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ASSESSMENT OF PHYSICAL-CHEMICAL CHARACTERISTICS OF DRINKING WATER IN WAGHOLI

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Abstract - Water plays an essential role in human life. WHO says that approximately 36% of urban and 65% of rural Indian are without access of safe drinking water. Fresh water is most important resources crucial for the survival of the living beings. Many people in Wagholi town of Pune depends on fresh water supplies from ground water. It provides water for domestic use for all parts of the Wagholi town. The availability of ground water depends on the rate at which ground water depends on the rate at which it is recycled by hydrological cycle than on the amount. The present work that is analysis of water is carried out in the vicinity of the Wagholi town. In order to study the water quality different sites were located in the study area. The water supplies were collected from there locations. The water samples were tested immediately after its collection so that there would not be any change in its, characteristics. The results of the study were obtained and presented in the chapters to come.

Key Words: (Fresh water, Domestic use, analysis, characterstics)…

1. INTRODUCTION

Water plays an important role in human life. It is necessary for industry, agriculture and human existence. The healthy water ecosystem is depended on the physico-chemical and biological characteristics. Due to increase in industrialization, urbanization, agriculture activity and various human activities has increase the pollution of surface water and ground water [3]. Water is the most widely circulated and abundant substances found in nature. In total, there is 1400 million billion liters of water, but most of this water is not used for drinking purpose, because 97% is sea water and only 3% is fresh water, out of which 2% is ledge in the polar ice caps and glaciers, only 1% water is available for portable use . Use of ground water for human being depends upon ambient water quality [5]. Universally, requirement for freshwater will continue to rise significantly over the coming decades to meet the needs of increasing populations, growing economies, changing lifestyles and evolving consumption patterns[1].

The present study of physico-chemical parameters of drinking water involves analysis of various characteristics of ground water. Ground water from open well and bore well has an important role in rural areas especially in those areas where other sources of water like river, lake, dam and canal is not considerable. The quality of water is of vital concern for the mankind since it is directly linked with human welfare.

The project aims at analysing the drinking water in Wagholi town of pune. The area is divided in different parts for this water assessment test one on the left side of the Ahmednagar highway and the other on right side. The samples from identified locations were collected and tested in the environmental engineering laboratory of the institute. Arsenic and fluoride and microbiological tests were carried out from FHHL, Pune. The detail study of all tests are described in the further chapters.

1.1 Objectives

1. To find out the hardness present in the water from various samples.
2. To find wheather Arsenic and Flouride is present in the drinking water samples.
3. To find wheather any Micro-biological parameters are present in the samples of drinking water in Wagholi town.

2. METHODOLOGY

The ground water of different areas of Wagholi village was collected in Jan 2019. The water samples was collected from open well and bore well source. The samples were collected in high density polyethylene and glass containers. The containers were rinsed twice by the same water sample and then the water sample filled in it. The location of sample collection are shown in figure. The area of Wagholi is divided in two section. One is left side and of Pune-Nagar road the water samples were analyzed for Colour, Temperature, pH, Total Dissolved Solid (TDS), Total Hardness (TH), Dissolve Oxygen (DO), Arsenic, Flouride, E-coli, Coliform, and Total Bacteria using standard techniques. A.R. grade reagents were used for preparation of all solutions. Measurement of various physico-chemical parameters were carried out as in

Standard methods given by the APHA. One an right side or in while heading towards nagar 5 sample were collected from each source & the type of test carried out are listed below & its procedure for collection. The samples were tested in Environmental lab of department except Arsenic, Flouride & Biological test were conducted in government authorize lab.

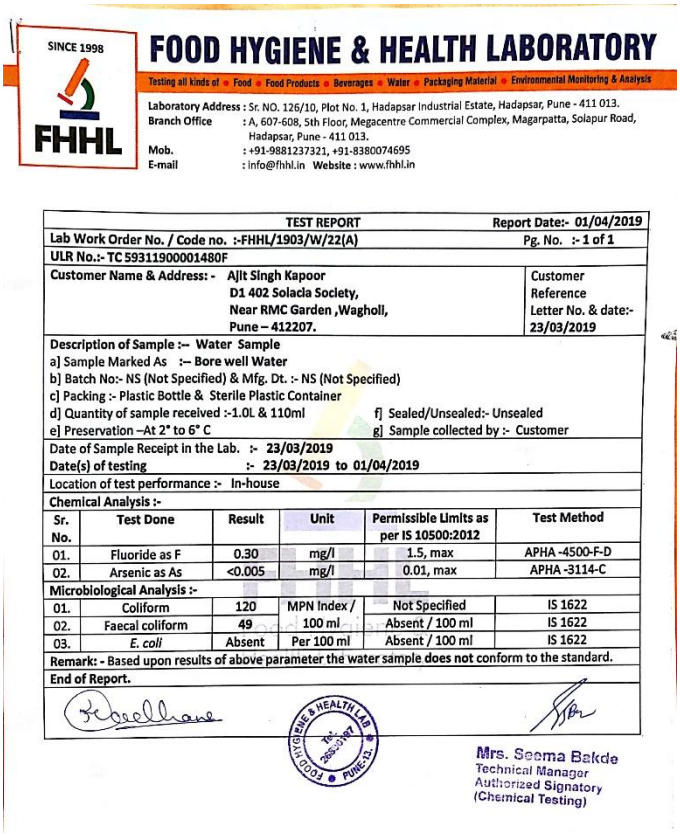
Types of test	Physical	Chemical	Biological parameters
1	Odour	PH	E-Coli
2	Colour	Hardness	Coliform
3	TDS	D.O.	Total bacteria
4	Temperature	Fluoride & Arsenic	

As supply of suitable water for drinking is most important, as the human health depends on its purity. Improper water may cause many health problems. The population of Wagholi town is increasing and suitable water supply is becoming most important for the town. Therefore it is intended to carry out analysis of water in Wagholi town.
So as to know its characteristics and hence suitable treatment may be suggested further. The other topics describes the parameters that have considered and its process of analysis.

3. RESULTS AND OBSERVATIONS

3.1 Data collection

Sample No.1 – Jayashree Girl's Hostel (Bore Water)
Sample No.2 – Samrudhi Palace (Bore Water)
Sample No.3 – Solacia Appartment (Boer Water)
Sample No.4 – Petrol Pump (Well Water)
Sample No.5 – Under Construction Site (Well Water)
Sample No.6 – Behind Grampanchayat (Well Water)
Sample No.7 – Behind Lifecare Hospital (Bore Water)
Sample No.8 – Wagheshwar Temple (Bore Water)
Sample No.9 – Kesanand Phata (Bore Water)
Sample No.10 – Ivory Apartment Opp. Lifeline Hospital (Bore Water).
As already discussed, the samples from various sources was collected. The samples were analyzed for the physical, chemical and microbiological parameters. The result obtained are presented in the following table.



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Mob. : +91-9881237321, +91-8380074695
E-mail : info@fhhl.in Website : www.fhhl.in

TEST REPORT Report Date:- 01/04/2019

Lab Work Order No. / Code no. :-FHHL/1903/W/22(A) Pg. No. :- 1 of 1

ULR No.:- TC 59311900001480F

Customer Name & Address: - Ajit Singh Kapoor, D1 402 Solacia Society, Near RMC Garden ,Wagholi, Pune – 412207. | Customer Reference Letter No. & date:- 23/03/2019

Description of Sample :– Water Sample
a] Sample Marked As :– Bore well Water
b] Batch No:- NS (Not Specified) & Mfg. Dt. :- NS (Not Specified)
c] Packing :- Plastic Bottle & Sterile Plastic Container
d] Quantity of sample received :-1.0L & 110ml f] Sealed/Unsealed:- Unsealed
e] Preservation –At 2° to 6° C g] Sample collected by :- Customer
Date of Sample Receipt in the Lab. :- 23/03/2019
Date(s) of testing :- 23/03/2019 to 01/04/2019
Location of test performance :- In-house

Chemical Analysis :-

Sr. No.	Test Done	Result	Unit	Permissible Limits as per IS 10500:2012	Test Method
01.	Fluoride as F	0.30	mg/l	1.5, max	APHA -4500-F-D
02.	Arsenic as As	<0.005	mg/l	0.01, max	APHA -3114-C

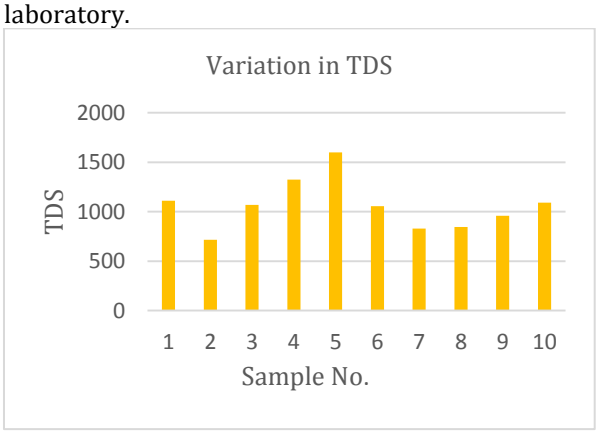
Microbiological Analysis :-

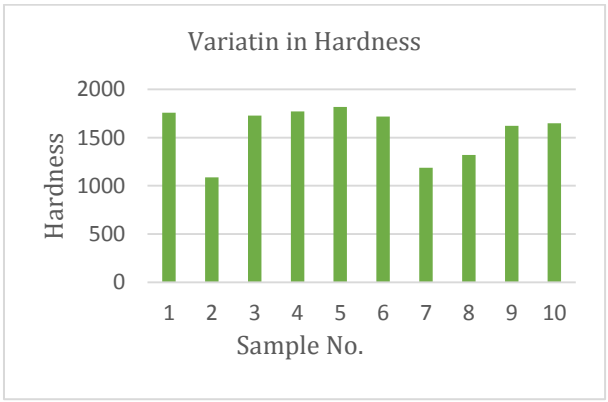
01.	Coliform	120	MPN Index /	Not Specified	IS 1622
02.	Faecal coliform	49	100 ml	Absent / 100 ml	IS 1622
03.	*E. coli*	Absent	Per 100 ml	Absent / 100 ml	IS 1622

Remark: - Based upon results of above parameter the water sample does not conform to the standard.
End of Report.

Mrs. Seema Bakde
Technical Manager
Authorized Signatory
(Chemical Testing)

Fig. shows result of the tests performed under the FHHL laboratory.





Graphs Showing Variations in the parameters.

Sample	PH	DO	TDS	Hardness	Colour	Odour	Temp.	Coliform	Faecal coliform	E.*coli*	Arsenic	Flouride
Permissible limit	6.5-8.5		500-2000	300-600	5-25	Unobjectionable	Acceptanle				0.01,max	1.5,max
1	7.88	4.38	1110	1760	Clear	Nil	24.6					
2	6.87	4.16	716	1089	Clear	Nil	24.2					
3	7.66	4.55	1068	1728	Clear	Nil	24.8					
4	7.61	4.38	1324	1772	Clear	Nil	25.6					
5	7.51	4.44	1598	1820	Clear	Nil	25.7				<0.005	0.80
6	8.8	4.8	1056	1720	Clear	Nil	26.1	120	49	Absent	<0.005	0.30
7	7.9	4.38	829	1187	Clear	Nil	26.3					
8	8.2	3.38	844	1321	Clear	Nil	27.2					
9	8.38	4.33	957	1624	Clear	Nil	26.3					
10	8.45	4.01	1090	1650	Clear	Nil	26.9					

Table showing all the results of the samples analysed.

4.CONCLUSIONS

1. Physical parameters like temperature, odour, colour was found to be agreeable. The general ISI standard for drinking water were compared and it is found that these characteristics are within the permissible limits.
2. The results obtained is showing that water is safe enough except the hardness.
3. The hardness of water is found to be exceeding its limits. Hence water needs to be treated for the hardness

ACKNOWLEDGEMENT

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BIOGRAPHIES

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