Report on water analysis results for Santa Teresa community, Esquipulas, Matagalpa.

Table 1. Water Analysis Results

Parameter	Value	Maximum permissible values according to CAPRE
Total Dissolved Solids (mg/L)	345	1000
Salinity	0,24	
pH	7,67	6,5 a 8,5
Conductivity (µS/cm)	490	400
Fecal Coliforms	>8,0 organisms /100 mL	negative

Analysis of results

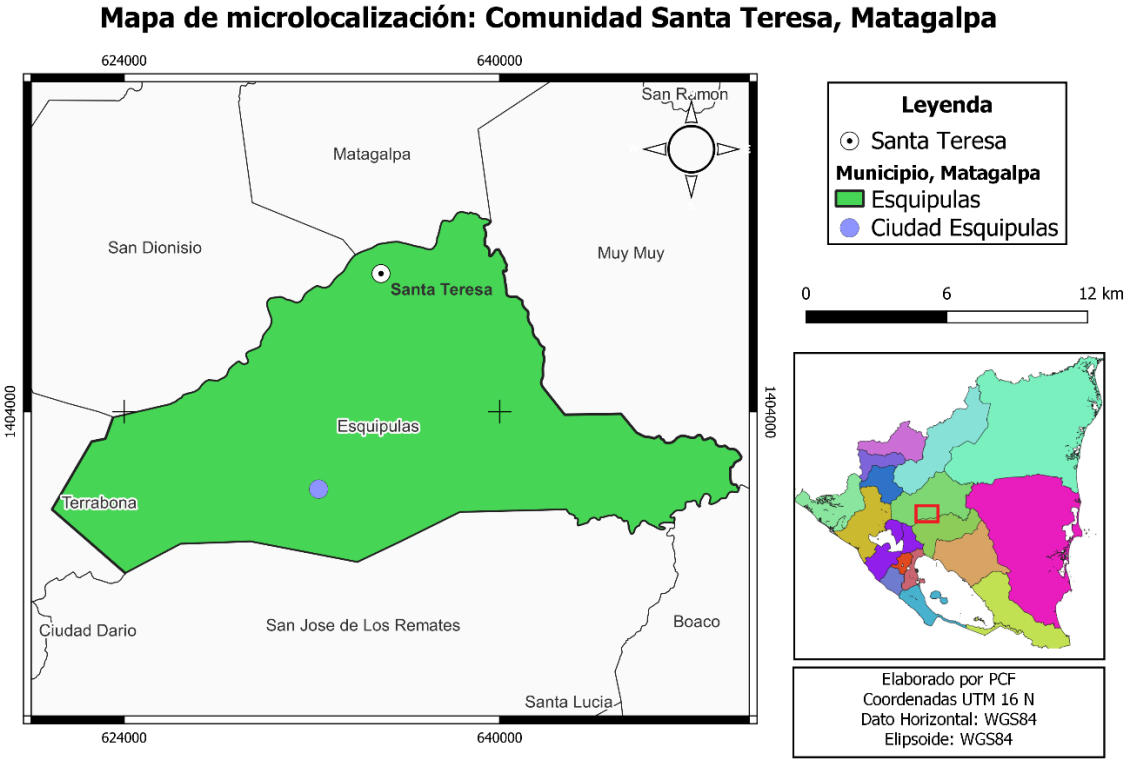
The Water Quality Standard for Human Consumption, CAPRE, meaning "Comité Coordinador Regional de Instituciones de Agua Potable y Saneamiento de Centroamérica, Panamá y República Dominicana", sets forth a series of maximum admissible values for the most important parameters in water for human consumption, i.e., if water exceeds these parameters it cannot be considered fit for consumption.

According to the results obtained, most parameters are within the permissible range, however, the conductivity parameter exceeds the acceptable levels within the CAPRE standard. This parameter can be related to the salts dissolved in the water, the positively and negatively charged, this can conduct electric current, the most common being sodium (Na+), calcium (Ca+) and magnesium (Mg+2). Being ions that are directly related to the hardness in water, especially calcium and magnesium, the first in the form of calcium carbonate (CaCO3), which means that having a high amount of dissolved salts in water can produce the well-known kidney stones, as a result of the membrane in the kidneys retaining these compounds.

On the other hand, one of the most important parameters in water quality, fecal coliforms, is elevated and for water to be fit for human consumption the value must be completely negative. If notthe water is contaminated by bacteria contained in feces that can cause gastrointestinal diseases in the inhabitants who consume it.

Fecal coliform contamination is an indicator that the water source was contaminated by fecal matter contained in humans and other animals, causing diseases such as typhoid fever, viral and bacterial gastroenteritis and hepatitis A. The presence of these coliforms is an indicator of health risks for the inhabitants of the Santa Teresa community.

Image 1. Micro-localization map



Recommendations:

- It is recommended to boil the water before ingestion to eliminate fecal coliform bacteria. In this way, coliform bacteria and other microorganisms are eliminated because they are inactivated at temperatures above 60°C.

- Likewise, heating the water to boiling can produce the precipitation of calcium carbonate and magnesium hydroxide, resulting in filtration so that the ions that produce water hardness can disappear; however, obtaining a filter implies an investment of resources that cannot be demanded from the villagers.

It is recommended that other relevant water quality parameters be analyzed to identify in depth the quality of this water in order to propose remediation or treatment measures.

ATTACHMENTS

Image 2. Results of analysis for coliforms