

Effect of the rainwater on the characteristics of the groundwater in Al-Buraimi Governorate

school (Um Al-Ghafari Primary School (1-12))

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Abstract

The present study aimed at detecting the effect of rainwater on the chemical properties of groundwater in Al Buraimi Governorate. he people in the villages which are depending on ground water sources noticed water taster change after the rain and most of people which i spoke with them are emphasize thats. The results were as follows: The data show that after rainfall, the salinity of the groundwater increased by approximately 300 ppm and its pH decreased by 0.8. The soil in these areas is acidic with a pH number (6). In collaboration with the staff of the Water Resources Department, it was found that the rainwater melted a layer of salts of the soil such as sodium chloride, or sodium fluoride, which increased salinity of the water and reduced pH. Therefore, the study confirmed that rainwater affects groundwater due to the soil characteristics of these areas. We recommend using single water filters in kitchens and in drinking refrigerators to balance salts from any climatic changes that lead to soil salinity change especially for people who are suffer from blood pressure and kidney disease

:Research Questions

1. What is the impact of rainwater on the percentage of salinity of groundwater in the village of AlMualqa and Al-Wasit?
2. What is the effect of rainwater on the pH of the groundwater in the villages of Al Mualqa and Alwasit?
3. What is the effect of soils on the characteristics of groundwater after rainfall?

References

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Diagram 1: Comparison of the salinity of groundwater before and after rainfall in the villages of Al-mualqa and Al-Wasit

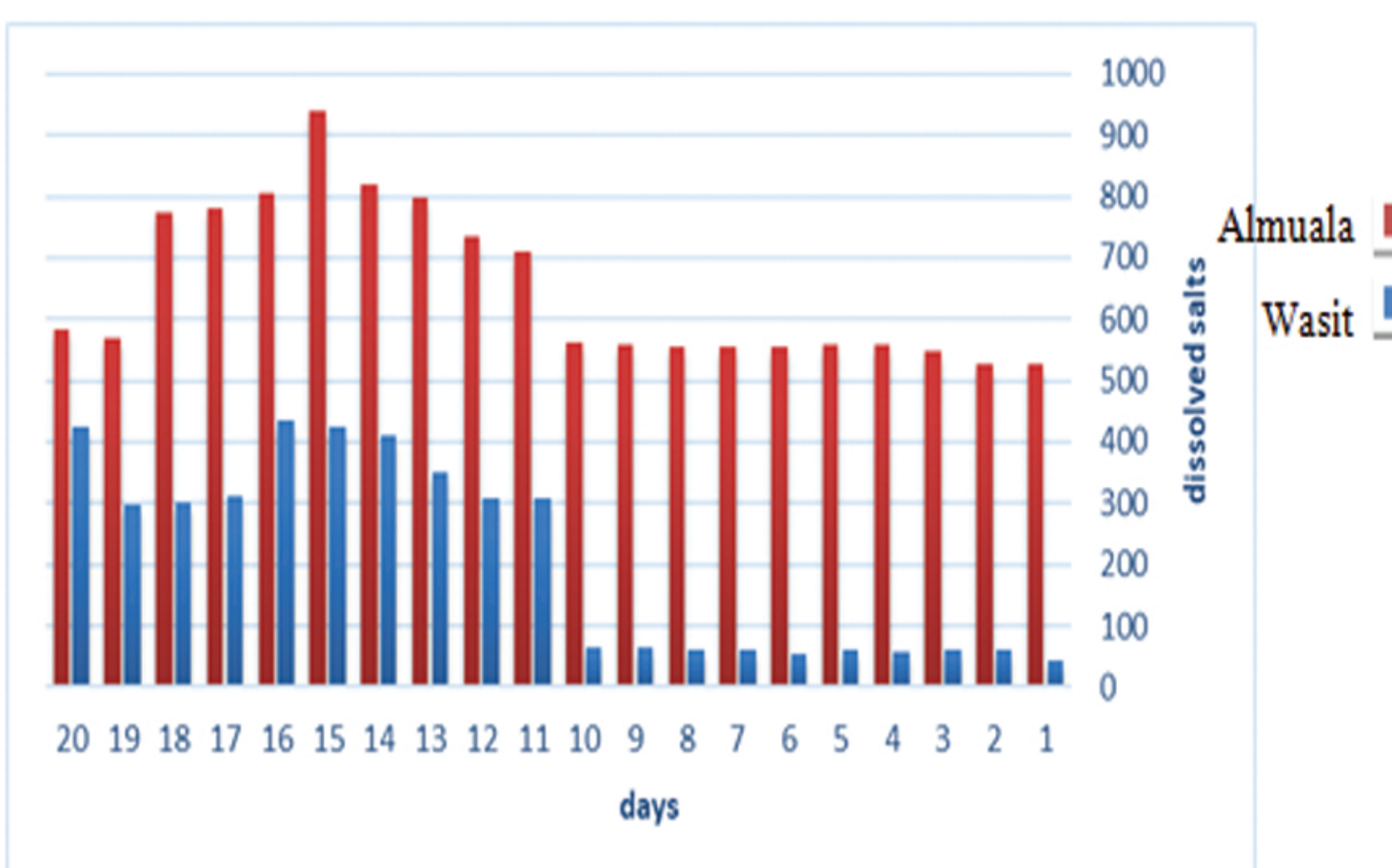


Diagram (2) Comparison of pH of groundwater before and after rainfall at study sites

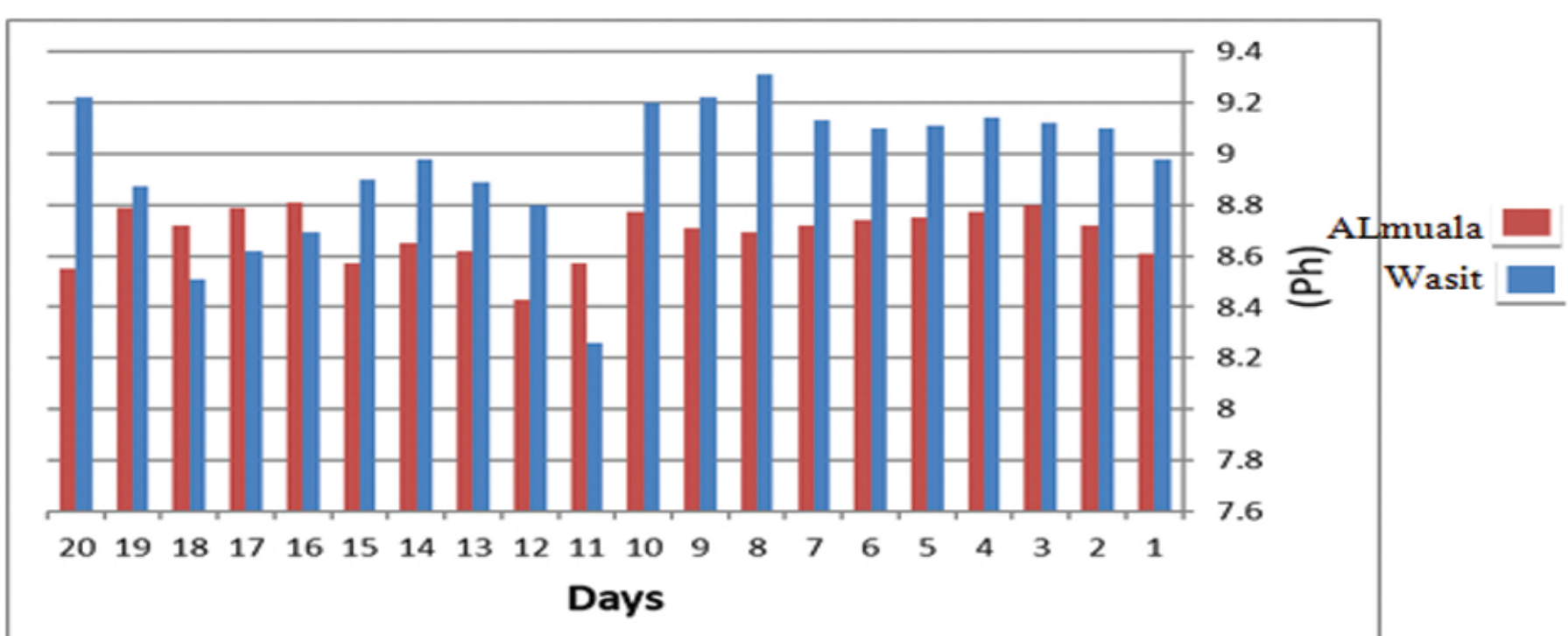
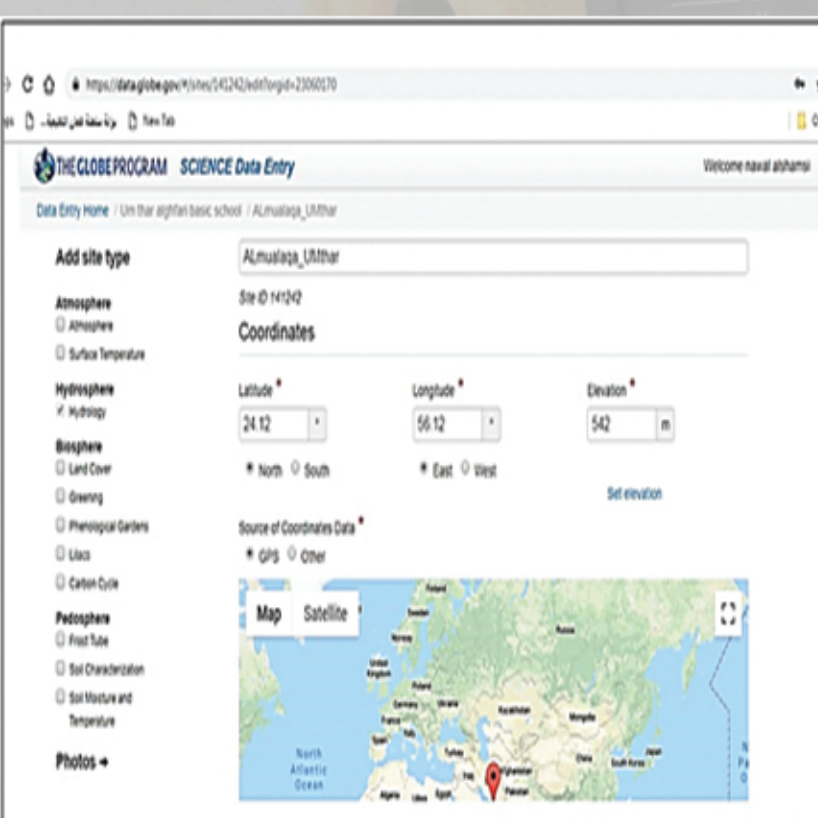


Table (3) Measurement of the soil protocol of the surface layer in the study sites

Organic materials		The extent of carbon		Soil salinity (ppm)		Ph for soil		Measurement period
Almualqa	Wasit	Almualqa	Wasit	Almualqa	Wasit	Almualqa	Wasit	Measurement
found	found	Medium	Large	844	593	8.11	6.2	1
found	found	Medium	Large	876	611	8.32	6	2



First: the research plan

- I felt the problem and I worked interviews with parents to identify then I discussed it with the teacher.
- The locations of the measurements were determined in cooperation with the people of the areas in the villages of Al-Mualqa and Al-Wasit and the school of Hudhayfah bin Mahsin.
- Addressing the Directorate General of Regional Municipalities and Water Resources in Al Buraimi Governorate (Water Resources Affairs Department) to approve the implementation of the research in cooperation with them.
- Starting to collect information and data needed to answer research questions by applying the water protocol and taking measurements of salinity and acidity of groundwater before and after rainfall.
- The soil protocol was implemented in the villages of Wasit and Al-mualqa.
- Comparing results and write recommendations

Discussion of results

- The salinity of groundwater increased from (43-60ppm) before the rain to (63-275) after the rainy which mean increase by (264-363ppm). But after several weeks of stop the rain, the salinity rate began to decline. While the salinity percentage in groundwater of Al Mualqa village rose from (527-560ppm) before precipitation to (800-937ppm) after rain.
- pH of the groundwater is affected by precipitation. Where we note that the pH in the water of both villages decreased after the rains, where it decreased in the water of the village of Wasit after the fall of rainfall about (0.96), While the slight change in village water Almualqa was almost (0.02).
- that the salts in Wassit soil ranged between 611-539ppm and pH (6). As for the Almualqa village, its salinity measured ranged from (844-876ppm) with a pH (8.32-8.11). The chemistry teacher in the school said during the interview that this indicates that the quality of salts found in sodium, ammonia chloride or sodium fluoride in the soil is related to the increase or decrease of the pH of the groundwater

Conclusion :

- this research was alert people for the need to make filters in kitchens and in refrigerators for drinking to balance salts, especially people who rely on drinking on ground water and people who is suffered of blood pressure and kidney diseases.
- The strengths of the research were the follow-up of groundwater over the course of a whole period and cooperation with the institutions of the community for the benefit of the community in which I live.
- As for the development points, I consider the need to continue research and detection of soil components and their laboratory analysis to explain and understand the phenomenon related to water and soil in cooperation with the competent authorities



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