Paper 31
Effective Utilization of Water Utility Geo-data Base for Day-to-day Operation & Maintenance Activities of NWSDB

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INTRODUCTION

National Water Supply & Drainage Board (NWSDB) is the leading organization responsible for providing safe drinking water in Sri Lanka. In the year 1999, NWSDB commenced to develop its water utility Maps using GIS platform. The main objective was to improve performance of Operation and Maintenance (O&M) activities of the water supply systems. However the NWSDB operational staff has not yet effectively utilized this GIS system for their day today O&M activities. The main objectives of this study were,

- To identify the causes for not utilizing the present GIS system effectively for O&M activities
- To develop a user friendly new GIS system.

METHODOLOGY

This study was based on one of the Provinces in Sri Lanka, namely Sabaragamuwa Province, managed by the Regional Support Centre (RSC) Sabaragamuwa of NWSDB. There are two districts; namely Ratnapura and Kegalle under this RSC. There are Ten (10) and Nine (11) water supply Schemes respectively in the two districts (Figure 1).

Figure 1: Water Supply Scheme in Sabaragamuwa Province

A need assessment was conducted based on the above water utility systems. According to their needs the following data model was finalized .There are 7 sets of data. Out of the seven (7), Six (6) set of data are related to the common feature classes of the Geography and one (1) set of data related to the water utilities. The water utility data set contained 16 no of feature classes (Table 1).

WATER UTILITY DATA MODEL

List of feature class

No	Feature Class Name	Alias	Data Type	Remarks
1	W_Pipeline	Pipe line Data	Line	Pipe lines
2	W_Pumps	Pumps data	Point	Water Pumps
3	W_Buildings	Building data	Polygon	Buildings
4	W_Lands	Land data	Polygon	Lands
5	W_Intake	Intake data	Polygon	Intake
6	W_Deep_Tube_Well	Tube well data	Point	Deep tube wells
7	W_Elec_Pt	Electricity connection data	Point	Electricity points
8	W_B_Meters	Bulk meters	Point	Bulk Meters
9	W_Tanks	Water tanks	Point	Water tanks
10	W_Treat_Comp	Water treatment components	Polygon	Treatment Components
11	W_Valves	Valves	Point	Valves
12	W_Pressure	Water pressure of distribution	Point	Logger reports
13	Sampling_pt	Sample collecting points	Point	Water Sample Collecting points
14	W_Con_Meters	Domestic meter points	Point	
15	W_Fire_Hydrant	Fire Hydrant point	Point	
16	W_BPT			

Table I: Water Utility Data Model

All sets of data are in a one Geo database. The process involving in a building a Geo database is given below (Figure 2).

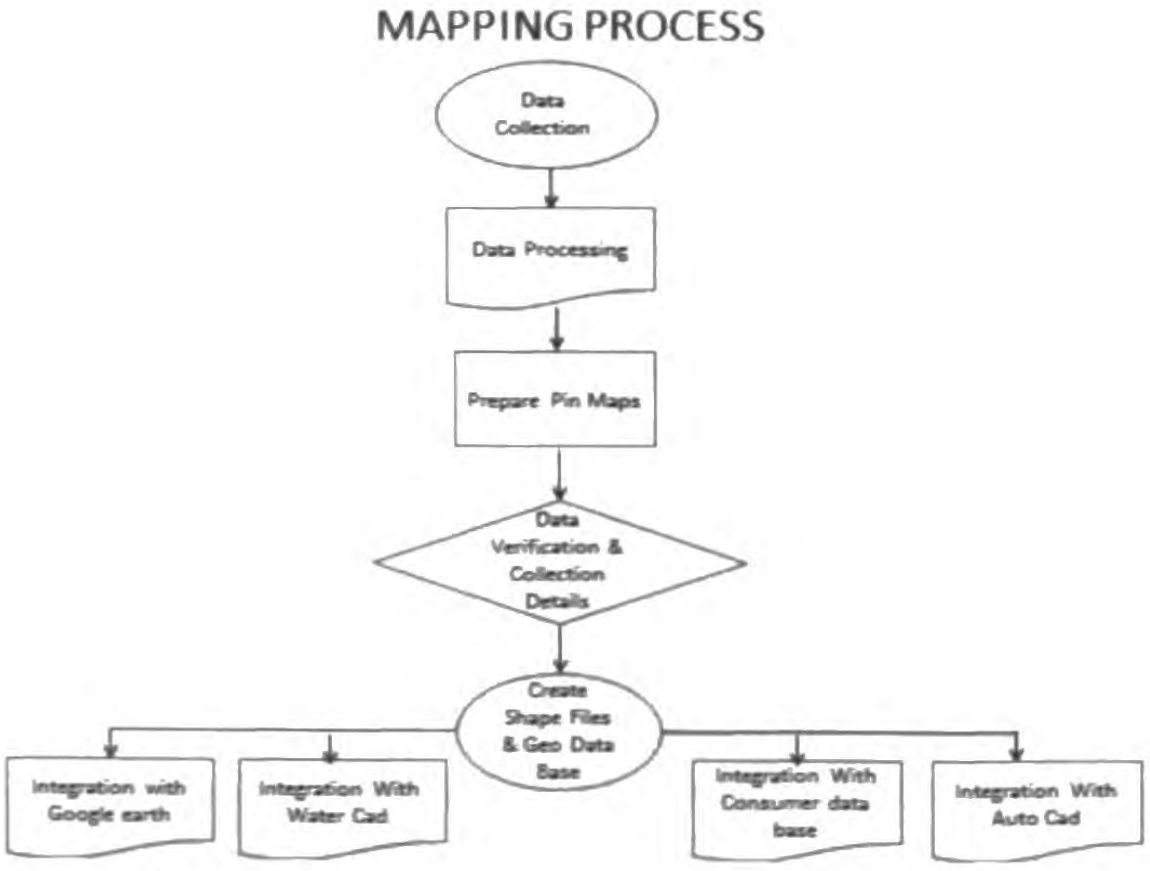

Figure2: Mapping Process

RESULTS

After completing and operating this Geo-database it could be linked with the client IT sever at RSC. Then any person who is given permission to access to the IT server can develop their own maps by using the Geo-database for day to day operational activities as required. On the other hand, after developing GIS map, it could be exported as a KMZ file to Google Earth which could be utilized by NWSDB (O&M) staff even without any special knowledge about the GIS software solution. Also they can use this KMZ map for any activity to improve the performance of the O&M work of the NWSDB (Figure 3 and 4).

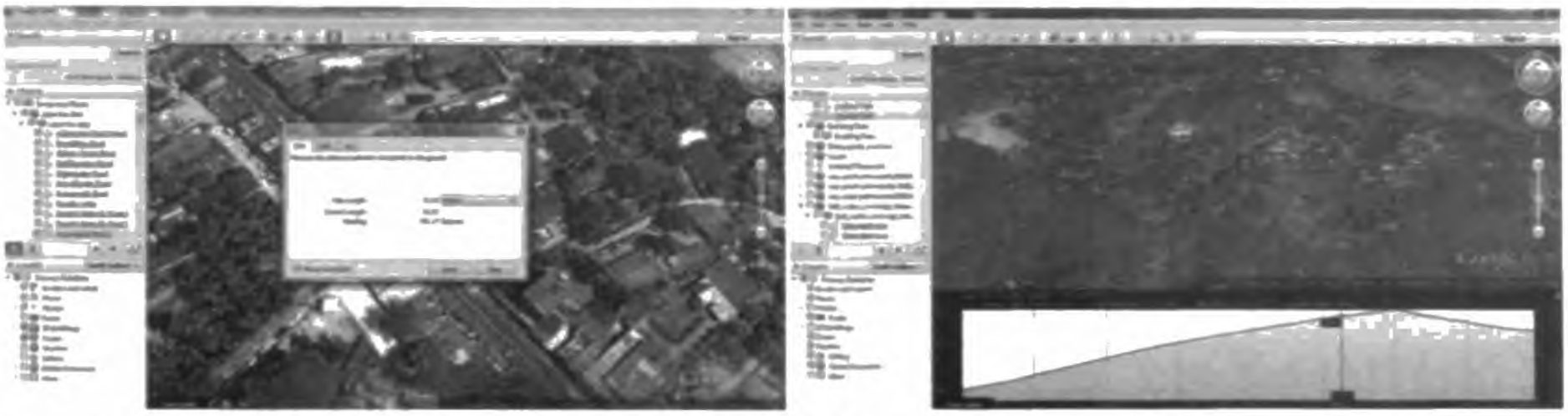

Figure3: Measure distance from pipe line to houseFigure4-Elevation profile for new pipe extension

CONCLUSION

The Geo database developed is creating a user-friendly customer ordinated GIS system. This system provide tools for making maps and developing tables and graphs for day to day operational activities of the (O&M) staff of the NWSDB. Through a user-friendly interface accessible from any computer connected on the network, the application provides many highly customized functionalities including specific spatial analysis information querying retrieving data, data summarizing etc. This system successfully fulfill the requirements of the O&M staff at grass root level of NWSDB.