

Annex 3.

Extract from Key Findings of Philadelphia Water Department Consultation on Low Impact Development (LID) elements (e.g., tree planting, permeable pavement, green roofs) v. tunnel option re: Stratus Consulting Executive Summary (Final, 8/24/2009).

**Table S.1. City-wide natural unit benefits of key CSO options: Cumulative through 2049<sup>a</sup>**

<b>Benefit categories</b>	<b>50% LID option</b>	<b>30' Tunnel option<sup>b</sup></b>
Additional creekside recreational user days	247,524,281	
Additional non-creekside recreational user days	101,738,547	
Reduction in number of heat-related fatalities	196	
<b>Annual willingness to pay (WTP) per household for water quality and aquatic habitat improvements<sup>c</sup></b>	<b>\$9.70–\$15.54</b>	<b>\$5.63–\$8.59</b>
Wetlands created or restored (acres)	193	
Green collar jobs (job years)	15,266	
Change in particulate matter (PM <sub>2.5</sub> ) due to increased trees (µg/m <sup>3</sup> )	0.01569	
Change in seasonal ozone due to increased trees (ppb)	0.04248	
Electricity savings due to cooling effect of trees (kWh)	369,739,725	
Natural gas savings due to cooling effect of trees (kBtu)	599,199,846	
Fuel used (vehicles for construction and operation and maintenance) (gallons)	493,387	1,132,409
Sulfur dioxide (SO <sub>2</sub> ) emissions (metric tons)	(1,530) <sup>d</sup>	1,452
Nitrogen oxides (NO <sub>x</sub> ) emissions (metric tons)	(38)	6,356,083
Carbon dioxide (CO <sub>2</sub> ) emissions (metric tons)	(1,091,433)	347,970
Vehicle delay from construction and maintenance (hours of delay)	346,883	796,597

**Comment [R1]:** Regarding willingness to pay, the 50% LID option attracted a 77.5% addition over the tunnel option. A similar option was not given to those consulted by Thames Water.

a. The 50% LID and 30' Tunnel options were chosen as example alternatives to illustrate the differences between green and traditional infrastructure approaches. This does not imply that a final decision has been made by PWD regarding the implementation of these options.

b. 28' Tunnel option in Delaware River Watershed.

c. WTP per household in Philadelphia, MA, including Bucks, Chester, Delaware, Montgomery, and Philadelphia counties.

d. Parentheses indicate negative values.