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Master Thesis Defense**

Entitled

*ENVIRONMENTAL ASSESSMENT OF THE IMPACT OF LAND-BASED DISCHARGES ON MARINE WATER
AND SEDIMENT QUALITY IN DUBAI, UAE*

by

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4:30 pm

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Virtual through Microsoft Teams

https://teams.microsoft.com/l/meetup-join/19%3ameeting_Nzg3Y2YxNjktZTcxYy00OWU4LTg0ZTgtNTQxYjgxOGMyZjE4%40thread.v2/0?content=%7b%22id%22%3a%2297a92b04-4c87-4341-9b08-d8051ef8dce2%22%2c%22oid%22%3a%22b3f605f7-f960-489b-8010-c6494b79f013%22%7d

Abstract

The current seawater and Creek – Canal waterway in the Emirate of Dubai, UAE are under tremendous pressure because of continuous coastal developments and urban wastewater discharges from land-based sources. Therefore, the impact of land-based discharges on marine water and sediment quality in the Emirate requires a thorough assessment. The main objective of this study is to assess the impacts of effluent discharges on the quality of water and sediment in the open sea and Dubai Creek. The land-based sources include the power and desalination plants, industrial sector, sewage treatment plant, and stormwater runoff. To achieve the stated objective, relevant data on effluents quality and quantity, water and sediment quality for seawater and Creek were collected from Dubai Municipality from 2017 to 2019. Collected data were utilized to assess effluent, marine water, and sediment quality in the Emirate. Variations of the parameters' values were coupled with potential contamination sources, and statistical analysis was conducted to investigate possible correlation(s) between different water and sediment quality parameters. The effluent discharges, water, and sediment quality data were evaluated against the environmental quality objective limits. Additionally, an assessment of marine water and sediment quality indices was conducted, which includes observation of temporal and spatial trends of the water and sediment quality indices. The study concluded that there is some deterioration in marine water and sediment quality parameters in sites exposed to discharges from desalination plants on the Dubai coast and from the discharge of treated sewage effluent (TSE) in Dubai Creek, in addition to polluted stormwater discharged in both the Dubai coast and Creek. The discharge of brine has locally increased the temperature and salinity of the marine water in Dubai Coast, while the discharged TSE has increased the nutrients and heavy metals in the water and sediment of Dubai Creek, and the polluted stormwater discharge has increased the microbial contamination in the open sea and Creek. The main recommendation is to control urban wastewater discharges and adopt best practices relevant to the sustainable management of water resources and the marine environment.

Keywords: water quality, sediment quality, effluent discharges, environmental assessment, wastewater.