ISSN 2249-894X Impact Factor : 3.1402 (UIF) Volume - 5 | Issue - 4 | Jan - 2016

STUDY OF HARDNESS OF WATER SUPERIORITY IN TULJAPUR TALUKA

Sunil T. Jadhav
Ramkrishna Paramhansa Mahavidyalaya, Osmanabad.

ABSTRACT:

Water is one of your most important natural sources. There is no life on earth. The nature of water supply available for our use is limited. Although there is plenty of water on earth, it is not always the right place at the right time at the right time and in the right quality. Increasing the problem is the fateful destruction of today's chemical substance, which is showing its water supply today. Hydrology has been developed as a science to help understand the complex water system of the Earth and solve the water problem. Hydrologists play an important role in solving water problems and in which entertaining and challenging careers are available for those who decide to study hydroelectricity. The main source of heavy metal pollution in the wells in the city, unused sewage in the village, solid waste disposal of industrial waste metals Religious festival waste Coal burning on human activities, fertilizers and pesticide use. Heavy metals are biologically non-degradable and yet food chain can pass to humans and cause health concerns.

KEYWORDS: Hydrology, pH, Conductivity of Electrode, Dissolved Oxygen, Total Dissolved Oxygen

INTRODUCTION:

The compound with general formula $M_3T_5O_{12}$ (where M stands for lanthanide Sm-Lu and yttrium and T for Fe, Ge, Al etc.) are usually termed as garnet. These materials where first identified by
Water quality is an important factor for all water development projects as it affects all uses of water for humans, animals, crops and industries. All natural water content of dense non-inorganic ions is mainly due to mineral and rock mineral climate. Weather products of Rock Minerals are released and transported by water action. Therefore, the ion nature and concentration of water depends on the mineral resistance of the rock, its redness, and the climate of the freshwater or carbonated waters and the local site environment. In addition to these main causes, the solubility of minerals is affected by pH. Water pH value is an important sign of its quality. The pH is the ratio of acidity or alkalinity to the amount of hydrogen ion in the water. If the free H + ion is higher than the OH-ion, the water will show insoluble water. The pH of natural water is about 7. Water is alkaline due to sufficient carbon (e.g. pH>). Increased pH during the day is mainly due to photosynthetic activity and overnight occurrence, which causes respiration of the plant empire. Factors such as air, temperature, and industrial waste disposal can cause changes in pH. Higher pH is undesirable in water as free NH3 increases in pH. Absolute hardness is the properties that make up the beard and boil water. Hardness usually enters the groundwater because water flows through the calcium and magnesium minerals. The most common sources of hardness are limestone and dolomite. In the chemical and mining industries, the local area may be local hardness for agriculture or land soils. There is a lot more rigidity in the earthquake compared to the surface. CO_2 is released by dissolving organic matter and by respiratory processes of aquatic plants and animals. CO_2 gas is most essential for the photosynthesis of green plants. CO_2 is the most important greenhouse gas on earth. One of the most important aspects of global water studies is

its solution at the air-water or seawater-water interface, which is often a measure of the net ecological production / metabolism of a hydropower system.

HYDROLOGY:

Hydrologists apply the principles of scientific knowledge and mathematics to solve water problems: the problem of quantity, quality, and availability. They may be related to water supply in the city or irrigation fields or to control river floods or soil waste. Or, they can work in environmental protection: to find sites to prevent pollution or to clean or dispose of hazardous waste. Individuals trained in gynaecology may have different job positions. Scientists and engineers of hydrological sciences can participate in field investigations and office work. In the field, they can collect basic data; See water quality testing, real regional workers and equipment. A lot of things have to go abroad. The hydrologist can spend a great deal of time working in remote and ductile terrain. In the office, hydrologists do many things, such as interpreting hydrolysis data and analysing their potential water supply. Much of his work depends on computer modelling studies, organizing, summarizing and analysing data, and predicting evidence, or the result of leakage out of a reservoir or underground oil storage pond. Hydraulic functions are different than using water and planning multi-sector dollar interstate projects because they can suggest homework for past mortgage problems.

GROUND WATER AND HYDROLOGY:

Pumping under the surface of the earth is often cheaper, more convenient than the surface, and less vulnerable to pollution. Therefore, it is commonly used for public water supply. Groundwater is the largest source of water storage in the United States. Groundwater reservoirs have more water than all the great lakes, with all the groundwater reservoirs. In some areas, geology may be the only option. Some municipalities only live in geography. Hydrology has calculated the geological reserves of water by measuring the water level of local wells and how much water quality has been determined by examining the geological records from drilling to determine the depth and thickness of the depth and thickness. Hydrologists can monitor test drilling wells before investing in full-size wells. They focus on the volume of water for laboratory analysis and collect soil, rocks and water samples. They can work for various geographical tests on the completion of complete inspection and test results and complete records. Hydrologists determine the most effective rate of pumping by controlling the volume of pumps and drainage. Pumping wells can be dry or prevent nearby wells. Coastal, over-pumping can cause flat infiltration. By storytelling and analysing this data, astrologers can estimate the optimal and optimal production of fenugreek. Polluted groundwater is not visible, but it is much harder to clean and clean than pollution in rivers and lakes. Groundwater pollution often misses the disinfection of waste. Industrial and domestic chemicals and waste lands, filtration includes the length of water in industrial waste, wastewater through mines and processes, oil field pits, underground oil storage tanks and pipelines, sewage sludge and septic systems. At regular intervals to determine toxic or hazardous chemicals in contaminated water - hydrological guides guide the inspection of wells around nature to reach groundwater levels and mark them as unwanted latches. Hydrological soil and water samples can be collected to identify the type and extent of the contaminated area in a contaminated area. Chemical data was then created on the map to indicate the size and direction of improper movement. In difficult cases, computer modelling of water flow and waste migration provides guidance for sanitation programs. In additional cases, therapeutic actions may require excavation of contaminated soil. Most people and industries today are aware that restricted investment is less than sanitation. Hydrologists are often consulted to choose the right place for new waste disposal. The discovery of wells in deep ground and unsafe soils reduces the risk of pollution. Other methods include adding a landfill lining, water treatment material, any pond with a tube and adding as much landfill surface as possible. Careful monitoring is always necessary.

REVIEW OF LITERATURE:

Karamanoils George, Theofanidou etl. (2008), concluded in their study ‘A Glass of Water Immediately Increases Gastric pH in Healthy Subjects’, that heartburn is usually associated with acidic oesophageal pH and not with intragastric drop in pH<4, we could hypothesize that an increase of intragastic pH>4 is likely to contribute to the improvement of heartburn. Thus, patients who with 'ondemand'' therapy for episodic heartburn should swallow the pill with at least a glass of water, as this may immediately relieve GERD symptoms.

Premalata Vikal (2009) has created physical chemical properties of water in Pichola Lake. They have studied various factors like gas and water temperature, pH, free CO2, dissolved oxygen, biochemical oxygen demand, chemical oxygen demand, conductivity, total decomposed density, hardness, total alkalinity, chloride, nitrate, phosphate and sulphate. Conclusions show that the value of conductivity, COD and sulphate exceeds the standard parameters of water samples. The coefficient of correlation (r) among various physico-chemical parameters has also been made.

Ranjana Agarwal (2009) has systematically studied physico-chemical parameters of Dudu Town's ground water quality. The study confirmed that pH levels are in geo-quantities. All other criteria such as electrical conductivity, TDS, fluoride are more than the permissible limits in most samples. Therefore, water cannot be used for drinking purpose.

Gaikwad and Mirgane (2011) , A systematic physico – chemical study of ground water in 16 different localities in Tuljapur of Maharashtra has been taken up to evaluate its suitability for drinking purpose in the year 2008-09. The physic –chemical parameters are such as pH, EC, TDS, TH, TA, Cl-, Ca++, Mg++, K+, Na+ of ground water were studied. In present study water samples were collected monthly for four months during summer from sixteen selected ground water sources i.e. bore wells. The values of physcio – chemical parameters are compared with standard values suggested by WHO. It is observed that values of TDS, TH, TA,Ca++, Mg++ and Na+ have high values than the permissible limit prescribed by WHO. Finally above results show those ground waters of all samples during summer also show higher values of 90 % parameters of common Borewells. This is because of large depth of Bore-wells. The Variation in nature of rock and nature of Earth crust contain Solid waste material deposition, improper drainage systems also changes the nature of ground water. Hence these are chemically unfit for drinking purposes and should not be used without pre-treatment. The physico chemical parameters of different samples in February, March, April and May months are given in table no. 1, 2, 3 and 4. The standard values prescribed by WHO for pH, EC, TDS, TA, Cl-, Ca++, Mg++, Na+, and K+ are 7.0 - 8.5, 750-2250 μs, 500 ppm, 200 ppm, 200 ppm, 75 ppm, 30 ppm, 20 ppm and 12 ppm respectively. This has almost all the samples in February show acidic pH which is not in the permissible limit of standard data prescribed by WHO except sample S11. In March 50% samples show alkaline while 50% are slightly acidic in nature. In April and May all samples are alkaline in nature.

MATERIAL AND METHOD:

Hydrographic data were collected and studied from Tuljapur taluka during the period of January to December and sample of water were collected during the period of 10^{th} to 15^{th} of every month. Collected sample water was stored in 1 litre capacity bottle and reversed with concentrated HNO_3 and noted using samples of 1 ml of concentrated HNO_3.

An independent 1 liter bottle was used for the analysis of dissolved oxygen and biological oxygen demand. The bottle was completely cleaned with HNO_3 and then washed and washed free H_2O for the presence of acid and then washed with double distilled water and finally collected water samples. Wash the solution before using the bureau and wipe. The current analysis was of the chemicals used and the regent AR grade.

The rainfall for the period of study from January 2017 to December 2017 is presented in table, the total rainfall for Tuljapur was mm. the total rainfall in Tuljapur was 584.41 mm, it show that in the month of July and August moth.

Table 1.1 Rainfall in Tuljapur Taluka

Sr. No.	Month	mm
1.	January	12.19
2.	February	15.54
3.	March	19.23
4.	April	06.14
5.	May	03.68
6.	June	28.59
7.	July	124.18
8.	August	219.51
9.	September	51.13
10.	October	29.27
11.	November	20.58
12.	December	54.37
Total		**584.41**

Table 1 Monthly Difference of pH in Tuljapur Taluka from January 2017 to December 2017

Sr. No	St.	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Mean
1.	**S1**	6.13	6.32	5.21	7.12	7.11	7.07	8.52	8.69	7.19	6.82	7.34	7.36	7.07
2.	**S2**	6.18	6.12	5.32	7.23	7.19	7.13	8.03	8.49	7.34	6.34	7.25	7.60	7.02
3.	**S3**	6.65	6.45	5.16	7.02	7.28	7.24	8.19	8.78	7.10	6.19	7.16	7.43	7.05
4.	**S4**	6.05	6.95	5.19	7.31	7.08	7.37	7.83	8.98	7.19	6.90	7.36	7.32	7.13
5.	**S5**	6.40	6.13	5.84	7.14	7.17	7.09	7.72	9.28	7.60	6.27	8.02	7.89	7.21
6.	**S6**	6.28	6.03	5.64	7.36	7.64	7.10	7.61	9.03	7.39	5.73	7.69	7.54	7.09
7.	**S7**	6.34	6.10	5.20	7.42	7.39	7.53	7.13	7.81	7.46	5.28	7.42	7.67	6.90
8.	**S8**	6.0	5.32	5.29	7.39	7.43	7.49	7.28	7.91	7.82	5.41	7.63	7.06	6.84
9.	**S9**	5.64	6.35	5.37	7.19	7.19	7.28	7.06	7.64	7.13	5.09	8.13	7.99	6.84
Mean		6.18	6.19	5.35	7.24	7.28	7.26	7.71	8.51	7.36	6.00	7.56	7.54	

Source: Field work

In pure water, hydrogen and hydroxyl ion are equal in size, so we refer to this as a neutral solution. The amount of hydrogen ion in acidic solution is higher than the concentration of hydroxyl ions. Hydrogen ion activity is expressed in pH units. Natural water hydrogen ions are one of the important environmental factors, which are related to chemical reactions, species composition and the life of communities of animals and plants. Water pH is controlled at the same time as dissolved carbon dioxide, carbonate and bicarbonate.

The sample collected from the Station 1 showed a maximum recorded pH was at 9.28 from S5 station in August month, and a minimum pH was recorded at 5.16 from S3 station in the month of March. The annual average of Tuljapur taluka was maximum at 7.21 from S5 station and minimum at 6.84 simultaneously A8 and A9 station.

Table 2 Monthly Difference of EC (μs/cm) in Tuljapur Taluka from January to December 2017

Sr. No	St.	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Mean
1.	**S2**	632	682	327	534	640	317	597	631	794	303	241	410	509.00
2.	**S2**	872	964	752	641	819	904	749	667	821	671	628	701	765.75
3.	**S3**	486	362	340	247	475	561	603	483	514	420	492	417	450.00
4.	**S4**	743	645	687	541	746	710	737	654	601	671	514	474	643.58
5.	**S5**	369	532	471	360	308	389	473	537	500	463	409	341	429.33
6.	**S6**	900	864	956	947	816	766	890	1029	1247	957	804	823	916.58
7.	**S7**	481	420	367	529	471	534	589	647	607	537	594	480	521.33
8.	**S8**	620	539	649	707	784	517	683	753	801	685	606	493	653.08
9.	**S9**	764	1067	1284	946	780	627	867	1154	1012	746	859	815	910.08
Mean		651.89	675.00	648.11	605.78	648.78	591.67	687.56	728.33	766.33	605.89	571.89	550.44	

Source: Fieldwork

The above table 2 describes about the monthly difference of EC in Tuljapur taluka from January to December 2017 and it was observed from the collected sample of water the maximum electrical conductivity was recorded at 1247 **µs/cm** at S6 station in the month of September, and the minimum electrical conductivity was recorded at 247 **µs/cm** at S3 station in the month of April, the annual average that is the maximum mean value was recorded at 916.53 from S6 station and minimum mean value was recorded at 429.33 **µs/cm** at S5 station.

Table 3 Monthly Difference of Dissolved Oxygen (mg/l) in Tuljapur Taluka from January 2017 to December 2017

Sr. No	St.	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Mean
1.	**S1**	3.3	5.1	2.3	4.3	3.5	3.9	4.1	3.7	5.3	4.6	3.9	2.8	3.90
2.	**S2**	4.9	4.9	4.1	4.1	4.6	3.7	4.3	4.0	3.4	3.5	4.2	3.1	4.07
3.	**S3**	2.9	3.6	3.5	5.2	4.9	4.1	3.9	3.2	4.6	3.5	4.1	3.7	3.93
4.	**S4**	3.7	4.7	3.7	2.9	3.1	4.6	3.8	3.4	4.1	3.7	4.6	3.4	3.81
5.	**S5**	4.3	2.8	4.6	4.9	3.8	3.1	2.7	4.3	5.3	4.2	3.4	2.4	3.82
6.	**S6**	2.4	3.1	5.1	3.4	2.9	3.9	3.3	4.8	4.2	4.7	5.3	3.7	3.90
7.	**S7**	5.3	4.2	4.3	2.7	3.4	4.2	3.1	5.2	4.7	3.8	3.7	2.6	3.93
8.	**S8**	4.9	3.7	3.8	2.9	3.5	3.7	2.1	3.7	4.1	4.3	2.9	3.4	3.58
9.	**S9**	3.8	5.4	4.7	3.9	2.9	4.1	3.4	3.9	3.7	5.4	3.3	4.2	4.06
Mean		3.94	4.17	4.01	3.81	3.62	3.92	3.41	4.02	4.38	4.19	3.93	3.26	

Source: Fieldwork

The above table 3 describes about the monthly difference of Dissolved Oxygen (mg/l) in Tuljapur taluka and from the collected water it was observed that the maximum Dissolved Oxygen was recorded at 5.4 mg/l at S9 in the month of February and October simultaneously and minimum Dissolved Oxygen was recorded at 2.1 mg/l at S8 station in the month of July, the annual maximum mean value was recorded at 4.07 mg/l from S2 station and the minimum mean value was recorded at 3.58 mg/l from B8 station.

Table 4 Monthly Difference of Total Dissolved Solid (mg/l) in Tuljaur Taluka from January 2017 to December 2017

Sr. No	St.	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Mean
1.	**S1**	532	465	698	781	847	974	623	732	746	864	780	806	**737.33**
2.	**S2**	547	539	627	864	953	967	769	954	957	768	840	1207	**832.67**
3.	**S3**	460	582	631	749	974	1171	870	829	648	459	784	765	**743.50**
4.	**S4**	963	1056	1948	1694	2149	2286	1785	1952	1239	2149	1429	1558	**1684.00**
5.	**S5**	756	851	654	957	1563	1347	1069	1147	1743	2047	1746	1640	**1293.33**
6.	**S6**	832	753	639	968	1175	1274	1348	1653	1128	1789	1394	1049	**1166.83**
7.	**S7**	436	594	745	840	967	1086	967	1127	943	956	730	875	**855.50**
8.	**S8**	947	845	690	981	847	1183	760	984	829	947	843	857	**892.75**
9.	**S9**	850	776	743	996	1095	985	1347	1083	959	849	1640	1068	**1032.58**
Mean		**702.56**	**717.89**	**819.44**	**981.11**	**1174.44**	**1252.56**	**1059.78**	**1162.33**	**1021.33**	**1203.11**	**1131.78**	**1091.67**	

Source: Fieldwork

The above table 4 describes about the monthly difference of total dissolved solid in Tuljapur taluka and it was observed from the collected sample water that the maximum value of total dissolved solid is recorded at 2286 mg/l from S4 station in the month of June and the minimum value of total dissolved solid is recorded at 436 mg/l from S7 station in the month of June and the annual average maximum mean value was recorded at 1684.00 mg/l from S4 station and the minimum mean value was recorded at 737.33 mg/l from S1 station.

Table 5 Monthly Difference of BOD (mg/l) in Tuljapur Taluka from January 2017 to December 2017

Sr. No	St.	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Mean
1.	S1	3.3	3.1	3.6	3.4	2.9	2.5	2.1	2.4	2.9	3.2	3.4	3.0	2.98
2.	S2	3.6	3.4	4.2	3.7	4.1	3.7	3.4	3.9	4.3	4.1	3.9	3.5	3.82
3.	S3	2.9	2.1	2.7	3.2	3.9	4.4	3.8	3.4	3.6	3.1	3.4	3.0	3.29
4.	S4	2.7	2.0	3.1	3.6	4.2	3.9	3.4	3.7	3.9	3.5	3.6	3.1	3.39
5.	S5	3.1	3.3	3.6	3.2	3.5	3.4	3.6	3.1	3.6	3.2	3.3	3.5	3.37
6.	S6	3.0	3.5	3.9	3.5	3.0	2.8	3.1	2.8	3.3	2.9	2.8	3.1	3.14
7.	S7	1.9	1.8	2.5	3.1	3.6	3.2	2.4	2.9	3.2	2.9	3.1	3.2	2.82
8.	S8	2.8	2.1	2.3	2.9	3.1	3.4	3.0	2.6	3.0	2.7	3.2	3.5	2.88
9.	S9	3.2	3.5	3.9	3.5	3.4	3.0	2.7	2.8	3.2	3.0	3.3	3.4	3.24
Mean		2.94	2.76	3.31	3.34	3.52	3.37	3.06	3.07	3.44	3.18	3.33	3.26	

Source: Fieldwork

The above table 5 describes about the monthly difference of BOD in Tuljapur taluka from January 2017 to December 2017 and it was observed from the collected water sample that the maximum BOD was recorded at 4.4 mg/l from S2 station in the month of June and the minimum BOD was recorded at 1.8 mg/l from S7 station in the month of February and the annual average maximum mean value was recorded at 3.39 mg/l from S4 station and the minimum mean value was recorded at 2.82 mg/l from A7 station.

Table 6 Monthly Difference of Hardness of Water (mg/l) in Tuljapur Taluka from January 2017 to December 2017

Sr. No	St.	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Mean
1.	S1	68	51	72	82	94	75	86	90	93	84	80	73	79.00
2.	S2	132	127	139	166	183	145	180	194	203	184	176	154	165.25
3.	S3	84	61	72	79	96	82	104	98	105	86	72	64	83.58
4.	S4	356	328	303	342	374	347	333	368	402	392	364	340	354.08
5.	S5	425	394	371	386	395	347	359	373	387	360	349	325	372.58
6.	S6	257	234	203	217	249	219	273	294	314	293	271	238	255.17
7.	S7	89	71	56	69	72	81	91	102	113	101	89	67	83.42
8.	S8	168	135	127	154	167	178	182	213	219	198	179	157	173.08
9.	S9	380	334	315	329	318	338	347	385	410	376	357	339	352.33
Mean		217.67	192.78	184.22	202.67	216.44	201.33	217.22	235.22	249.56	230.44	215.22	195.22	

Source: Fieldwork

The above table 6 describes about the monthly difference of hardness of water in Tuljapur Taluka from January to December 2017 and it was observed from the collected sample of water that the maximum Hardness of Water was recorded at 425 mg/l from S5 station in the month of January and the minimum Hardness of Water was recorded at 51 mg/l from S1 station in the month of February and the annual average maximum mean value was recorded at 372.58 mg/l from S5 station and the minimum mean value was recorded at 79.00 mg/l from S1 station

Table 7 Monthly Difference of Total Acidity (mg/l) in Tuljapur Taluka from January 2017 to December 2017

Sr. No	St.	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Mean
1.	S1	12.5	16.9	19.2	17.4	15.5	16.7	18.6	17.2	18.4	19.4	19.1	17.2	17.34
2.	S2	32.8	36.7	38.8	37.2	35.4	36.8	37.5	38.4	37.6	39.4	38.5	36.5	37.13
3.	S3	45.8	40.6	42.5	40.4	43.8	45.7	47.9	46.8	44.2	47.0	45.3	42.6	44.38
4.	S4	22.9	28.3	25.7	23.8	21.9	23.1	26.0	27.3	28.7	29.7	28.5	27.4	26.11
5.	S5	56.7	59.7	57.3	55.6	54.7	56.3	55.1	54.9	56.7	59.3	58.7	26.7	54.31
6.	S6	13.9	16.7	17.8	15.7	14.7	18.4	19.7	18.4	19.7	17.8	16.2	15.8	17.07
7.	S7	25.7	28.9	25.8	24.3	26.7	27.6	25.3	23.3	22.1	21.5	23.4	21.7	24.69
8.	S8	42.3	45.6	44.6	42.9	43.3	44.9	42.7	40.8	42.8	41.1	43.8	41.8	43.05
9.	S9	51.2	53.7	52.9	54.3	54.8	55.7	52.3	54.9	55.2	53.4	51.8	52.7	53.58
Mean		33.76	36.34	36.07	34.62	34.53	36.13	36.12	35.78	36.16	36.51	36.14	31.38	

Source: Fieldwork

The above table 7 describes about the monthly difference of total acidity of water in Tuljapur Taluka from January to December 2017 and from the collected sample it was observed that the maximum total acidity of water was recorded at 59.7 mg/l from S5 station in the month of February and the minimum total acidity of water was recorded at 12.5 mg/l from S1 station in the month of January and the annual average maximum mean value was recorded at 54.31 mg/l from S5 station and the minimum mean value was recorded at 17.07mg/l from S6 station.

Table 4.10.1 Monthly Difference of Alkalinity (mg/l) in Tuljapur Taluka from January 2017 to December 2017

Sr. No	St.	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Mean
1.	S1	32	39	37	42	45	41	47	51	49	41	35	27	**41**
2.	S2	56	51	55	59	61	58	63	68	65	60	51	46	**58**
3.	S3	39	37	38	35	39	42	45	49	48	45	40	43	**42**
4.	S4	48	52	53	55	57	58	62	66	62	57	52	56	**57**
5.	S5	69	65	68	72	74	70	74	79	75	41	36	38	**63**
6.	S6	87	86	91	95	98	103	108	105	98	92	89	94	**96**
7.	S7	93	91	87	89	91	95	104	109	101	95	90	87	**94**
8.	S8	29	28	30	33	36	41	44	49	45	40	37	39	**38**
9.	S9	36	34	36	41	47	45	49	42	36	33	29	34	**39**
Mean		54	54	55	58	61	61	66	69	64	56	51	52	

Source: Fieldwork

The above table 4.10.1 describes about the monthly difference of Alkalinity of water in Tuljapur taluka from January 2017 to December 2017 and it was observed from the collected sample water that the maximum Alkalinity of water was recorded at 109 mg/l at S7 station in the month of August and minimum total acidity was recorded at 27 mg/l at S1 station in the month of December and the annual mean maximum value was recorded at 96 mg/l from S6 station and annual minimum mean value was recorded at 39 mg/l from S9 station.

DISCUSSION/CONCLUSION:

The major causes for deterioration of the ground water are, its use for many purposes besides drinking leading to the possibility for pollution during recharge of ground water in the polluted environment. This is because it contains soluble detergents, fertilizers, harmful chemicals, degradable as well as non-degradable waste, hospital waste, drainage, municipal waste, etc. These wastes and pollution also change the physical parameters like colour, smell, taste, etc. of water besides creating health problems and diseases.

REFERENCES:

1. Abbasi, S, A. (199B): Environmental pollution and its control. Congent International, First Ed.
2. Chandrasekhar, S.V. A. and Muhammed, Jaffer, P. (1998): Limnology studies of a temple pond in Kerala. Env. Eco.16, P. 463 - 467.
3. Aboo, K. M; Sastry, C. A, and Alex, P.G. (1968): A study of well waters in Bhopal city. IndJ. Env. Hlth., 10(3), P. 189-203.
4. Bhatia, R. and Dave, J. M. (1980) : Study of water quality of an urban village in Dellhi. J Ind. Wat. Works. Assam, 12(4) P.337-349.
5. Davis, B.E. and Anderson, M.P. (1979), 'The effect of urbanization of groundwater -A case study', Groundwater, 17(5), P .456-462.
6. Bhubeneswam, N.; Sathalakshmi, G. and Rajeswari, S. (1999): Water quality of river Adyar in Chnnai eity-the river a boone or a bane. Ind. J. Env. Prot. 19 (6), P. 412 – 415
7. Garg, Abha; Kripalani, Chandani and Brighu, Urmilla (2004): Heavy metals in the water of wastewater drain (Amanishash nallah) near Mansarover region in Jaipur and groundwater of the vicinity. Nat .Env. Poll. Tech. 3(1), P. 73-77.

8. Harilal, C. C.; Hashim, Akness; Arun, P. R. and Baji, S. (2004): Hydrogeochemistry of two rivers of Kerala with special reference to drinking water quality. Eco. Env. & Corn. 10(2), P. 187-192.
9. Jhingaran, A. G. and Pathak, V. (1987), 'Ecology and management of beels in Assam-A case study of Dhir beel', Workshop on Dev. Beel Fisheries, Assam, Assam Agril, Univ. Khanapara, Assam, 20-22 April, India.