



## Management Cost Collected Urban Runoff Projects Using Gis (Shirvan Study Area)

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### ABSTRACT

Today, a mechanized system, accurate, updated and appropriate location, one of the main pillars of management plans for surface water is collected. Mentioned systems with specific design features, the aim of this study is to compare the costs related to any of the departments plan to conduct studies. These features include: estimated based on the amount of funding, reporting costs, showing separately the costs are. It is worth noting that the view about priorities with the unique capabilities of this system is on the map. Given what was said, the research to create a special place in the field of management information system to collect surface water has led research projects. The study sample was selected from Khorasan functions. All relevant data were collected in a six month period, then the system using Arc GIS 9.3 software to record, process, integrate and analyze data was a reference location. System development using Visual Basic programming language was designed for a specific functionality. Finally, the efficiency of the system about its role in the management of surface water collection schemes were examined.

**Keywords** Geographic Information System; Surface Water Collection Design; Programming Language; Visual Basic.

### 1- INTRODUCTION

Today, a mechanized system, accurate, updated, one of the main pillars for the development of management plans for surface water is collected. In this regard, a mechanized system to store the maps in AutoCAD format, descriptive and spatial information in a spreadsheet program like Excel or Access database, as there are in their respective organizations. Existing weaknesses in different and separate mechanized systems, heterogeneity and decentralization, between their [1] and also no relationship between side is descriptive spatial data; So in this respect, case study of an appropriate management takes place [5], In a curious way with the use of new techniques in the management plan is a step in surface water collected and new techniques with purpose solving existing problems in water resources management, especially in the categories of surface water under the most threatening factors Legal aspects, environmental management is implemented [2], Has been implemented. It is worth noting that so far a good and valuable in connection with its suppression of surface water and how the city is located in the bed. Can be in this relationship, Effect of increasing the surface area of impermeable surfaces,

Such as urban development on flood formation output using a mathematical model by Ghafouri [3] pointed out; The link can be production to determine the levels participating in the runoff, by Gorokhovich through GIS levels has been noted at every time step [4], But in connection with the management of surface water to be mechanized, centralized, when and where appropriate, with special features so that the case study is, If a particular investigation is not accepted. The present study attempts to provide ways in this area. The focus in the organization of all data related to water resources management in GIS is applicable [10]. The present study uses Geographic Information System to organize data in the study area were discussed, and development of specific capabilities, the system is done with Visual Basic programming language, then using this system and its role in the management of surface water is collected.

### 2- SYSTEM DESIGN

This system mainly in three stages, respectively, which are: 1 - data collection, 2 - Manage and organize data 3 - Productivity and analysis of data, which the three parts are linked together. Continuous line represents the data flow is in the system. And the continuous line in the system development is a specific feature. The subjects were told in short, describes the creation and deployment phases of each system are reviewed. Integrated design system is presented (Figure 1).

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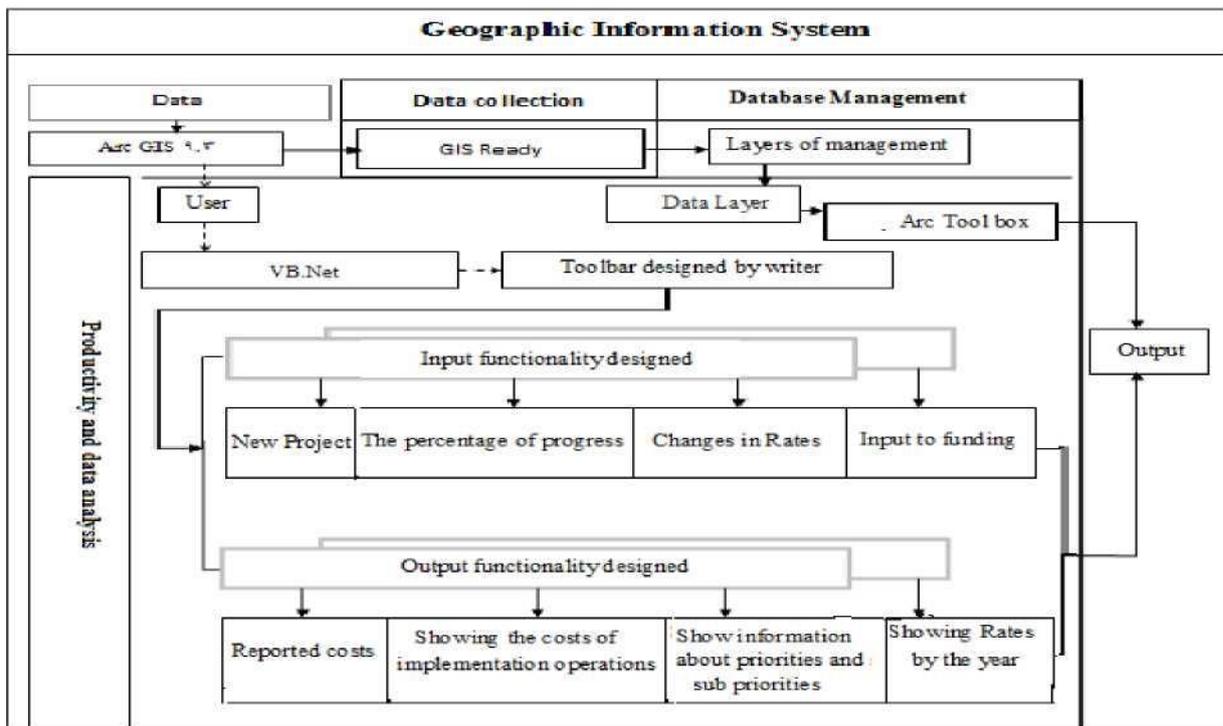


Figure 1 - System Design

### 2-1- Data collection

The combination of data and file format compatibility, the processing power of GIS is more for specific purposes. [11] The goal of this stage, the complete structure of spatial data with GIS software is used. To this end a detailed review of existing data, information systems have been identified. This data includes a list of basic data and technical information of the project plans are available. Map based on the implementation of their projects done. After preparing the data for Log to display information on a computer screen along with the Geographic Information System is standard. Preparing Data Format Shape - File [12] has been done.

### 2-2-Database Management

Due to the application requirements, we can design and produce a logical model of the action. Logical modeling phase of the translation information in the conceptual modeling language for software to be understood [6]. Spatial database model used in this study is the Geo database model that supports the Arc GIS software. This model is able to storage all data in a database, feature Dataset and the structure within the Geo database to organize information related uses. Then, along with other information in order to save a specifications graphic effects capabilities of Representation in the software Arc GIS, is used.

### 2-3-Analysis of data

Management part, the data flow to productive sectors and the analysis will move. this part uses the Arc Tool

box software that is included in the general capabilities, and the GIS Tools developed by writer using Visual Basic to a specific functionality is consists [9], that the and productivity analysis for studies of surface water will collect.

### 2-3-1- General functionality System

The following are some of the functions.

- 1- Search Spatial data and descriptive information based
- 2- The logical question based on various parameters
- 3- Create buffer, the desired effects
- 4- Connectivity various documents to the effects of spatial
- 5- Classification maps based on specific parameters
- 6- Simultaneous viewing of raster and vector data for updating maps
- 7- To produce the desired outputs such as maps, reports, charts
- 8- To produce a profile of desired routes
- 9- Check the status quo with the detailed plans (to generate statistical reports required)
- 10- Zoning and generate thiesen polygon
- 11- Three-dimensional model and determine the slope and elevation, at any point

**2-3-2-System specific functionality**

Specific system functionality using Visual Basic programming language is designed as a tool bar. Their applications are briefly described below (Figure 2).

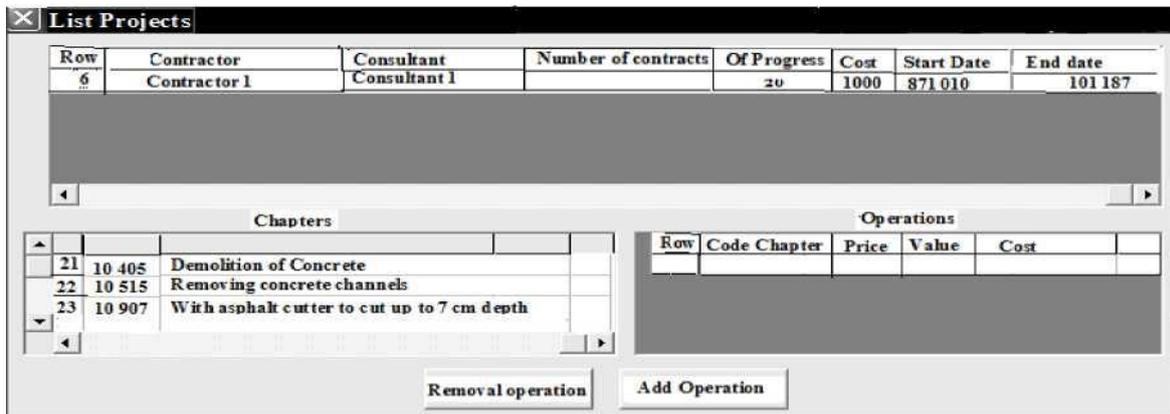


**Figure 2 - specific system functionality toolbar**

**2-3-2-1-Defining a new project**

To create a new project in the project layer, the layer desired to be drawn. Information on the new layer under the name and other information that is relevant to the table. Selecting the option "Define Project" will

form the list of selected projects will be displayed that lists the set of operations, using two options: "Add operation" or "removal action" in this new form to be added or subtracted to the project (Figure 3).

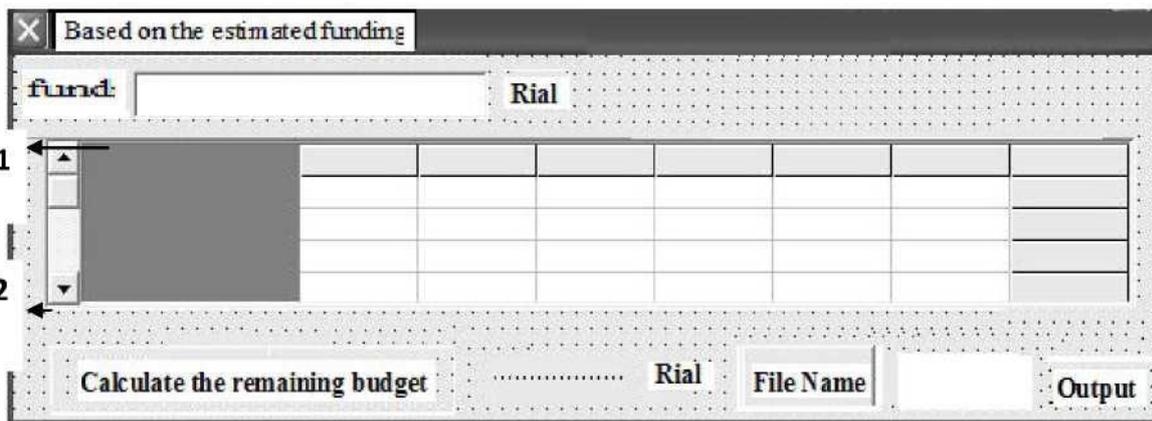


**Figure 3 - Adding or Removing a New Project**

**2-3-2-2- Based on the estimated funding**

Knowing that the existing budget of how things can be done, will be very useful. This system is currently antic-

ipated that the cost of each operation can be work to calculate the amount of the budget is low (Figure 4).



**Figure4 - Based on the estimated funding**

In the figure above, Part 1 is devoted to input the amount of money. Double-click on any of the two phases of work following window opens. Includes the under priorities of each work phase and the phase of the work of the unit. This window has been completed and approved, then click the option to calculate the budget in Figure 3. The remaining budget in the following window is displayed. Thus, users can know the amount of money, a list of desired work processes so that the appropriate budget is allocated. Use the form

below with the option "Text output" generated list as a text file is also stored (Figure 5).



**Figure 5 - Run the command window and set the budget priorities and actions**

**2-3-2-3-reporting costs**

Downloadable report costs in the system before they can be examined. Projects relevant to note that the total funds allocated in one phase does not. Consultants design studies, several high priority projects in order to estimate the incremental costs are classified. This classification and pay any part of the template is created in the system. Click on Options on the toolbar to report expenses. Relevant information to each priority and each of them and the cost of each subset are shown. Over time from year to year cost of implementing the priorities will change. This allows the system to update the information provided. The case will be discussed (Figure 6).

**Figure 6 - Display the option of reporting costs**

**2-3-2-4- Show separately the costs of operations performed**

Related projects have been prioritized due to restrictions of transfer credits. These priorities have been classified as main priorities. and in every major priority under the priority of priorities and a breakdown of each also conducted a series of operational performance. It is noteworthy that each of the operations with the code name of code, quantity, cost per chapter and code...Formed. For documentation of the cases mentioned, the ability to "show costs separately operations", is designed. Given what was said in the documentation process. if you consider the time factor. May change operations arise. This system could easily change with the operating time required for the operation, the cost of each operation and the operation rate ... Is possible. another our capabilities of this system can display the progress of each operation. (Figure 7)



Priority	Irrigation costs	Road costs	Cona ruction Coa
1		2026379126	2272980146
		1971584027	2250965426
3	161861509	55644010	65602376

	Code	Road cost!	Percent pro-	Cona ruction Coa	Value
	249	20103	4485000	1370000	230
	250	20201	290700	290700	45
	251	20501	316100	316100	545
	"	20501	133525	572250	545
	2*3	30502	4930250	1930250	925
	294	30601	120700	120700	170
	25?	30701	2679600	2933700	1155
	256	30702	924000	1016400	4620
	257	30703	3922033.5	1222241	4002.075
	258	40103	18525000	34580000	650
	29	00101	744000	858000	20
	260	60201	19314000	21904000	270
	2*1	00901	398000	414 000	100
	262	70201	19230250	19230250	2425
	262	70202	20984550	20984550	2985

	FollowEg prior it'	Irritation	Road cost!	Cona ruction
l	SfMt E\$tal	295710383	285863608	330736515
T	Siter Str"t	430568066	394157798	456031394
	Boeltoivfd Railway	949241549	921408699	100909345
	Nilooftir Street «r4 Hikim	318511507	298147291	338350286
r	Street Jsme Nbsque	130969535	126801530	138768806

1

2

**Figure 6-Show separately the costs of operations performed**

In the above, in Part 1, the list of priorities and the cost of each of the three types of rates: "buildings", "The airport and railway infrastructure" and "Irrigation and Drainage" exists. Select the priority of this section, the following list of priorities and costs related to each of the three types based on the rates mentioned above, is shown in Part 2. The following priorities are selected from Part 2. All operations in the priority list in Part 3 are shown below. Part 3 of the cost of operations based on three types of fees and expenses as the cost of doing the work progress will be displayed. Selecting the option in Part 4, according to the rates application is shown (Figure 8).

In this Figure, Part 5 consists of four options: "Delete Operations", "updated information", "rates year" and "output text" is. The option to "remove the" cause of action in Part 3 of the already selected, will be removed. Select "Update Details" to enter the changes in operations on the following priorities are priorities and fit it on. Option "rates year" for rates based costs used in the request, because of year to year, some of the rates will change. Therefore, costs are calculated based on the new rates. To do so, should the Excel file to the existing rates in the project, a new year is called Datasheet. The new rates information required to be entered in a sheet. After this step, in section 5 form, and enter the corresponding rates option is selected. Perform these operations with the new rates levels have been attributed to the operation. And costs were calculated based on the new rates is shown in Part 7. Select "Text output" of the five is the last option. The priority will be selected from a text file. And double opt Part 7 below will be displayed (Figure 9).

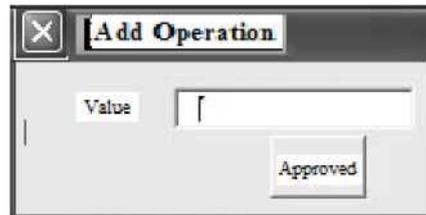
**Figure 8 - Application Rates associated with the desired**



**Figure 9 - Form of the progress of each operation**

Enter the percentage of operations in progress. Approved expenditures made by selecting the relevant operations are shown in Part 7. The user will be able to operate on the basis of the amount of money spent on development and related charges (which shall be communicated in different years), shall see. Also, double clicking a window will open with section 6 in Figure 8. In this window, enter the amount and confirm the option we choose. This action adds to our existing sub-priorities (Figure 10).

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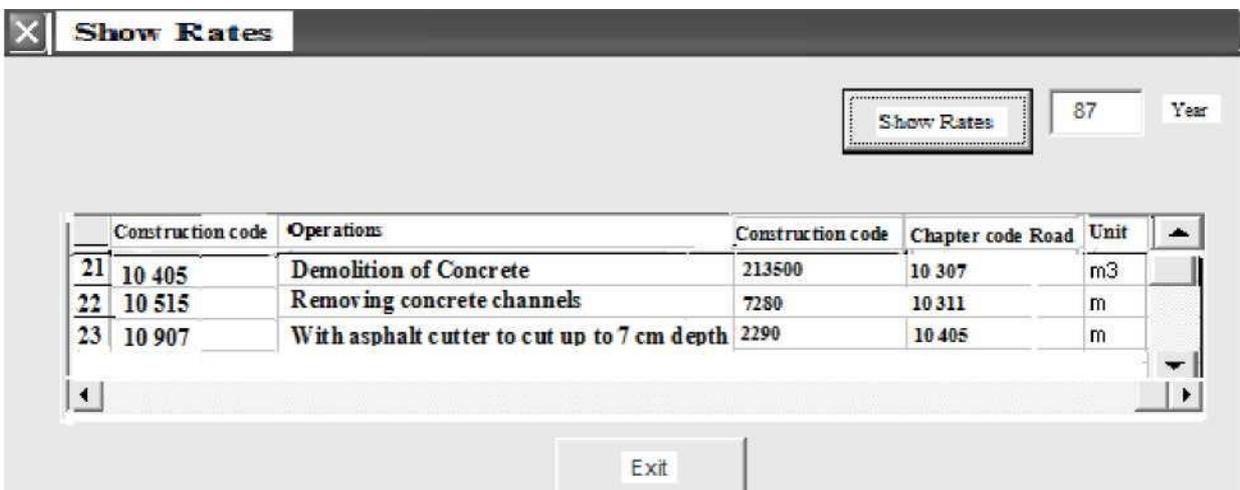
**Figure 10 - Adding forms to a subset of operational priorities**

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**2-3-2-4- Show Rates**

Option "Show Rates" rates years of operation will be displayed. This option has all the information on rates (Figure 11).

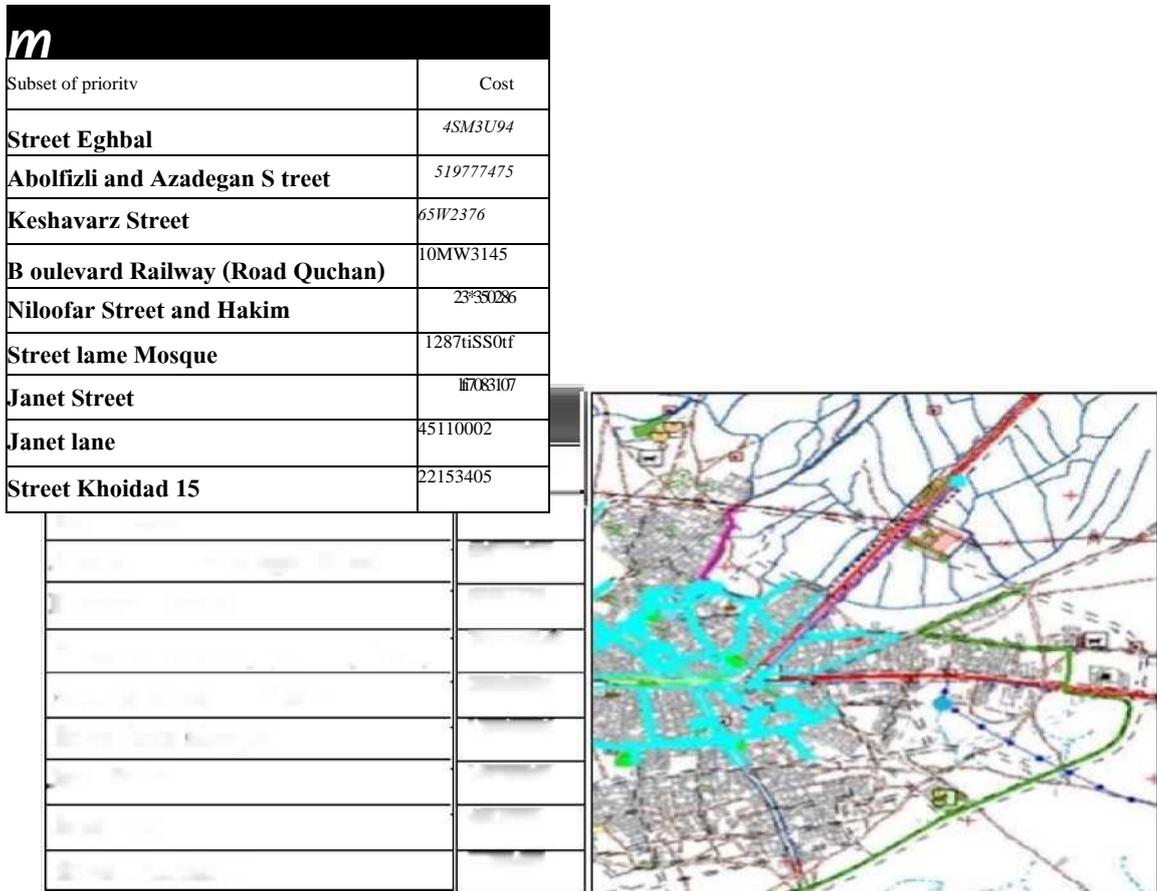


**Figure 11 - Form Show Rates**

**2-3-2-4-Show information about the priorities selected on the map**

To use this feature, the range selected on the map. Select "is selected report" from the toolbar, the follow-

ing list of priorities along with their related costs in the selected range is displayed (Figure 12).



**Figure 12 - Information about the priorities set**

**2- RESULTS AND RECOMMENDATIONS**

In addition to the general system capabilities in the design is capable of. Also using a special feature capabilities are designed by the author.

- 1-Report costs
- 2 - Show separately the costs of operations performed
- 3- Show information on priorities and sub priorities selected on the map
- 4-Defining a new project
- 5- Calculate the cost based on available funds
- 6- Show the list of tariffs by the year

In all cases, survey results are mentioned. According to the proposed research in this field; creation is admit-

ted, that with full implementation of GIS in the future to answer questions like the following.

- 1- Simulation of flood risk, the more threatening the city, in what areas? What routes will be over? How to conduct flood and surface waters in order to reduce the waste?
- 2- What range of the city against floods will be less resistance?
- 3- Determine the relief to the devastated areas is the problem?

**CONCLUSION**

System implementation in the relevant plan of management has been studied.

To make some changes after the system implementation in the relevant organization, a brief mention.

- 1- When making a rapid and coordinated spatial and descriptive information
- 2- To achieve a quality level suitable for point of information, through to follow a single standard
- 3- To facilitate the conversion and exchange of information and thus save costs.
- 4- Increase the accuracy of statistics and data from multiple.
- 5- 5 -Reducing the cost of the preferred management.
- 6- To try and reduce operating costs reduced errors and risk management decision.
- 7- Creating an information infrastructure for researchers and experts.

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