

Water Reclamation and Reuse in Asia's Largest Sewage Treatment Plant

Authors : Naveen Porika, Snigdho Majumdar, Niraj Sethi

Abstract : Water, food and energy securities are emerging as increasingly important and vital issues for India and the world. Hyderabad urban agglomeration (HUA), the capital city of Andhra Pradesh State in India, is the sixth largest city has a population of about 8.2 million. The Musi River, which is a tributary of Krishna river flows from west to east right through the heart of Hyderabad, about 80% of the water used by people is released back as sewage, which flows back into Musi every day with detrimental effects on the environment and people downstream of the city. The average daily sewage generated in Hyderabad city is 950 MLD, however, treatment capacity exists only for 541 Million Liters per Day (MLD) but only 407 MLD of sewage is treated. As a result, 543 MLD of sewage daily flows into Musi river. Hyderabad's current estimated water demand stands at 320 Million Gallons per Day (MGD). However, its installed capacity is merely 270 MGD; by 2020 estimated demand will grow to 400 MGD. There is huge gap between current supply and demand, and this is likely to widen by 2021. Developing new fresh water sources is a challenge for Hyderabad, as the fresh water sources are few and far from the City (about 150-200 km) and requires excessive pumping. The constraints presented above make the conventional alternatives for supply augmentation unsustainable and unattractive. One such dependable and captive source of easily available water is the treated sewage. With proper treatment, water of desired quality can be recovered from the waste water (sewage) for recycle and reuse. Hyderabad Amberpet sewage treatment of capacity 339 MLD is Asia's largest sewage treatment plant. Tertiary sewage treatment Standard basic engineering modules of 30 MLD, 60 MLD, 120MLD & 180 MLD for sewage treatment plants has been developed which are utilized for developing Sewage Reclamation & Reuse model in Asia's largest sewage treatment plant. This paper will focus on Hyderabad Water Supply & Demand, Sewage Generation & Treatment, Technical aspects of Tertiary Sewage Treatment and Utilization of developed standard modules for reclamation & reuse of treated sewage to overcome the deficit of 130 MGD as projected by 2021.

Keywords : water reclamation, reuse, Andhra Pradesh, hyderabad, musu river, sewage, demand and supply, recycle, Amberpet, 339 MLD, engineering modules, tertiary treatment

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