

# **Building Water Resiliency – From Wet Weather to Drought**

**A Clean Water Caucus Briefing  
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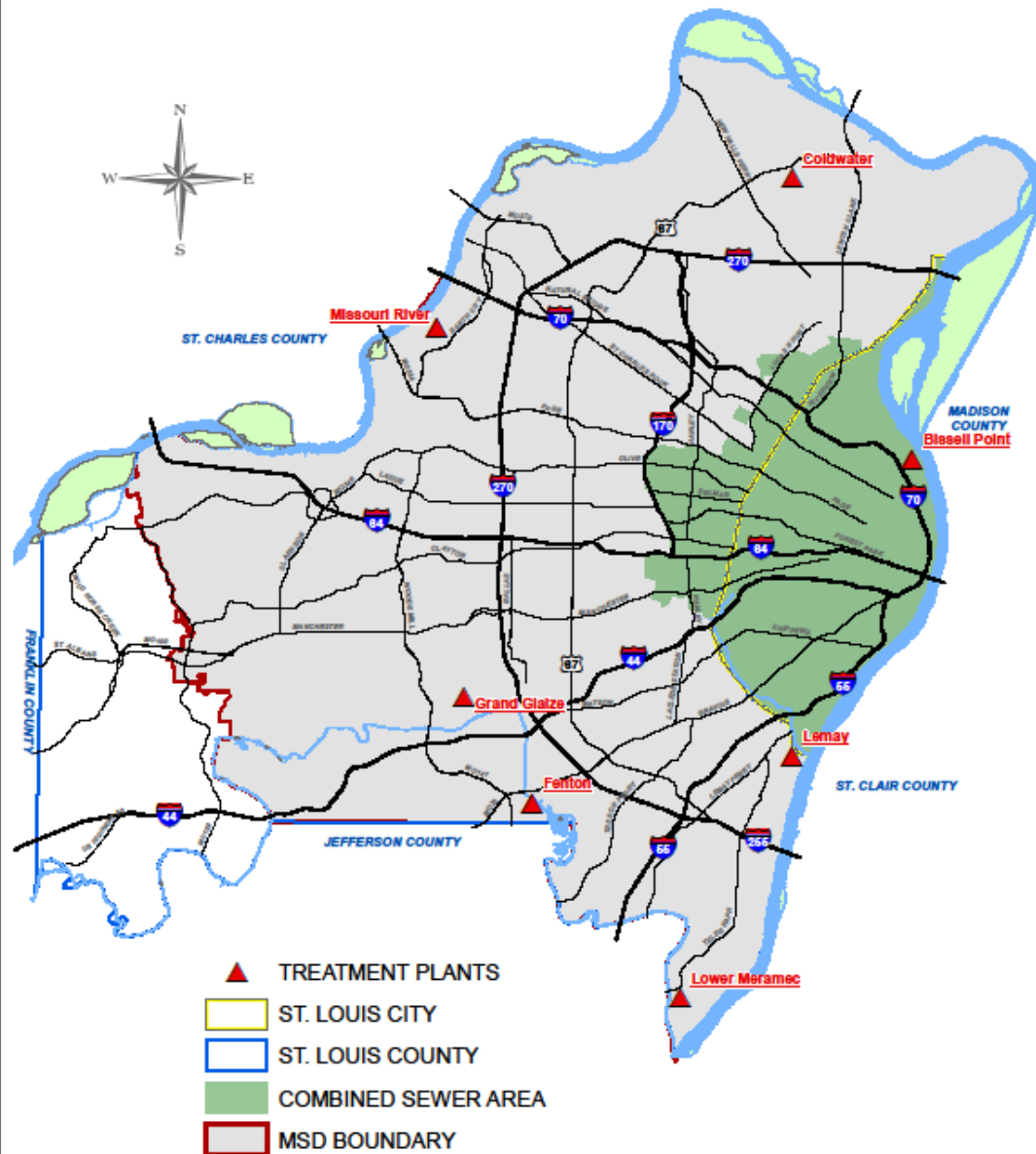
# MSD System Overview & Details

- 💧 Two utilities: wastewater and stormwater
- 💧 525 square mile service area
- 💧 1,300,000 customers
- 💧 90 municipalities served
- 💧 7 treatment plants
- 💧 350+ million gallons/day wastewater treated
- 💧 4,744 miles of sanitary sewers
- 💧 1,806 miles of combined sewers
- 💧 3,028 miles of stormwater sewers
- 💧 4th largest sewer system in US (by miles of sewers that handle wastewater)



# The Metropolitan St. Louis Sewer District

## COMBINED SEWER AREA



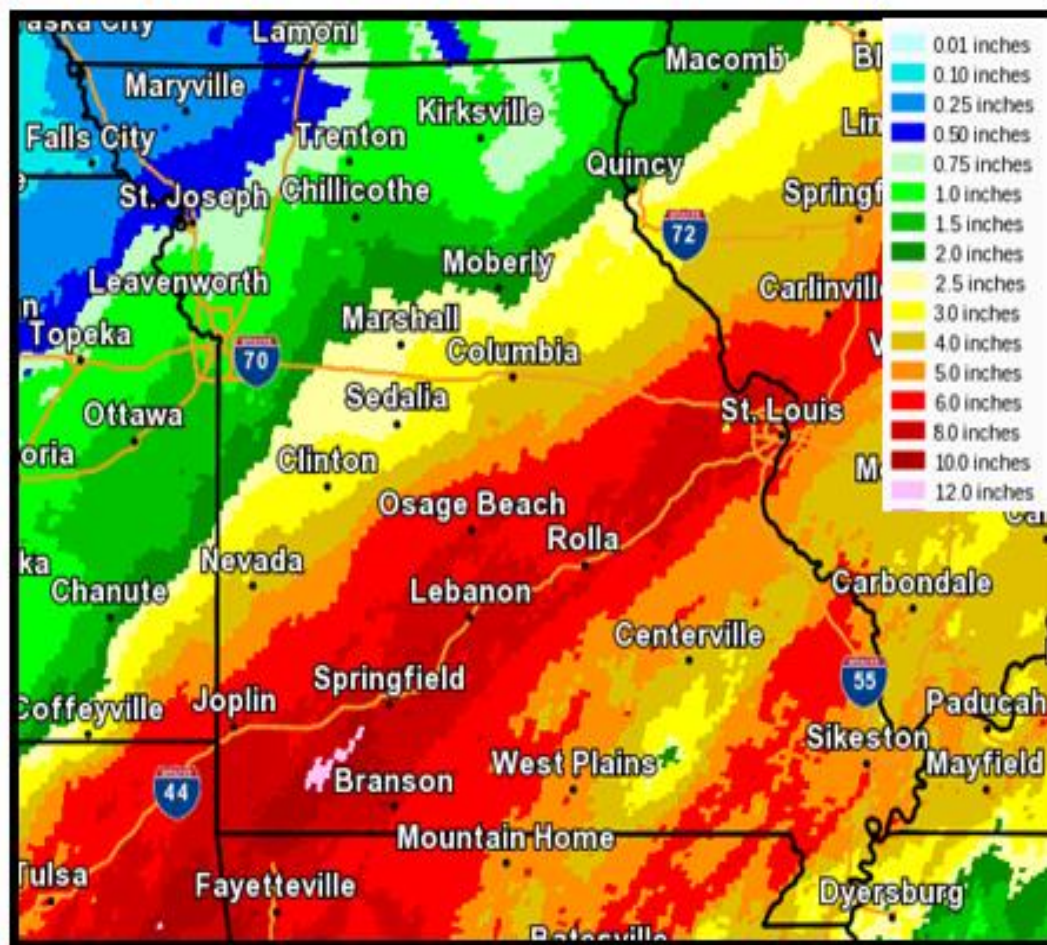
# MSD's Annual Budget

- 💧 FY 2016 Operating Budget - \$210 million
- 💧 FY 2016 Capital Improvement Budget - \$300 million
- 💧 Currently under a 23 year Consent Decree to construct approximately \$5 Billion in improvements to reduce or eliminate combined and separate sewer system overflows

# December 26<sup>th</sup> through December 28<sup>th</sup>, 2015

## Storm Total Rainfall

ST. LOUIS	9.18"
COLUMBIA	4.49"
JEFFERSON CITY	5.17"
CHESTERFIELD	7.85"
ST. CHARLES	8.04"
FARMINGTON	5.99"
QUINCY	2.58"
CAHOKIA	5.91"
BELLEVILLE/SCOTT	5.31"
PITTSFIELD	3.82"
SPARTA	5.53"
SALEM	3.05"





# Fenton Wastewater Treatment Plan

Fenton 12/31/2015



Fenton 1/5/2016





# Grand Glaize Wastewater Treatment Plant

Grand Glaize 12/31/2015



Grand Glaize 1/6/2015





# Lower Meramec Wastewater Treatment Plant





# Pre-Flood Operational Activities in Combined Sewer Area

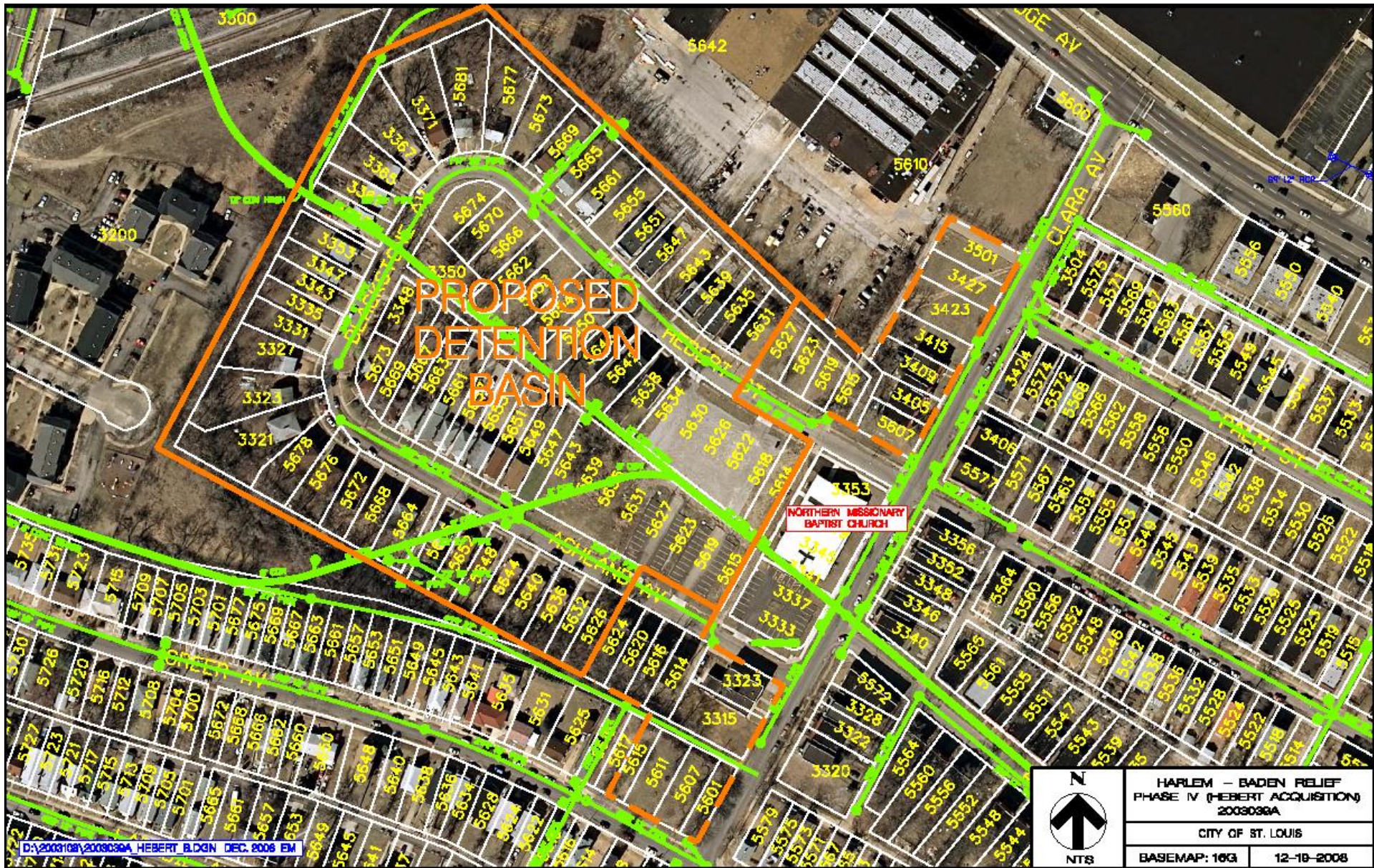
























06/19/2009





06/19/2009



# MSD Project Clear Effectiveness: A Tale of Two Storms in Coldwater Creek

MSD installed Coldwater Tank A, initiated Sewer rehabilitation and lining, continued cleaning programs

	<b>April 18-19, 2013</b>	<b>April 2-3, 2014</b>
Weather	Total Rain: 2-5 in. 1 <sup>st</sup> Day total: 2.5 in. Record rainfall on April 18	Total Rain: 2-6 in. 1 <sup>st</sup> Day total: 2.5 in Record rainfall on April 2
Blocked Mains	24	28
Overcharged Mains	<b>150</b>	<b>53</b>



# MSD Project Clear Effectiveness: 2008 v. 2015

MSD initiated proactive programs and system rehabilitation in 2008

	<b>September 2008 Hurricane Ike</b>	<b>December 2015 Flooding</b>
Rainfall	7 in over 3 days Peak day: 5 in	9 in over 3 days Peak day: 5 in
Basement backups from blocked mains	1,134	356
Basement backups from overcharges	4,956	1,646
Sewer Overflows	363	199
Customer service calls	6,700	2,900

# Building Resiliency – Summary

- 💧 Continue Best Practices in Collections system Maintenance and Operations reducing impacts and costs to customers
- 💧 Continue utilization of Green Infrastructure practices to improve water quality and mitigate peak stormwater runoff
- 💧 Working with local municipalities to address structures suffering from flooding and erosion

# Building Resiliency – Issues

- 💧 Flood mitigation improvements at various WWTTPs subject to extreme events (ability to fund on top of already large program)
- 💧 Allowance of regulatory operational flexibility to protect facilities (i.e. wet weather operations and blending)
- 💧 Flooding and Erosion impacting Stormwater customers (ability to secure funding for needed Capital Improvements and buyouts)