Oxygen Uptake Rate in a Free Surface Flow

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Abstract

The occurrence of anaerobic conditions is inevitable in sewers, these conditions lead to hydrogen sulfide formation which is directly linked to the corrosion of the collector concrete. Sewer pipes subject to corrosion require rehabilitation and permanent assessment of risk areas. Oxygen is considered an ideal presence to keep the occurrence of hydrogen sulfide under control. The introduction of air prevents the formation of an anaerobic environment and certain procedures have been used to control the production of sulfides in sewer networks. Surface aeration can introduce a significant amount of oxygen into the sewer in pipes with steep slopes but main collectors usually, do not have significant slopes. To estimate the re-aeration coefficient, empirical relationships were used based on easily measurable flow quantities, with very different results.