Stormwater Detention for Urban Water Management
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Introduction and Statement of the Problem
Sustainable water management in the urban centers is crucial in collecting the excess water and using it for other purposes. Surface runoff causes water erosion, pollution and urban flooding which can cause property damage. In order to prevent this, a stormwater drainage network which discharges water in a detention basin can be constructed having in mind the economic cost and sustainability of the process.

Examples of urban runoff, stormwater detention basin and the drainage network

Stormwater Detention Basin

Drainage Network

Urban Runoff causing flooding

Processes involved in design

SWMM software and Google Earth pro were the main softwares used in the design process. Properties of the study area include conduits, subcatchments and junctions.

<table>
<thead>
<tr>
<th>Subcatchments</th>
<th>Area (m²)</th>
<th>Area (ha)</th>
<th>Width (m)</th>
<th>Slope (%)</th>
<th>Impervious %</th>
<th>Impervious area (ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>S67</td>
<td>10400</td>
<td>1.04</td>
<td>0.76</td>
<td>90</td>
<td>0.87</td>
<td>0.87</td>
</tr>
<tr>
<td>S68</td>
<td>12500</td>
<td>1.25</td>
<td>1.98</td>
<td>90</td>
<td>1.10</td>
<td>1.09</td>
</tr>
<tr>
<td>S69</td>
<td>32100</td>
<td>3.21</td>
<td>2.61</td>
<td>90</td>
<td>2.67</td>
<td>2.66</td>
</tr>
<tr>
<td>S70</td>
<td>98,79</td>
<td>0.99</td>
<td>4.48</td>
<td>90</td>
<td>4.50</td>
<td>4.49</td>
</tr>
</tbody>
</table>

Cost estimation determines project risk and to determine whether the benefits balance the expected cost.

Sustainability and cost
Sustainable urban drainage system is used to deal with surface runoff locally through collection, storage and cleaning. Green roof, water harvesting systems and infiltration basins are among uses of urban drainage systems. Cost estimation determines project risk and to determine whether the benefits balance the expected cost.

- Stormwater Detention Basin: [https://www.youtube.com/watch?v=wdcXmerZWDc&ab_channel=PracticalEngineering](https://www.youtube.com/watch?v=wdcXmerZWDc&ab_channel=PracticalEngineering)
- Sustainable Urban Drainage System: [https://www.youtube.com/watch?v=co6lQU2o3k&ab_channel=PracticalEngineering](https://www.youtube.com/watch?v=co6lQU2o3k&ab_channel=PracticalEngineering)