Blueprint Columbus
Clean Streams. Strong Neighborhoods.
Columbus’ Plan to Eliminate Sewer Overflows

- Blueprint Columbus is born
- Pilot projects
- Community Outreach
- Plan Development (prioritization)
Columbus’ Wet Weather Plan

• Two consent orders with Ohio EPA (SSO, CSO)
• Wet Weather Management Plan (WWMP) submitted July 1, 2005
• All gray, 40 year plan
• Since the submission of the WWMP:
  – WWTP expansion – peak capacities increased by 50% at each plant
  – CSO tunnel – 20 foot tunnel under construction to address a significant number of CSOs
  – $1B spent
The chart shows the total overflow from WWTP bypass and overflow from the largest SSO and CSO from 2007 to 2013. The total overflow (in MG) is represented by orange bars, and rainfall (in inches) is represented by blue bars.

- 2007: 3500 MG, Rainfall: 4000 in
- 2008: 3300 MG, Rainfall: 3500 in
- 2009: 2400 MG, Rainfall: 2800 in
- 2010: 1600 MG, Rainfall: 2000 in
- 2011: 4500 MG, Rainfall: 5000 in
- 2012: 900 MG, Rainfall: 1000 in
- 2013: 1150 MG, Rainfall: 1150 in

2011 is the wettest year on record.
Columbus’ Wet Weather Plan

- The remainder of the plan will focus on SSOs
- SSO tunnels will be:
  - 5 times longer
  - Far more costly
  - Achieve far less
# Gray Infrastructure from WWMP

<table>
<thead>
<tr>
<th>SSO Program (ORT and ART Tunnels)</th>
<th>CSO Program (OARS Tunnel)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SSO Volume: Captures 200 Million Gallons per year</td>
<td>CSO Volume: Captures 1.4 Billion Gallons per year</td>
</tr>
<tr>
<td>Length: 28 miles (total, for both tunnels)</td>
<td>Length: 5 miles</td>
</tr>
<tr>
<td>Diameter: 14 feet</td>
<td>Diameter: 20 feet</td>
</tr>
<tr>
<td>Cost: $2.5 Billion</td>
<td>Cost: $1 Billion spent</td>
</tr>
<tr>
<td>Cost/Gal: $12.50/Gal</td>
<td>Cost/Gal: $0.70/Gal</td>
</tr>
</tbody>
</table>
Plus Stormwater

• The WWMP did not address stormwater, only addresses SSOs and CSOs
• Columbus rivers are more impacted by stormwater than SSOs
  – 64% of the City’s Facilities Planning Area has stormwater listed as a cause of impairment (2012 OEPA Integrated Report)
A Better Way

• Address the problem, not the symptom

• Focus on private side
  – Majority of I/I is coming from private side
  – Older residential areas

• Combine I/I removal with green infrastructure
Pre-Blueprint Condition

- Directly connected roof drains and ineffective splash blocks contribute rain to the foundation drain
- The foundation drain is connected to the lateral
- Lateral may be cracked or leaking
Roof Drain Redirection and Lining

- Roof drain redirection will direct water away from the foundation drain
- Laterals and mainlines lined
Voluntary Sump Pump Program and GI

Sump pumps and lateral lining will disconnect foundation drains from the lateral and push the water to rain gardens.
Clintonville Blueprint Pilot Project

• Older neighborhood on City’s north side
• 1000 acres, 3000 houses
• Analyzing runoff from each house
• Video each lateral
• Pilot Area Technical Committee (PATC) convened
Weisheimer Road Green Infrastructure

- Utilities
- Parking
- Trees

Dominion Middle School
Colerain Elementary School

Legend:
- Rain Garden
- Bumpout
- Example Catchment Area

Bumpout Area: 0.33 acres
Bumpout Percent: 1.1%
Rain Garden Area: 0.79 acres
Rain Garden Percent: 2.6%
Example Catchment Area: 30.5 acres
Barthman Parsons Vacant Lot Pilot

• Repurposing vacant lots to address CSO and SSO
• Working closely with City’s Department of Development
• Identified locations that may provide viable options at a reasonable price
  – Preliminary estimates suggest control for stormwater as $75k/acre (controlling 1.5 to 2 inch storm)
  – Additional amenities will increase costs (playgrounds, basketball courts, etc.)
• Emphasis on variety of GI installations
South Side Settlement Heritage Park
Community Engagement

- Community Advisory Panel
- Neighborhood Engagement
- Focus groups with previous pilot areas
Community Advisory Panel

- Made up of citizens, neighborhood leaders, and activists
- Meeting quarterly
- Field trips
- Already provided good feedback and assistance
  - Prioritization
CAP Show and Tell
Roadshows/Events

- Traveling education program that utilizes visual and tangible aids
- Total Completed: 52
- Highlight Events:
  - Earth Day Celebration (167 people engaged)
  - Yay Bikes (42 people engaged)
  - Voter Registration drive (40 people engaged)
Outreach

- Distribution of material to homes and businesses
- Total of 291 local businesses engaged
- Over 34,200 post cards delivered
- Area Commissions and Civic Associations
  - Thirteen down, two to go

Baseline Surveys

- Gauges Blueprint brand and general knowledge of sewer overflow issues
- Administered in:
  - Public library branches
  - Local small businesses
  - Community centers and events
CAP Input on Priorities

Proposed Criteria for Ranking Each Area

- Number and size of overflows
- Leaky sewers having a downstream impact
- Public exposure to overflows
- Water in basement event
- Structural/Operations and Maintenance concerns
- Water Quality

Social Parameter
- Community acceptance
- Ability to implement (cleanly, efficiently)
- Neighborhood involvement

Net
Future Blueprint Areas
# Scoring Criteria

<table>
<thead>
<tr>
<th>Weight(1)</th>
<th>Category</th>
<th>Score Basis</th>
<th>0 Points</th>
<th>1 Point</th>
<th>2 Points</th>
<th>3 Points</th>
<th>4 Points</th>
<th>5 Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>40%</td>
<td>SSOs(2)</td>
<td>Number of SSO Locations</td>
<td>0 - 1</td>
<td>2 - 3</td>
<td>4 - 5</td>
<td>6 - 7</td>
<td>8 - 9</td>
<td>10+</td>
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<tr>
<td></td>
<td></td>
<td>Number of SSO Activations</td>
<td>0 - 15</td>
<td>16 - 30</td>
<td>31 - 45</td>
<td>46 - 60</td>
<td>61 - 75</td>
<td>76+</td>
</tr>
<tr>
<td>25%</td>
<td>Exposure Risk</td>
<td>SSO activations to tributary</td>
<td>0</td>
<td>1 - 5</td>
<td>6 - 10</td>
<td>11 - 15</td>
<td>16 - 20</td>
<td>21+</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SSO activations near park (500 ft.)</td>
<td>0</td>
<td>N/A</td>
<td>1 - 5</td>
<td>6 - 10</td>
<td>11 - 15</td>
<td>16+</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SSO activations near school (500 ft.)</td>
<td>0</td>
<td>1 - 5</td>
<td>6 - 10</td>
<td>11 - 15</td>
<td>16 - 20</td>
<td>21+</td>
</tr>
<tr>
<td>25%</td>
<td>WIBs</td>
<td>Number of wet weather WIBs</td>
<td>0 - 20</td>
<td>21 - 40</td>
<td>41 - 60</td>
<td>61 - 80</td>
<td>81 - 100</td>
<td>101+</td>
</tr>
<tr>
<td>10%</td>
<td>Structural/O&amp;M</td>
<td>Length of pipe with SCREAM score of 90-100</td>
<td>0 - 2,000</td>
<td>2,001 - 4,000</td>
<td>4,001 - 6,000</td>
<td>6,001 - 8,000</td>
<td>8,001 - 10,000</td>
<td>10,000+</td>
</tr>
<tr>
<td>Social Implementability</td>
<td>Used as a validation as to the next area to go to, utilizing the 7 objective criteria above as the initial criteria. This criteria will validate and finalize the ranking once community readiness is assessed.</td>
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</tbody>
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Lessons Learned

• Dialogue with the public on technical issues is challenging

• Public doesn’t want anything that’s “free” and they want to know if this solution will work

• Green infrastructure needs to be optimized, but installed in relation to parking, utilities, and existing trees

• This won’t be a one-size-fits all design process – must look house-by-house
Lessons Learned

• Stormwater goals are still undefined and TMDLs across Central Ohio vary with respect to target pollutants – City defined Level of Service will be the metric for Blueprint

• Internal coordination and understanding is critical to project success

• Strong leadership is an effective tool for generating support
Blueprint Columbus

• Columbus has made some great progress with gray infrastructure so far

• Future investments in gray will bring ever smaller benefits

• Blueprint Columbus is our proposed new approach to address current and future water quality challenges
“That’s the bold proposal contained in the city’s “Blueprint Columbus” plan and if it goes forward, Columbus will be a pioneer in a greener, cleaner way to control stormwater.”

-- Columbus Dispatch Editorial