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Cairo University

UNCERTAINTY ASSESSMENT OF AQUIFER HYDRAULIC PARAMETERS FROM PUMPING TEST DATA

By

Azza Mohammed Bshandy Said

A Thesis Submitted to the
Faculty of Engineering at Cairo University
in Partial Fulfillment of the
Requirements for the Degree of

MASTER of SCIENCE
In
Irrigation and Hydraulics Engineering

**FACULTY OF ENGINEERING, CAIRO UNIVERSITY
GIZA, EGYPT
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Under the Supervision of

**Prof. Dr. Hesham Bekhit Mohamed
Bekhit**

.....
Professor of Water Resources
Irrigation and Hydraulics Department
Faculty of Engineering-Cairo University

**Dr. Hany Gomaa Ahmed
Elsayed Radwan**

.....
Associate Professor
Irrigation and Hydraulics Department
Faculty of Engineering-Cairo University

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Approved by the Examining Committee:

Prof. Dr. Hesham Bekhit Mohamed Bekhit

Thesis Main Advisor

Professor of Water Resources-Irrigation and Hydraulics Department-Faculty of
Engineering-Cairo University

Dr. Hany Gomaa Ahmed Elsayed Radwan

Advisor

Associate Professor -Irrigation and Hydraulics Department-Faculty of
Engineering-Cairo University

Prof. Dr. Ashraf Hassan Mohieb Ghanem

Internal Examiner

Professor -Irrigation and Hydraulics Department-Faculty of Engineering-Cairo
University

Prof. Dr. Ahmed Ali Ali Hassan

External Examiner

Professor -Irrigation and Hydraulics Department-Faculty of Engineering-Ain
Shams University

FACULTY OF ENGINEERING, CAIRO UNIVERSITY
GIZA, EGYPT
Year 2022

Engineer's Name: Azza Mohammed Bshandy Said
Date of Birth: 13/5/1980
Nationality: Egyptian
E-mail: Redrose3090@yahoo.com
Phone: 01026488282
Address: Faisal-Giza-Egypt
Registration Date: 1/10/2013
Awarding Date:/.....
Degree: Master of Science
Department: Irrigation and Hydraulics Engineering



Supervisors:

Prof.Dr./Hesham Bekhit Mohamed Bekhit
Dr./Hany Gomaa Ahmed Elsayed Radwan

Examiners:

Prof. Hesham Bekhit Mohamed Bekhit (Thesis Main Advisor)
Professor of Water Resources- Irrigation and Hydraulics Department
Faculty of Engineering-Cairo University

Dr.Hany Gomaa Ahmed Elsayed Radwan (Advisor)
Associate Professor -Irrigation and Hydraulics Department-Faculty of
Engineering-Cairo University

Prof. Ashraf Hassan Mohieb Ghanem (Internal Examiner)
Professor -Irrigation and Hydraulics Department-Faculty of
Engineering-Cairo University

Prof. Ahmed Ali Ali Hassan (External Examiner)
Professor -Irrigation and Hydraulics Department-Faculty of
Engineering-Ain Shams University

Title of Thesis:

UNCERTAINTY ASSESSMENT OF AQUIFER HYDRAULIC PARAMETERS FROM PUMPING TEST DATA

Key Words:

MCMC; Uncertainty; Pumping test data; Aquifer parameters

Summary:

A new analytical tool is progressing using Markov Chain Monte Carlo method to quantify uncertainty in the estimate of aquifer characteristics from pumping test results. The new tool is applied on hypothetical cases for confined /semi-confined aquifers with good results. The new tool gives a reliable range with high level of confidence instead of using one single numbers for aquifer parameters that are traditionally used which could lead to significant error that affect the results on which the decision-makers rely.

Disclaimer

I hereby declare that this thesis is my own original work and that no part of it has been submitted for a degree qualification at any other university or institute.

I further declare that I have appropriately acknowledged all sources used and have cited them in the references section.

Name: Azza Mohamed Bshandy Said

Date: / /

Signature

Dedication

I would like to dedicate this thesis with heartfelt gratitude to my parents for their love, support, and encouragement throughout my life. Also, I would like to dedicate this thesis to my beloved sisters "Ahlam and Amira" and to my beloved roommate "Rehab Nassar" who always stand by me and support me.

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