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Ground Water Quality of Basavakalyan City (Karnataka)

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ABSTRACT: Analysis physico-chemical parameters of ground water of municipal area of Basavakalyan (Karnataka) was carried out seasonally to study the quality of water and suitability for domestic purpose. Talabs (Lakes), Baudy (Wells constructed by Adil Shahi Sultans in 16th &17th century) and bore wells are water resources of the study area. Thirty six samples from different sources at different locations were collected in different seasons during Year 2010-11. The parameters: pH, EC, TDS, Turbidity, Total hardness and content of Fluoride, Sulphate, Chloride were studied and compared with the standard values prescribed by ICMR, WHO and APHA. The present investigation revealed that the quality of water of a source varies from season to season and some of the water samples are unfit for drinking and utility purpose.

Key words: Basavakalyan, Ground water quality, Organic and inorganic constituents.

I. INTRODUCTION

Water is considered absolutely essential to sustain life. In India ground water has a major role to satisfy the needs of domestic and agriculture purposes. The ever growing demands for water resources coupled with the rate at which much of the earths fresh water being adversely affected by human activities, demonstrate a developing crisis and horrible future if environmental water resources are not appropriately managed1 . Basavakalyanis not an exception to this future crisis. Indeed, Basavakalyan with an average annual rain fall of 553 mm is a city located in an area that suffers critically from a shortage of water resources. So the conservation of improvised water resources is indispensable for the sustainability of our economic development. For this reason, in the past few decades more attention has been given to the water quality of Basavakalyan. Basavakalyan is facing water quality problems as well as drinking water shortage, specially during summer season. Many people from the city are suffering Current World Environment Vol 6(2), 265-269 (2011) Physico-Chemical Analysis of Ground Water in Municipal Area of Basavakalyan (Karnataka).The effective maintenance of water quality of local resources through appropriate control measures, continuous monitoring of their quality parameters and their use as a supplement to river water may reduce the water crisis of the city. Also the information on water quality of Basavakalyan is scanty. Hence, the present work, seasonally determining suitability of ground water for drinking and other purposes of Basavakalyan city area is taken up. The present study also strengthens the national and local water quality data base.

1.1SOURCE OF GROUND WATER:

Occurrence of ground water is as shown in Figure-1

After rain, some quantity of water may get in filtered into the soil which may move downward through a soil layer. Some water is dispersed through the soil and held by the capillary forces in the smaller pores or by molecular attraction around the soil particles. The water, after satisfying the retention capacity of the soil further moves downward into the regions where the pores of the soil or rock are completely filled with water. The water in this zone is called the groundwater. Figure 1 shows a schematic diagram illustrating the occurrence of groundwater.

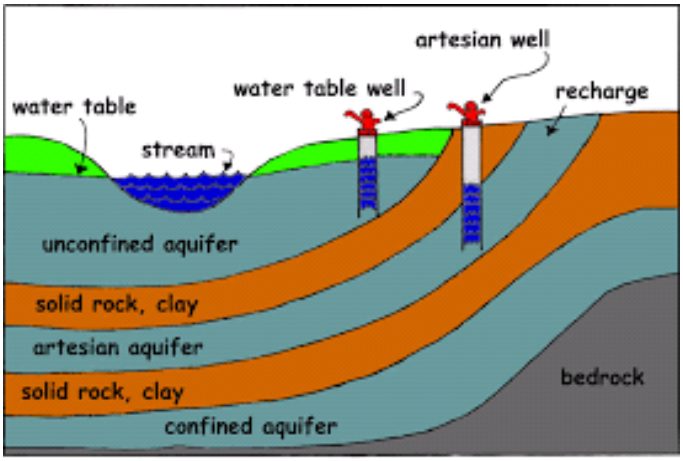

Fig.1: Occurrence of ground water

2 METHODOLOGY

Water is considered absolutely essential to sustain life. In India ground water has a major role to satisfy the needs of domestic and agriculture purposes. The ever growing demands for water resources coupled with the rate at which much of the earths fresh water being adversely affected by human activities, demonstrate a developing crisis and horrible future if environmental water resources are not appropriately managed1 . Basavakalyanis not an exception to this future crisis. Indeed, Basavakalyan with an average annual rain fall of 553 mm is a city located in an area that suffers critically from a shortage of water resources. So the conservation of improvised water resources is indispensable

for the sustainability of our economic development. For this reason, in the past few decades more attention has been given to the water quality of Basavakalyan. Basavakalyan is facing water quality problems as well as drinking water shortage, specially during summer season. Many people from the city are suffering Current World Environment Vol. 6(2), 265-269 (2011) Physico-Chemical Analysis of Ground Water in Municipal Area of Basavakalyan (Karnataka).

3. EXPERIMENTAL RESULTS

This study clearly depicts that Total Hardness, Calcium, Magnesium, Chloride, Total Dissolved Solids and Alkalinity are exceeding the permissible standards. The water quality index of the samples is found out to be 191.21 which is poor quality of water. pH value of ground water is 7.535 indicates basic in nature. Nitrate of ground water is 5.02mg/L respectively. Total dissolved solid of ground water is 410.557mg/L. Chloride of ground water is 147.8mg/L. Sulphate of ground water is 26.277mg/L. Iron content of ground water is 0.269mg/L.The calcium content of ground water is81.47 mg/l. The magnesium content of ground water is 17.31mg/l. The alkalinity, sodium, potassium and iron content of ground water is 82.060mg/l, 95.791mg/l, 22.18mg/l, and 0.269mg/l respectively.

SI.NO	Sampling of points	
1	Ph	7.535
2	TH	98.436
3	Ca	81.471
4	Mg	17.131
5	Cl	147.8
6	TDS	410.57
7	Fe	0.269
9	F	0.353
10	No3	19.550
11	**SO_4**	26.277
12	Na	95.791
13	K	22.18
14	Alkalinity	82.060

4. CONCLUSIONS

- As there is no considerable increase in chloride, this shows that there is no possible contamination of groundwater due to percolated waste water.
- The concentration of iron and fluoride in the entire Basavakalyan city is well within the permissible limit

  The concentration of Nitrate was also well below the permissible limit.
- The water quality index (WQI) for whole Basavakalyan City found to be in Excellent Range.
- The analysis reveals that the groundwater of the Basavakalyan City as of now needs disinfection treatment before consumption, and it also needs to be protected from the perils of contam

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