

Hydro-Chemical parameters of ground water around Khajipalem village, Guntur district, Andhra Pradesh, India.

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ABSTRACT

Present study deals with the consequents of sea water on ground water quality of Khajipalem village, Guntur District, Andhra Pradesh. The samples were collected from 06 places in different locations of the village in June 2015. The temperature, pH, DO, BOD, COD, Total hardness, fluoride, chlorides, Sulphates and nitrates were determined. All the parameters were found to be below permissible limit except Total hardness, COD and fluoride.

Keywords: Ground water quality, water parameters, Khajipalem village, Guntur district, Andhra Pradesh, India.

Introduction:

Approximately 70% of our body's mass is made of water and according to a number of doctors, drinking a total of eight glasses of water a day fulfils the requirement of our body demands. Water is the only liquid on Earth that safely reduces weight. It removes the by-products of fat and keeps us fresh and healthy. Drinking water regularly, suppresses appetite to a great extent and limits our food intake. Another distinct feature of water is that it literally contains no calories, hence, contributes significantly to weight loss. Khajipalem is a village located aerielly 8 kms to Nizampatnam, the coast of Bay of Bengal in Guntur district of Andhra Pradesh, India. It has a population of around 8,000+ people in an area of 2.5 sq.km. Its populace is mainly dependent on farming. It is situated 8 km as the crow flies from the beach, as a result of which cool breezes provide an environment and ambience pleasing to residents and holidaymakers alike.

Experimental:

The water samples were collected by taking care of not to have any bubbling during sampling process. The initial water samples were thrown out and the bottles were filled up to the mouth without any air gap. The temperature was recorded at the site only. Some of the samples tasted salt and some other tasteless. The pH was measured by using pH meter (ELICO-120) and combined glassed electrode. TDS was determined by evaporation method. DO was determined by Winkers method. BOD was calculated using DO for five days. COD was measured using dichromatic titration method. The total hardness was determined complexometrically by titrating with EDTA. Mohr's method was used to determine chloride. Sulphate was determining using turbidometer. Nitrate was determined by chlorimeter. In all these experiments required solutions were prepared using double distilled water. The volumetric apparatus, pH meter and Colorimeter (Hitachi) were calibrated before use.

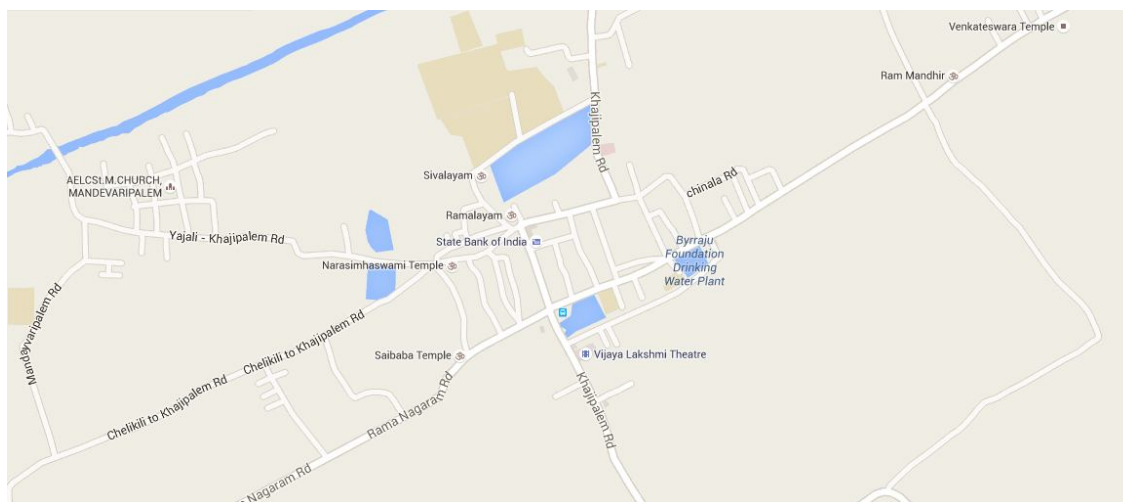


Figure.1 Satellite image of Khajipalem Village

Results and Discussion:

S.NO	Parameter	WS1	WS2	WS3	WS4	WS5	WS6	Permissible limit ISI 1991
1	pH	8.58	8.21	8.14	8.95	8.93	8.84	6.5-8.5
2	Total Hardness	895.4	991.0	854.8	957.6	1000.7	958.6	600
3	Ca (ppm)	205.8	188.5	218.4	225.8	187.5	164.5	200
4	Mg (ppm)	85.4	91.7	65.2	74.8	100.5	94.2	100
5	Na (ppm)	66.4	68.2	62.7	71.4	72.5	78.6	75
6	K (ppm)	8.2	8.5	8.8	8.4	8.2	9.1	9
7	Cl (ppm)	712.6	725.4	743.8	750.9	744.5	731.0	1000
8	SO ₄ (ppm)	222.2	235.8	244.9	198.4	207.2	248.5	200
9	F (ppm)	2.5	2.9	3.0	2.8	2.8	2.6	1.5
10	NO ₂ (ppm)	66.2	64.8	67.8	70.2	74.8	76.2	45
11	D.O (ppm)	6.65	7.44	7.02	6.79	7.54	4.58	8
12	B.O.D (ppm)	29.5	32.5	35.6	20.7	24.7	20.8	28-32
13	C.O.D (ppm)	268.4	254.8	288.9	245.2	232.2	240.6	250
14	Temperature	33.5	33.4	33.5	33.8	33.5	33.4	28-30

Conclusion:

Khajipalem is a nearby village to Bay of Bengal. The 8.14-8.95 range pH value of water samples indicates the basic nature of drinking water. The Hardness is also more than permissible limit. The average value of Ca, Mg and Sodium levels are also more than the Threshold limit. The fluoride is more than permissible limit. The average values indicate all the ground water samples of Khajipalem Village are not within the prescribed

limits of safe water due to the effect of sea water on ground water. Hence it can be concluded that it is not safe to use the ground water for drinking and advised to use purified water i.e., UV and RO processed water or at least boiled, cooled and filtered water to avoid adverse effects on the health of the rural people.

Acknowledgements:

The authors express their sincere thanks to the department of Chemistry, ANU Research Centre, SVRM PG college, Nagaram for facilitating them to carry out the required analysis.

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