TANKS OF MADURAI DISTRICT-TAMILNADU

History of Tanks:

The irrigation Tanks and Village ponds of South India are traditional Water harvesting structures indigenously designed by native rulers and chieftains over the past several centuries and have been among the most important water resources for rural communities.

Methodology are shown below as sequence:

Acquisition of Data:

As a prime work for this project , we have downloaded the satellite data of Madurai region from **BHUVAN** platform (https://bhuvan.nrsc.gov.in/). This Satellite data was captured by Advanced Wide Field Sensor **(AWiFS)** which is a part of **Resourcesat-1 satellite**. AWiFS operates in four spectral bands ,which has a spatial resolution of **56 metre**s.

Collection of Tanks Data:

We have made use of Tanks data from **Public Works Department (PWD)** resources, Government of Tamil Nadu. We further verified nearly (¼)th of the data through field visit and have cross-verified all data combined with acquisition of new data related to technical aspects of Tanks and verified the Latitude and Longitude co-ordinates of Tank location with a **GPS device**.

Digitization of Boundaries:

- ➢ **Software used : QGIS version   3.16.1-Hannover**
- ➢ **Coordinate Reference System (CRS) Used : WGS 84 (EPSG 4326)**
- ➢ The Maduari district and taluk map have been downloaded from Madurai district coporation website.
- ➢ Using BHUVAN data as basemap, this district and taluk map have been georeferenced using QGIS.
- ➢ Then we have digitized the boundaries of Madurai district and its seven taluks in QGIS using the above georeferenced data.

Addition of Data in QGIS:

All the data have been recorded and made into excel sheet which consists of technical data like latitude,longitude,Maximum Capacity, Maximum Water Level,Ayacut,Water Spread Area, Sub-Basins, Basins of Tanks etc... After that, we have converted excel sheet

into comma-separated values (.csv) file. Then this csv has been imported into QGIS as point features. Using various attributes available in the tanks data, five different maps have been created.

Necessity of Tanks' Data:

Water is one of the most crucial elements in development planning. Efforts to develop, conserve, utilize and manage this important resource have to be guided by national perspective.

Standardized Information System:

The prime requisite for resource planning is a well – developed information system. There is a strong need for establishing a standardized information system with a network of data banks and data bases, integrating and strengthening the agencies at various levels & Improving the quality of data and processing capabilities. The water resources should be conserved and the availability augmented by measures for maximizing retention and minimizing losses.

Application & Use of Map:

With help of these maps what we have created can be used to,

♦ To reduce the Encroachments and siltation in the water spread areas/Tanks, supply channel and surplus courses, take preventions to mitigate Major flood loss.

♦ Using these data, Government can allocate relief fund for farmers whose who have lost their grown crops in their own field due to Natural calamities like **CYCLONES, FLOODS, HEAVY RAINS** etc...,

♦ These data directly contribute the region of Natural wellness meant for **potential & productive agricultural areas.**

♦ Gives a clear vision to **protecting** those particular areas with immense beneficiary data.

♦ With the cumulative capacities of Tank, current available water for the given population density and Irrigational lands can be evaluated.

♦ Proper rationing of water for both domestic purpose as well as agricultural utilities can be validated.

- ♦ Cost for Maintenace of Conduits and its new installation can be done in very effective manner.
- ♦ Seasonal opening of sluices may be decided by knowing the Capacity of Tank.
- ♦ To increase the depth of Tank, to meet the future forecasted water requirements which would be found by **Mathematical modelling.**
- ♦ To mitigate the **Major flood loss** by monitoring the water level by taking these values as extreme values.
- ♦ Alarm for a time to **Desilting of Tank** (Desiltaion process)
- ♦ Geological /Soil Analysis data combined with our obtained data, suitable agricultural crop may be suggested to cultivate in those regions, pertaining to uniform Sub-Basins.
- ♦ With the help of these data, Renovation/Repair work in any particular Sub-Basin can be made since repair work simultaneously affect the series of Tanks associated in the particular Sub-Basin.
- ♦ These data enable us to directly measure the available surface water in the particular zone, which can be **index factor** for balancing the eco-systems.
- ♦ Using these data, Government can easily allocate fund for CPWD, SPWD for the **Civil repair Project.**

Complexities faced during the course of the project:

➢During Tank data collection and visiting the field, which really made us to travel even in undulated terrain as well as hilly region where some tanks are located.

➢We faced a big trouble in choosing the specific value for each and every Attributes specification which has sub-division too.

➢It consumed lot of time for choosing the exact interval value for pointing the specific attributes by viewing and compared the each and every values of 1338 tanks which really made this work as very tedious one.

➢ We have gone through many literature reviews related to irrigation engineering domain and got some ideas.

➢ Though we have explored a lots of literature reviews, we found themselves as still insufficient one

Reference:

1. https://cdn.s3waas.gov.in/s3f5f8590cd58a54e94377e6ae2eded4d9/uploads/2020/02/2020022142.pdf

2. https://bhuvan.nrsc.gov.in/