1.7 GIS APPLICATIONS

The GIS technology is rapidly becoming a standard tool for management of natural resources. The effective use of large spatial data volumes is dependent upon the existence of an efficient geographic handling and processing system to transform this data into usable information.

The GIS technology is used to assist decision-makers by indicating various alternatives in development and conservation planning and by modeling the potential outcomes of a series of scenarios. It should be noted that any task begins and ends with the real world. Data are collected about the real world. After the data are analyzed, information is compiled for decision-makers. Based on this information, actions are taken and plans implemented in the real world.

Many professionals have recognized the importance of spatial dimensions in organizing & analyzing information. GIS can introduce a perspective, which can provide valuable insights.

GIS can be used to add value to spatial data. GIS creates useful information to help decision making

- by allowing data to be organized and viewed efficiently
- by integrating them with other data
- by analysis
- by the creation of new data that can be operated on in turn.

A GIS can be described as a form of spatial decision support system. A GIS represents a major commitment of time, money and organizational energy. The frequent problems related to geographical data management faced by most of the organizations are

- Geospatial data are poorly maintained
- Maps and statistics are out of date
- Data and information are inaccurate
- Inability to use a map that someone else has borrowed
- There is no data retrieval service
- There is no data sharing

processing, DEM etc.

1.9 AREAS OF GIS APPLICATION

Different streams of planning

- Urban planning and design
- Transportation planning
- Architectural conservation
- Watershed management and planning
- Planning for sustainable development
- Site selection of a civil engineering project

Street network based

- Address matching application - finding locations given street addresses
- Vehicle routing and scheduling
- Location analysis and site selection
- Development of evacuation plans
- Disaster planning

Natural resource based

- Management of rivers, recreation resources, floodplains, wetlands, agricultural lands, aquifers, forests, wildlife
- Environmental impact analysis (EIA)
- Digester management
- Viewshed analysis
- Hazardous or toxic facility siting
- Groundwater modeling and contamination tracking
- Wildlife habitat analysis, migration routes planning

Land parcel based

- Zoning, subdivision plan review
- Land acquisition
- Environmental impact analysis
- Water quality management
- Maintenance of ownership

Facilities management

- Locating underground pipes, cables
- Balancing loads in electrical networks
- Planning facility maintenance
- Tracking energy use

Not only in the above-mentioned fields but also in the social sciences GIS can prove extremely useful. GIS can be a valuable tool for sociologists to analyze administrative data such as population distribution, market localization and other related features.