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REVIEW OF RESEARCH

GROUND WATER ANALYSIS OF NANDED DISTRICT IN SUMMER SEASON

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ABSTRACT :

Water covers about 70% of the earth's surface. Although the volume of water on Earth is abundant, 95% water is saline, 2% is abundant water and only 1% pure water is available which contains 98% of groundwater. Water is very important in living things. The economy and health of the country depends on the quality and quantity of water. Generally, people in urban and rural areas are using their own bore well water for drinking and domestic purposes, as the concerned authorities cannot meet the ever increasing demand for drinking water.

KEYWORDS : *Ground Water , drinking water, Summer Season*

INTRODUCTION :

When unwanted substances enter the water, water pollution, water quality changes and environmental and human health are detrimental. Water is an important natural resource for drinking and other developmental purposes in our lives. Safe drinking water is essential for human health worldwide. Water is a major source of water contamination because of the universal bankruptcy. 80% of the World Health Organization (WHO) is under water. Drinking water in different countries does not meet WHO standards. The 3.5% death is due to pure water quality and poor quality. Water pollution is one of the major causes of water and sewage dumps, radioactive waste and atmospheric waste due to the reduction of domestic and industrial pollution waste. The obstruction and industrial waste collected in the main pond and river are harmful to humans and animals. Toxins in industrial wastes are the main cause of immune immunity, failure to reproduce, and severe poisoning. Infectious diseases, gastroenteritis, diarrhea, vomiting, skin and kidney problems are spread by cholera, ascites and other diseases through contaminated water. Human health is directly affected by the nutrition of plants and animals. Water pollutants are destroying marine, nesting, sea birds, fish, crustaceans.

The physico chemical parameters of ground water from Nanded district were studied. The following is the list of sample area names from Nanded district.

Table 1.1 List of Selected Areas

Sr. No	Area Name	Station Name
1.	Deglur	S1
2.	Mukhed	S2
3.	Biloli	S3
4.	Naigaon	S4
5.	Kandhar	S5
6.	Loha	S6
7.	Dharmabad	S7
8.	Umri	S8
9.	Mudkhed	S9
10.	Nanded	S10
11.	Ardhapur	S11
12.	Bhokar	S12
13.	Himayatnagar	S13
14.	Hadgaon	S14
15.	Kinwat	S15
16.	Mahoor	S16

Source: Fieldwork

The above selected areas are the name of the taluks and for these talukas researcher has given the name as stations like S1, S2……S16. These specimens have access to water quality during the summer season. The results obtained are compared to standard data set.

RESULTS AND DISCUSSION:

The standard values arranged according to the WHO for pH, TDS, SC, TA, Na^{+}, $Ca^{++,}$ Mg^{++}, Cl-, K^{+} are 7.5 to 8.9, 800-2300 µs, 550 ppm, 250 ppm, 250 ppm, 80 ppm, 50, pp, 30 ppm and 15 ppm respectively.

Almost all samples in February show acidic pH that is not within the permissible limit of standard data set by WHO except sample S11. In March,50% of the samples showed alkaline whereas% 1% was slightly acidic. All samples are alkaline in April and May. During the summer season the electrical conductivity of all the specimens was within the WHO permit limits. The value of TDS is higher in all samples studied during the summer season, ranging from 200 ppm to 2900 ppm. The total hardness of the samples studied varies from 85 ppm to 1320 ppm. The total stiffness in the summer increases from February to May. The total alkalinity of all samples during the summer exceeds the permit limit set by WHO. This varies from 278 ppm to 750 ppm. All samples except the SL2, S3, and S10 show CL in the permissible limit. Much of this is being focused on what is being decided by the WHO. CL- concentration increases from February to May in the summer. The content of Ca^{++} is high in all the samples studied except for a few samples in different months. All samples studied over the summer show higher levels of Mg^{++} than WHO's permissive licenses.

Potassium and sodium are naturally constituents of ground water. Sodium is high but potassium is within the WHO permissible limits. The concentration of sodium in the studied samples varied from 58 ppm to 95 ppm. The concentration of potassium varies from 3.60 ppm to 60.20 ppm. Sample S12 and S13 have higher values in February, while S S has higher values in May.

Table 1.2 February 2016

Station	T	pH	EC	TDS	TA	TH	Cl^-	SO_4^{2-}	Ca^{2+}	Mg^{2+}	Na^+	K^+	DO
S1	27	6.9	1110	370	325	425	103	32	160	270	75	7.3	6.61
S2	27.3	6.6	3000	880	480	680	260	41	196	490	86	7.7	6.0
S3	27.1	6.8	1556	500	428	420	172	17	160	270	91	9.1	5.86
S4	27	7.0	1912	640	659	340	142	105	70	280	62	4.3	6.1
S5	27	7.0	1228	430	443	280	142	23	133	155	70	4.9	7.10
S6	26.8	6.9	1121	380	434	415	138	15	115	302	96	16.9	6.53
S7	26.7	7.1	834	250	324	335	118	3	105	235	84	9.9	6.85
S8	27	7.0	912	210	340	310	76	24	105	210	71	6.1	6.29
S9	27	6.9	801	240	275	315	132	6	86	232	65	6.9	6.75
S10	26.7	7.0	1664	600	265	300	301	70	140	174	53	4.3	6.40
S11	27.9	7.5	518	170	245	65	73	5	62	15	68	7.3	6.02
S12	26.7	7.1	1023	360	374	415	165	15	105	315	91	48.9	6.10
S13	27.1	7.0	802	240	286	180	48	3	47	142	86	25.8	6.34
S14	26.8	6.9	835	300	412	345	42	2	115	234	70	5.9	5.75
S15	27	7.0	1040	400	365	385	74	15	142	240	85	6.7	6.05
S16	27.3	7.1	1086	390	365	350	90	53	71	268	88	8.7	6.84

Source: Fieldwork

Table 1.2 March 2016

Station	T	pH	EC	TDS	TA	TH	Cl^-	SO_4^{2-}	Ca^{2+}	Mg^{2+}	Na^+	K^+	DO
S1	25	6.2	951	360	315	315	194	28	121	186	64	4.1	5.21
S2	25.2	5.9	632	200	150	125	254	12	35	86	70	6.9	5.20
S3	25.1	6.1	1925	1750	320	480	275	55	171	286	65	6.5	7.6
S4	25	6.3	2016	750	654	305	160	108	184	130	70	6.1	5.9
S5	25	6.3	1480	515	471	405	183	53	103	168	91	11.9	5.13
S6	24.9	6.2	2131	400	381	345	132	33	71	341	62	4.9	4.87
S7	24.8	6.4	856	325	304	321	129	15	96	237	75	4.9	5.3
S8	25	6.3	765	535	321	420	91	8	76	239	65	6.4	5.76
S9	25	6.2	1115	415	264	310	231	35	114	286	70	8.7	5.32
S10	24.8	6.3	1168	495	251	76	267	42	103	197	71	3.4	5.98
S11	27.9	6.8	652	195	294	421	40	5	32	61	55	4.5	5.97
S12	24.8	6.3	801	365	358	415	221	39	118	298	71	8.9	4.47
S13	25.1	6.2	1137	380	271	376	117	29	142	268	69	9.3	5.68
S14	24.9	6.3	849	305	425	348	74	5	86	286	85	10.8	5.32
S15	25	6.4	1048	375	384	341	161	39	78	274	64	7.5	5.78
S16	25.2	6.3	1137	380	360	319	128	63	72	236	64	9.8	6.18

Source: Fieldwork

Table 1.2 April 2016

Station	T	pH	EC	TDS	TA	TH	Cl^-	SO_4^{2-}	Ca^{2+}	Mg^{2+}	Na^+	K^+	DO
S1	33	8.6	1152	1380	415	630	275	205	176	330	75	6.3	4.91
S2	33.1	7.3	2425	2285	540	355	248	58	107	675	76	6.1	5.16
S3	33	7.9	1068	1905	305	515	385	175	168	350	83	8.3	4.71
S4	33.3	7.9	1948	650	885	335	320	175	59	275	91	8.1	4.03
S5	33	8.2	601	660	475	390	225	186	61	320	64	10.9	4.47
S6	33.3	7.5	1124	720	420	715	335	175	159	415	76	7.6	4.58
S7	33	8.1	860	720	328	715	330	45	65	230	78	10.6	4.97
S8	33.1	7.9	824	530	365	395	94	165	175	234	78	7.1	5.10
S9	3	7.6	1005	901	358	630	345	180	176	460	55	7.6	5.13
S10	32.8	7.5	1890	1785	425	940	205	30	148	795	76	3.2	4.85
S11	32.7	7.6	860	1585	448	750	115	31	305	450	22	6.1	4.70
S12	32.2	7.8	550	600	355	420	310	48	135	302	73	11.1	4.15
S13	32.9	9.1	617	1515	430	395	214	38	132	315	79	11.8	4.42
S14	33	8.1	489	355	385	834	190	5	245	598	22	9.7	4.91
S15	33.4	7.2	1674	910	378	750	247	52	198	570	75	11.7	4.80
S16	33.2	8.1	1798	940	705	1280	257	61	315	995	70	10.9	5.17

Table 1.2 May 2016

Station	T	pH	EC	TDS	TA	TH	Cl^-	SO_4^{2-}	Ca^{2+}	Mg^{2+}	Na^+	K^+	DO
S1	36	8.3	1130	1270	405	740	145	48	156	475	68	7.2	4.47
S2	35.8	7.2	2240	2810	515	1010	310	97	224	778	70	6.1	4.21
S3	35.9	7.5	2290	2510	371	855	320	83	289	548	70	7.3	4.08
S4	36.3	7.4	1910	1720	881	380	165	96	67	391	71	8.2	3.84
S5	36	7.5	1220	1020	441	470	121	95	117	340	80	7.5	4.18
S6	36.2	7.2	1140	1015	520	615	207	98	196	431	71	6.1	4.1
S7	35.8	7.9	840	775	350	385	108	56	98	307	75	8.1	4.08
S8	36.2	8.3	835	1100	370	510	88	49	162	338	60	3.4	4.48
S9	36.2	8.1	1321	1210	350	595	201	91	186	415	85	6.1	4.49
S10	35.8	8.2	2070	2310	405	935	302	48	345	768	59	4.1	4.32
S11	36	8.0	1113	1447	400	720	94	34	265	468	59	4.9	4.04
S12	36.2	7.8	1021	1590	391	545	107	34	163	418	61	5.0	4.09
S13	36.3	7.8	1245	1565	415	480	117	59	205	284	47	8.4	4.68
S14	36.2	7.5	947	1210	421	820	94	59	221	591	70	4.3	5.2
S15	35.7	7.1	1710	1010	385	680	97	59	185	508	79	11	4.47
S16	35.9	7.3	2387	1390	680	1250	113	60	285	1027	78	59.6	3.94

Source: Fieldwork

CONCLUSION:

Finally the above results show that the groundwater of all samples also shows high values of 90% of the normal bore wells in summer. This is due to the large depth of the bore well. Differences in the appearance of rocks, the nature of the earth's crust, and the accumulation of solid waste, improper drainage systems also change the nature of groundwater. They are therefore chemically inappropriate for drinking purposes and should not be used without pre-treatments.

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