



## PHYSICOCHEMICAL ANALYSIS OF WATER SAMPLES IN AND AROUND ELURU AND THEIR COMPARATIVE STUDY

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### ABSTRACT

Water is one of the most valuable of all earth-known natural resources. It is essential to all living species, most environmentally sustainable structures, human health, food production, and economic growth. Drinking water protection is critical to the health. Related pollutants impact the quality of the drinking water. These pollutants cause severe health issues. The Drinking Water quality becomes low due to these pollutants. Such low quality water also causes many diseases in humans. The purpose of this research is to provide information on the physicochemical characteristics to discuss its suitability for human consumption. To determine water quality, physicochemical aspects of the water were investigated. The water quality is determined in neighbouring villages in 11 areas of Eluru. Samples of water taken from Madhepalli, NTR Colony, Pathebadha, Ponangi, Satrampadu, Shanti nagar, Tangellamudi, Vempadu, Vanguru, Vatluru and Vasantawada. Then each water sample is under study for water samples' physico-chemical status. In physico-chemical research, different consistency parameters are calculated including pH, Basic conductivity (SP), total dissolved solids (TDS), total hardness according to WHO water quality standards; the pH of all water samples was found to be nearly neutral. All the Parameters were within the limits permitted. Stated and explained the findings.

**Keywords:** Physico-chemical analysis, water analysis, water samples, Total hardness of water,

### INTRODUCTION

Water is a product of universe use. Water is important to all life forms, and is most abundantly available on planet earth. It is one of the strongest solvents and in many physico-chemical aspects [1,2]. Should cell contain some water and all reactions to the life process take place in the water medium. Via this medium food nutrients transfer from cell to cell. Man can live without water for 5 weeks 70 per cent of our body contains water as a result of which only the density of man is almost equal to that of water. Water is among nature's most valuable gifts. It is an essential component of all animals and vegetable matter all food contains as many as 60 % to 70 % water while the human body contains 70% of it in the combined state as water of crystallisation is found in several salts. Water is one of the readily accessible substances in nature. It is an important component of all animals and vegetable matter and element of animals and plant life water, spring water and mineral water. Rain water is the purest type of natural water as it is created by distillation process. However, rainwater is correlated with dissolved atmospheric gases such as CO<sub>2</sub>, SO<sub>2</sub> and NH<sub>3</sub> ect. India is a large country with an area of around 806 million acres. One of the most significant and biggest sources of water is the rainfall. The water at the original river is really clean. But as it flows from one place to another, it brings all the impurities caused by skin diseases caused by water. Water from the springs includes certain salts such as MgCl<sub>2</sub> and MgSO<sub>4</sub> it is also

known as salt water. The key explanation for water pollution is due to the rise in population industrial expansion, urbanisation raises living standards and large spheres of human activity. Groundwater level, river lake ponds and streams are the source that does not avoid water pollution. Domestic and agricultural waste consisting of organic compounds often pollutes drinking water from the natural resources and industrial waste is one of the causes of water pollution[3,4].

### MATERIAL Y MOTHODS

The Water Samples were obtained in Polythene Bottles from 11 Separate locations in the morning hours from 8 a.m. to 9 a.m. The water samples were immediately brought to the laboratory to estimate various physico-chemical parameters such as water temperature; pH was reported using thermometer and digital pH metre. Specific conductivity was measured using digital conductivity metre. The values for TDS were calculated using TDS metre. And other parameters were measured in the laboratory by using normal laboratory methods, such as hardness, calcium, magnesium, chloride ion. Present Research includes Water Quality Analysis in Physico-chemical process terminology[4,5,6,7,8,9].

### INTERPRETATION OF RESULTS

**Table-1:Results of physico-chemical analysis of water samples**

S. No	Name of the Area	EC mill omhos/cm	pH	TDS ppm	Chloride ppm	Total Hardness ppm	Calcium ppm	Magnesium ppm	Alkalinity ppm	RESULT
	<b>Indian Standards and WHO Standards</b>	-----	<b>6.5 to 8.5</b>	<b>500</b>	<b>250</b>	<b>200</b>	<b>75</b>	<b>30</b>	<b>200</b>	
1.	Madhepalli	0.6	7.3	400	99	80	42	38	400	Good for drinking
2.	NTR Colony	2.2	7.2	1480	827	348	162	186	730	Not sufficient for drinking
3.	Pathebadha	1.5	7.8	1010	205	182	124	58	244	Moderate
4.	Ponangi	3.7	7.7	2480	1560	320	196	124	612	Not sufficient for drinking
5.	Satrampadu	1.2	7.3	810	471	270	94	176	432	Not sufficient for drinking
6.	Shanthi nagar	0.9	7.2	610	103	242	84	158	498	Moderate
7.	Tangellamudi	0.2	7.2	140	270	86	42	44	158	Good for drinking
8.	Vempadu	2.38	7.5	1600	475	334	152	182	400	Not sufficient for drinking
9.	Vanguru	0.9	7.0	610	265	148	70	78	402	Moderate
10.	Vatluru	1.38	7.3	920	234	184	96	88	294	Moderate
11.	Vasantawada	0.64	7.8	430	120	80	36	44	140	Good for drinking

Figure-1: Electrical conductivity of water samples

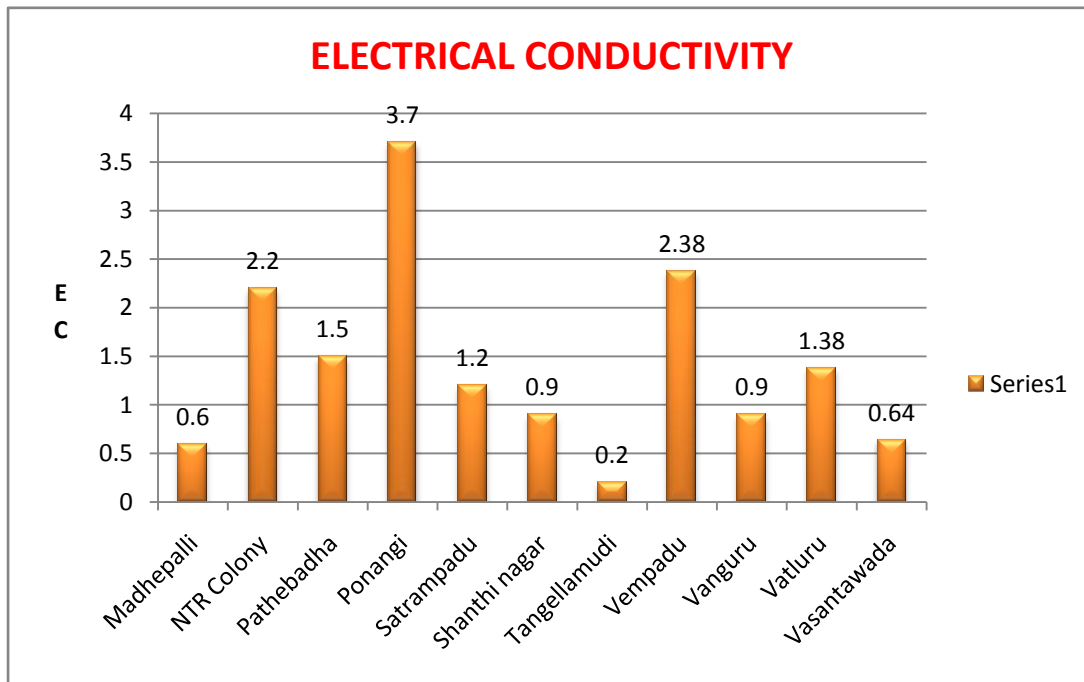


Figure-2: P<sup>H</sup> of water samples

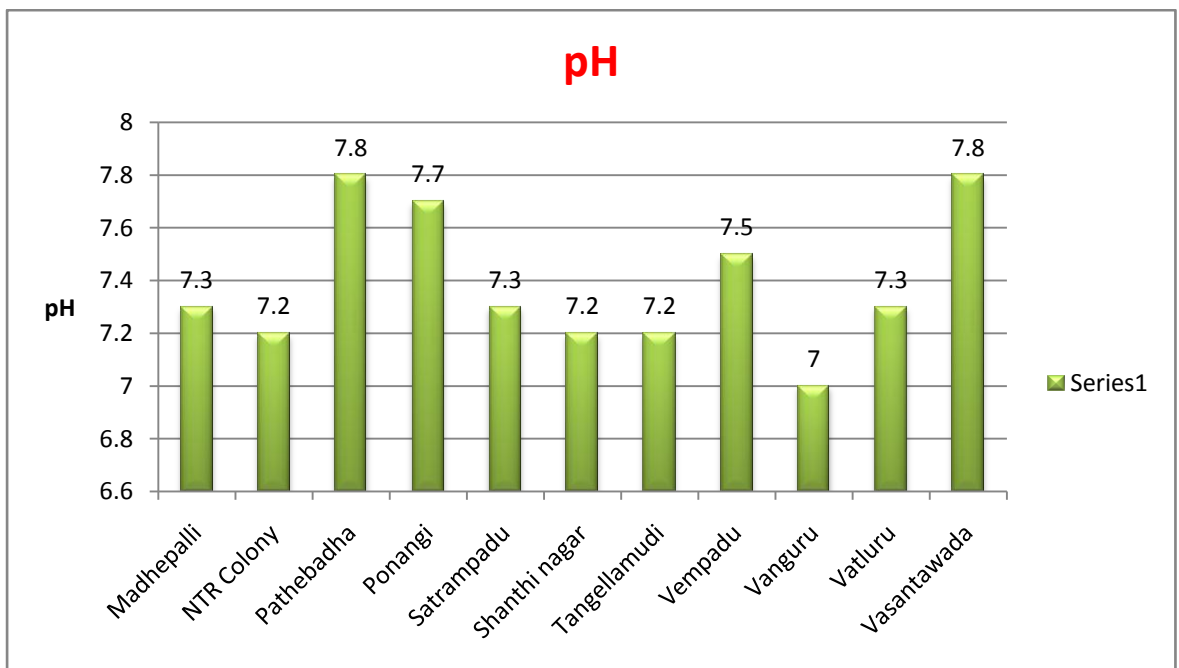


Figure -3: Total dissolved salts of water samples

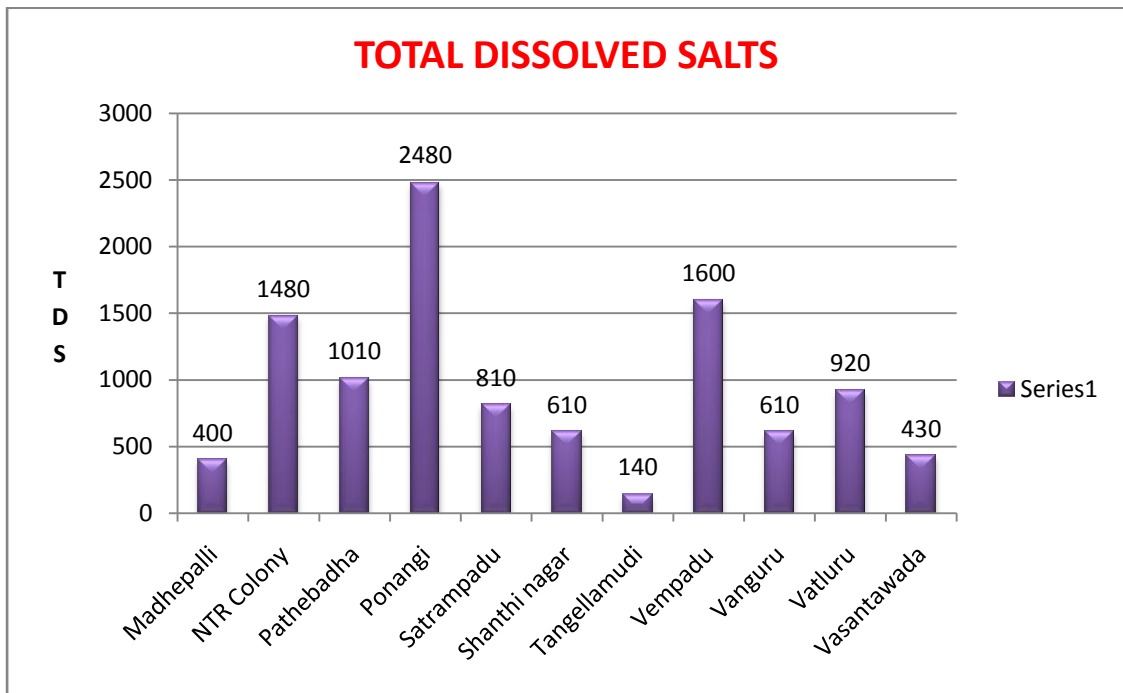


Figure-4: Total hardness of water samples

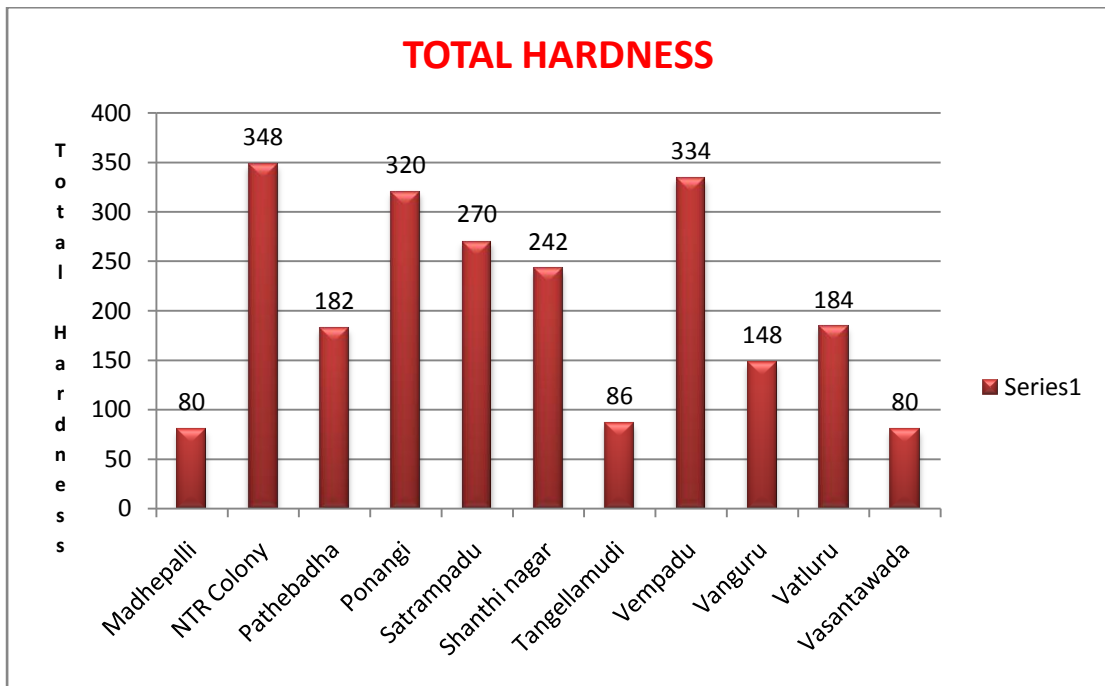


Figure -5: Amount of Calcium and Magnesium present in water samples

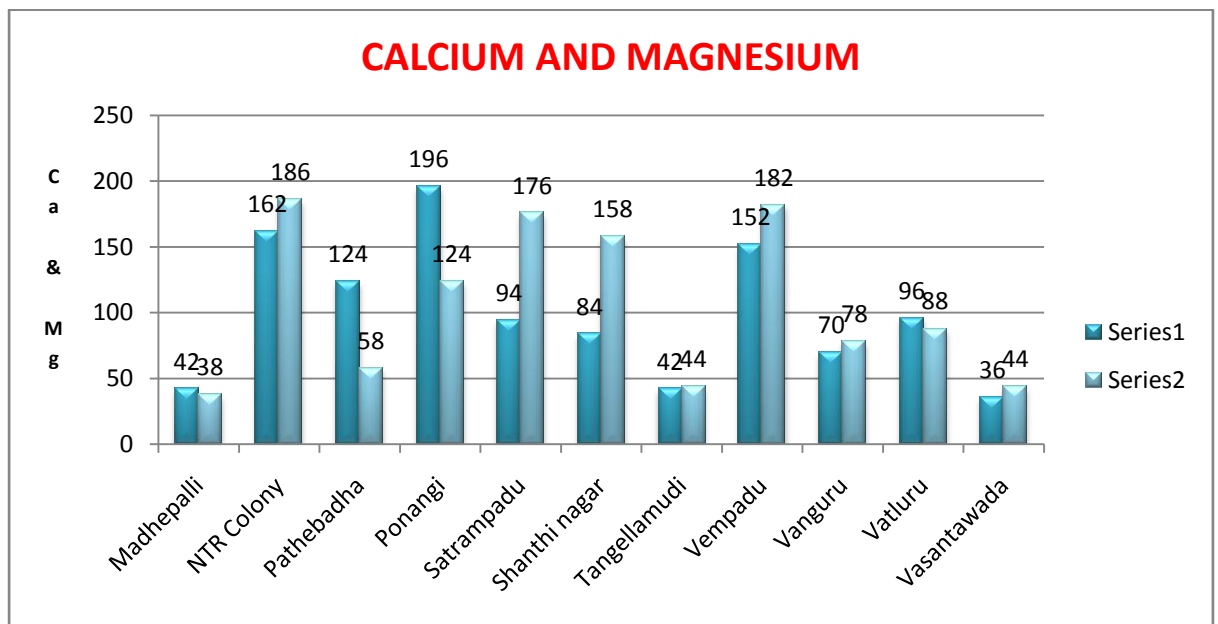
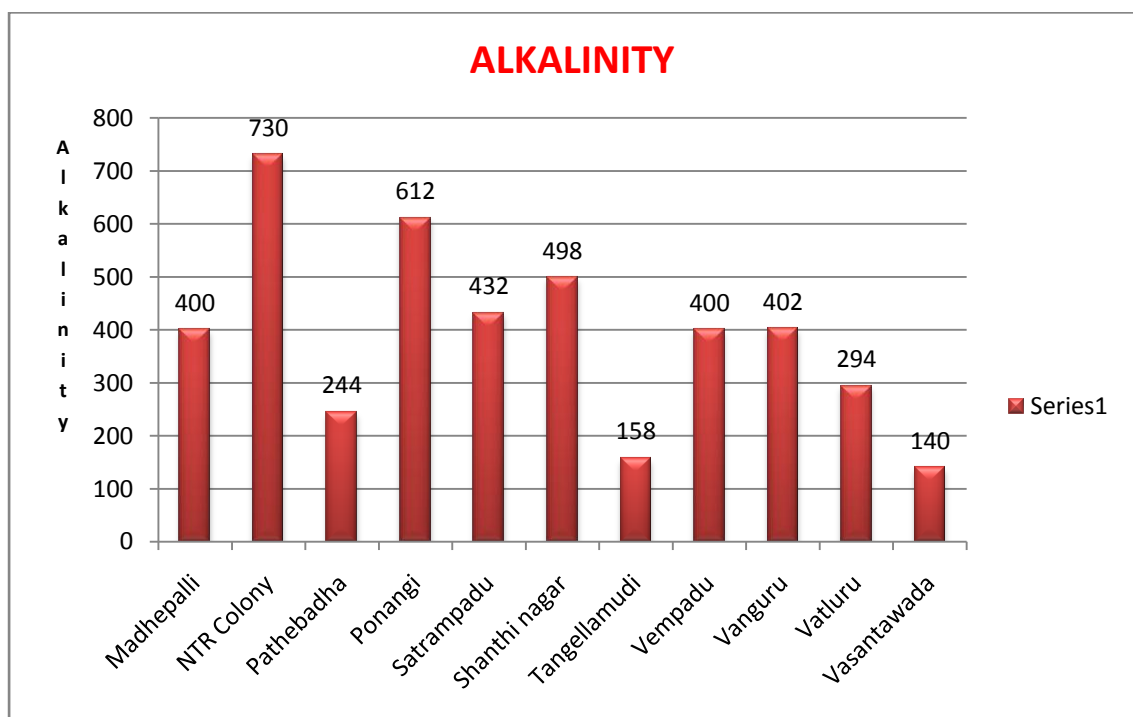


Figure-6: Alkalinity of water samples



## RESULTS AND ANALYSIS

The project work is done by gathering different samples of water, and above are tabulated values. The range of electrical conductivity is less than 2 milliohms from the surface. It is observed that NTR colony, ponangi and vempadu have high electrical conductivity and that all samples are within permissible limits. PH values are all within permissible range. In water samples the total dissolved solvents are all allowable limits. The concentration of chloride ion really will be 1000 mg / lt. From the data it is evident that chloride is less in madhepalli,

vasantawada, shantinagar and high in ponangi in the collected samples and all samples are in adequate range. In tangellamudi and vasantawada, the total hardness in water samples is lower, and all samples are within adequate range.

## **CONCLUSION**

The project works on water analysis at various locations in Eluru by quantitative measurement of various parameters such as, electrical conductivity, alkalinity, chloride percentage and total hardness. From our study it has been found that the concentration of chloride in madhepalli, shantinagar and vasantawada water samples is lower. If the concentration of chloride reaches the acceptable range then an activated carbon filter can be used to some degree to minimise it. Electrical conductivity of madhepalli, ponangi, vempadu water samples having more than the allowable quantity [10,11,12]. Bicarbonates, calcium and magnesium dissolved in water are responsible for the temporary hardness that "boiling" will reduce. By reverse osmosis the permanent hardness or non-carbonate hardness added by remaining calcium and magnesium salts can be reduced.

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