

River Musi as a Living Heritage

Sustainable Management of River Musi using Scientific and Digital Technologies

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River Musi as a Living Heritage

Musi River is known as one of the perennial Rivers of Telangana State and it also have mythological significance in Purana's. The Muchukunda river i.e. Musi river is a tributary of Krishna River in the Deccan Plateau region of Telangana state in India. River Musi originates in the Anantagiri Hills in Vikrabad and traverses through Hyderabad city before joining Krishna River at Vadapally in Nalgonda district. The Musi River basin extends over a geographical area of about 11,270 sq. km and the length of the Musi River basin is 240 Kms. The basin is bounded by 170° 58' N to 160° 38' N latitude and 770° 46'E to 790° 48'E longitude. (Gopal, et al., September 19, 2017).

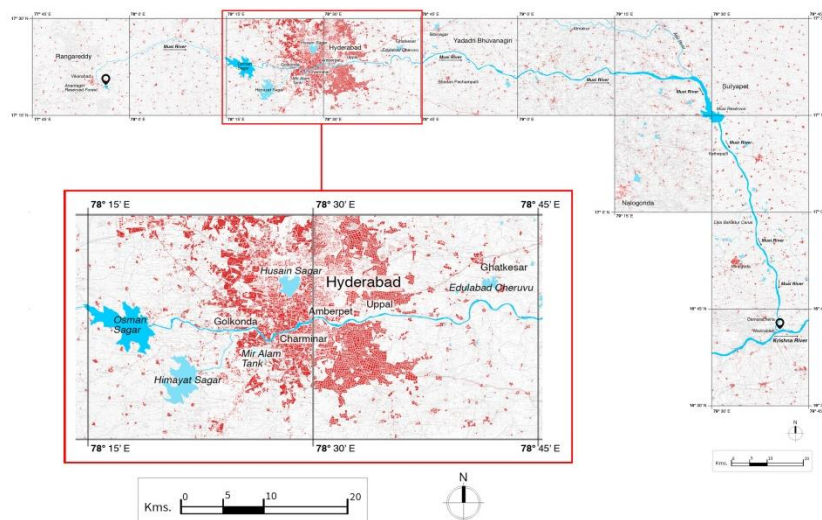


Fig. 1. Topography map of River Musi Basin and its Settlements © Vedkumar M.

The River Musi divides Hyderabad city into two halves with the Old City settlements along the southern bank of the river. Hyderabad is fourth largest city in India and capital of Telangana state with a population of 6.73 million as of year 2019. The physiography of Hyderabad is dominated by hills, monuments, tanks with a rich and varied heritage. The entire course of the river has been encroached and the water has been turned into dark sludge owing to continuous disposal of

¹ Footnotes- Geographical Information Systems (GIS)

² Footnotes- Geomorphology Based Hydrological Model (GBHM)

untreated waste into the river. Recently commissioned Rehabilitation and Strengthening of Sewerage System in Old City project south of River Musi in Zone I and Zone II is treating 94.01 MLD³ out of the projected outflow of 482.49 MLD³. The river can be classified into 3 distinctive geographical sections i.e. Area upstream, Area within and Area downstream of HMDA.

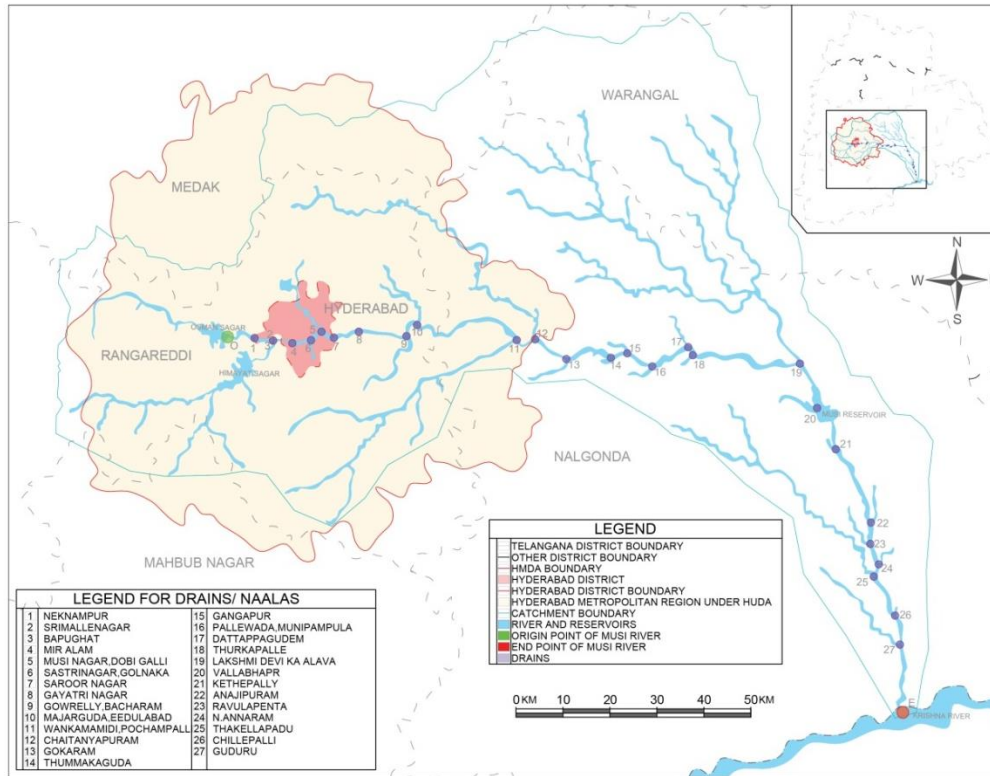


Fig. 2. Drains and Naalas Merging in River Musi Basin © Vedkumar M.

Water has always been a central human concern. Being located in an undulating topography of the Deccan Plateau of the Indian subcontinent, Hyderabad city and its environs were blessed with a number of natural and man-made water bodies locally known as cheruvus⁴, kuntas⁵ etc. These water bodies acted as water storage reservoirs for irrigation, drinking, and groundwater recharge, and have been an inalienable part of the urban ecology of the city. The landscape of the city is interspersed with a string of lakes and water bodies, one linked to the other by streams and canals that culminate in the River Musi, giving it a fine natural drainage system. But in the name of development and modernization these water bodies have been put under severe strain. The sprawling Hussain Sagar has been reduced considerably due to government and private encroachments. River Musi receives large quantity of untreated sewage from the city of Hyderabad through industrial and domestic disposal, sometimes medical wastage also dumped in the River. It is because of rapid and uncontrolled urbanization. Due to water demand increased day by day in and around the greater Hyderabad, now drinking water inflows from Krishna, Manjeera and Godavari through the water pipelines to Hyderabad city and wastewater release the city is disposed into the River Musi.

³ Footnotes- MLD-Million litres per day

⁴ Footnotes- Cheruvus-Fresh water Lake

⁵ Footnotes- Kuntas- A pond

Due to these reasons water smells objectionable and is deemed unfit for drinking. It became the sixth most polluted river in India declared by the CPCB⁶, India.

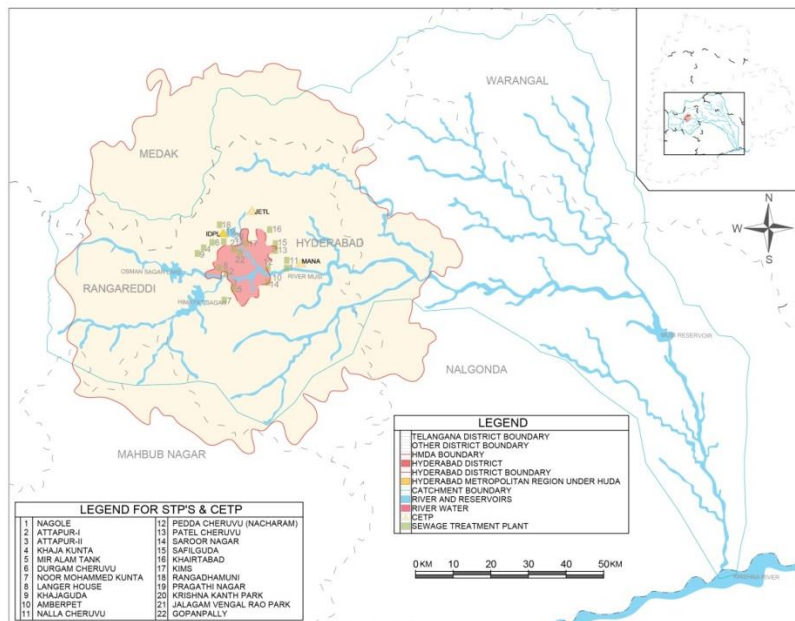


Fig. 3. STP's & CETP's Merging in River Musi Basin © Vedkumar M.

The lens of Musi riverscape highlights the need to bring the ecological and social aspects of sustainability at the centre of the planning process. River Musi needs to be examined along the disciplinary lines of science, engineering, governance, and management. The use of Digital Technology for overall sustainable development and maintenance of River Musi should be promoted.

Unfortunately, the high level of development in the field of various technologies is not matched by the ability and willingness to properly utilize and apply them. While there has been significant progress in this regard, much is lacking. This is the case specifically for development-related projects. The study of Land-use data, Hydrodynamic monitoring, Hydro-geophysical surveys, water chemistry data will help in providing a conceptual development model. Development of efficient and useful GISs will help the society and the government at all levels right from the inception level to the implementation level and assisting in the critical aspects of proper feedback and monitoring. For regional-scale GBHM acts as a powerful tool and can be used to analyse the river basin by utilizing the geomorphological properties data for each catchment and hill slope hydrological processes. In this paper, fundamental concept of the proposed water management modelling of the River Musi and overview of hydrological model using GBHM will be discussed.

Furthermore, various spatial data such as land-use layers and hydrological layers will also be developed in this study by conducting latest GIS technology. Proper use of technology at all levels can help solve many issues much before they arise and save a lot of precious time. The use of satellite images/ technology needs to be increased even more and this needs to percolate deeper into the planning as well as implementation and monitoring process.

⁶ Footnotes- Central Pollution Control Board (CPCB)

References

- Musi Conservation Study Pilot Project (MCS-PP) [Report]. ... (2017) Hydrological Modeling of Musi River Basin, India and Sensitive Parameterization of Streamflow Using SWAT CUP [Journal] // Journal of Hydrogeology & Hydrologic Engineering.,pp. 1-2.
- Vedkumar. M, (2021), River Musi as Intertwined with Urban Planning and Sustainable Development of Hyderabad.,pp. 1-2, 131-136.
- Gopal Naik M., and Srinivas G., (2017) Hydrological Modeling of Musi River Basin, India and Sensitive Parameterization Streamflow Using SWAT CUP [Journal] // Journal of Hydrogeology & Hydrologic Engineering.,pp. 1-2.
- Wintgens. T., Nättorp. A., Elango. L., Asolekar. S. (2015) Natural Water Treatment Systems for Safe and Sustainable Water Supply in the Indian Context: Saph Pani, (pp.177-190) DOI:
<https://www.researchgate.net/publication/283579388>