Managing Seasonal Sewer Flows with a Plan Based on Averages

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Abstract. Most long-term plans that have been developed for sanitary sewer service, including collection, treatment, and disposal, are based on average daily flow projections for the various types of customers served by this infrastructure. Additionally, most local, state, and federal regulations and guidelines are based on an average daily flow projection for various types of wastewater generators, as is the case in the State of North Carolina. There are a number of cases, however, where the actual flows experienced do not follow the prescriptive rates stipulated in published texts and guidance documents. Although the "law of averages" holds true in the end, and volumetrically, average daily flow limits in permits can be maintained, seasonal peak flows affecting tourist-based infrastructure, such as at the beaches or mountains of North Carolina, can present real challenges in managing and operating sewer infrastructure. Such is the case for The Town of Surf City, North Carolina. Located on the coast in Pender County, North Carolina, approximately half of the Town's land mass is situated on Topsail Island. During the summer tourism season, much more than half of the Town's sewer flow is generated by the island-portion of the Town, which sees exponential flow increases as vacationers and tourist flock to the beaches during warmer weather. In the "off seasons", however, the proportionate flows between the island and the mainland portions of the Town become much more balanced. This paper describes the manner in which the Town of Surf City has managed seasonality and growth, and the impacts both have to the sewer collection system and wastewater treatment system. Also discussed is how a water balance may be developed for the existing system and coupled with the plans for expanding and improving upon the existing system infrastructure to accommodate continued growth with seasonality in the future.