

Dear MUA Executive Staff,

On behalf of Jersey City's Stormwater Treatment and Resiliency Team (JC START) we would like to thank you for your continued collaboration regarding the Development and Evaluation of Alternatives report for your Long-Term Control Plan (LTCP). The purpose of this memo is to present our team's recommendation that the Jersey City Municipal Utilities Authority (JCMUA) adopt a triple bottom line approach to evaluating each alternative included in JCMUA's Long Term Control Plan.

A **triple bottom line (TBL)** is an approach that considers social, environmental and financial aspects as part of the analysis. For example, evaluating green infrastructure (GI) using a TBL approach takes into consideration community values and benefits that wouldn't otherwise be taken into consideration.

GI benefits for the community include substantial and measurable eco-system benefits such as reduced heat island effect, improved air quality and stormwater management opportunities. Such as, public health reporting reflects the powerful impacts trees have on the quality of life and welfare of communities (ANZILOTTI, 2017). Crime reduction opportunities and increased economic success for business districts have also been documented with other cities<sup>i</sup> (McDonald, 2017) short-term positive impacts as a result of their use of GI. In addition, GI generally results in neighborhood beautification, more green spaces, and opportunities for recreation, which offer positive psychological benefits to city populations, not to mention the direct financial benefits to residents and businesses that include increased property values and reduced energy utility costs.

- 1.) In consideration of the benefits documents by other communities, we recommend that the Jersey City MUA: Use a triple bottom line approach and utilize the **GI Co-Benefits Calculator** to evaluate GI in the selection of alternatives;
- 2.) Identify community priorities and develop metrics for alternative selection through robust public participation process up until the final CSO LTCP is submitted; and
- 3.) Support Jersey City's goal of planting 30,000 trees by including enhanced tree pits in the LTCP and preserve existing trees.

We would like to highlight four examples of how a TBL approach has been used to assess GI and tools that have been used to perform TBL cost benefit analysis:

1. Public Participation and TBL: The Camden County Municipal Utility Authority (CCMUA), together with the U.S. EPA Office of Wastewater Management and representatives from the community-based Camden SMART Initiative, used a triple bottom line approach to help CCMUA identify an optimal and cost-effective mix of green and gray infrastructure to support its Combined Sewer Long-Term Control Plan. “The method allows utilities and community members to use a range of environmental, social, and economic criteria (also known as “Triple Bottom Line” criteria) and create a broad basis for comparison of infrastructure alternatives.” A community stakeholder working group was convened to identify a set of goals with community benefits at the core of the discussion.

Figure 1: Camden’s LTCP Goals



The group weighted the goals based on its priorities and then developed metrics associated with each goal. For example, enhanced public health and environment ranked the highest in terms of priorities at a 10, all of the other goals were ranked 10 and under. The metric associated with enhanced public health and environment was reduction of flooding. They were then able to use the metrics they developed to score different alternative scenarios in specific sewer sheds. (A Wet Weather Case Study of Incorporating Community Interests into CSO LTCPs, 2018)

2. Quantifying GI Benefits: The Philadelphia Water Department (PWD) took the approach of favoring green infrastructure solutions in its CSO long term control plan. In 2009, PWD commissioned a triple-bottom-line analysis that estimated the cost-effectiveness of 25 percent, 50 percent, 75 percent, and 100 percent green investment scenarios, based on the potential to improve water quality, reduce adverse health effects from urban heat islands, increase property values, and provide other benefits. The study concluded that a predominantly green infrastructure-oriented approach could achieve

CSO reduction goals at a much lower cost than an all-gray approach. Another key finding was a projected 45-year positive net return on green infrastructure investment, derived from a cost-benefit analysis of social, economic, and environmental metrics such as property values, public health expenses, recreation, habitat creation, job creation, and water quality. In accordance with the study’s findings, Philadelphia developed its [Green Cities, Green Waters](#) plan. This plan, which obtained public support and regulatory approval, commits the city to using green infrastructure to manage the first inch of rainfall from one-third of the impervious area in the CSO sewer shed — nearly 10,000 acres — over 25 years.

In light of the advantages of GI, such as the benefit of flexible and decentralized capital investment, community quality of life improvements, and comparatively lower costs of implementation, the city committed \$1.67 billion allocation for green infrastructure, \$345 million for traditional wet-weather treatment plant upgrades, and an additional \$420 million for green or gray projects to be selected on a case-by-case basis between 2011 and 2036. (Works, 2018)

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| <b>Total annual benefits (April 2019 stats for 3,394 Trees)</b> |
| <b>\$215,449 saved</b>  |
| <b>TREE BENEFITS</b>  |
| <b>Energy conserved</b>   |
| <b>3,089,102 kwh/year saved \$173,438</b>                       |
| <b>Stormwater filtered</b>                                      |
| <b>5,591,902 gal/year saved \$4,473</b>                         |
| <b>Air quality improved</b>                                     |
| <b>5,734 lbs/year saved \$32,757</b>                            |
| <b>Carbon dioxide removed</b>                                   |
| <b>1,431,034 lbs/year saved \$4,779</b>                         |
| <b>Carbon dioxide stored to date</b>                            |
| <b>7,175,017 lbs saved \$23,964</b>                             |

3. Quantifying Tree Benefits: Residents of Jersey City are already using a tool called the OpenTreeMap to estimate the co-benefits of trees. 3,394 trees have been mapped by the public using this tool which represents a very small percentage of the estimated

Jersey City Tree Canopy (see chart below from the OpenTreeMap). The last estimate in 2005 was 70,000 trees from the Tree Canopy Study Commissioned by the Jersey City Environmental Commission.

One opportunity for the JCMUA is to support JC GI sustainability and resiliency planning commitments that are already underway, like expansion of the JC tree canopy. We urge the JCMUA to consider the potential cost savings this presents for the CSO LTCP. Based on increasing the 17% tree canopy to a modest 20%, the JC Environmental Commission has targeted planting an additional 30,000 trees. This decision was supported by the Mayor and efforts are underway to synchronize this effort across various City Departments, Divisions and Agencies in order to manifest this. JCMUA can consider partnering on this effort given the potent TBL contributions and stormwater management opportunities of trees. It is also estimated that Jersey City's existing tree canopy intercepts between 95 million and 155 million gallons of stormwater each year according to the Jersey City Tree Canopy Study. Trees are especially good at capturing the first 1-2 inches of rainfall during a storm. By incorporating enhanced tree pits that maximize water detention and preserving existing trees the MUA can further the City's goals while realizing quantifiable stormwater capture.

4. Project-by-project approach to assessing the co-benefits of GI. The New Jersey Developers' Green Infrastructure Guide shows how to use the **GI Co-Benefits Calculator** that was designed to estimate costs and benefits using user-input project details. The calculator is intended to be used as a tool to calculate and compare the social, economic, and environmental benefits of green infrastructure against the costs. The green infrastructure calculator can be found on the New Jersey Developers Green Infrastructure Guide website: <https://developersguide.njfuture.org/measuring-benefits/green-infrastructure-co-benefits-calculator/>

In conclusion, by using a triple-bottom-line approach to evaluate alternatives to combined sewer outfalls the Jersey City MUA will be able to develop a LTCP that will meet the permit requirements, provide additional benefits to communities, reduce costs and assist the City of Jersey City and the JC MUA in meeting shared goal like stormwater management through increasing Jersey City's tree canopy.

## Appendix

- Benefits Of Trees and Urban Forestry Opportunities For Stormwater Management Community Co-Benefits [SOURCE- 2015 Jersey City Tree Canopy Study]  
<http://www.jcmakeitgreen.org/resource/jersey-city-tree-canopy-assessment/>
- McDonald, Rob “Funding Trees for Health: An Analysis of Finance and Policy Actions to Enable Planting Trees for Public Health.” (The Nature Conservancy, 2017)  
<https://www.nature.org/en-us/what-we-do/our-insights/perspectives/funding-trees-for-health/>
- Anzilotti, Ellie “Cities Should Think About Trees As Public Health Infrastructure” (Fast Company, 2017) <https://www.fastcompany.com/40474204/cities-should-think-about-trees-as-public-health-infrastructure>
- “Jersey Cities Tree Canopy Assessment: A Report on Current Tree Canopy and Assessment for the Future.” (Green Infrastructure Center and The Jersey City Environmental Commission, 2015) [http://www.gicinc.org/PDFs/Jersey\\_City\\_Report.pdf](http://www.gicinc.org/PDFs/Jersey_City_Report.pdf)
- Balancing Green and Gray Solutions to CSO Management (Jersey Water Works, 2018)  
<https://www.jerseywaterworks.org/resource/balancing-green-and-gray-solutions-to-cso-management/>
- A Wet Weather Case Study in Incorporating Community Interests into CSO Management (Jersey Water Works, 2017). <https://www.jerseywaterworks.org/resource/ccmua-incorporating-community-interests-effective-infrastructure-decision-making/>

CC.

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Jersey City Council

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Jersey City START

Sewage-Free Streets and Rivers campaign partners

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