Supplementary Materials

Table S1. Control effectiveness of GI

	Detention storage	Sedimentation	Adsorption	Infiltration	Microbial degradation	Filtration	Plant uptake	Evapotranspiration volatilization
Runoff volume control	High	None	Low	Medium/high	None	None	Low	Low
Runoff peak time delay	Medium/high	None	Low	Low	None	Low	Low	Low
Runoff peak volume reduction	High	None	Low	Medium/high	None	Low	Low	Low
Suspended pollutant removal	Low/medium	High	Medium	Medium/high	Low	High	None	None
Oxygen-consuming pollutant removal	Low	Medium	Medium	Medium	Medium	Medium	Medium	Low
Nutrient pollutant removal	Low/medium	High	High	High	Low	High	High	None
Toxic pollutant removal	Medium	Medium/high	Medium/high	Medium/high	Low	Medium/high	Medium/high	Medium
Runoff utilization capacity	High	None	Low	Medium/high	None	None	Low	Low

Table S2. Runoff control mechanisms and effectiveness for common structural GIs

	Detention storage	Sedimentation	Adsorption	Infiltration	Microbial degradation	Filtration	Plant uptake	Evapotranspiration volatilization
Infiltration trench (IT)	Low/medium	Low/medium	Medium/high	High	Medium	Medium/high	Low	Low
Dry Pond (DP)	High	Medium/high	Medium	Low	Low/medium	Low	Low	Medium
Wet Pond (WP)	High	High	Medium	Low/medium	Medium	Low	Medium	Medium
Sunken green spaces (SGS)	Low/medium	Low	Medium	Medium	Low/medium	Medium	Medium	Low/medium
Vegetation swales (VS)	Medium	Low/medium	Medium	Medium	Low/medium	Medium	Medium	Low/medium
Green Roof (GR)	Medium/high	Low/medium	Medium	Low	Medium	Medium	Medium	Low/medium
Permeable pavement (PP)	Low/medium	Low/medium	Medium/high	High	Low/medium	Medium/high	Low	Low

Bioretention facilities (BF)	Medium	Medium	Medium	Medium	Medium/high	Medium	Medium/high	Low/medium

The system assigns numbers from 0 to 5 to represent effectiveness of unsuitable, low, low/medium, medium, medium/high, high.

$$X_{ij} = \sum_{i=1}^{m} \sum_{j=1}^{n} e_{ik} \times f_{ik}, \qquad k = 1, 2, \ldots 8$$

where X_{ij} denotes the effectiveness of the *i*th GI in controlling the *j*th target pollutant. e_{ik} denotes the function of the *k*th process or mechanism associated with the *i*th GI. These processes are presented in S.I. Table 1. A total of eight GI processes were considered. f_{ik} denotes the effectiveness of the *k*th process or mechanism in controlling the *j*th target pollutant as shown in S.I. Table 2.

Table S3. Capital, operational, and maintenance cost of structural GIs

	Construction costs	Management strategies	Maintenance costs
Infiltration trench (IT)	230~550	Regular inspection, dredging Requires infill replacement every 5–10 years	10~40
Dry Pond (DP)	70~710	Requires dredging every 5–10 years	2~15
Wet Pond (WP)	70~1150	Requires grass cuttings twice every year; Requires equipment checked every year Requires dredging and sediment cleaning every 5–10 years	6.5~12.5
Sunken green spaces (SGS)	230~300	Regular inspection; sediment cleaning; Requires replacement after 10–12 years	2~3.5
Vegetation swales (VS)	60~470	Regular cuttings; dredging Requires dredging every 10 years	4~8.2
Green Roof (GR)	1000~1300	Regular inspection and maintenance: the same as common roof	7~10
Permeable pavement (PP)	260~1800	Regular cleaning road blockages and sludge of gaps; Depreciation life of permeable asphalt is 10–15 years	2~12
Bioretention facilities (BF)	540~1200	Regular pruning, weeding, adding plants, soil; Irrigation when rainless	30-76