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Effectiveness of Retention Ponds for Sustainable Urban Flood Mitigation Across A Range of Storm Depths in northern Tehran, Iran

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Full Title:	Effectiveness of Retention Ponds for Sustainable Urban Flood Mitigation Across A Range of Storm Depths in northern Tehran, Iran
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Abstract:	Although there has been a growing interest in application of stormwater best management practices, many developing countries still rely solely on traditional practices such as channels for urban flood management. The city of Tehran in Iran is an example. Here, the effectiveness of hypothetical retention ponds for flood mitigation and removal of total suspended solids (TSS) was evaluated in five design storm depths in Darakeh catchment in northern Tehran. The key case study findings were: (i) a large pond is more efficient than a series of small ponds for both flood mitigation and TSS removal; (ii) channel enlargement is the most cost-effective alternative in all the five storms, if only flood mitigation is desired (traditional flood management approach); however, if TSS removal is considered along (more sustainable approach), retention pond is the most cost-effective alternative for all the storms; and (iii) retention ponds more effectively reduce both peak flow and TSS in smaller storm depths.
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