# LIFE-CYCLE COSTING TOOL
# SUMMARY REPORT

Florida Stormwater Association Educational Foundation (FSAEF)
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# ACKNOWLEDGEMENTS

Development of the Life-Cycle Costing Tool was a collaborative effort between the Florida Stormwater Association Educational Foundation Board of Directors, members of the Water Management Districts, the Florida Department of Environmental Protection (DEP), the Florida Stormwater Association through Association Management Professionals, and other members of the Florida Stormwater Association. We appreciate this fully volunteer effort by each individual to make this much-needed tool possible. Each of the individuals are listed below.

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# DEFINITIONS

The following are definitions of terms used in the context of this tool:

- Construction Cost – Full costs associated with construction, including design, installation, administrative, and profit.
- Economic Evaluation Duration – Period during which the life-cycle cost analysis is calculated. This period should be sufficiently long to account for all relevant costs, such as long-term maintenance and replacement costs.
- Expected Service Life – The anticipated duration that an improvement or component will be useable and meet its intended function before requiring replacement. This assumes proper maintenance occurs throughout its active use period.
- Present Worth – The present-day monetary value of all cash flow, or expenditures (i.e., negative cash flow), over a period of time based on the discount rate.
- Maintenance Cost – The cost to provide the maintenance necessary to properly operate the facility and extend components to the expected service life.
- Replacement Cost – Full cost to replace an improvement or component, including design, installation, administrative, and profit.

# 1 BACKGROUND

Determining treatment effectiveness is an important part of project planning, design, grant funding, and ultimately achieving the most efficient investment of resources. However, the Florida Stormwater Association recognized that there is no industry standard for how to go about making these determinations. While there are standards for BMP efficiencies, there is not an industry standard in Florida for determining life-cycle costing. With treatment effectiveness often being one consideration in water quality grants, the absence of an industry standard leads to unequitable comparisons between projects. The tool developed under this project is being proposed as the industry standard for computing life-cycle costs for stormwater BMPs.

When developing a life-cycle cost, certain elements need to be defined such as construction costs, land costs, O&M costs, and the useful life of the installed infrastructure components. These elements need to be considered using a consistent approach to make a fair comparison between true overall project costs. This project focused on the useful life and consistent approach aspects with the goal of developing an industry standard. It did not cover capital costing, which is far too dynamic to be considered within this tool. Capital cost estimating needs to be done outside the tool and then transferred to it.

# 2 TOOL OVERVIEW

The life-cycling costing tool was developed in Microsoft Excel in order provide transparency for calculations within it and flexibility to the user. The template contains the following six tabs:

1. Directions – This tab provides directions for data entry and general use of the tool. It provides a description on each of the inputs, including their locations.

2. Background Information – This tab is where the user provides general input on their project.

3. Life-Cycle Cost Analysis – This tab is where the life-cycle cost analysis comes together. It is where individual components of the BMP are entered. It can be copied when multiple projects are being considered inside the same spreadsheet. However, the Economic Evaluation Duration in this tab is referenced in the Background Information tab. The formula in that cell will only reference the original tab.

4. Water Quality System Database – This tab contains suggested values for expected service life of and annual operation and maintenance costs for components of the BMP. These values are based on a literature review and the combined experience of the authors of this tool.

5. Discount Rate Factors – This tab is a table that translates costs between annual, present, and future. No input is required on this tab.

6. Unit Cost Summary – This tab is a summary table of the life-cycle costs and contains information that is often required in grant-funding applications.

# 3 FUTURE CONSIDERATIONS

We recognize that the database of BMP components is not all-inclusive. The intent with the first iteration of this tool was to include commonly used components. With future applications of the tool and feedback from FSA members, we hope that user feedback and support from future FSAEF Boards will continue to expand the tool as needed. As you apply the tool, your input and suggestions for how to improve it are welcome.