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Assessment Of Potential Clean Water Sources Meeting Criteria For Feasibility Study Of Establishing A Hospital In The Samarang Region Along The New Ibrahim Aji Road

Muhammad Nur Abdillah
Garut University

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ABSTRACT

This report assesses the water conditions and feasibility for both residents and hospitals in the Samarang area adjacent to the new road, Jl. Ibrahim Aji. The objective is to determine if the water conditions within the hospital comply with existing regulations. The research conducted for this report is of a descriptive nature. Based on the interviewed interviews, it was revealed that the water supply in the vicinity of Jl. Ibrahim Aji is provided by a local water service, which, upon further investigation, draws its water from the Thunder Mountain springs. Organoleptic analysis suggests that this water is suitable for bathing, cooking, and other household needs. Regarding water sources used by hospitals, they utilize water from springs, rivers, lakes, and groundwater. However, it is imperative to ensure compliance with applicable standards. Based on the findings, it can be concluded that the groundwater in the area appears visually suitable for use, but further examination is required to assess its compliance with chemical, microbiological, and radiation safety criteria.

Email :
nurabdillah@gmail.com

1. INTRODUCTION

Water is a very important natural resource. Water is a primary need that must be met. Water resources can be used for various purposes, including the need for cooking, bathing and drinking water (clean water/raw water). Furthermore, these water resources can also be used for irrigation needs. Whether it is for irrigation needs for rice fields, gardens and other irrigation needs. Raw water can also be used for fisheries needs, namely ponds and other fisheries cultivation. For this reason, techniques and efforts are needed to manage water resources appropriately and efficiently.

Based on its location, currently available water resources can be obtained from several springs. Based on their location, natural resources in the form of liquid can be classified into several types, namely: water resources located on the surface of the land and water resources located underground (groundwater). We can see water resources on the ground surface all around us, for example: river water, reservoirs, etc. Water resources in the ground are in the form of water flows in the ground which are usually obtained after digging a place that is predicted to have abundant levels/storage of water resources. Subsurface water sources include digging wells, both ordinary wells (conventional) and wells made by drilling (drilled wells). For this reason, water is very functional and plays a role in the life of living creatures on this earth. It is important for us as humans to always conserve and maintain the sustainability of the water we use by implementing good water management such as saving, not throwing away rubbish and waste which can cause water pollution and thus disrupt the existing ecosystem.

Apart from being a natural resource, water is also an ecosystem component that is very important for human life and 2 other living creatures, which is controlled by the State and used for the greatest prosperity of the people. This is stated in Article 33 paragraph (3) of the 1945 Constitution of the Republic of Indonesia. Article 33 of the 1945 Constitution regulates the economic meaning of natural resource utilization, and the principles of the national economy. Considering the importance of the need for clean water, it is very natural that the clean water sector gets top priority because it concerns the lives of many people. The existence of the Constitution which regulates water makes it

clear that water must be safeguarded and protected so that the water will continue to exist and be sustainable.

In terms of water supply, it has actually been regulated in Law number 11 of 1974, this Law is general in nature. After a long time, Law No. 11 of 1974 was replaced with Law No. 7 of 2004 concerning water resources. Law number 7 of 2004 is actually more focused on water resources, but Law number 7 of 2004 has many articles that indicate efforts to commercialize and privatize water resources. In Law number 7 of 2004, it is more integrated in regulating water management, as it emphasizes the conservation function. However, with the problem that Law No. 7 of 2004 contradicts the 1945 Constitution, the Water Law goes back to Law No. 11 of 1974.

By knowing that the Water Law goes back to Law No. 11 of 1974, we as a society must protect and care for water resources from threats that come, such as investors who will use water resources as a business. Currently, many local companies are making water resources a business or income source with quite large results. In the future, it is likely that groundwater needs in this region will increase, including domestic needs (residential households) and tourism services as well as public services (hospitals, mosques, etc.). Utilization of groundwater for human needs, both domestic and service needs, does not only require attention to quantity, but also quality in accordance with quality standards. Therefore, it is also important to know the quality of groundwater that will be used to meet these needs.

Meeting the large demand for water resources must of course still be done by paying attention to safe limits for groundwater extraction. This aims to prevent environmental damage due to use of groundwater that exceeds its carrying capacity, including lowering groundwater levels, intrusion, land subsidence and tidal flooding. Based on the background above, the author is interested in conducting research entitled "Evaluation of prospective clean water sources that meet the criteria for a feasibility study for establishing a hospital in the Samarang area along the Baru Ibrahim Haji road."

2. METHOD

The type of research used in descriptive research, the focus or point of attention in this case is planning for the procurement of clean water sources for health facilities (hospitals) around Jl. Ibrahim Ajie, Samarang Area, Garut Regency. The data collection method was carried out through an interview and survey process of people living in the research location, data collection was carried out through a literature study process, and data collection was carried out by visual observation of water samples. The data obtained will be compared with the criteria for good water to use based on literature studies.

3. RESULTS AND DISCUSSION

Results Interview

Based on interviews conducted with residents, it was stated that the condition of the water around the Jl. Ibrahim Aji was clean and used a water provider service. When traced, the water came from the Guntur mountain spring. The condition of the water used by the community is said to be organoleptically clean and suitable for daily use for bathing, cooking and other household purposes.

Clean water criteria for hospitals

Through Minister of Health Regulation no. 416 of 1990 has established requirements and quality control in Indonesia.

Table 1. Results of Clean Water Observations for Hospital Feasibility Studies

No.	Parameter	Unit	Max Level	Results
1.	Smell	-	-	No smell
2.	Total Dissolve Solids	Mg/L	1000	2000
3.	Turbidity	Scale/NTU	5	8
4.	Flavor	-	-	A little taste
5.	Temperature	∘C	Air temperature	5∘C
6.	Color	TCU Scale	15	15

Feasibility comparison

The water sources used by hospitals can be taken from springs, rivers, lakes and groundwater, but compliance with applicable standards is required. And it is better for hospitals to take water from water supply companies to reduce the burden of water treatment. If water pipes from the service provider are not available, it is best to use groundwater where the water conditions are sufficient and an advanced system is needed, be it a disinfection system (filtration/chlorination) or a reservoir tank.

Discussion

Criteria for clean water used daily

According to Minister of Health Decree No. 907 of 2022, clean water is water that has gone through a processing process or without a processing process that meets health requirements and can be drunk directly. Meanwhile, according to the World Health Organization (WHO), hygienic water is water that people can use to meet drinking needs, household needs, culinary production, or recreational purposes. The following are the criteria for hygienic water that you need to know:

a. Nocolored
   First, hygienic water that is safe to consume will appear colorless and clear. If the color is unusual, cloudy or slightly brown, try not to consume it because you can be sure it contains dangerous substances.
b. Has a bland taste when drunk
   The next requirement for clean water is that it has a fresh taste when drunk. Many say that drinking water generally has a taste after being left for longer than overnight. However, not all flavored drinking water is unfit for consumption.
c. Nohas a smell
   The criterion for clean water is that the water does not have any aroma. If the water you consume has an aroma, let alone an unpleasant smell, it is better not to use or consume it. Water with a fishy smell also needs to be avoided, because this is likely due to the high barium content. Barium is a chemical substance that occurs naturally in water as a result of drilling processes or manufacturing waste.
d. Bacteria free
   For this first point, special research is needed. Bad bacteria come from mineral water that contains pathogens. This pathogen is a type of microbe that has the potential to cause various diseases. There are many types of bacteria that can accumulate in the body unconsciously. Therefore, make sure the quality of the water you use or consume is guaranteed.
e. Nofeels sticky after use
   The next requirement is that the water should not feel sticky after being used to wash your hands. Identifying the requirements for hygienic water also needs to be considered according to its texture. Water that is not suitable for use or consumption will generally leave marks on the tap, sink or glass. This can be caused by the impact of certain substances, such as magnesium, manganese, aluminum and tin.

Criteria for Clean Water for Health Purposes

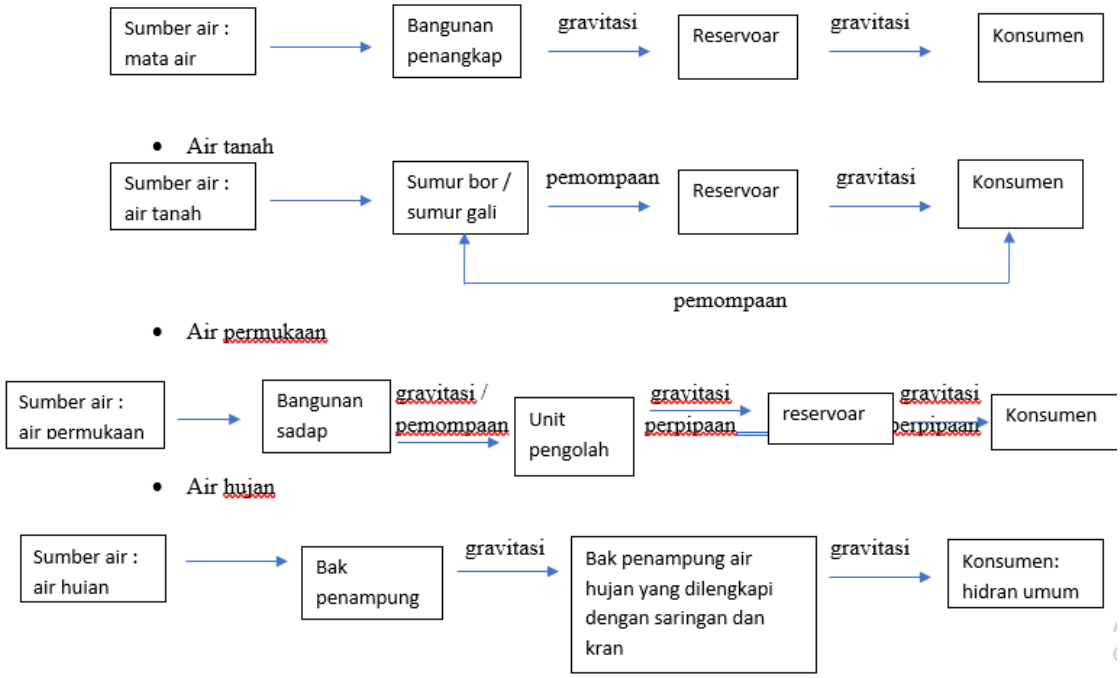
According to the Regulation of the Minister of Health of the Republic of Indonesia No.7 of 2019, the following are the requirements for healthy clean water: In terms of quantity, hospitals must provide a minimum of 5 liters of clean water per bed per day. Taking into account other needs, the provision of clean water volume can be up to 7.5 liters per bed per day. Water volumefor hygiene and sanitation purposes, the minimum volume of water provided by hospitals per bed per day is differentiated between class A and B hospitals and class C and D hospitals,

1. HouseClass A and B hospitals must provide a minimum of 400 liters of water/bed/day and a maximum of 450 liters/per bed/day. This maximum volume is intended so that hospitals have efforts to save water usage so that its availability remains guaranteed without sacrificing infection control interests.
2. HouseClass C and D hospitals must provide for sanitation hygiene purposes a minimum of 200 liters/bed/day and a maximum of 300 liters/bed/day.

3. Water volumefor outpatient needs it is 5 liters/person/day. The provision of water for outpatient care has been taken into account with water requirements for sanitation hygiene
4. Water requirements according to the hospital class and its designation must be met every day and the volume of water for sanitation hygiene has taken into account the water requirements for washing linen, kitchen nutrition, cleaning/watering and others. (Badriani et al., 2018)

Through Minister of Health Regulation no. 416 of 1990 has established requirements and quality control in Indonesia.

Figure 1. Candidate Water Source for Hospital Eligibility



4. CONCLUSION

Based on the results obtained, it was concluded that the groundwater in the area is suitable for use visually and still needs further examination regarding chemical, microbiological and radiation safety criteria.Thank you to the Faculty of Mathematics and Natural Sciences, Garut University and Students of the Environmental Pharmacy Project Course.

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