**CSO Control Program Overview and Green Infrastructure Update**

**A Focus on Water Quality**

Jim Theiler, City of Omaha

Post-Construction Stormwater Management Workshop
March 21, 2013

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**Presentation Outline**

- CSO Program Overview
- Current Green Infrastructure Activities
- Path Forward

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**Challenges Facing Omaha**

- Meeting the increased requirements of the federal Clean Water Act
- Balancing the following needs:
  - Regulatory compliance
  - Economic affordability
  - Community acceptance

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**Omaha’s Regional Sewer System**

- **1,950 miles of sewers**
  - Eastern third combined
  - Western third separate
- **43 sq. mi combined sewer area**
  - 28,000 acres
  - 6,200 sq. blocks
- **29 CSO outfalls**
  - 10 to Papio Creek
  - 19 to Missouri River
  - 3 recently eliminated
  - 5 to be eliminated in next few years

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**Omaha’s Regional Sewer System**

- Two regional treatment plants
- 10 wholesale users
- 275 sq. mi drainage area
- 600,000 service population (approx.)
CSO Overflow Statistics
Total wet weather volume:
8.2 Billion Gallons/year
Total untreated volume:
3.5 billion Gallons/year
Missouri River = 2.8
Papio system = 0.7

Computer model estimates, typical year prior to start of CSO program, typical rainfall patterns with average annual precipitation of approx. 30". (Photo of dry weather overflow, Elm Creek)

CSO Consent Order Timeline

Program Benefits
• Reduce overflows of raw sewage to our streams; improve water quality
• Continue to minimize basement backups
• Replace aging sewer, gas, water and street infrastructure

[Photo of Leavenworth CSO 109 after rain event]

Program Benefits
• Integrate infrastructure upgrades with continued redevelopment
• Improve drainage and reduce flooding

Green Solutions (Green Infrastructure)
• Utilize green solutions to:
  • Enhance the project aesthetics
  • Reduce wet weather impact on the system
  • Reduce costs
  • Provide neighborhood benefits

PROGRAM COSTS (2009 dollars)

<table>
<thead>
<tr>
<th>Project Category</th>
<th>Program Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deep Tunnel Project **</td>
<td>$ 442,000,000</td>
</tr>
<tr>
<td>Minne Lusa Stormwater Collector Projects</td>
<td>$ 123,000,000</td>
</tr>
<tr>
<td>High Rate Treatment Projects</td>
<td>$ 126,000,000</td>
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<tr>
<td>South Interceptor Force Main Project</td>
<td>$ 77,000,000</td>
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<td>MRWWTP Improvements</td>
<td>$ 91,000,000</td>
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<td>Lift Station Projects</td>
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<tr>
<td>Storage Structure Projects</td>
<td>$ 31,000,000</td>
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<tr>
<td>Sewer Separation Projects</td>
<td>$ 614,000,000</td>
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<tr>
<td>Miscellaneous Projects</td>
<td>$ 36,000,000</td>
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<tr>
<td><strong>GREEN</strong></td>
<td>$</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>$ 1,661,000,000</td>
</tr>
</tbody>
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Estimate 2012 costs $1.96 billion
Current Green Infrastructure Activities

• Aksarben Village Neighborhood
  (Elmwood Park bioretention/storm water diversion)
  Work in the park substantially complete

CSO Green Capital Projects Status

• Saddle Creek - 55th to 64th
  (stream diversion from CSS, wetlands and detention, open channel creation) – under construction

CSO Green Capital Projects Status (cont.)

• Spring Lake Park (multi use pond, constructed wetlands and water quality basins) - 60%
  Design review completed, NET Phase 4 Grant recommended for award

CSO Green Capital Projects Status (cont.)

• Adams Park (wetlands, storage, water quality)
  Beginning final design

CSO Green Capital Projects Status (cont.)

• Fontenelle Park Improvements (lake improvements, open channel creation) – preliminary design
CSO Green Capital Projects Status (cont.)

- Forest Lawn (stream diversion from CSS, proposed lake for storage) – RFP for Design consultant to be issued soon

CSO Green Capital Projects Status (cont.)

- All capital projects in the CSO are evaluated for inclusion of Green
- Must be cost effective
  Working to achieve multiple benefits and save money for the ratepayer!!

EPA Partnerships

- Office of Water Community Partners Project
- Office of Research and Development/Region 7 Soils Study/USGS Monitoring follow up
- Urban Waters Grant, Saddlebrook Neighborhood and Benson area

Other Green Infrastructure Activities and supporting efforts

- Series of internal workshops to educate broader cross section of City Staff (this spring)
- Continue to focus on more collaborative efforts between CSO Program and Storm Water/MS4 Program

Other Green Infrastructure Activities and supporting efforts (cont.)

- Pilot demonstration projects looking at Green to support CSO
  - SE Police Precinct WERF Study pervious pavement retrofit for volume control
  - 50th and Pine firehouse pervious pavement with volume control
  - Sewer Maintenance Facility bioretention and Pave Drain installation (USGS monitoring site)

Other Green Infrastructure Activities and Supporting Efforts (cont.)

- Upgrade to City of Omaha GIS in the CSO area to better support delineation of pervious/impervious surfaces (May 2013)
- Upgrading stormwater component of City of Omaha CSO computer model – will better support watershed/green alternative modeling (late fall 2013)
- Selection of Consultant (Tetra Tech) to work with City of Omaha CSO Program Management - reevaluation of Green for the CSO Program
Path Forward

- CSO LTCP update required by permit, October 2014. Will include additional COST EFFECTIVE Green Infrastructure with 2014 update or in subsequent updates or addendums.
- City will continue to work in collaboration with NDEQ and EPA. Making our regulators our partners has lead to the success of the CSO Program.

Path Forward (cont.)

- Continue to focus efforts to educate ourselves, our stakeholders, and the community.
- Challenge engineering community to rethink stormwater management. Control water at its source.
- Develop/incorporate cost effective, maintainable standard designs, implement additional demonstrations and pilot studies.

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EXTRA SLIDES

It’s All About Money!

“We must continue to look for better ways to implement the CSO Program and prepare ourselves to meet future requirements of the CWA. We have a duty to our ratepayers and to the community to meet our water quality objectives in the least cost and most fiscally responsible manner.”
EPA Office of Research and Development/Region 7/USGS Partnership

- City reached out to EPA to form collaborative partnership
- 14 sites selected by City Staff for field investigation by ORD/USGS
- Field investigations completed in July 2012
- Draft report received by City
- Follow on activities include demonstration site with USGS monitoring

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Omaha versus National Industrial Average

CSO PROGRAM COSTS

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Paying For The Program

Financed with Bonds
Funded by Sewer Fees

National Average
Omaha