Sudan University of Science and Technology

FACULTY OF ENGINEERING

APPLICATION OF GIS ON GEZIRA SCHEME AND MANAGIL EXTENSION

تطبيق نظم المعلومات الجغرافية على مشروع الجزيرة

A thesis presented for the degree of

M.Sc. in Surveying Engineering

By

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بسم الله الرحمن الرحيم

(وما أوتيتم من العلم إلا قليلا)

صدق الله العظيم

الايه (85) سورة الإسراء

DEDICATION

Dedicated

To my father,

The first one who taught me a letter.

To my mother,

From whom I knew the meaning of life.

No less worthy of my dedication are my colleagues the officials and

Workers at the ministry of irrigation.

To whom eager to learn could I have dedicated this documentary

Last but not least to my little family whom I love.

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APSTRACT

The purpose of this research is to establish a solid base for building up information system which will support decision making and planning polices for Gezira scheme.

Along with the conventional techniques (GIS) has been extensively utilized in different objectives or in regional development.

The utilization of GIS can assist in decision making, planning and developing Gezira scheme and Managil extension. In this study GIS had been applied on the following

- Connect geometric location with attribute information of blocs of the scheme.
- Determining suitable blocs can be cultivated by different crops depending up on soil components.
- Selecting good blocs according to their location with respect to the main roads in the scheme.
- Producing many layers for different purpose.
- Considering towns of the scheme as factor of differentiation for selecting best blocks.
- Supplying different administrations in the scheme by required information.
- Buffering suitable areas of groups in the scheme to assist in studies and investment.
- Shows the ability of (GIS) to assist in decision making in the field of developing and agricultural planning for the scheme.
- To produce digital maps quickly with low cost.
- Distingwishment between different geographic features in the scheme by means of graduation of colors.

- Windowing the descriptive information of the blocks of the scheme.
- Producing statistical tables for soil components in salinity and sodicity.

The results of this research include after capturing detailed soil, information of data base that can be used for the determination of suitable areas for the growing of different crops according to soil components in salinity and sodicity with the crops requirements. Maps on scale 1:2000000 with 50 kilometers interval grid lines had been produced to provide location information beside tabular data for supplying descriptive information for the different geographic features as roads, towns, blocks, and the groups of the scheme. Moreover thematic maps for cultivated crops. The most operations of cultivation in the scheme had been in autumn season, there for the transportation is main problem, the asphalt roads and the embankments are considered as first factor of differentiation which applied to suitable areas to obtain good areas, and hence for obtaining the best areas by considering the towns of the scheme as the second factor of differentiation. Each feature class comprises the entire pertinent maps and attributes data ready for supplying decision maker by information as required in the field of developing and planning the schemes.

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