

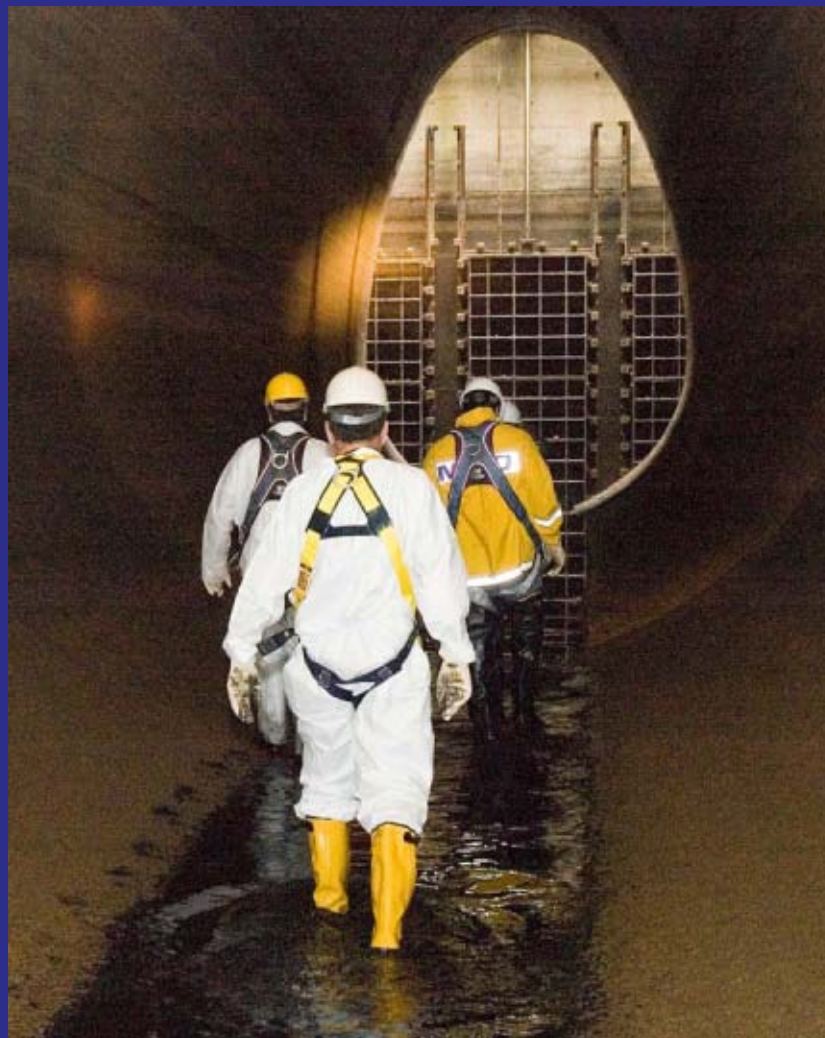
# IOAP Proposed Project Modifications

## January 24, 2012

# Objectives

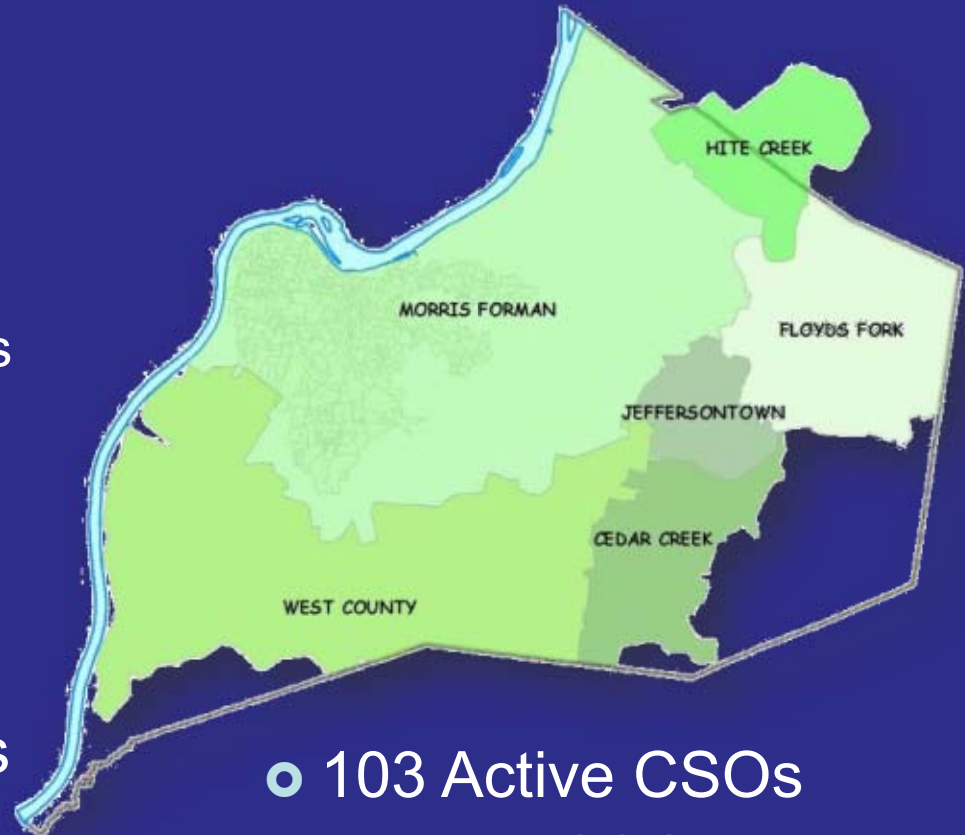
- System & Overflow Abatement Plan Overview
- Adapting through Monitoring & Recalibration
- Results – Size, Cost & Schedule
- Green Program Approach

# System & Plan Overview



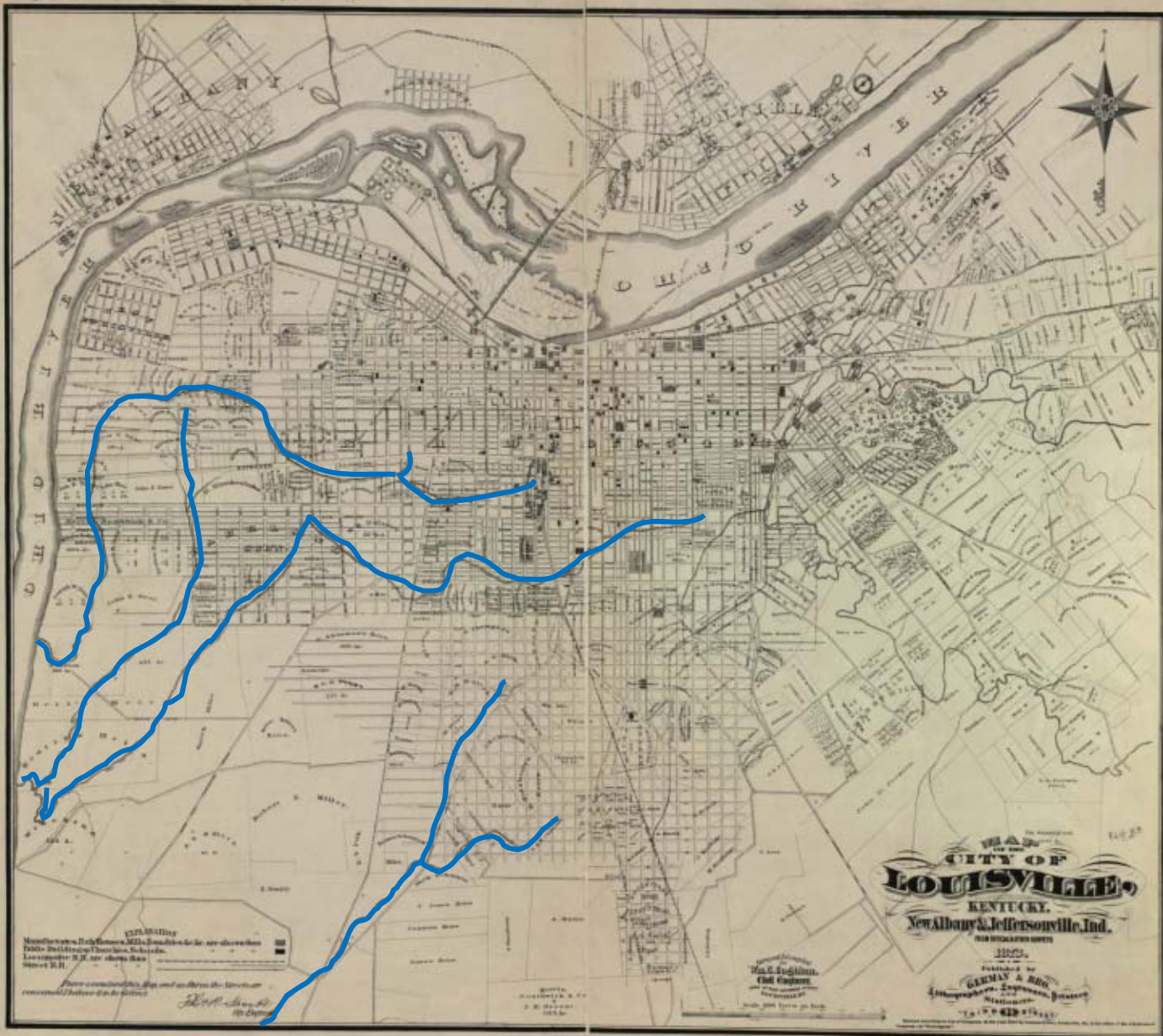
# System Overview

- 385 sq. miles
- Pop. 700,000
- Ohio River Flood Protection System
  - 16 Flood Pump Stations
  - 29 miles of Floodwall
- 6 Regional WQTCs
- 14 Small WQTCs
- 286 Pump Stations
- 3,200 miles of Sewers



- 103 Active CSOs
- 200+ SSOs





Manufactures, Public Houses, Mills, and other buildings are shown in black.  
Public Buildings, Churches, Schools, etc., are shown in white.  
Locusts, etc., are shown in green.

There are several other maps and sections of the city shown on the reverse side of this sheet.

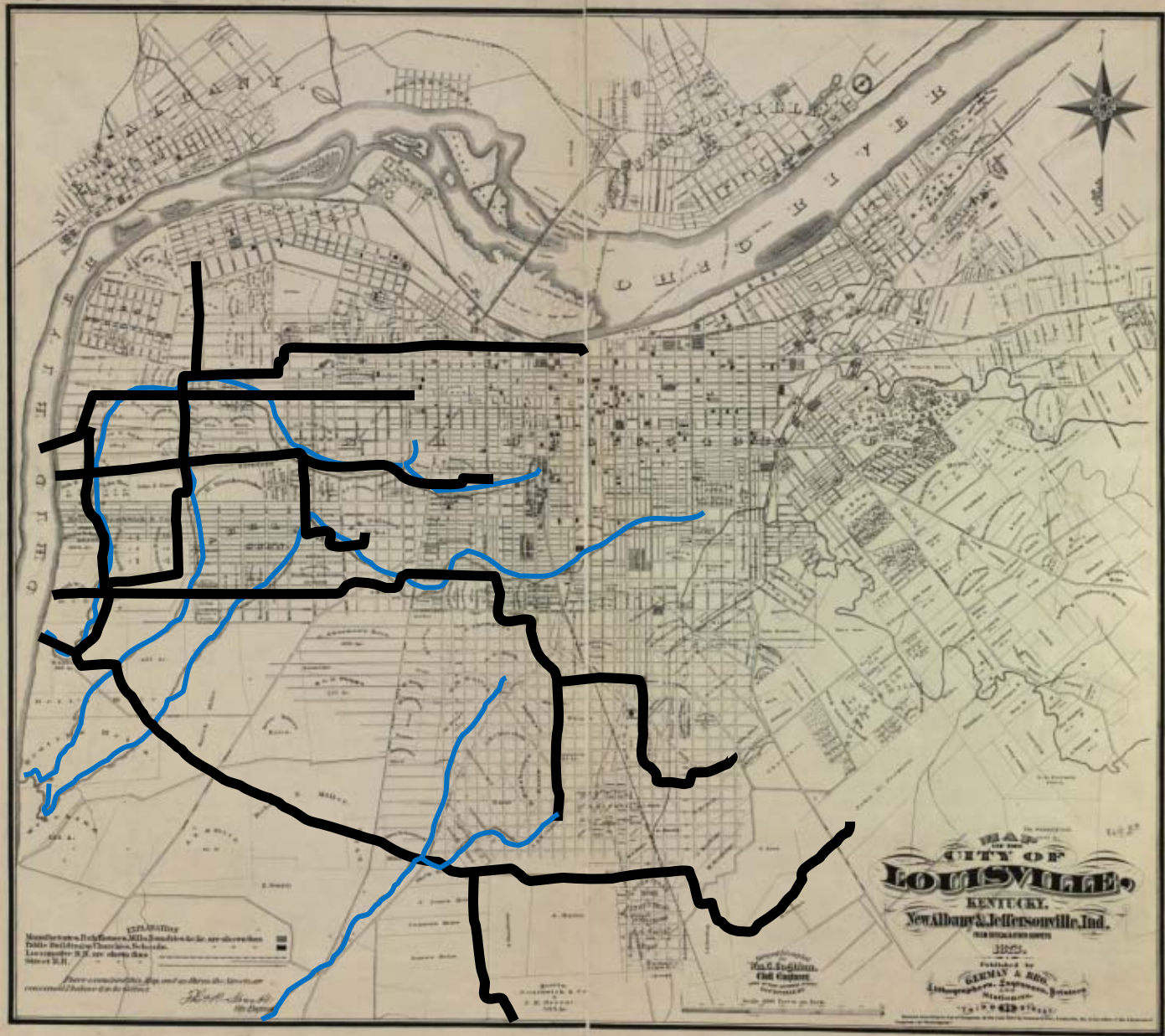
*Wm. H. Smith*  
1875

Wm. H. Smith & Co.  
212 N. 2nd St.  
Louisville, Ky.

Wm. H. Smith & Co.  
212 N. 2nd St.  
Louisville, Ky.

**CITY OF LOUISVILLE**  
KENTUCKY.  
New Albany & Jeffersonville, Ind.  
1875.

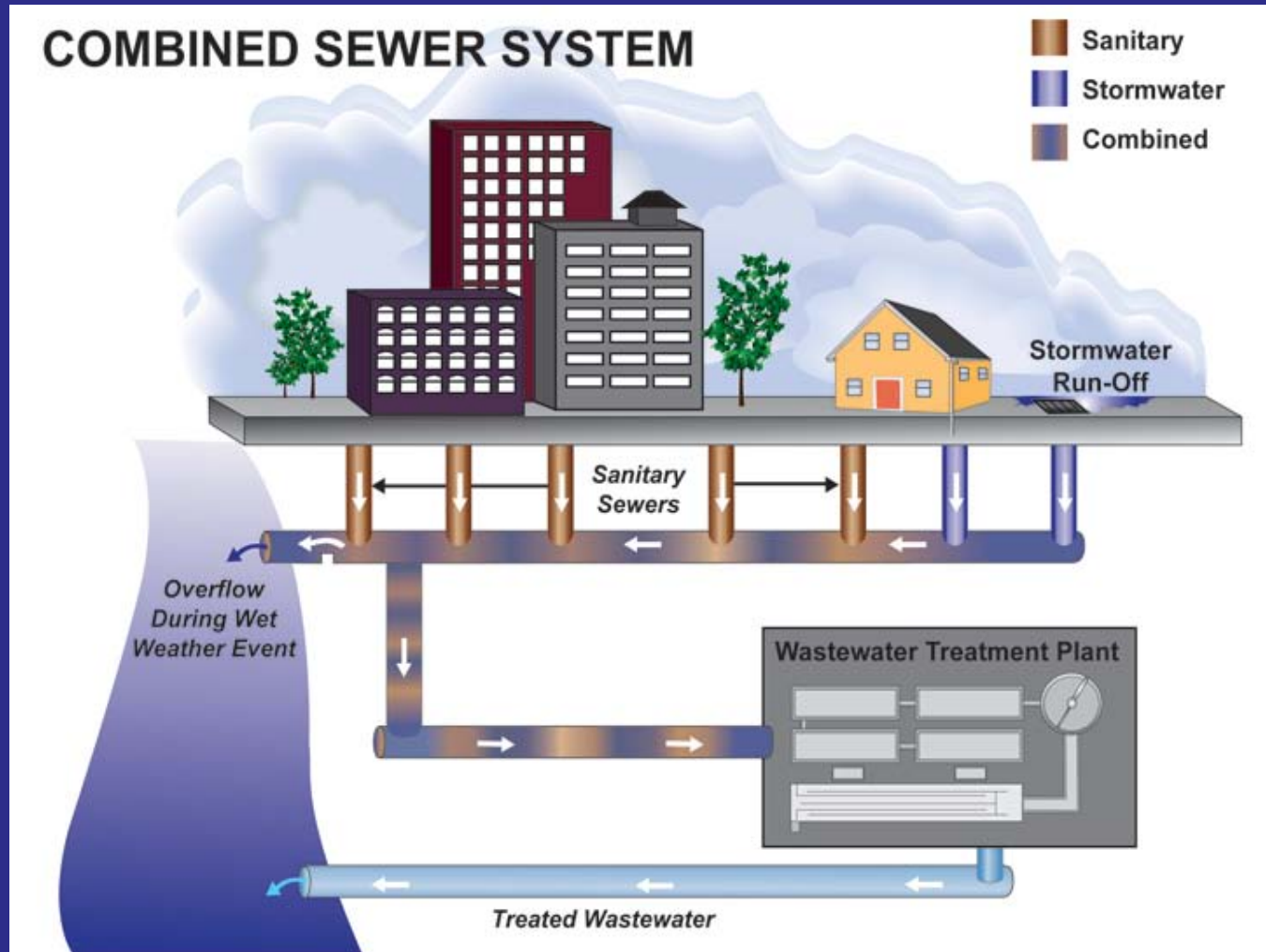
Published by  
**GENE & SON**  
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112 N. 2nd St.



SOUTHWESTERN  
OUTFALL



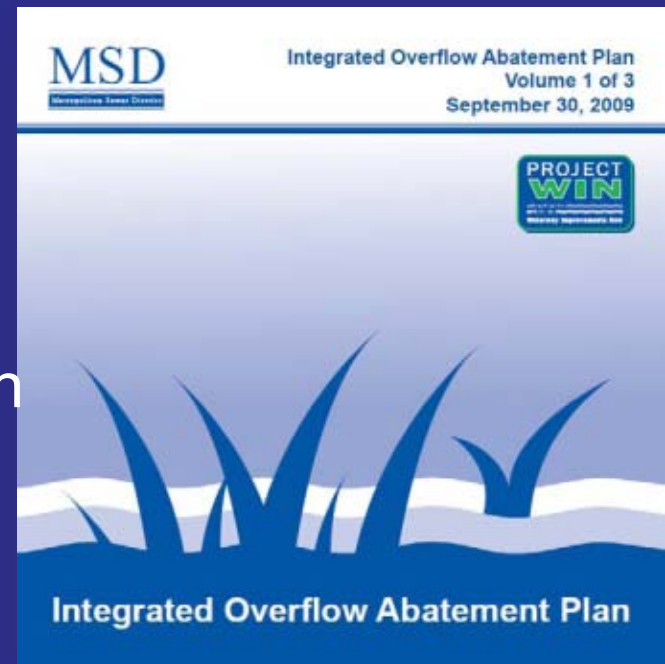
# System Configuration





# Integrated Overflow Abatement Plan

- 3 Volumes
  - Vol 1 – Program Overview
  - Vol 2 – CSO Control
  - Vol 3 – SSO Control
- \$850 Million Capital Cost
- Comparable Programs between \$2.2 Billion & \$4.4 Billion
- Targeted Overflow Reductions
  - **Enforceable by Law**
    - **Fines**
    - **Incarceration**
    - **Further Litigation**



# 2009 CSO Long Term Control Plan

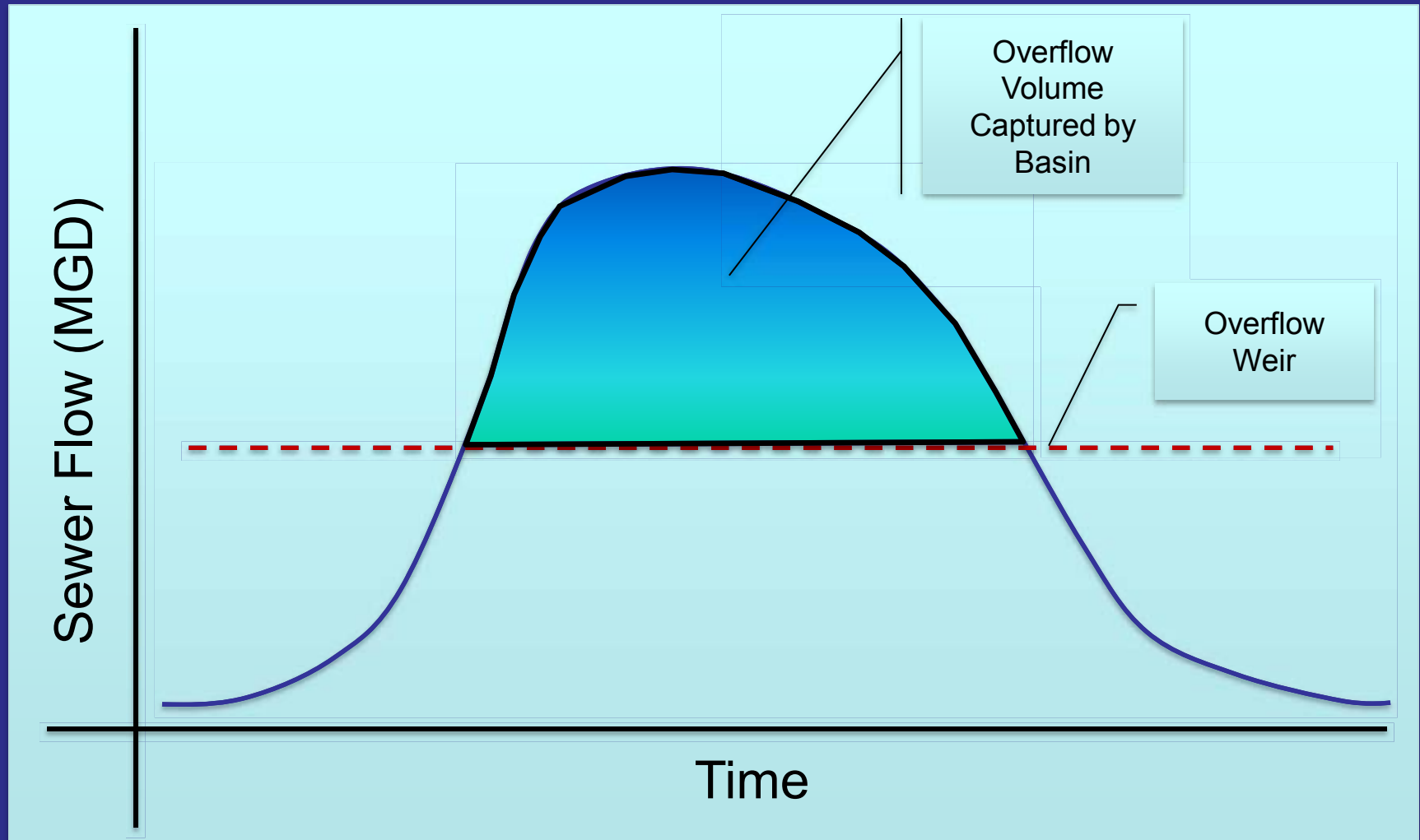
- **19 Gray Infrastructure Projects**
  - 4 Sewer Separations
  - 13 Storage basins
  - Replacement and expansion of Nightingale Pump Station
  - 1 High-Rate Wet Weather Treatment Facility
- **Green Infrastructure Projects – 17% of Gray Program**
  - Demonstration projects
    - Bioswale/biofiltration
    - Rain garden
    - Pervious alleys
    - Infiltration dry wells and sink holes
- **9 Flood Pump Station Projects for DWO's**
- **Green to Gray 'Right Sizing' Allowable**

# 2009 Sanitary Sewer Discharge Plan

- Gray infrastructure
  - 16 conveyance capacity
  - 19 storage
  - 10 pump station upgrades or expansions
  - 1 wastewater treatment expansion
- Source control program – 15% of Gray



# Storage Basin Overflow Reduction





# Adaptive Management



Measure Twice - Cut Once

# IOAP Volume 1, Chapter 6.5.3.6

## Adaptive Management

Adaptive management makes use of project performance measurements, such as sewer flow monitoring, observations of overflow events at known trouble spots, and KPDES permit reporting to compare the actual effectiveness of the overflow abatement measures to the assumed performance that served as the basis for design and planning. Observed results will be used to “right-size” subsequent projects to ensure overall IOAP objectives are achieved.

**Preliminary Discussions w/ regulators underway**



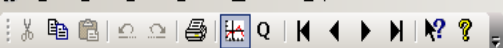


CSO Outfall



Flow Meter



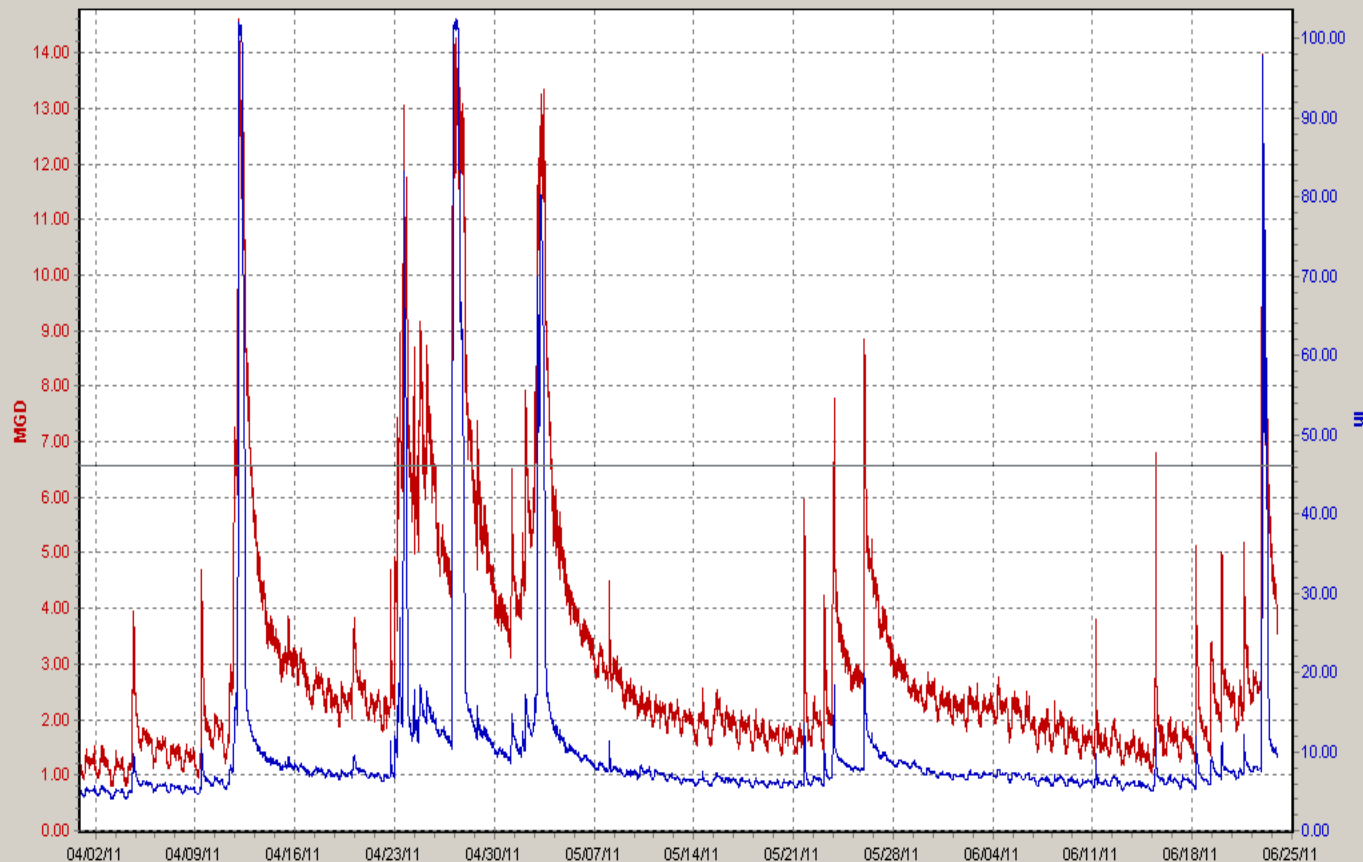


Database View

- 08349\_1711\_Spring\_Dr
- 08354\_1916\_Spring\_Dr
- 08499\_W\_Breck\_St
- 08770\_Buchanan\_Washington St
- 08816\_2431 Maple Street
- 08816\_25th\_and\_Maple\_Hist
- 08843\_8th and Magazine
- 08850\_8th and York
- 08870\_Brent\_st
- 08901A\_2nd\_and\_Broadway
- 08935-DO
- 08954\_Nightingale Pump Station
- 100756A-X\_Level\_Frankfort\_Ave
- 11070\_Center\_and\_Florence\_C
- 11267\_Hoertz\_and\_Sylvia
- 114703\_7th and Congress Alley
- 115139\_4639 Beaver Rd
- 115281\_Shelbyville Rd Plaza
- 11970\_Campbell and Market\_C
- 11971\_Campbell and Main
- 12022\_801\_Vine\_St
- 1203102
- 12439\_102 Webster St
- 12834\_1400 Story Ave
- 1293102
- 13474\_1709 Nightingale Rd
  - Measurements
    - Call Log
    - Flow 1
      - Max
      - Avg
      - Min
    - Level 1
      - Max
      - Avg
      - Min
  - Local Battery
  - Sigma Battery
  - Telog Local Battery
  - Velocity 1
- Saved Reports
- Alerts
- Documents
- 13710\_1621 Lytle Street
- 15928\_1944 Richmond Dr
- 16139\_2082 Douglas Dr

13474\_1709 Nightingale Rd

13474\_1709 Nightingale Rd (04/01/11 to 06/25/11)

☒ Flow 1 (MGD) ☒ Level 1 (in)

	A	B	C
1	Time	Flow 1 (MGD)	Level 1 (in)
1250	04/14/11 00:00:00	3.709	8.901
1251	04/14/11 00:15:00	3.597	8.923
1252	04/14/11 00:30:00	3.384	8.857
1253	04/14/11 00:45:00	3.496	8.899



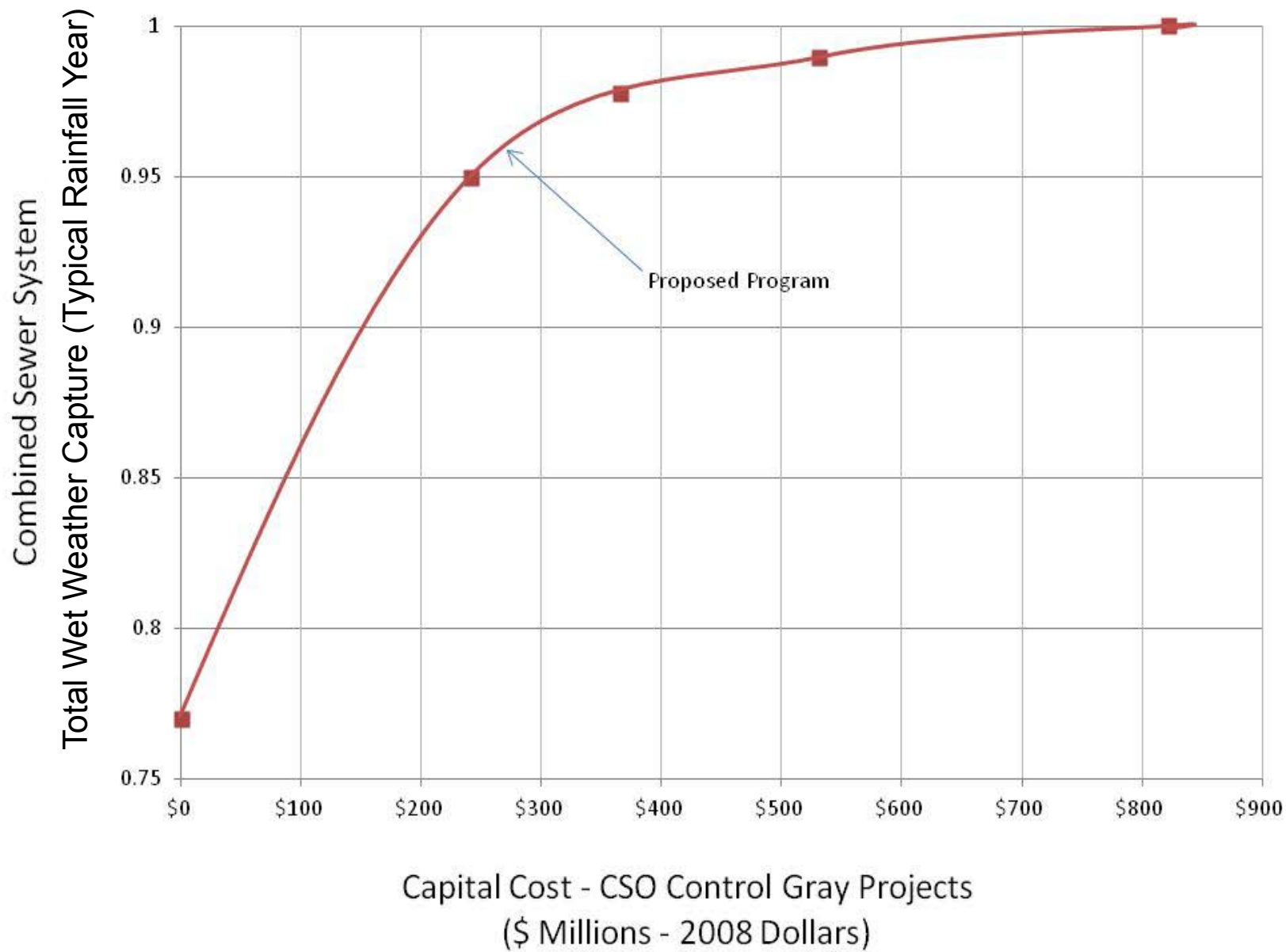
# Project Revision Summary

- 7 projects got larger, 7 smaller

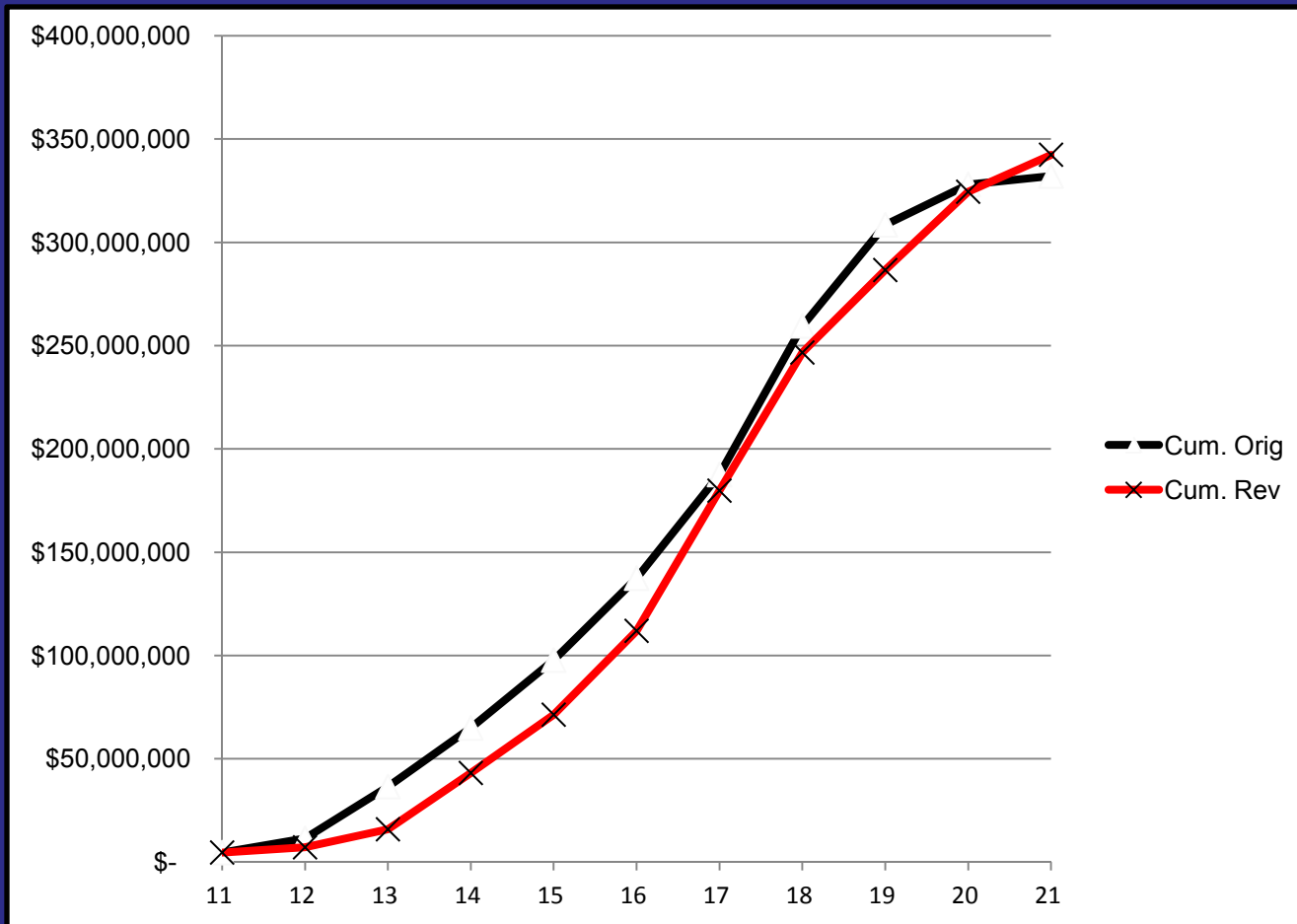
## Project Handouts on Table

reduction targets, 1 lower

- Moving 12 projects forward – some split from other projects
- Moving 4 projects backward
- Overall program benefits increased
- \$850 million capital cost maintained



# CSO Storage Cashflow

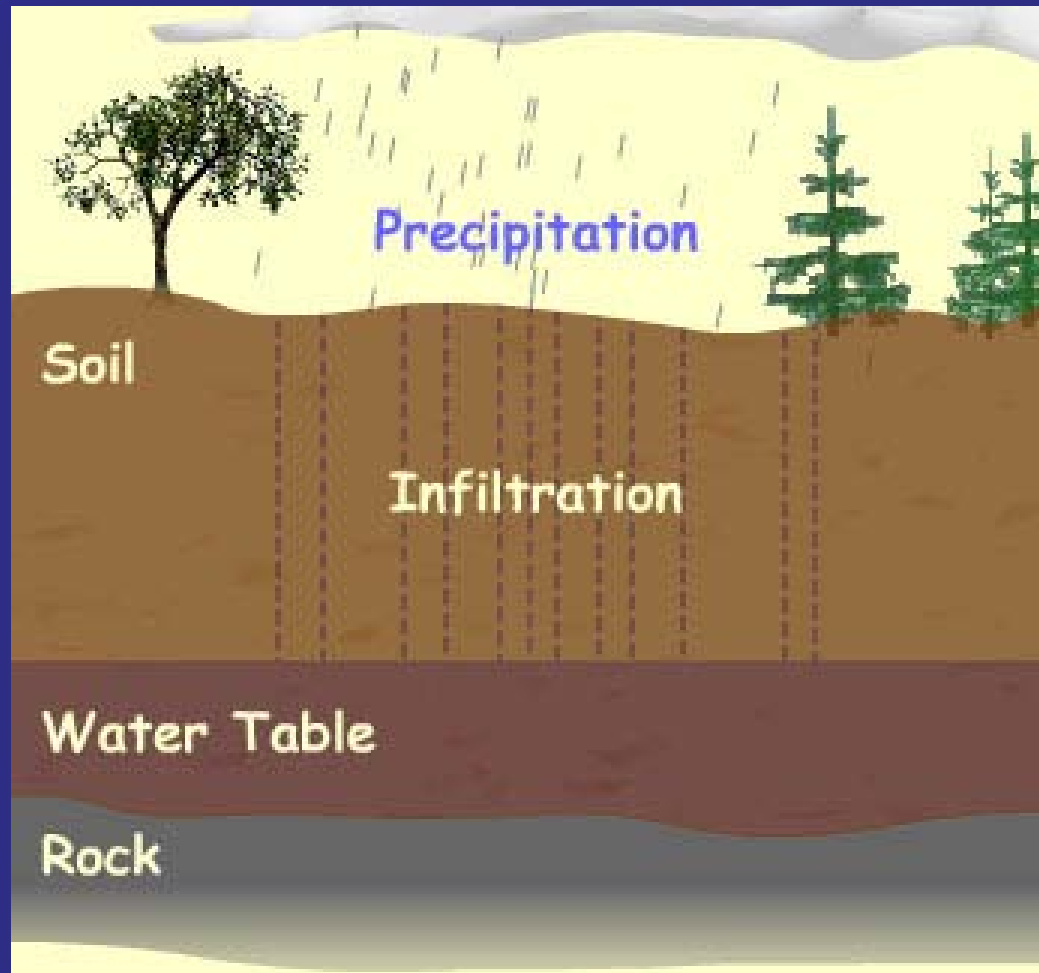


# Projected Rates

- 6.5% Rate Increases from 2009 through 2013
- Between 5.0% and 5.5% from 2013 to 2024
- Current monthly rate is \$\$\$\$



# Green Infrastructure Program



# Pervious Pavers



# Pervious Pavers





# Infiltration Trenches





# Rain Gardens & Green Roofs

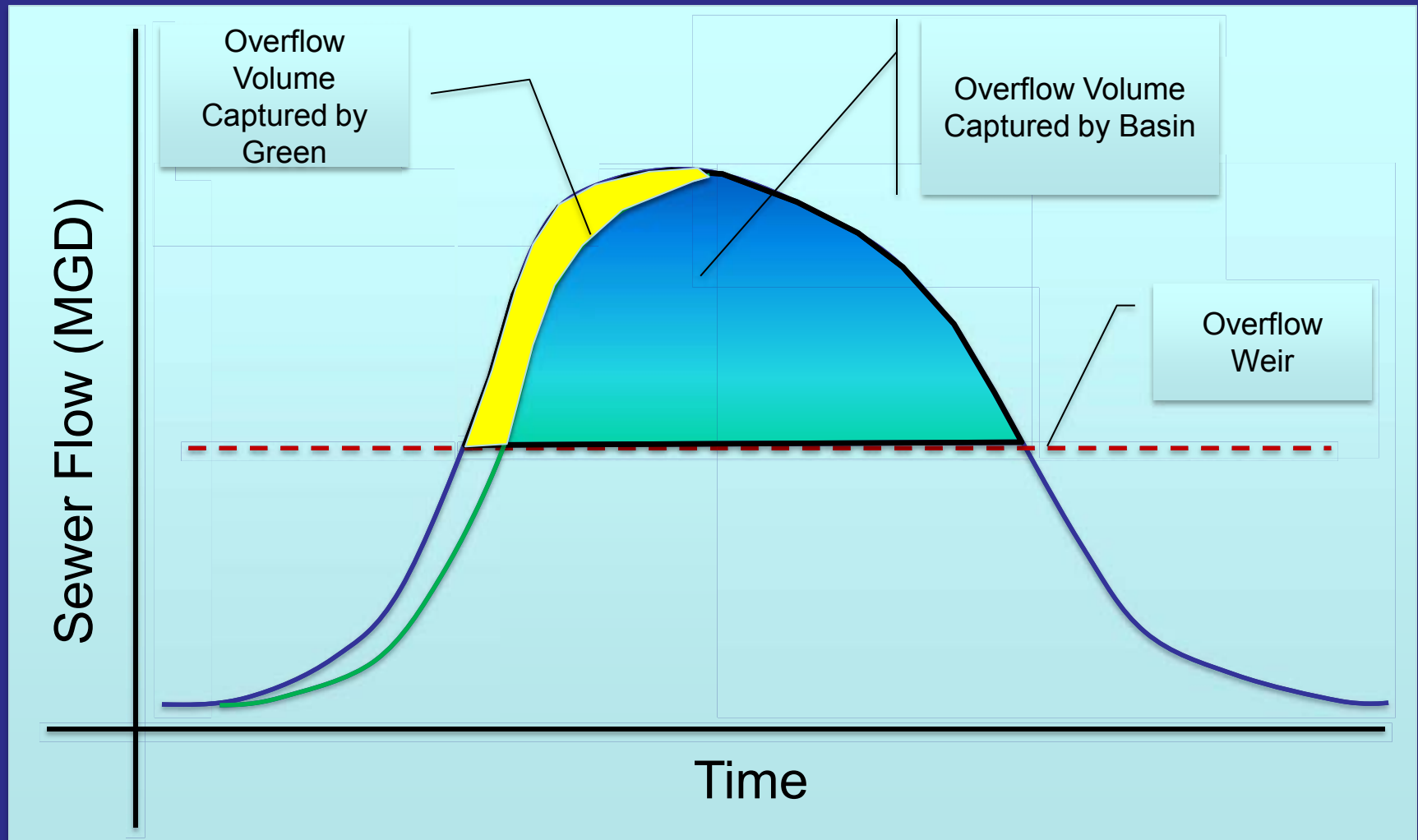


# Rain Barrels

- Educational
- Irrigation
- Private Property Dependent
- Requires Operation by Owner
- Very Small Capture
- Ineffective in Winter



# Overflow Reduction Using Green



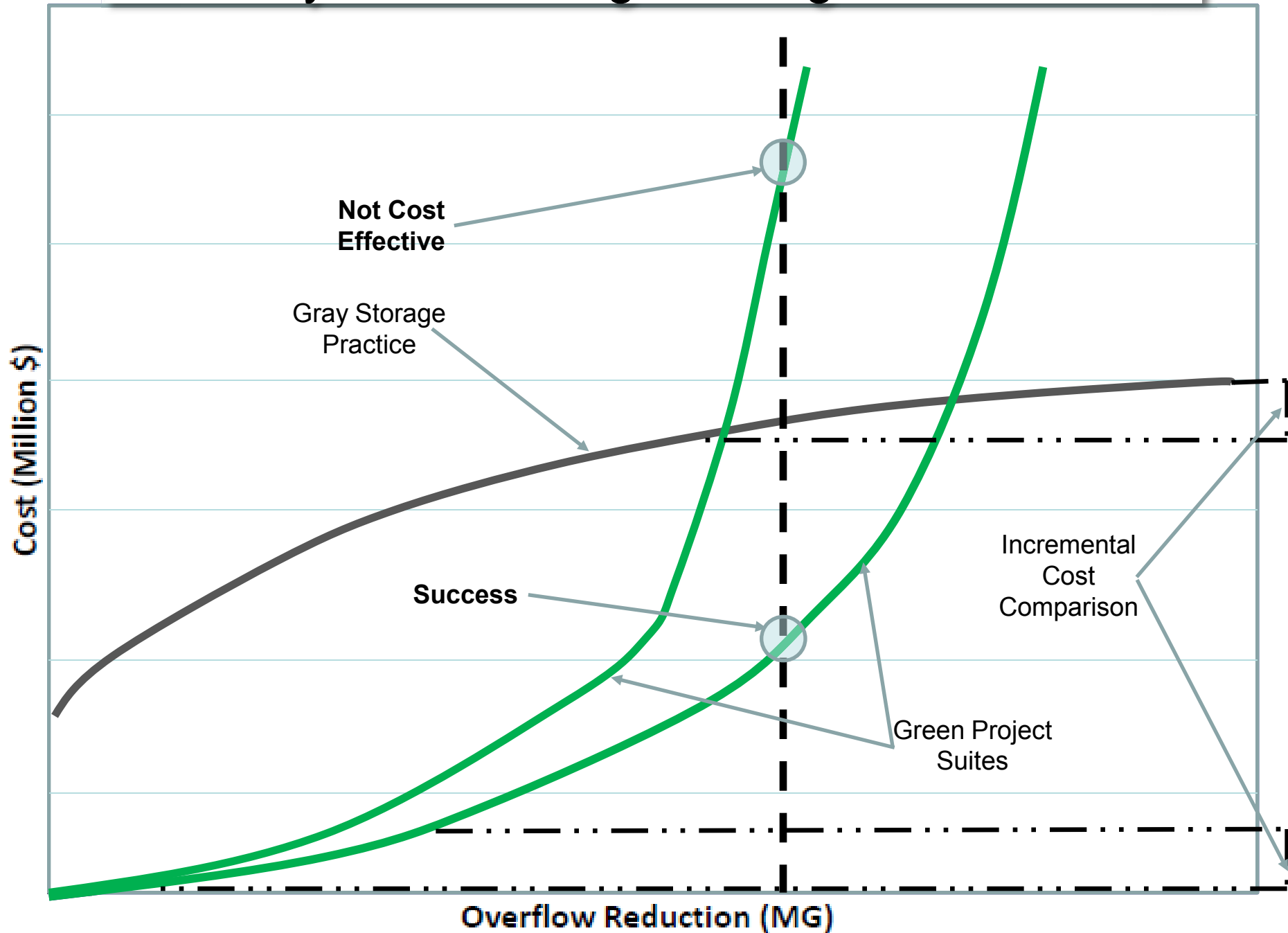


# CSO130 Drainage Area

- 28 Acre Drainage Area
- 0.04 MG Gray Basin Captures 1.3 MG AAOV
- 0.16 MG Green Storage Captures 14.65 MG of Green Storage
- 11 Gallons of Green Stormwater Capture to 1 Gallon of Overflow Removed
- In this case, green cost still half of gray cost



# Gray to Green Right Sizing Evaluation



# CSO190 Drainage Area

- 145 Acre Drainage Area
- 1.24 MG Gray Basin Controls 36 MG AAOV
- Equivalent AAOV Reduction with Green Requires 160 Projects & 80% Drainage Area Capture
- Green Costs Appear Lower, but Implementation Issues are under Review





# Next Steps

- Evaluate Green in I-64 & Grinstead Drainage Area (1280 acres)
- Finalize Proposed Project & Schedule Revision Development
- Revise IOAP Volumes
- Public Outreach & Comment Period
- Continued review by EPA, Kentucky Dept. for Environmental Protection & U.S. Dept. of Justice Review for approval

# Public Input Sought

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- Send comments via email:  
[commentsIOAP@msdlouky.org](mailto:commentsIOAP@msdlouky.org)
- Mail comments:

**MSD IOAP Project Comments**  
**Attention: Project WIN Program Manager**  
**700 West Liberty St.**  
**Louisville, KY 40203**



# Benefit/Cost Impacts of LTCP Storage Basin Project Changes Due to 2010 Model Recalibration

Cumulative Benefit /Cost Score  
All LTCP Storage Basin Projects

