

**Criterion Example:**

**George V. Voinovich Bridge**

**Ohio**

**Module:** Project Development (INVEST Version 1.0)

**Scorecard:** Urban Extended

**Criterion:** [PD-08 Stormwater \(1-9 points\)](#)

**Lead Agency:** Ohio Department of Transportation (ODOT)

**Link:** [www.Innerbelt.org](http://www.Innerbelt.org)

**Sources:** To review the sources for criterion examples, including Case Studies, please refer to the Resources tab of [www.sustainablehighways.org](http://www.sustainablehighways.org).

**Description:** INVEST helped ODOT improve the sustainability of the largest project in ODOT history, the replacement of the Cleveland Innerbelt Bridge on I-90, now called the George V. Voinovich Bridge. The project has two phases – the first was construction of the westbound bridge, completed in 2013; the second phase, design and construction of the eastbound bridge, began in 2014. ODOT used the pilot version of INVEST to score the first phase to see if the project was meeting its goals. ODOT found the process so valuable, that for the second phase of the project, the agency stipulated in its request for proposals that the contractor use INVEST to demonstrate sustainability. The George V. Voinovich Bridge project provides an example of scoring and documenting the INVEST stormwater management criterion.

**Scoring Details:**

**Water Quality (3/3)**

The score for water quality requires treating pollutants from at least 80 percent of the total annual runoff volume. The table below is then used to calculate the number of points achieved. The project received the maximum of three points for this sub-criterion (see the last line of the table) as it treats greater than 90 percent of the annual runoff volume of sediments, metals, and other pollutants, and the target impervious surface area treated is greater than 125% of the impervious surface area added.

Amount of Runoff Treated [% of Annual Volume]	Target Pollutant	Target Imp. Surface Area [& of Added]-	Points
80% – 89%	Sediment	101% – 125%	0
		>125%	1
	Sediment, and Metals or Other-	101% – 125%	1
		>125%	2
90% +	Sediment	101% – 125%	1
		>125%	2
	Sediment, and Metals or Other-	101% – 125%	2
		>125%	3

These outcomes are particularly important as the project is located in a combined stormwater - sewer area. The project was designed to separate stormwater from combined sewers at feasible locations and treat the separated runoff by an ODOT approved best management practice. Using project documents, staff documented exactly how many acres of drainage area would be treated using different methods.

The total pre-project area that drained to the combined sewer was 58 acres. The project separated 20 acres of area that previously drained to the combined sewer system and rerouted these areas to manufactured systems and extended detention basins designed to best management practices from the ODOT Location & Design Manual Volume 2. The remaining 38 acres will stay connected to the combined sewer and will receive treatment at a wastewater treatment plant.

### Flow Control (3/3)

Flow Control requires managing the flow from at least 80 percent of the total runoff volume, and is based on controlling durations and attenuating peak flow magnitudes from the project site. The table below is used to calculate the number of points achieved for flow control based on the amount of runoff treated, what was treated, and the target impervious surface area treated.

ODOT designed the stormwater system to control 100 percent of peak flows for the 5, 10, and 25 year flows. Controlling peak flows from storm events reduced the probability of overflowing the system and discharging sewer directly to the Cuyahoga River. Peak flows were managed through detention and water quality treatment for all separated areas that discharge directly to the Cuyahoga River. The scoring team documented pre/post flows to area tributaries and combined and separated sewers by providing tables from the E. 9th Street, Gateway, E. 22nd, and Tremont Roadway Reports. According to this data, over 125% of the target impervious surface area is treated for flow durations. This places the project’s performance on the final line of the table below, earning the project all three points for this sub-criterion.

Amount of Runoff Managed (% of Annual Volume)	Flow Control Standard Used	Target Imp. Surface Area (% of Added)	Points
80% – 89%	Peak Rate	101% – 125%	0
		> 125%	1
	Flow Durations	101% – 125%	1
		> 125%	2
90% +	Peak Rate	101% – 125%	1
		> 125%	2
	Flow Durations	101% – 125%	2
		> 125%	3

### **Low Impact Development / Effective Best Management Practices (3/3)**

Best management practices for stormwater management mimic natural hydrology to treat pollutants and include detention ponds, wet ponds, wetlands, biofilters, and media filters. The project received the maximum of three points for this area as 100 percent of impervious surface area is treated using best management practices. All 20 acres separated from the combined sewer and 6.3 acres from East Bank & W. 3rd Street are being treated per ODOT's Location and Design Manual Volume 2. The remaining 38 acres will stay connected to the combined sewer for treatment.

**Sustainability Improvements:** Through the INVEST evaluation process, ODOT learned that this project demonstrated a strong commitment to stormwater management. They also learned as the project progressed that ground-truthing is required, because even with the extensive analysis conducted ahead of time to improve stormwater management, on the ground realities can reveal additional challenges that need to be addressed.