



جامعة الإمارات العربية المتحدة
United Arab Emirates University

**The College of Graduate Studies and College of Engineering Cordially Invite
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Master Thesis Defense

Entitled

*ASSESSMENT OF GROUNDWATER QUALITY IN THE AL KHATIM AND REMAH AREA OF THE
UAE*

by

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Date & Venue

10:00

Wednesday, 14 November 2018

Room 134, F3 Building

Abstract

This thesis is concerned with the assessment of groundwater quality in two agricultural intense Eastern regions, Remah and Al Khatim, of Abu Dhabi. The increasing salinity of the groundwater in the study areas is of great concern. The main objective of this study is to examine the current conditions of groundwater and identify the factors that are involved in the degradation of groundwater quality. The samples from both study areas were collected and analyzed for different hydrochemical, and radioactive parameters to understand the chemistry of groundwater. The positive correlation of sodium and chloride ion confirms the salinity due to extensive use of groundwater for agricultural purposes. Much higher salinity in Al Khatim was assessed using Gibbs plot, which demonstrated that it is because of evaporation from the shallow water table. The presence of clay attributes to the presence of potassium ions in both areas. Limestone strata is present in Remah and Al Khatim as indicated by the calcium concentration. Heavy metals; lead, zinc, and chromium were found to be below the WHO standard limits except for cadmium. Cadmium is used in fertilizers, which is recorded above the WHO standard limit in Remah followed by Al Khatim. The groundwater in Al Khatim and Remah is unfit for agricultural purposes as explained by the agricultural indexes. The radioactive study of Radon-222 shows its concentration below the WHO permissible guidelines. This study will provide technical support for the farmers, decision makers and other stakeholders towards sustainable groundwater development.

Keywords: Groundwater, Salinity, Major Cations and Anions, Heavy Metals, Aquifer.