

GIS Project on
PRIMARY INDUSTRIES IN JUBAIL INDUSTRIAL AREA
OF JUBAIL ROYAL COMMISSION

Prepared for

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CRP514

Geographic Information System (GIS)

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Introduction

Geographical information systems are computer-based systems that are used represent the map along with the attribute tables attached to it so that information can be retrieved by a mouse click. A GIS is a database that links information to location (it connects the what to the where), allowing you to see and analyze data in new and useful ways. By using GIS we can create, edit, analyze and display various types of information as per the requirement. GIS helps in combining various layers of information as per the requirement and makes life easy for an individual to understand the world he lives in. Spatial features are stored in a coordinate system (latitude/longitude, state plane, UTM, etc.), which references a particular place on the earth. Descriptive attributes in tabular form are associated with spatial features. Spatial data and associated attributes in the same coordinate system can then be layered together for mapping and analysis. Its capability to link descriptive information with maps makes it the ultimate solution. GIS can be used for scientific investigations, resource management, and development planning.

Problem Statement

This project forms a requirement for the course CRP 514 Geographical Information system and is to be worked out within a scheduled time and that is within this semester.

My project focuses mainly on representing the industrial area of Royal Commission of Jubail or Madinat Al-Jubail Al-Sinaiyah (MAJAS). The MAJAS Primary Industries has unique arrangement to the industries according to their amount of productivity and their percentage amount of exported products. These are most probable been arranged near by the King Fhad Industrial Port and they are need a lot of cooling water from the cooling sea water channel immediately because of the highly heat resulted from the high productivity. Moreover, some information needs to be represented as hotlinks for each industry.

Literature Review

Geographical Information system formed as a good route for such a representation. Environmental System Research Institute (ESRI) founded in 1969 as a research organization to develop new methods for managing geographic information provides the services of data automation and consulting services to thousands of GIS users around the world. This project accomplished with working with the textbook of getting to know Arc View GIS to get

the advantages and ideas of using the software of Arc View GIS. This book has been published by ESRI in the year 1997 for managing geographic information. This software is ESRI's product, which allows managing geographic information from a desktop.

Data used in this project including map, attributes, and hotlinks pictures or tables have been gotten from the Royal Commission's public publications of the industries in the industrial area and from the Environmental program informative book, which were they published at the years 1998, 1996 respectively. These sources provided by the public affairs department in the Royal Commission of Jubail during previous visit.

Study Area

Study area is the industrial area of Jubail Royal Commission in the Eastern Province of Saudi Arabia. As all are well aware that Jubail at the extreme North corner of the area is a form of an industrial city complex with the entire primary, secondary, and support industries located in that place.

Tools Needed for the Study

The main tool needed is the GIS Arc View software to run out the project work and minor tool was for the initial stage by using the Paint Shop

MS for preparing the study area scanned map (fig. 1). Although GIS Arc View has contents of the windows components as well as the menus, buttons, and tools where the data managed, manipulated, analyzed, and displayed along with views, tables, charts, layouts, and scripts. This gives ability of dealing in such application with an Arc View project through the themes and documents icons. All the work with the software has been conducted with a desktop computer.

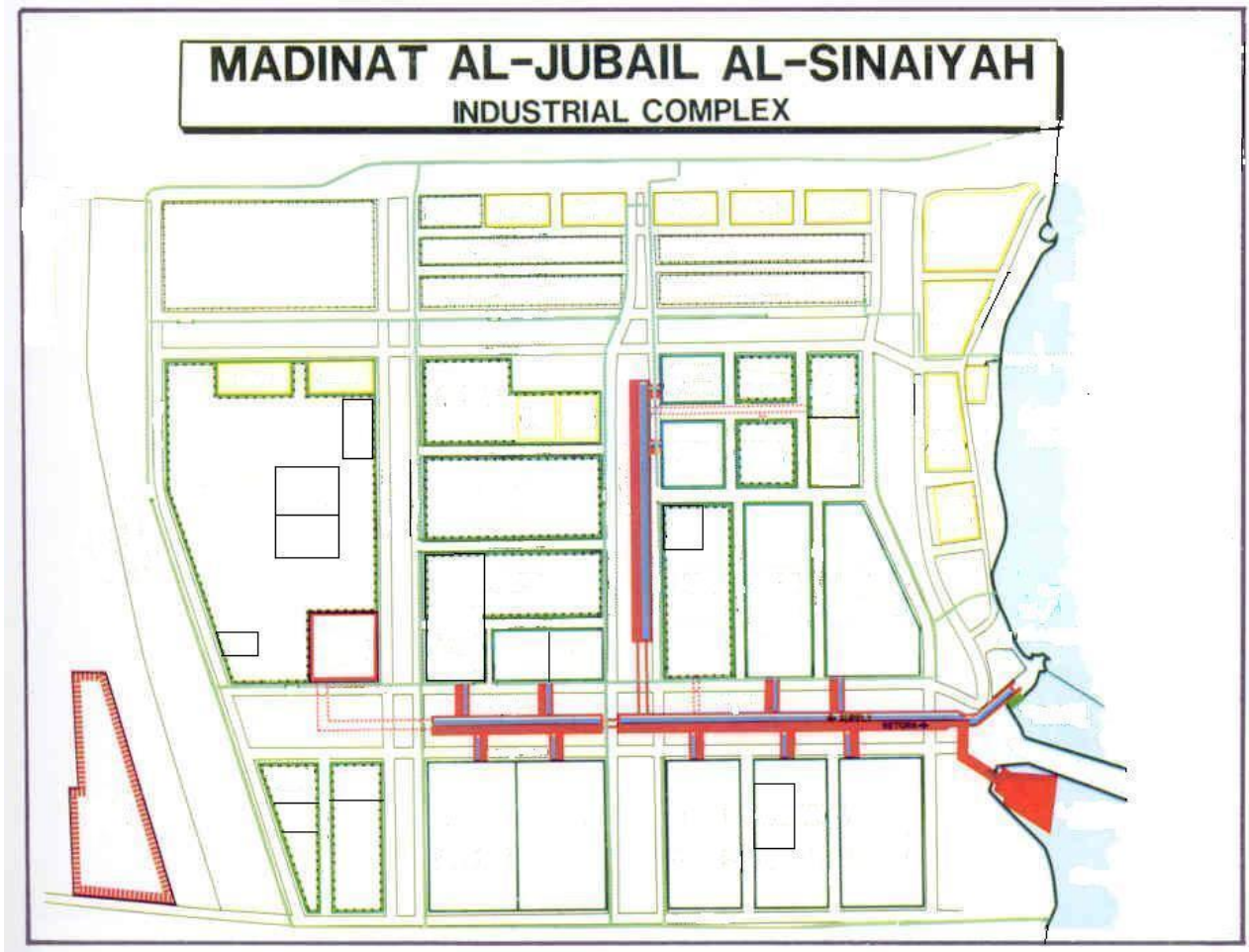


Figure 1: the map of the industrial area of MAJAS that used in the project after scanning and preparing.

Methodology

Arc View software has been used for the representation after scanning the proposed map in a desired format and saving it as a project file (figure 1). Then, Themes have been created for the features as per the requirement with respect to represent the industrial area in various classes according to the category that it follows. Next, descriptive information attributes in the form of tables have been created for developing database for the features. This has two views, one for the whole MAJAS industrial area showing the different divisions of the industrial categories of primary, secondary, and supporting industries with the services infrastructures and residual places within it as created themes (figure 2). The second view going to concern only on the primary industries by dividing them to Petrochemical, Metallurgy, Fertilizer, Gas, and Refinery Industries and represent them on themes (figure 3). This became after scanning the map in the desirable format and then does the required representations on it. This worked planed by using the Arc View software on the map. After that, hotlinks have been linked to each industry showing the industries views or information table showing the related information of complete name, logo, and products with quantity, employees, and address to contact (figure 3). Also hot links to the water-cooling channel, and the industrial port (figure 2).

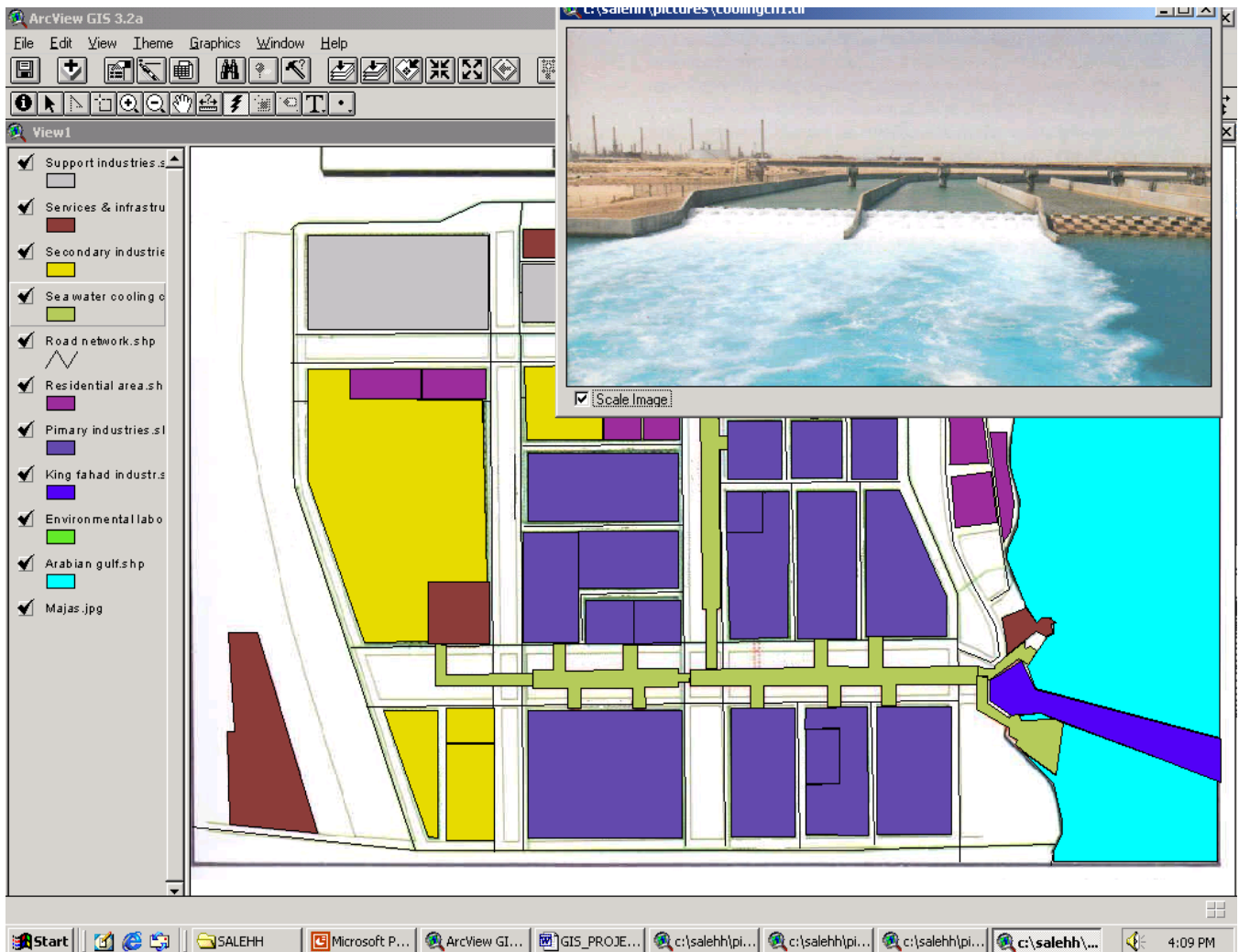


Figure 2: A print screen for the Arc View MAJAS-view1 showing the various represented different categories of MAJAS with hotlink image showing the seawater-cooling channel in natural view.

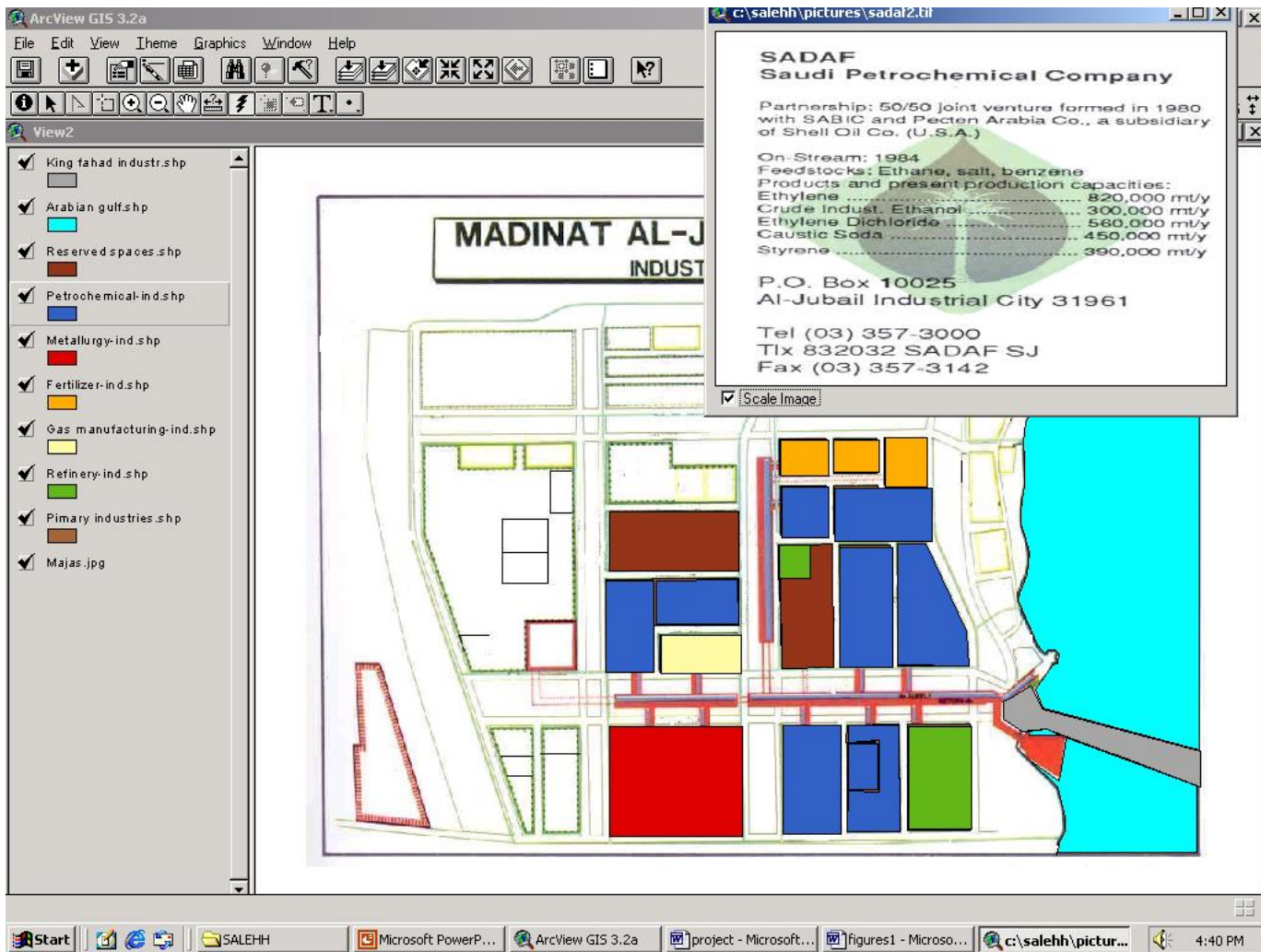


Figure 3: A print screen for the Arc View MAJAS-view2 showing only the primary industries categories and a hotlink image showing the informative table of SADAF industry.

Analysis

Analysis has been done to the primary industries by select selecting records in the table and sorting them, getting statistics about them to locate the primary industries that has heavy production and has products exporting for more than 70 % of production from the King Fahd Industrial Port and from the water cooling channel (figure 4). These Features and their attributes are linked in Arc View GIS, which helps to perform the same operations on either in records in the table or features in the view. Records have been selected directly and searching for them is by the Find button or by writing the definition statement of them in the Query Builder. In Arc View, the selection of records always leads to select their corresponding features in the view (figure 5). The selection performed by using the select tool and the Query Builder and also on the selected records, it can be get statistics to find out how many records share each of the values in a specified field. Finally, the needed themes were selected with analysis by creating bar charts on the heavily produced industries and the industries that has the products exporting for over 70% of its total production. All this have already illustrated in the form of layout (figure 6).

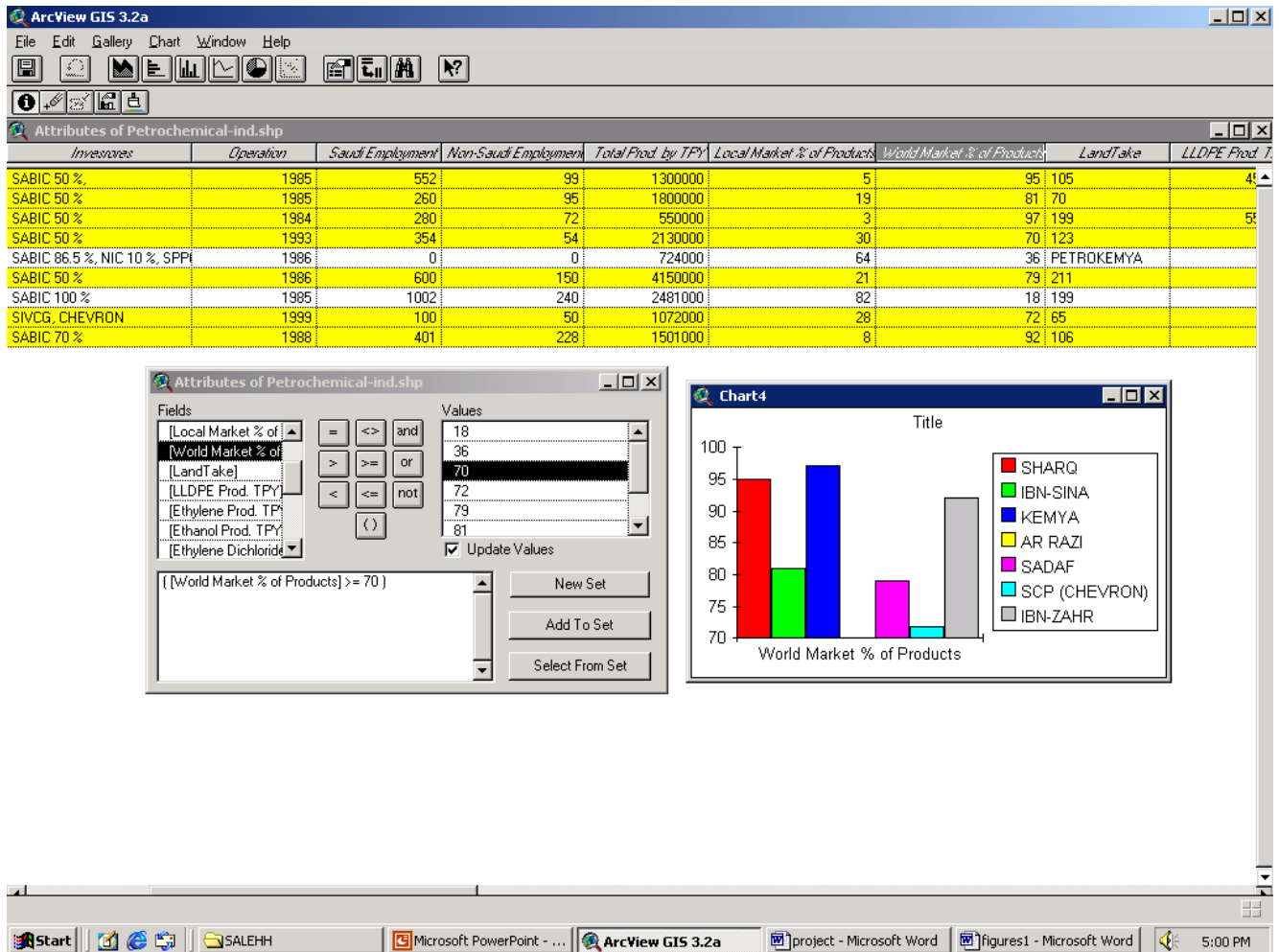


Figure 4: A print screen for the Arc View MAJAS project of the primary industries, which has production to the world market for more than 70 % by using the Query Builder and chart.

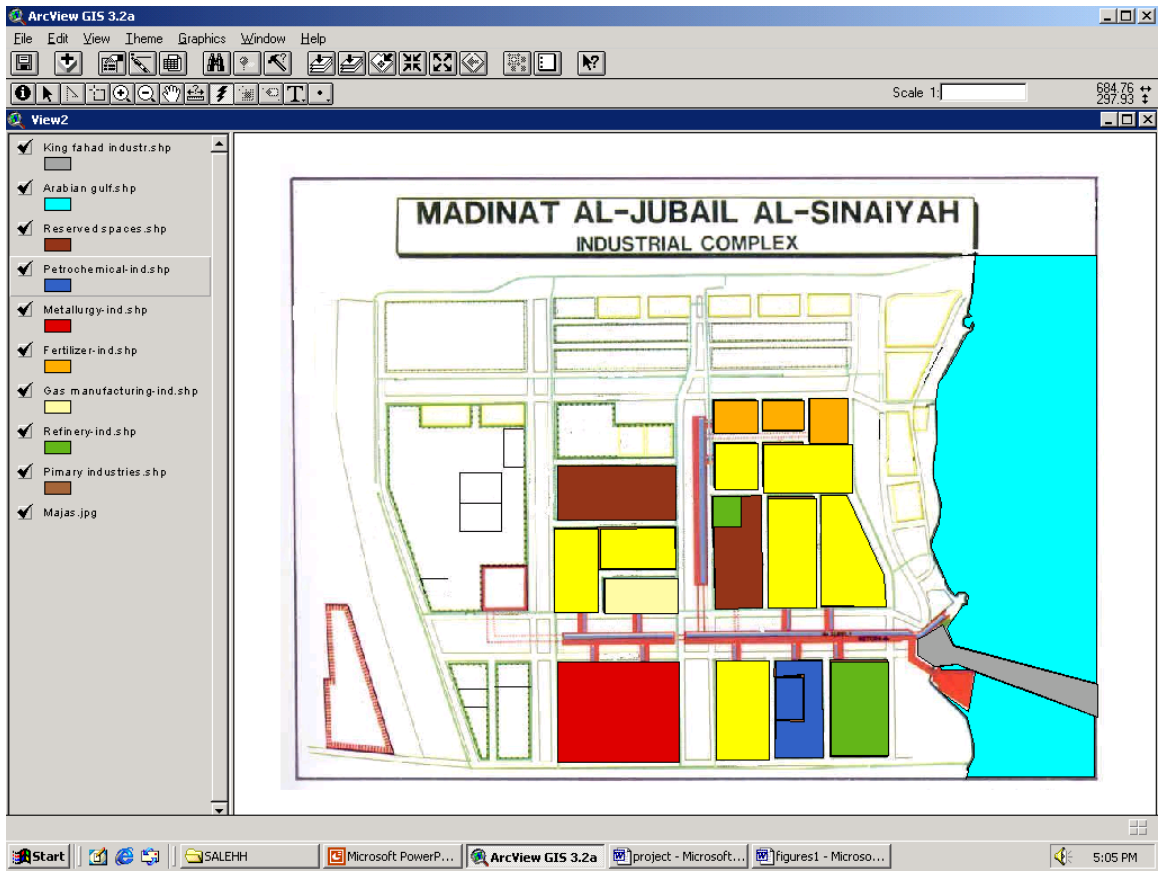


Figure 5: A print screen for the Arc View MAJAS-view2 of the selected primary industries, which has production to the world market for more than 70 %.

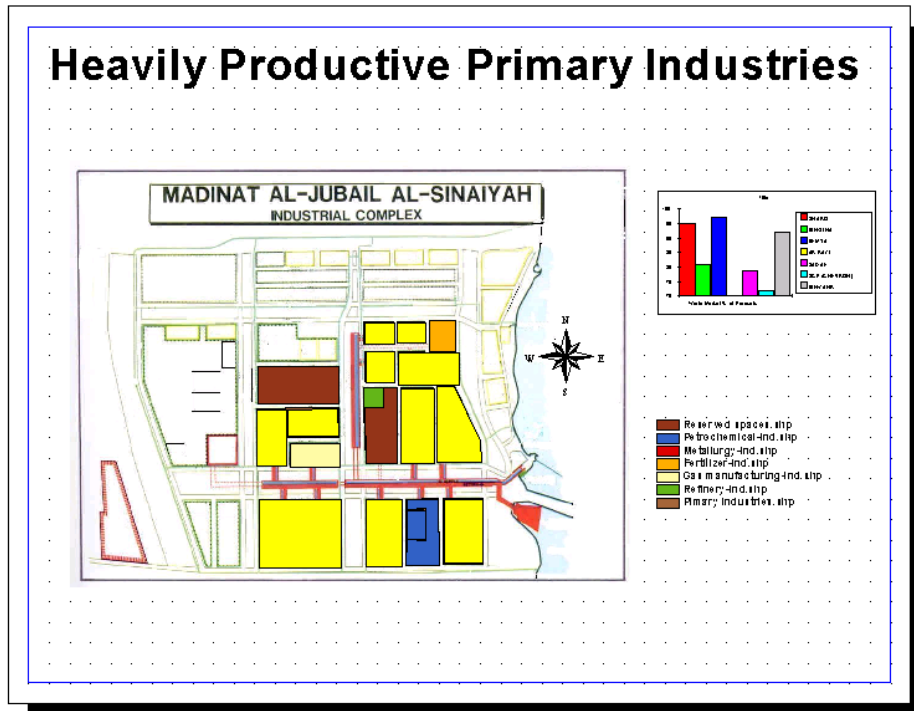


Figure 6: A print screen for the Arc View MAJAS-view2 of the selected primary industries, which has production to the world market for more than 70 % and heavily productive industries.

Conclusion

The heavily productive industries and the industries that have more than 70 % of exported production are located close to the King Fahd Industrial Port and to the seawater-cooling channel. The industries that have more than 70 % of exported production are SHARQ, IBN-SINA, KEMYA, AR-RAZI, SADAF, SCP (CHEVRON), and IBN-ZAHR. The industries that have heavy production (more than 1745333 TPY) are SADAF, PETROKEMYA, AR-RAZI, SADAF, SCP (CHEVRON), HADEED, IBN AL-BAYTAR, and SASREF.

References

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