



## CHALLENGE

A NUMBER OF LONG-TERM, SUSTAINABLE, STORMWATER SOLUTIONS WERE NEEDED THAT ALSO IMPROVED WATER QUALITY AND REVITALIZED LOCAL NEIGHBORHOODS.

## SERVICES

- Environmental Engineering
- Water Resource Engineering
- Green + Gray Infrastructure Design
- Interagency Coordination
- Green Infrastructure Design
- Public Outreach + Strategy

## BLUEPRINT COLUMBUS: INTEGRATED SOLUTIONS

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The City of Columbus has refocused its Wet Weather Management Program to include an integrated planning approach, known as Blueprint Columbus. As an integral part of the city's updated plan, projects included within Blueprint Columbus aim to reduce the amount of infiltration and inflow (I/I) into the sanitary sewer system and the number of sanitary sewer overflows (SSOs) at designed sewer relief (DSR) points.

The Blueprint Columbus initiative outlines four key concepts to reduce I/I and SSOs, while simultaneously

treating stormwater runoff entering the Municipal Separate Storm Sewer System (MS4) system:

1. Lining sanitary sewer main and lateral lines.
2. Redirecting residential rooftop downspouts to the public right of way (ROW).
3. Voluntary sump pump redirection.
4. Green infrastructure (GI) implementation to treat additional runoff directed to sewers.

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## INTEGRATED SOLUTIONS

One project area was subject to extensive street and surface flooding. The team recommended a preferred gray and green infrastructure alternative to the city. These alternatives not only meet the Blueprint objectives for water quality, but also mitigated flooding in several areas, helping to revitalize the neighborhood. The following green infrastructure technologies were utilized:

- Bioretention cells/basins within boulevards (street islands) in the right-of-way.
- Pocket parks in select land bank parcels.
- Permeable pavement from curb to curb.
- Permeable parking areas and relief storm sewers for additional storage.

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## INNOVATIVE GIS/APPLICATION DEVELOPMENT

The ms team's innovative approach to data collection was to use the geo-referencing capability and user-friendly interface of the Collector for ArcGIS app to develop a custom app. This new app collected private property investigation data including vegetation, fences, downspouts, building outlines, rooftop drainage areas, utility meter locations, building exterior

photographs, and H&H task drainage patterns. The field data was used to create the existing condition and baseline conditions hydrologic and hydraulic model. By using the team-developed app, the city reduced data pre- and post-processing costs. Additionally, the City of Columbus used the new app on other Blueprint projects, reducing costs even further.

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## INTERAGENCY COORDINATION

One of the first lessons learned during the Blueprint Columbus process was the critical need for interagency communication. The ms team led the charge in developing a sharing-information process that all agencies can follow to share their information and

priorities during this process. This coordination was especially important in areas where the Department of Recreation and Parks and Department of Public Services were both stakeholders.

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## LESSONS LEARNED

The Blueprint Integrated Solutions Projects have been learning experiences for all involved parties. There were many valuable lessons learned throughout the project, including:

- Regional Green Stormwater Infrastructure (GSI) can be more cost effective than right-of-way GSI
- Parking studies helped understand loss of parking while selecting right-of-way GSI
- Interagency coordination early and often is critical for success
- Integration of green and gray infrastructure improvements helped provide positive outflow for GSI and mitigated flooding.