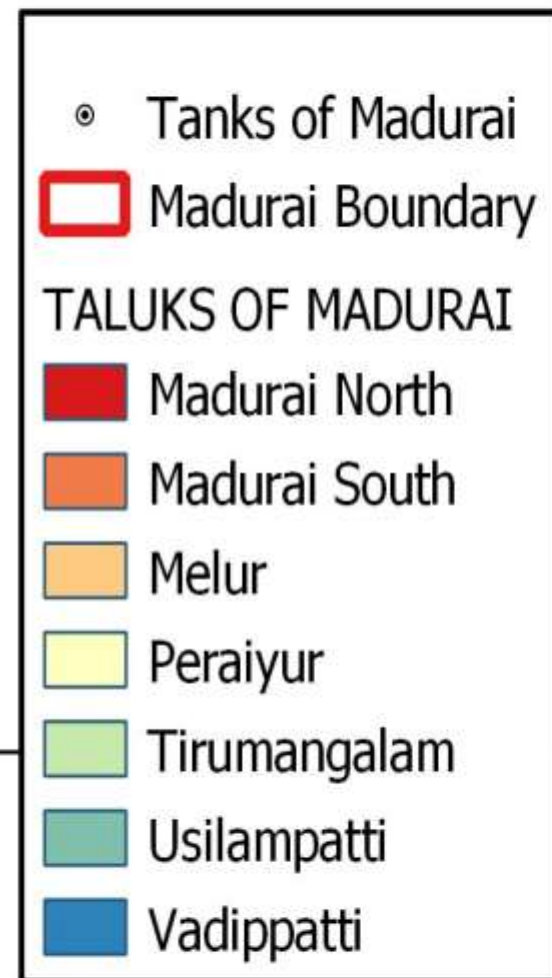


TANKS OF MADURAI



Map description and analysis

Introduction:

- Madurai District is in the South-Central Region of Tamilnadu lying between longitudes $77^{\circ}2'$ and $78^{\circ}2'$ and between latitudes $9^{\circ}30'$ and $10^{\circ}27'$. The general slope of Madurai District is from West to East.
- There are 7 Taluks, 13 Blocks, 669 Villages consists of population 25,62,279(Rural Population= 1129028, Urban Population= 1433251).

Physiography and Drainage:

- It has geographical area of 3741.73 sq.km, consists of 7 Basins out of which two (Vaigai ,Gundar) is major.
- Central Part of Madurai district is drained by Vaigai River and Gundar river that forms parts of Vaigai. Northern Part of the district is drained by Pambar.
- Southeastern part of the district (part of Sedapatti and Kallupatti blocks) falls in Vaippar basin and the area is drained by Arjuna Nadi.

Major Contribution of Tanks:

- Madurai has 13 Sub Basins, possessing **1338** Tanks, contributing a Ayacut of **52197.21ha**, Water Spread Area of **28395.33ha**, Cumulative Capacity of **$2143.48 \times 10^6 \text{m}^3$** and Catchment Area of **9886.43km²**.

Application of Analysis:

- Tanks are becoming endangered at these recent days. To reduce the encroachments and siltation in the water spread areas/Tanks, supply channel and surplus courses, take preventions to mitigate major flood loss.



Team Name: HYDRO VECTOR

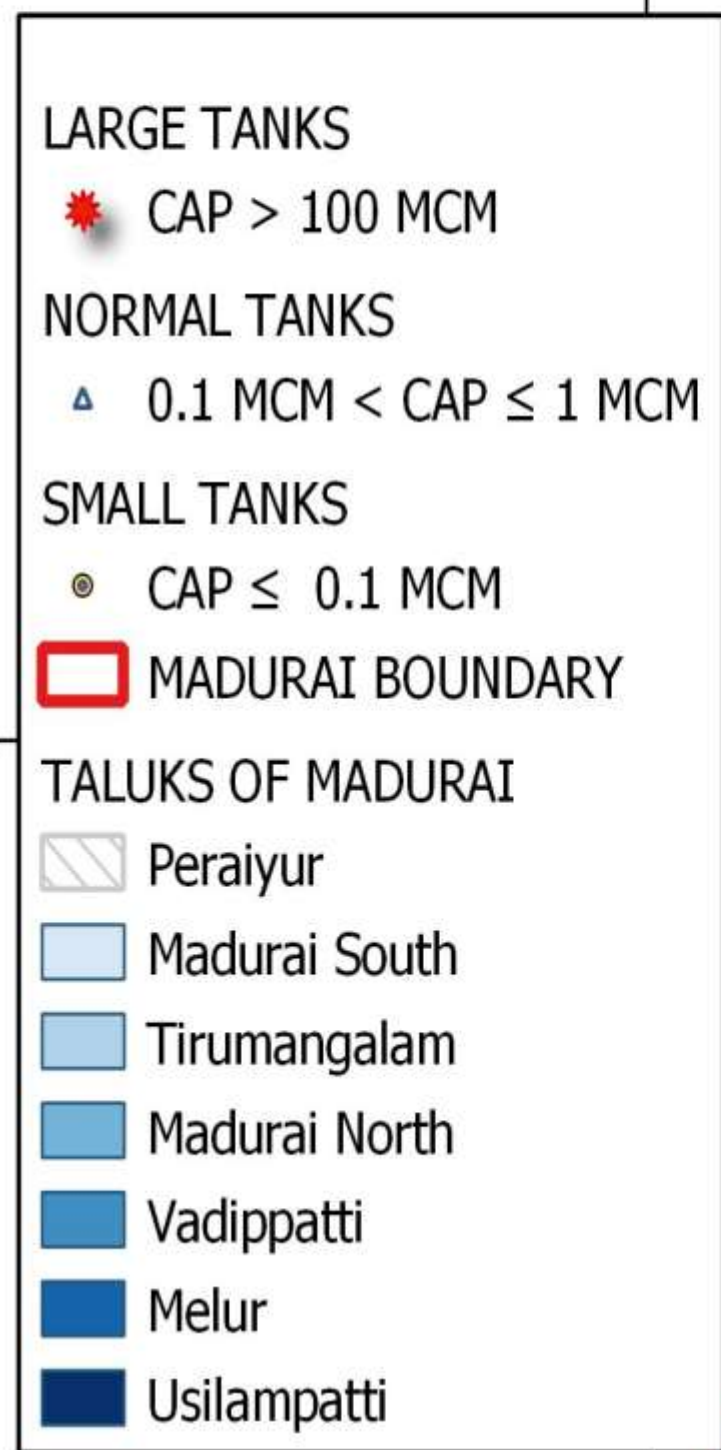
Topic: Tanks of Madurai.

Team lead: Akashkannan K

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MAXIMUM CAPACITY OF IRRIGATIONAL TANKS



Map description and analysis

Irrigational System:

- Madurai has a source of irrigation from PERIYAR – VAIGAI IRRIGATION SYSTEM (irrigating about 57,000ha, SATHYAR reservoir (irrigating about 200ha), Minor Irrigation tanks, Dug wells and Tube wells.
- Area under cultivation: 150704 ha(ha=hectare)

Capacity of Tank:

- Gross volume of water which can be stored in the Tank/storage structures.

Capacity specification of Madurai Tanks:

- Madakulam Tank**(Thirupparankundram Village, Madurai South Block) is the Largest Tank in this District, having Maximum Capacity of $166.90 \times 10^6 \text{m}^3$ serving Agricultural land of **1043.30ha.** (ha=hectare)
- Also there exists a many small tanks of magnitude less than 1MCM.
- Cumulative MCM of 1338 Tanks= $2143.48 \times 10^6 \text{m}^3$
- 1MCM=1Million Cubic Meter(10^6m^3)

Important crops:

- Paddy, Millets, Pulses, Seeds, Cotton, Sugarcane (in Madurai Sedapatti Block- Vaigai river Basin).

Application of analysis:

- 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 Maintanace 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.



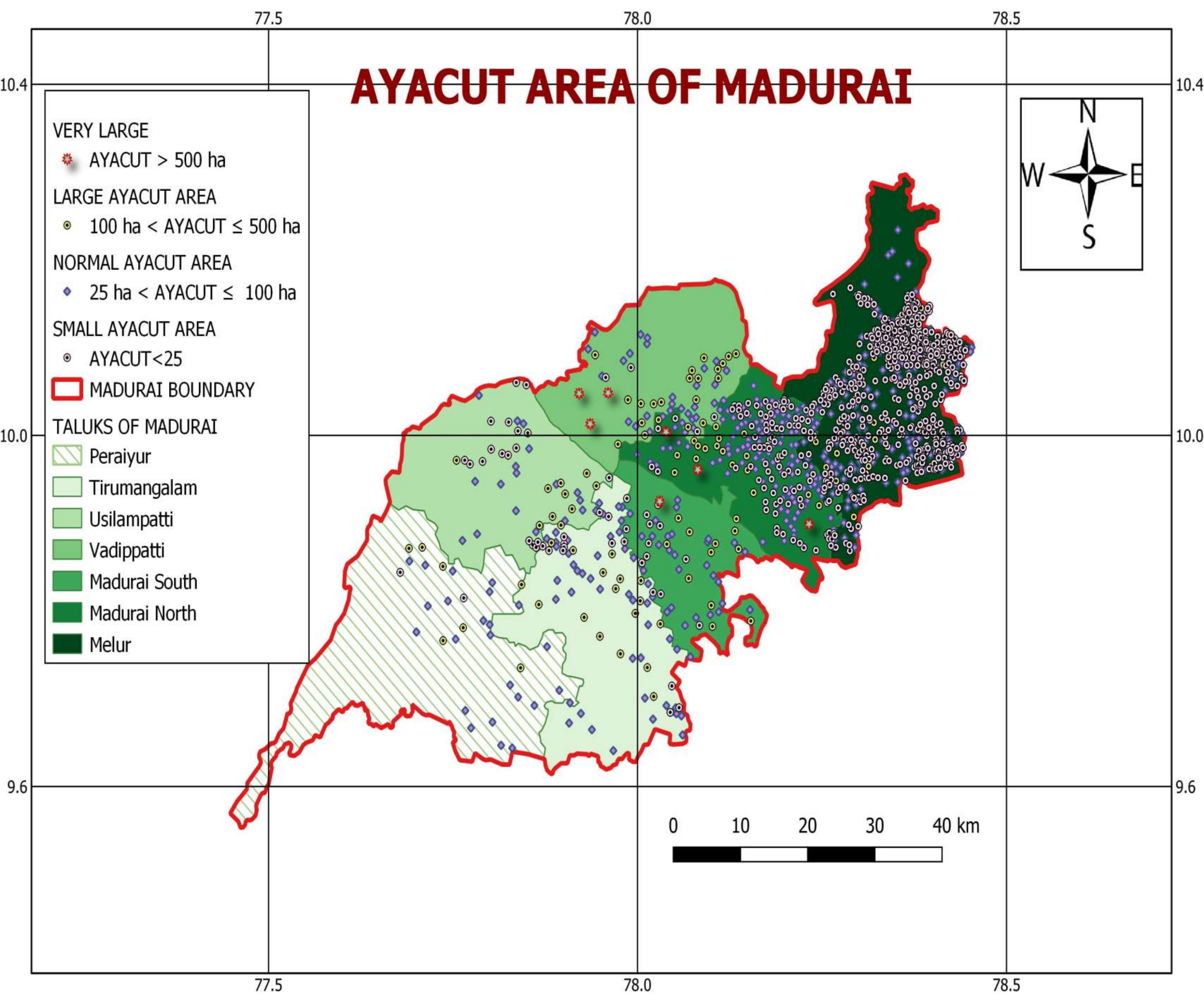
Team Name: HYDRO VECTOR

Topic: Maximum capacity of Irrigational Tanks.

Team lead: Akashkannan K

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Map description and analysis

Ayacut:
•The area served by the Tanks for the irrigational purposes.

Ayacut specification of Madurai Tanks:
•Madurai Tanks has a cumulative ayacut of almost **52197.21ha**(ha=hectare), spreading over **669 villages** namely Elumalai, Mellapuram ,Perungamanallur, Kallappanpatty, Poosalapuram, Sembarani, Kuppalnatham, Sedapatti etc...,
•MADAKULAM TANK serving largest ayacut area of about **1043.30ha** to its neighbouring villages with a capacity of $166.90 \times 10^6 \text{m}^3$, comes under the Sub basin of GridhamaalNadhi,basin of Gundar.
•Also there exists a small ayacut served by tank of magnitude less than 1ha like CHINNAKULAM TANK.

Important crops:
Area under cultivation: 150704 ha
Paddy, Cholan(Maize) Cumbu(Millet), Sugarcane, Groundnut, Banana, Cotton, Jasmine.

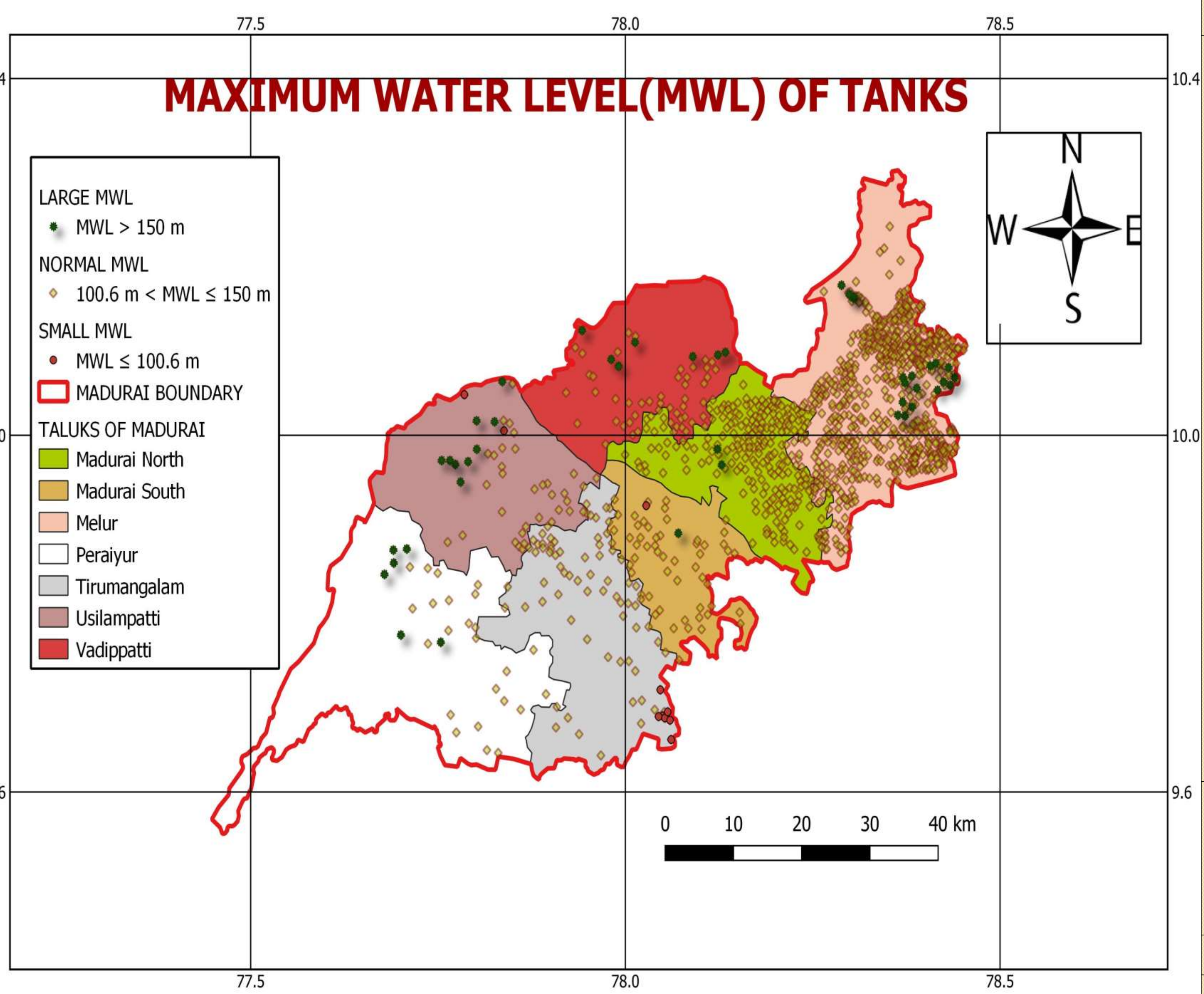
Application of Analysis:
•Using these data, Government can allocate relief fund for farmers whose who have lost their grown crops in their own field due to Natural calamities like**CYCLONES, FLOODS, HEAVY RAINS** etc...,
•These data directly contribute the region of Natural wellness meant for **potential & productive agricultural areas**.
•Gives a clear vision to **protecting** those particular areas with immense beneficiary data.



Team Name: HYDRO VECTOR
Topic: Ayacut area of Madurai.
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Map description and analysis

Maximum Water Level (MWL):


- Water level that is attained during the passage of the design flood.
- It depends upon the specified initial reservoir level and the spillway gate operation rule.(also called sometimes as the HIGHEST RESERVOIR LEVEL or the HIGHEST FLOOD LEVEL).
- Cumulative MWL of 1338 Tanks=183307.57m (m-meter)

MWL specification of Madurai Tanks:

- **Veppankulam Tank** has the highest Maximum Water Level (MWL) of **497.41m**, located in the Madurai North Taluk- Kulamagalam Village comes under the Sub Basin of Sathaiyar , Basin –Vaigai
- Also there exists a Tank possessing smallest MWL **less than 1m** like**Chandrakulam Tank**, located in the Thirumangalam Taluk- Kallikudi Block comes under the Sub-Basin of Therkar,Basin- Gundar.

Application of Analysis:

- 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** (Desilting process)



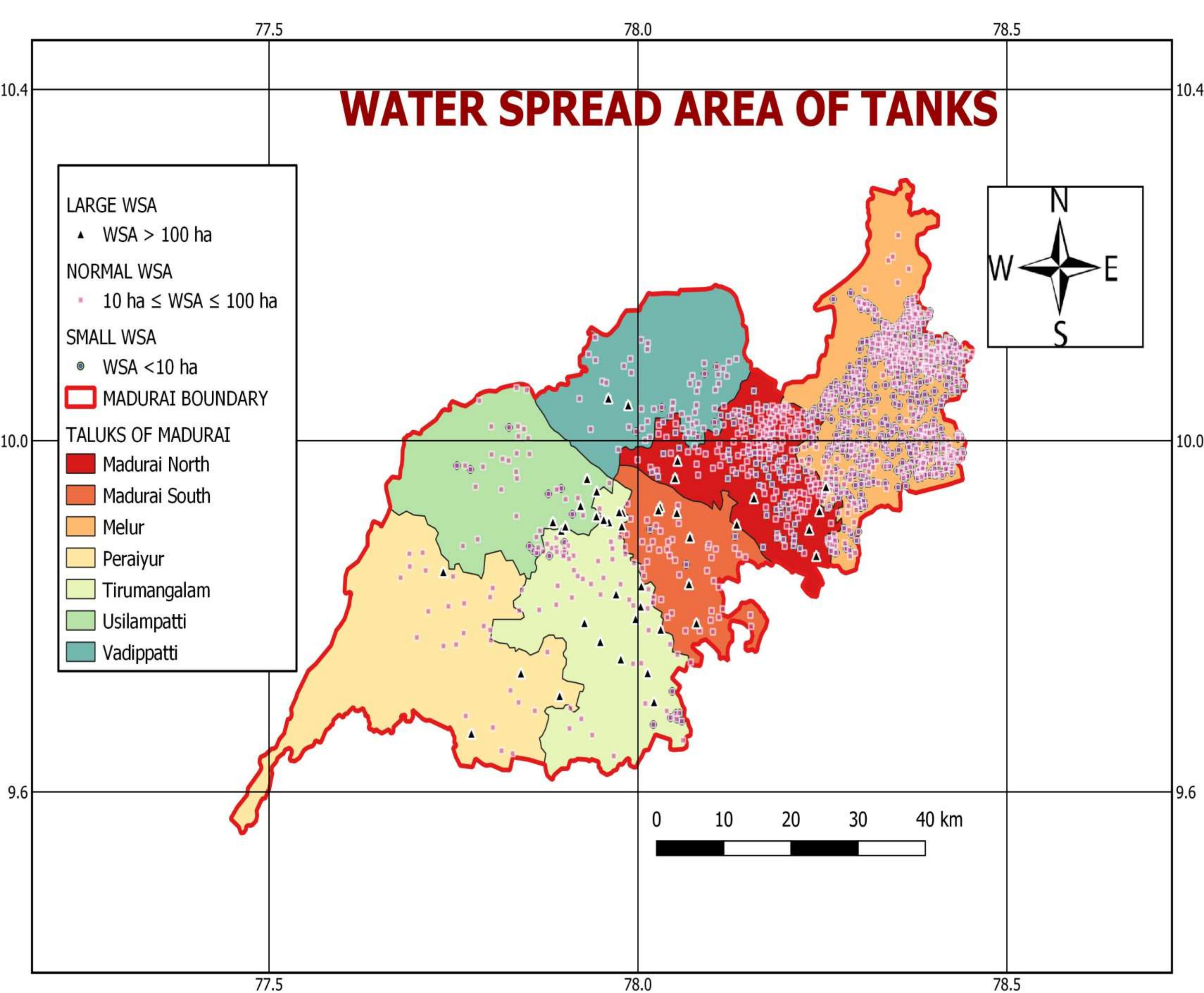
Team Name: HYDRO VECTOR


Topic: Maximum Water Level (MWL) of Tanks.

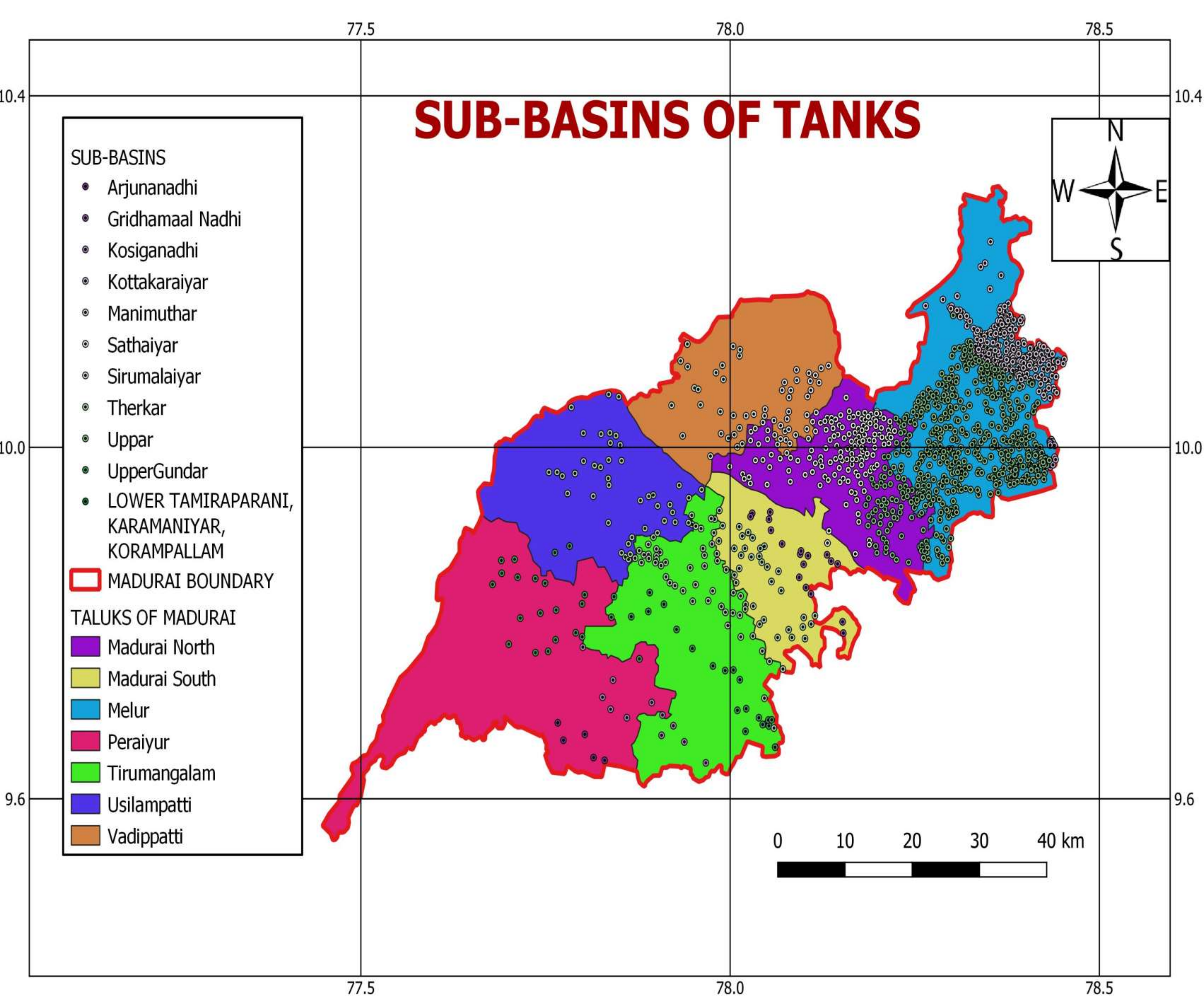
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Map description and analysis	
<p><u>Water Spread Area:</u></p> <ul style="list-style-type: none">•Water Spread Area (WSA) will have the meaning of area covered by water i.e., land of Tank occupied by water (submerged area)➤Cumulative WSA of 1338 Tanks= 28395.33ha (ha=hectare)	
<p><u>WSA specification of Madurai Tanks:</u></p> <ul style="list-style-type: none">•Valandur Tank having the largest value of Water Spread Area of 1014.0ha, located in the Valandur Village-Usilampatti Taluk.•Also there exists a Tanks having WSA less than 1ha like Veeraputhukulam(Katchirayanpatti Village- Melur Taluk), Somakulam(Maruthankudi Village- Thirumangalam Taluk) etc.,	
<p><u>Application of Analysis:</u></p> <ul style="list-style-type: none">•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.•To monitor/detect any encroachment in these areas.	
	Team Name: HYDRO VECTOR
	Topic: Water spread area of Tanks.
	Team lead: Akashkannan K
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Map description and analysis

Sub-Basin:
•**Sub-Basin** is a structural geologic feature where a larger basin is divided into a series of smaller basins with intervening intrabasinal highs.

Sub-Basins of Madurai Tank:
□ There are **13 Sub-Basins** in the Madurai district. namely, (With number of tanks under these Sub-Basins)
Arjunanadhi-5, Gridhamaal Nadhi-24, Kosiganadhi-11, Kottakaraiyar-31, Manimuthar-330, Sathaiyar-187, Therkar-137, Uppar-540, UpperGundar-44, Lower Tamiraparani-5, Karamaniyar-1, Korampallam-1, Sirumalaiyar-22

Basins of Madurai:
□ There are almost **7 Basins** in Madurai which in turn converted into Sub-Basins as above. They are mentioned below with number of tanks fall under this Basins too.
➤Pambar Kottakaraiyar-363, Vaippar-16, Vaigai-748, Nambiyar-1, Kallar-1, Gundar-204, Tamiraparani-5

Application of Analysis:
•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.



Team Name: HYDRO VECTOR
Topic: Sub-basins of Tanks.
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