بسم اللّه الرحمن الرحيم

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

قسم

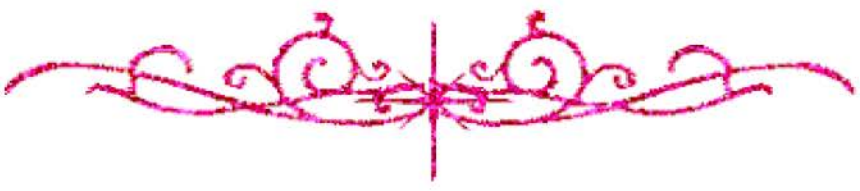
نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
علي هذه الأقراص المدمجة قد أعدت دون أية تغيرات

يجب أن

تحفظ هذه الأقراص المدمجة بعيدا عن الغبار

شبكة المعلومات الجامعية

بعض الوثائق الأصلية تالفة



بالرسالة صفحات لم ترد بالأصل

ASSESSMENT AND SIMULATION OF ABU ZAABAL DUMPSITE IMPACT ON THE SURROUNDING WATER RESOURCES

By

Mohamed Ehab Mohamed Aly Sayed Ahmed El-Mathana

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
Civil Engineering - Public Works

FACULTY OF ENGINEERING, CAIRO UNIVERSITY
GIZA, EGYPT
2021

ASSESSMENT AND SIMULATION OF ABU ZAABAL DUMPSITE IMPACT ON THE SURROUNDING WATER RESOURCES

By

Mohamed Ehab Mohamed Aly Sayed Ahmed El-Mathana

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
Civil Engineering - Public Works

Under the Supervision of

Prof. Dr. Mona M. Galal El-Din

Professor of Sanitary and Environmental Engineering
Public Works Department
Faculty of Engineering, Cairo University

Associate Prof. Dr. Abdelsalam Mohamed Elawwad

Associate Professor of Sanitary and Environmental Engineering
Public works department
Faculty of Engineering, Cairo University

FACULTY OF ENGINEERING, CAIRO UNIVERSITY
GIZA, EGYPT
2021

ASSESSMENT AND SIMULATION OF ABU ZAABAL DUMPSITE IMPACT ON THE SURROUNDING WATER RESOURCES

By

Mohamed Ehab Mohamed Aly Sayed Ahmed El-Mathana

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
Civil Engineering - Public Works

Approved by the
Examining Committee

M. Galal

Prof. Dr. Mona M. Galal El-Din (Thesis Main Advisor)

Associate Prof. Dr. Minerva Edward Matta (Internal Examiner)

Zeinab M. Ali

Associate Prof. Dr. Zeinab Mohamed Aly El-Fakharany (External Examiner)
Associate Professor, Research Institute for Groundwater (RIGW),
National Water Research Center (NWRC), Egypt

FACULTY OF ENGINEERING, CAIRO UNIVERSITY
GIZA, EGYPT
2021

Engineer's Name: Mohamed Ehab Mohamed Aly Sayed Ahmed El-Mathana
Date of Birth: 31/05/1993
Nationality: Egyptian
E-mail: mohd.elmathana@hotmail.com
Phone: +201110816733
Address: 30-Becho America City, Zahraa El-Maadi, Cairo

Registration Date: 01/10/2017
Awarding Date: / /2021
Degree: Master of Science
Department: Civil Engineering – Public Works

Supervisors:

Prof. Dr. Mona M. Galal El-Din M. Galal
Associate Prof. Dr. Abdelsalam Mohamed Elawwad A-Elawwad

Examiners:

Associate Prof. Zeinab Mohamed Aly El-Fakharany (External Examiner) Zeinab
Associate Prof. Minerva Edward Matta (Internal Examiner)
Prof. Dr. Mona M. Galal El-Din (Thesis Main Advisor) M. Galal

Title of Thesis:

ASSESSMENT AND SIMULATION OF ABU ZAABAL DUMPSITE IMPACT ON THE SURROUNDING WATER RESOURCES

Key Words:
Groundwater modeling; Groundwater contamination; Water quality; Contamination transport; Solid waste

Summary:

This thesis discusses the area of Abu Zaabal dumpsite which has been overloaded with contaminants and wastes such as Solid waste (Domestic, Industrial, etc.). The area is also surrounded by high count of agricultural fields which is also a source of pollution due to excessive pesticides used. The location of the dumpsite is very sensitive as it is adjacent to Ismailia canal main branch which is one of the major canals used to feed the agricultural lands. There is also Belbais drain which is on the western side of Abu Zaabal dumpsite. The main aim is to assess the groundwater and surface water quality by developing a 3-dimensional contaminant transport model by utilizing the available data. This will enable us to predict the contamination levels at different periods of time.

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: Mohammed Ehab El-Mathana Date: 09/08/2021

Signature: M.ELM

Acknowledgement

First and foremost, praises and thanks to the God, the Almighty, for His showers of blessings throughout my research work to complete the research successfully.

I would like to express my deep and sincere gratitude to my research supervisors: Prof. Dr. Mona Galal and Associate Prof. Dr. Abdelsalam Elawwad, for giving me the opportunity to do research and providing invaluable guidance throughout this research. Their dynamism, vision, sincerity and motivation have deeply inspired me. They have taught me the methodology to carry out the research and to present the research works as clearly as possible. It was a great privilege and honor to work and study under their guidance. I am extremely grateful for what they have offered me. I would also like to thank them for his friendship, empathy, and great sense of responsibility.

I would like to acknowledge especially Dr. Mahmoud Bakr, a hidden champion in my work for numerous discussions on related topics that helped me improve my knowledge in my research field. I am grateful to his encouragement and practical advice, as well as, for the many valuable discussions that helped me understand my research area better.

I am extremely grateful to my parents, relatives and friends for their love, prayers, caring and sacrifices for educating and preparing me for my future.

I appreciate the financial support from Cairo University; Sanitary and Environmental Engineering Department, which funded parts of the discussed research.

Finally, my thanks go to all the people who have supported me to complete the research work directly or indirectly.

Table of Contents

List of Tables

List of Figures