



CASE STUDY

Community Life-Cycle Analysis for Stormwater Infrastructure Costs



Photo credit: Robert Jordan, © Ole Miss Communications

Oxford Mississippi

CLASIC Case Studies showcase the variety of ways that the online tool can assist communities with stormwater project planning and decision-making.

CASE STUDY HIGHLIGHTS

- ➔ The case for the use of green stormwater infrastructure in combination with traditional gray infrastructure.

The Challenge

Communities across the U.S. are experiencing stricter and stricter stormwater ordinances to reduce peak flows off site. The needed infrastructure costs are often a big strain on the budgets of smaller communities. Research engineers from the University of Mississippi used CLASIC as a tool to make decisions about the installation of gray or green stormwater infrastructure in Oxford, Mississippi.

CLASIC Inputs

(targets, data, technologies, default adjustments, etc.)

Baseline

- One medium storage vault (0.5 million gallon capacity) that captures 100% of the impervious runoff

Scenario 1

- Seven small rain gardens (100 ft²) with diverse vegetation that capture 10% of the impervious runoff

- One small storage vault (0.1 million gallon capacity) that capture 90% of the impervious runoff

Scenario 2

- One medium rain garden (1,000 ft²) with grass vegetation, seed planted, with 2 trees that capture 10% of the impervious runoff
- One medium storage vault (0.5 million gallon capacity) that capture 80% of the impervious runoff
- Permeable pavers (17,427 ft²), no underdrain, that capture 10% of the impervious runoff

RESULTS/OUTPUTS

Cost

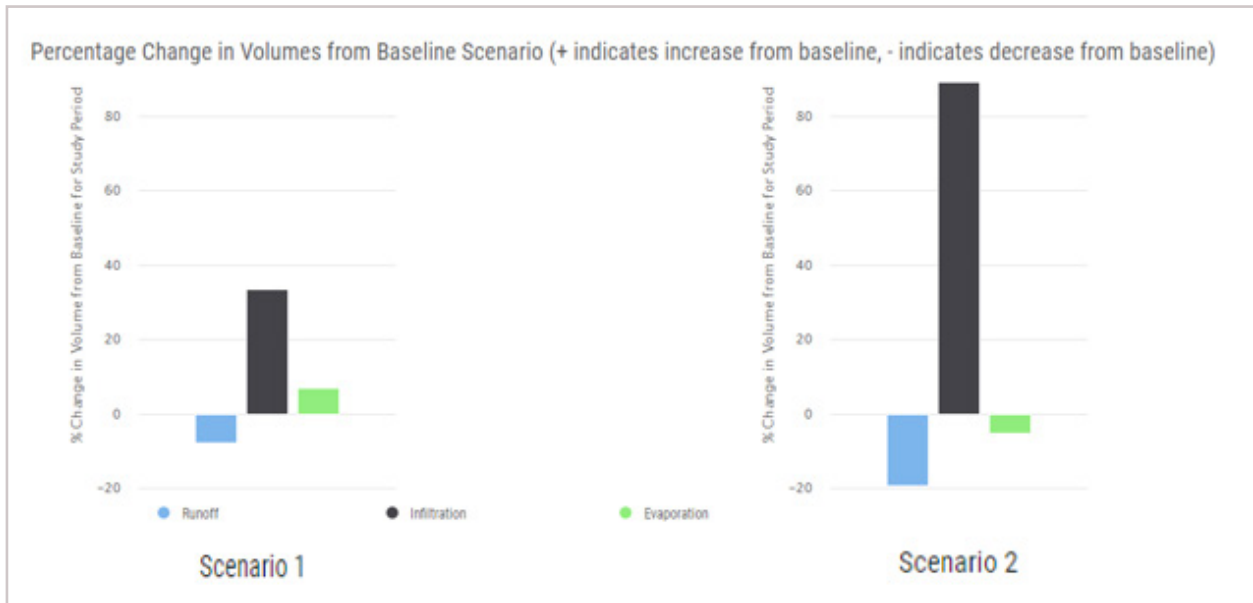
The CLASIC Tool indicates that stormwater infrastructure costs can be maintained or improved when adding green infrastructure elements, like permeable pavers and rain gardens while reducing the size of gray infrastructure elements like storage vaults.

The lowest cost scenario is Scenario 1 that includes a small storage vault and seven rain gardens. The Baseline cost of a large storage vault is only slightly less than the construction cost of Scenario 2 with a medium storage vault, a medium-size rain garden and permeable pavers. Maintenance costs for the Baseline and Scenario 2 are also comparable.



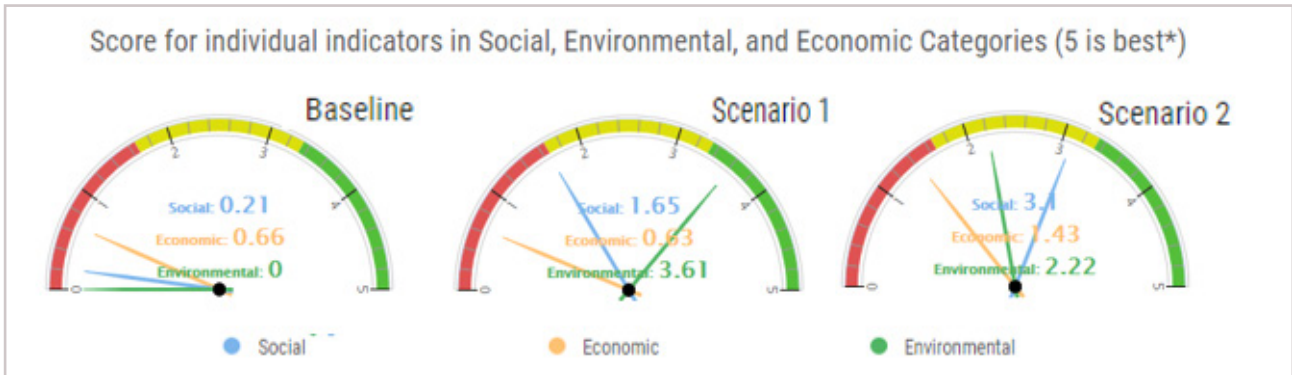
Hydrology and Water Quality

CLASIC indicates that Scenario 2, smaller storage vault, permeable pavers and rain garden, will demonstrate the largest hydrological and water quality improvements compared to the Baseline, one large storage vault.



Co-Benefits

Scenario 2 also indicates larger co-benefit scores compared to Scenario 1 and the Baseline.



SUMMARY

CLASIC results could be used to make the case for the use of green stormwater infrastructure in combination with traditional gray infrastructure to achieve comparable construction and maintenance costs, improved hydrology and water quality results and increased environmental, social and economic benefits.

This case study is based on a hypothetical project in a real-world location. The project and results do not represent any actual construction or spending in the city listed.