شبكة المعلومات الجامعية

بسم الله الرحمن الرحيم

شبكة المعلومـــات الجامعية

التوثيق الالكتروني والميكروفيلم

شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الالكتروني والميكروفيلم

قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
علي هذه الأفلام قد اعدت دون آية تغيرات

يجب أن

تحفظ هذه الأفلام بعيداً عن الغبار

في درجة حرارة من 15 – 20 مئوية ورطوبة نسبية من 20-40 %

To be kept away from dust in dry cool place of
15 – 25c and relative humidity 20-40 %

بعض الوثائق الأصلية تالفة

بالرسالة صفحات

لم ترد بالأصـــل

AIN SHAMS UNIVERSITY
FACULTY OF ENGINEERING
IRRIGATION AND HYDRAULICS DEPARTMENT

GROUNDWATER RECHARGE IN ARID AND SEMI ARID REGIONS

BY

RATEB ZAKOUR SAYEGH

(B. Sc. IN CIVIL ENGINEERING)
Al Baath University, Syria

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF SCIENCE IN CIVIL ENGINEERING

Supervised by

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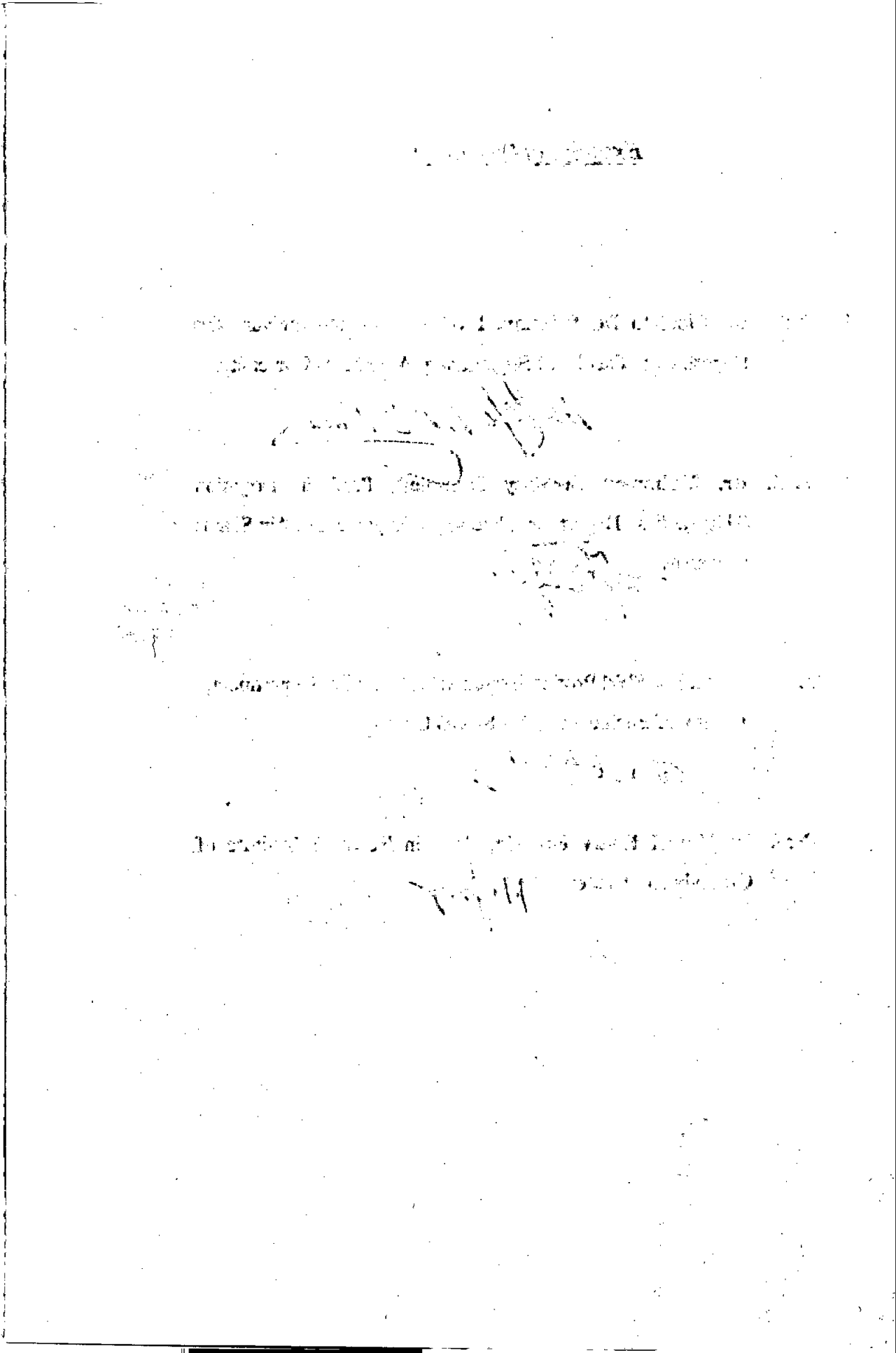

ABSTRACT

Groundwater is an important source of water supply, its uses in irrigation, industries, municipalities and rural districts continue to increase. So groundwater is necessary for the continuous demand for more and more water.

The objective of this study is to establish the water balance and the groundwater recharge of the general area and the pilot area in the Figeh site, which is located to the northwestern of Damascus City (Syria), in view of defining the present situation and the interrelationships of the groundwater system. The result of this study would indicate the possibility of operating withdrawals of water from the aquifer system and constitute a first step toward a more comprehensive scheme of conjunctive use of surface and groundwater resources and more efficient drainage system for the area. Items of the water balance equations and pumping tests, quality of groundwater and some environmental constraints are studied and analysed using the data collected from both, the field and pervious relevant studies.

Pumping test results indicate that, with proper control and managed modifications at Figeh Spring, flow augmentation in the amount of 4 m^3/sec is available to support the needs of Damascus during the low-flow season. The reduction in storage will be replaced by the rains during the early part of the recharge. The study has shown that no change in storage is taking place neither in the study area nor in the pilot area, since no built up in the groundwater piezometric heads are encountered. The study has shown that there is a maximum deficit of producing water in the summer season and there is a surplus in the winter season. The maximum deficit after the month "September" was found to be covered by using the side springs of Ain Figeh.

It is recommended to apply groundwater modeling techniques in the pilot area simulating the different alternatives of vertical and/or horizontal drainage schemes and water supply facilities. Optimization techniques may be of great importance on selecting the best management policy based on conjunctive use concepts. Maximum security must be imposed to the recharge area of Figeh Spring.

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