

# FIVE Cities Conference Director's Update

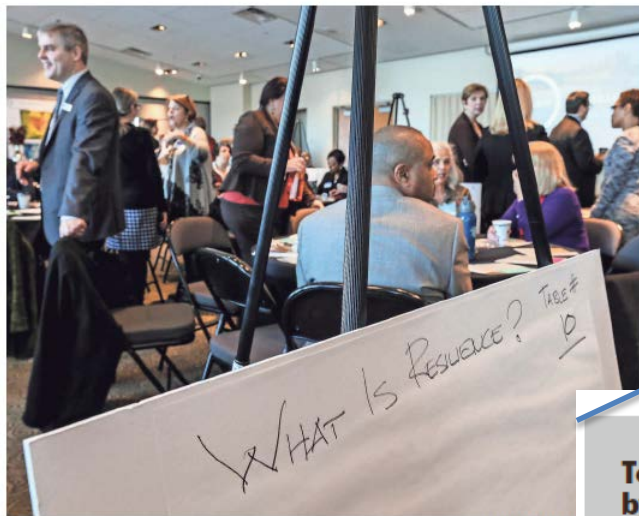
**Louisville MSD**  
*August 17, 2017*



# Louisville is Committed to Becoming a Resilient City



100 RESILIENT CITIES



MICHAEL CLEVELAND  
Attendees for a conference on resilience mingle ahead of the start of the conference Tuesday morning at the Muhammad Ali C

## CITY GETTING HELP TO FACE THREATS

Effort aims to protect Louisville from shocks, stresses

JAMES BRUGGERS  
@JBRUGGERS

Louisville may be able to tap into millions of dollars of free services from some of the world's leading companies or organizations as part of its participation in a network of 100 global cities trying to become more adaptable in the face of serious threats.

But first the city will have to narrow its focus on the problems it will seek to solve.

Among the priorities that made the

### Top six shocks identified by workgroups

- » Economic crisis
- » Severe or catastrophic weather.
- » Infrastructure vulnerability or failure.
- » Riot or civil unrest.
- » Hazardous materials accident.
- » Cyber attack.

### Top seven stresses identified by workgroups

- » Poverty and inequality.
- » Lack of wellbeing and poor health.
- » Low-performing education systems.
- » Aging infrastructure.
- » Racial and lack of social cohesion.
- » Degradation of built and natural environment.
- » Climate change.

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February 1, 2017  
Courier-Journal article  
on 100 Resilient Cities  
Workshop

# Utility Infrastructure is foundational to Louisville's transformation



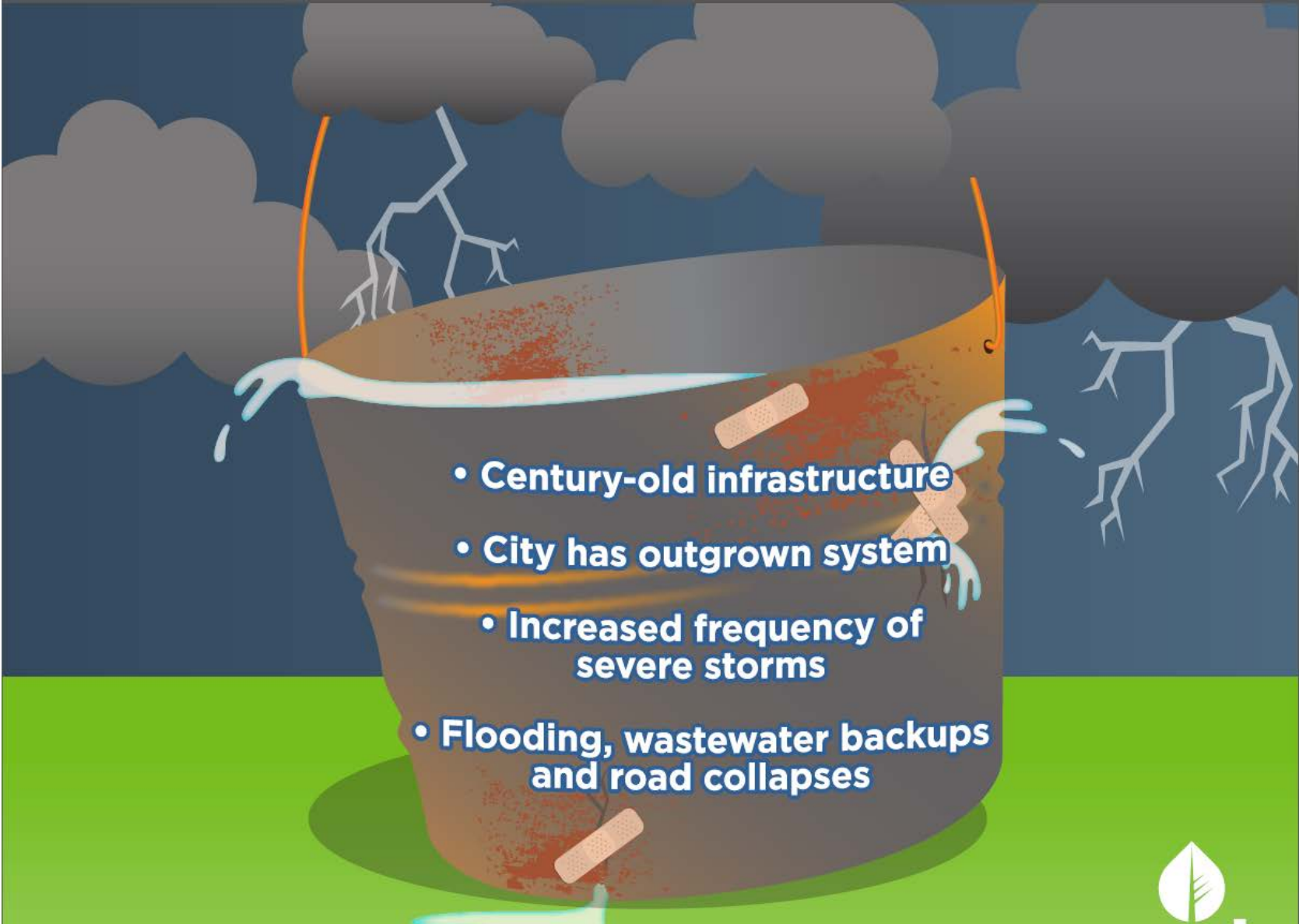
\$1.2 billion investment downtown with 2018 projected completion

Louisville Metro development estimated to exceed **\$6 billion**

# Louisville's prosperity depends on vital sewer, drainage and flood protection infrastructure





- 
- **Century-old infrastructure**
  - **City has outgrown system**
  - **Increased frequency of severe storms**
  - **Flooding, wastewater backups and road collapses**

# Aging Sewer Infrastructure

## Sewers

# Infrastructure Solutions: Sewers & Facilities

### Legend

- Hospitals
- Primary & Secondary Schools
- Colleges & Universities
- Fire Stations
- Police Stations
- Metro Government Offices
- Louisville Free Public Libraries
- Major Employer (>1000)

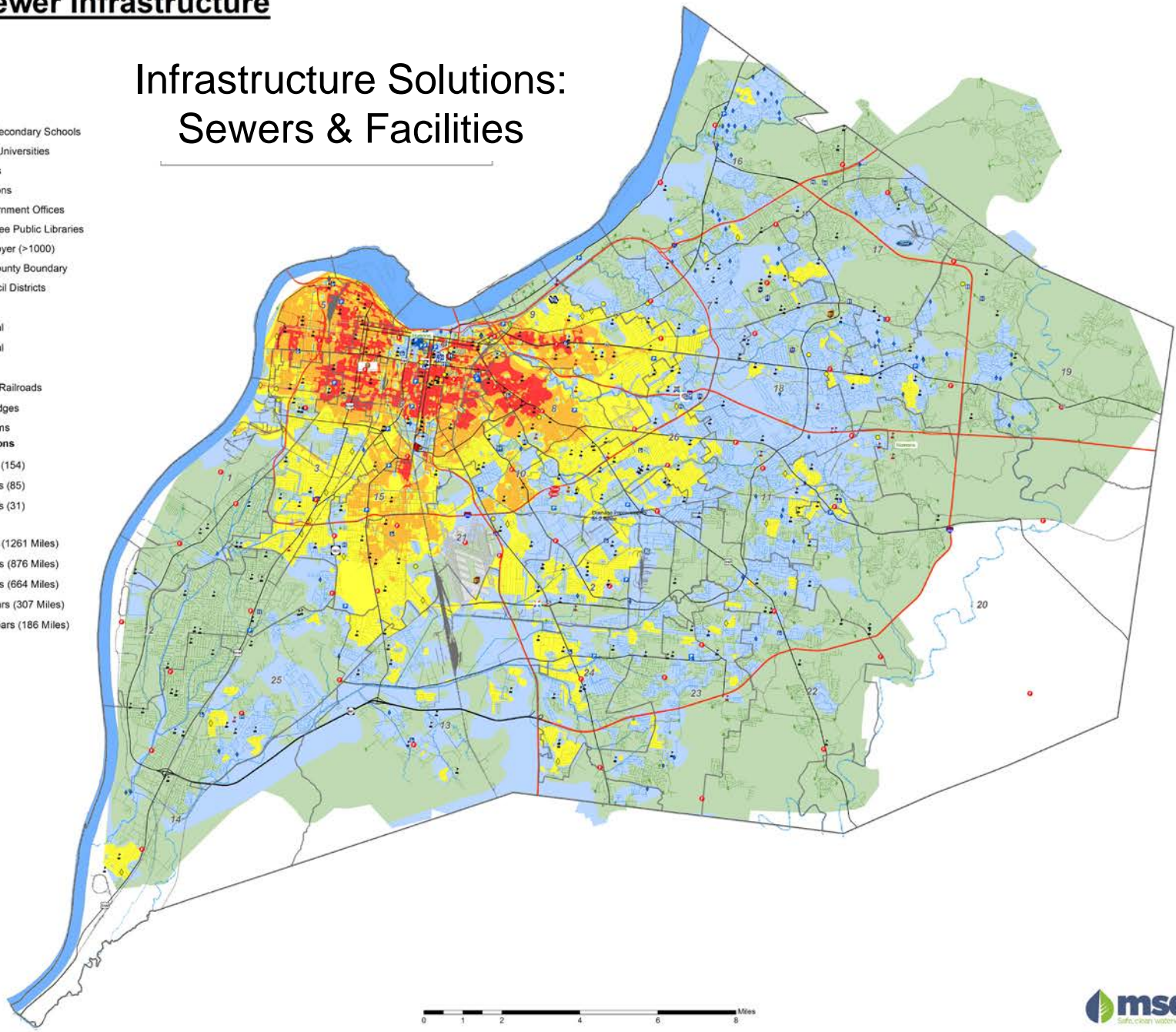
- Jefferson County Boundary
- Metro Council Districts
- Interstate
- Major Arterial
- Minor Arterial
- Railroads
- Abandoned Railroads
- Railroad Bridges
- ~ Major Streams

### Sanitary Pump Stations

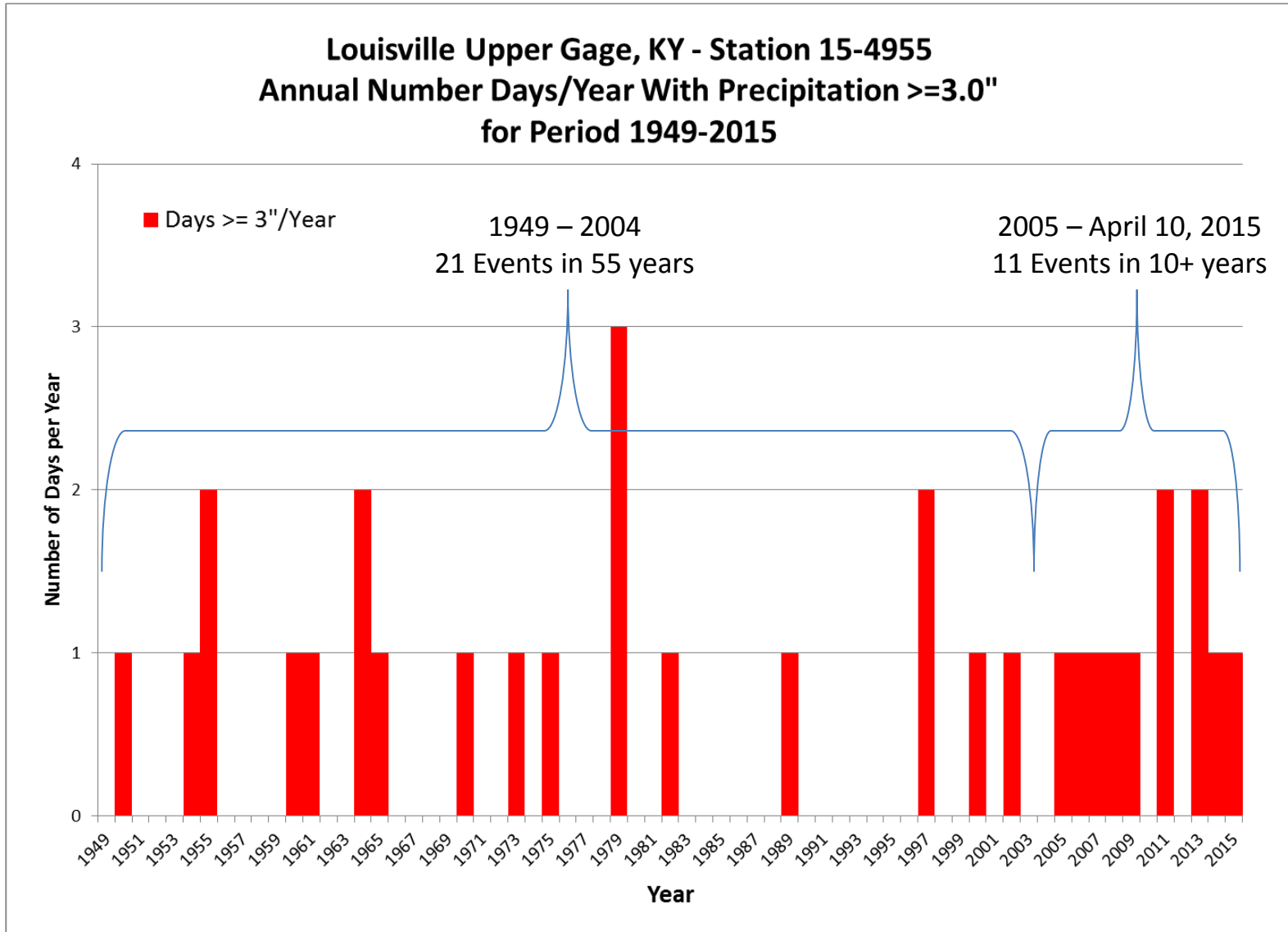
- 0 - 25 Years (154)
- 25 - 50 Years (85)
- 50 - 75 Years (31)

### Sewer Age

- 0 - 25 Years (1261 Miles)
- 26 - 50 Years (876 Miles)
- 51 - 75 Years (664 Miles)
- 76 - 100 Years (307 Miles)
- 110 - 150 Years (186 Miles)









# Increased Frequency of Extreme Storms










# Critical Repair and Reinvestment Plan Background

**Draft for Public Review -  
20-Year Comprehensive Facility Plan  
MSD's Critical Repair and Reinvestment Initiative  
Volume 1 - Programmatic and Integrating Information**

In Association with:  
NAC | K.S. Ware & Associates | RKX | Powers Engineering


December 2016

**CRITICAL REPAIR & REINVESTMENT PLAN**

Community Conversation

Status Update  
June 1, 2017





# MSD's Critical Repair & Reinvestment Plan

## Addresses Public Health and Safety Risks



Upgrade Ohio River Flood Protection



Reduce Neighborhood Flooding



Minimize Viaduct Flooding



Upgrade Wastewater Treatment Facilities



Prevent Collapsing Sewers



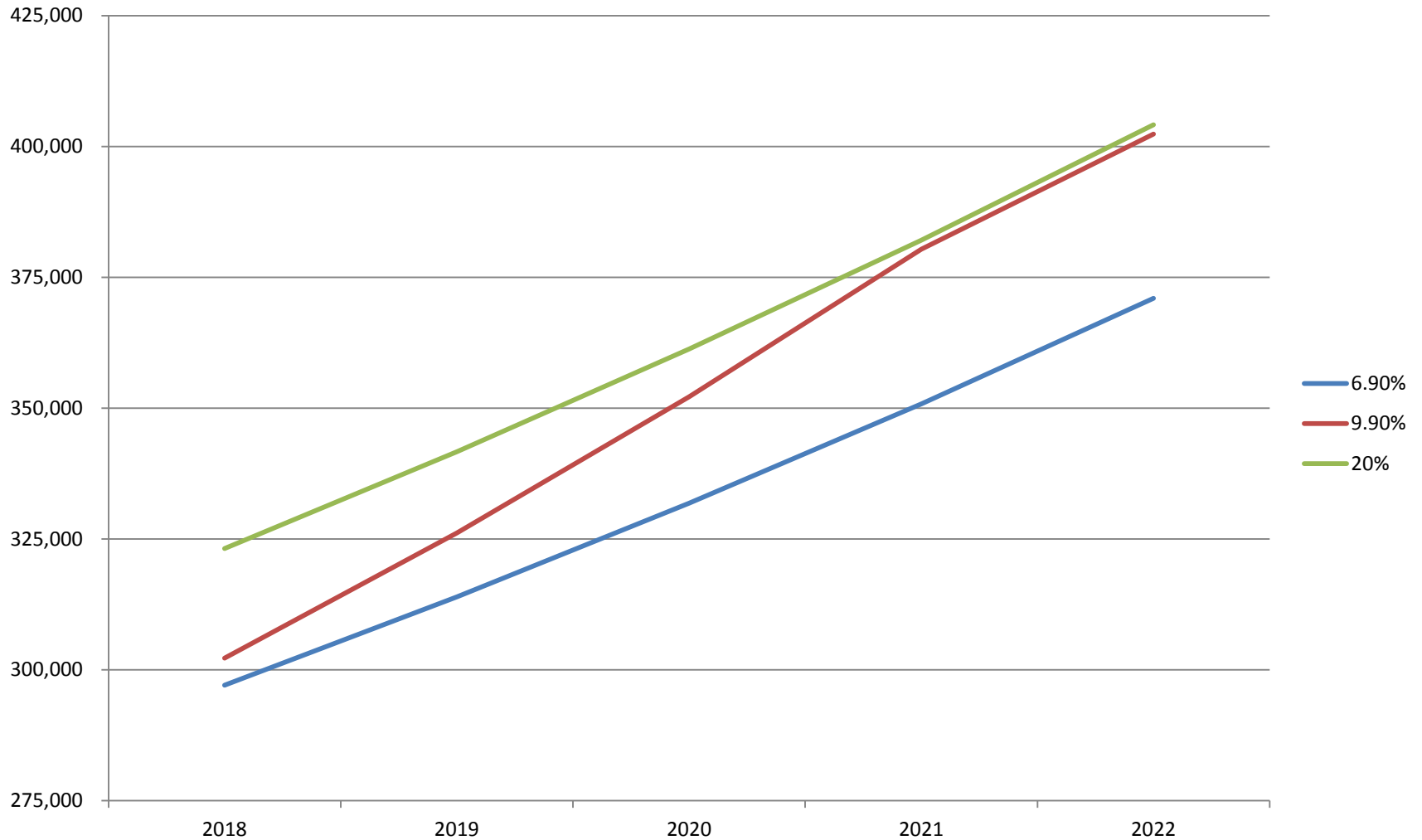
Comply with Consent Decree

# Louisville MSD Sewer Investments



**\$4.3 billion**

# Revenue per Rate Change





# Average Monthly Residential Bill with WRAP

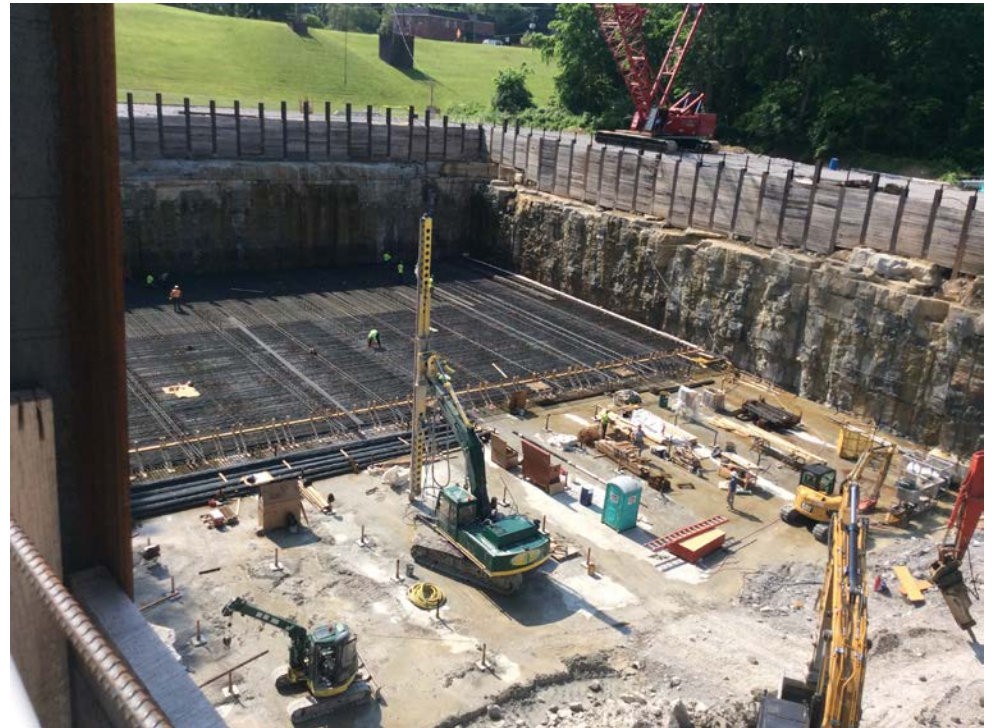
| AVG. RESIDENTIAL RATE |  |         |         |         |         |         |         |
|-----------------------|--|---------|---------|---------|---------|---------|---------|
|                       |  | 2017    | 2018    | 2019    | 2020    | 2021    | 2022    |
| Rate Increase         |  | 6.9%    | 9.9%    | 9.9%    | 9.9%    | 9.9%    | 6.9%    |
| Wastewater            |  | \$46.87 | \$51.51 | \$56.61 | \$62.21 | \$68.37 | \$73.09 |
| Drainage              |  | 9.26    | 10.18   | 11.19   | 12.30   | 13.52   | 14.45   |
| Total Bill            |  | \$56.13 | \$57.70 | \$63.41 | \$69.69 | \$76.59 | \$81.87 |

| WITH RATE ASSISTANCE |  |         | 9.0% WRAP | 17.2% WRAP | 24.65% WRAP | 30% WRAP | 30% WRAP |
|----------------------|--|---------|-----------|------------|-------------|----------|----------|
| Rate Increase        |  | 6.9%    | 9.9%      | 9.9%       | 9.9%        | 9.9%     | 6.9%     |
| Wastewater           |  | \$46.87 | \$46.87   | \$46.87    | \$46.87     | \$47.86  | \$51.16  |
| Drainage             |  | 9.26    | 10.18     | 11.19      | 12.30       | 13.52    | 14.45    |
| Total Bill           |  | \$56.13 | \$57.05   | \$58.06    | \$59.17     | \$61.38  | \$65.61  |

# Clifton Heights CSO Basin



# Clifton Heights CSO Basin

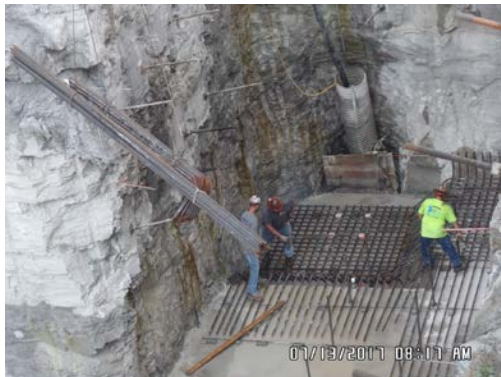
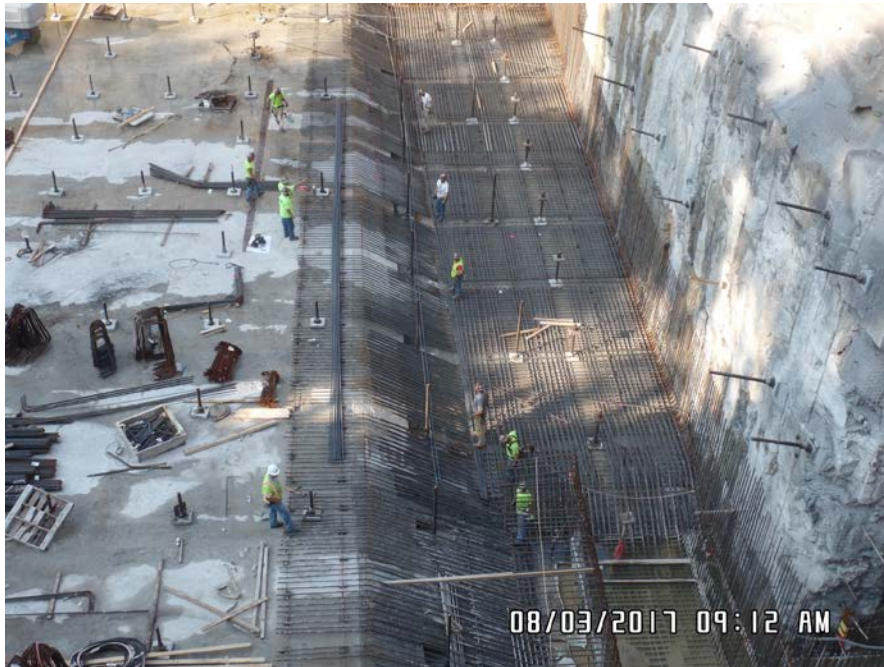




# Clifton Heights CSO Basin



# Clifton Heights CSO Basin



MAC poured concrete on wet well floor slab

Completed the second floor slab pour on the basin floor

Completed rebars on trough area.



# Clifton Heights CSO Basin Concept #3: Below Ground

Southeast





# Logan CSO Basin

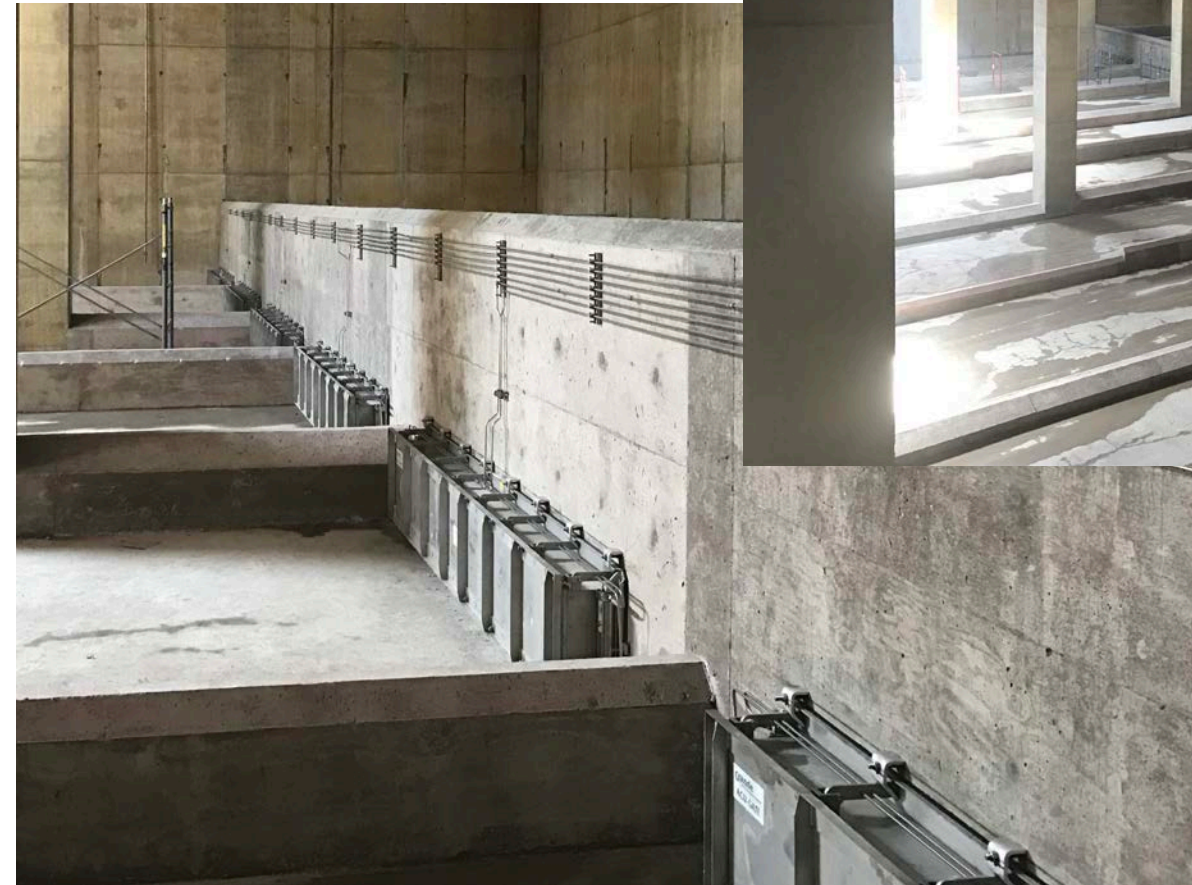


# Logan CSO Basin





# Logan CSO Basin





# Logan CSO Basin



# SHAWNEE Park CSO Basin









# Shawnee Post Construction Renderings





# Shawnee Post Construction Renderings









# Local Labor Preference Shawnee Basin

| Labor Craft                     | Estimated Projected Hours | FTEs |
|---------------------------------|---------------------------|------|
| Carpenters                      | 42502                     | 13.6 |
| Millwrights                     | 12350                     | 4.0  |
| Electricians                    | 13974                     | 4.5  |
| Heavy Equipment Operators       | 97880                     | 31.4 |
| Ironworkers - Reinforcing steel | 32150                     | 10.3 |
| Laborers                        | 135112                    | 43.3 |
| Masons                          | 66070                     | 21.2 |
| Plumbers                        | 977                       | 0.3  |
| Sheet Metal Workers             | 906                       | 0.3  |
| Pipefitter                      | 31187                     | 10.0 |
| Painter                         | 704                       | 0.2  |
| Roofer                          | 148                       | 0.0  |

# Louisville Ohio River Tunnel Project



# CSO Deep Tunnel Project



## LOUISVILLE OHIO RIVER TUNNEL



### FREQUENTLY ASKED QUESTIONS

**Q: WHY IS THE LOUISVILLE OHIO RIVER TUNNEL BEING CONSTRUCTED?**

**A:** The Louisville Ohio River Tunnel is being constructed to collect and convey combined sewer overflows (CSOs) as part of a consent decree signed with the EPA and Commonwealth of Kentucky.

**Q: HOW DO CSOs AFFECT THE PUBLIC?**

**A:** CSOs discharge both stormwater and untreated sewage to waterways during some rain and precipitation events, which poses a potential environmental and public health risk. The combined stormwater and untreated sewage introduces fecal matter, oils, grease, and other sanitary wastes directly into Louisville's waterways.

**Q: WHAT ELSE IS BEING DONE TO DEAL WITH THIS ISSUE?**

**A:** The Louisville and Jefferson County Metropolitan Sewer District has developed a comprehensive CSO Integrated Overflow Abatement Plan (IOAP) that includes multiple components to abate CSOs. The Louisville Ohio River Tunnel along with several CSO storage basins will reduce the number of CSO events and store untreated flows until they can be returned to the conveyance system for treatment.

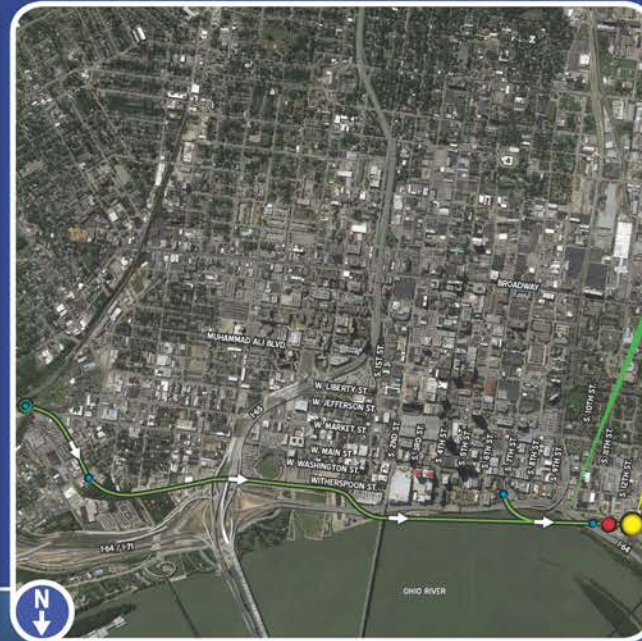
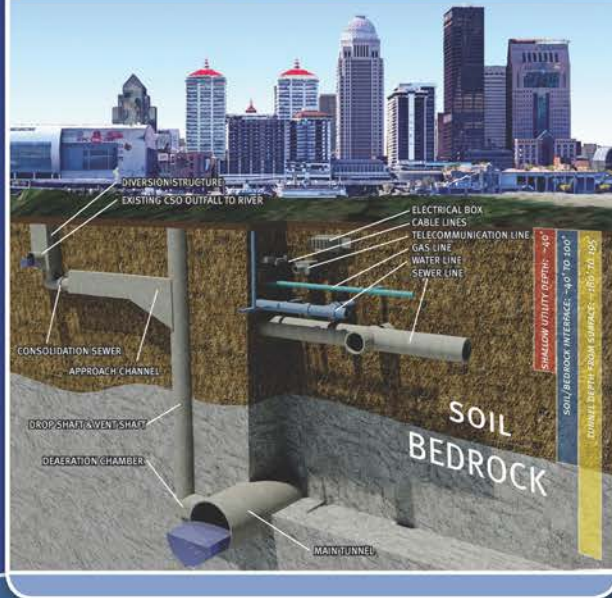
**Q: WHAT CAN YOU TELL ME ABOUT THE LOUISVILLE OHIO RIVER TUNNEL?**

**A:** The Louisville Ohio River Tunnel will consist of approximately 2.5 miles of 20-foot finished diameter tunnel, 4 drop shafts, consolidation sewers, and a deep pump station.

**Q: WHAT DISTURBANCES SHOULD I EXPECT?**

**A:** Near surface open-cut consolidation sewers will convey flow to shafts which drop untreated sewage to a deep tunnel. The storage and conveyance tunnel will be constructed underground to limit surface disruptions to the public and local businesses.

### TUNNEL SYSTEM COMPONENTS



### TUNNEL

- 2.5 miles of 20-foot finished diameter tunnel
- Minimum 33.7MG of storage
- Consolidation sewers
- 4 drop shafts
- Constructed in bedrock
- Tunnel shafts are anticipated to be between 8 and 50 feet finished diameter

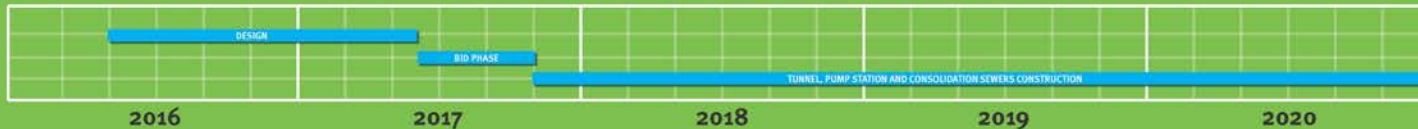
### PUMP STATION

- Approximately 50 MGD deep dewatering pump station
- Dewatering tunnel after storm event to the Ohio River interceptor

### LEGEND

- TUNNEL
  - PUMP STATION
  - RETRIEVAL SHAFT
  - WORKING SHAFT
  - DROP SHAFT
  - FLOW DIRECTION
- NOT TO SCALE

### ANTICIPATED TIMELINE







# Local Labor Preference

## Ohio River Tunnel

| Labor Craft                     | Estimated Project Hours | FTEs |
|---------------------------------|-------------------------|------|
| Carpenters                      | 8,695                   | 1.6  |
| Millwrights                     | 8,695                   | 1.6  |
| Electricians                    | 37,151                  | 6.9  |
| Heavy Equipment Operators       | 248,202                 | 46.2 |
| Ironworkers - Reinforcing steel | 135,958                 | 25.3 |
| Laborers                        | 287,724                 | 53.5 |
| Masons                          | 3,162                   | 0.6  |
| Pipefitter                      | 3,162                   | 0.6  |
| Painter                         | 1,581                   | 0.3  |
| Specialty Labor                 | 52,960                  | 9.9  |
| Roofer                          | 3,162                   | 0.6  |



# The economic impact in Louisville will be **\$5 billion** and **3,700 jobs/yr** over 20 years



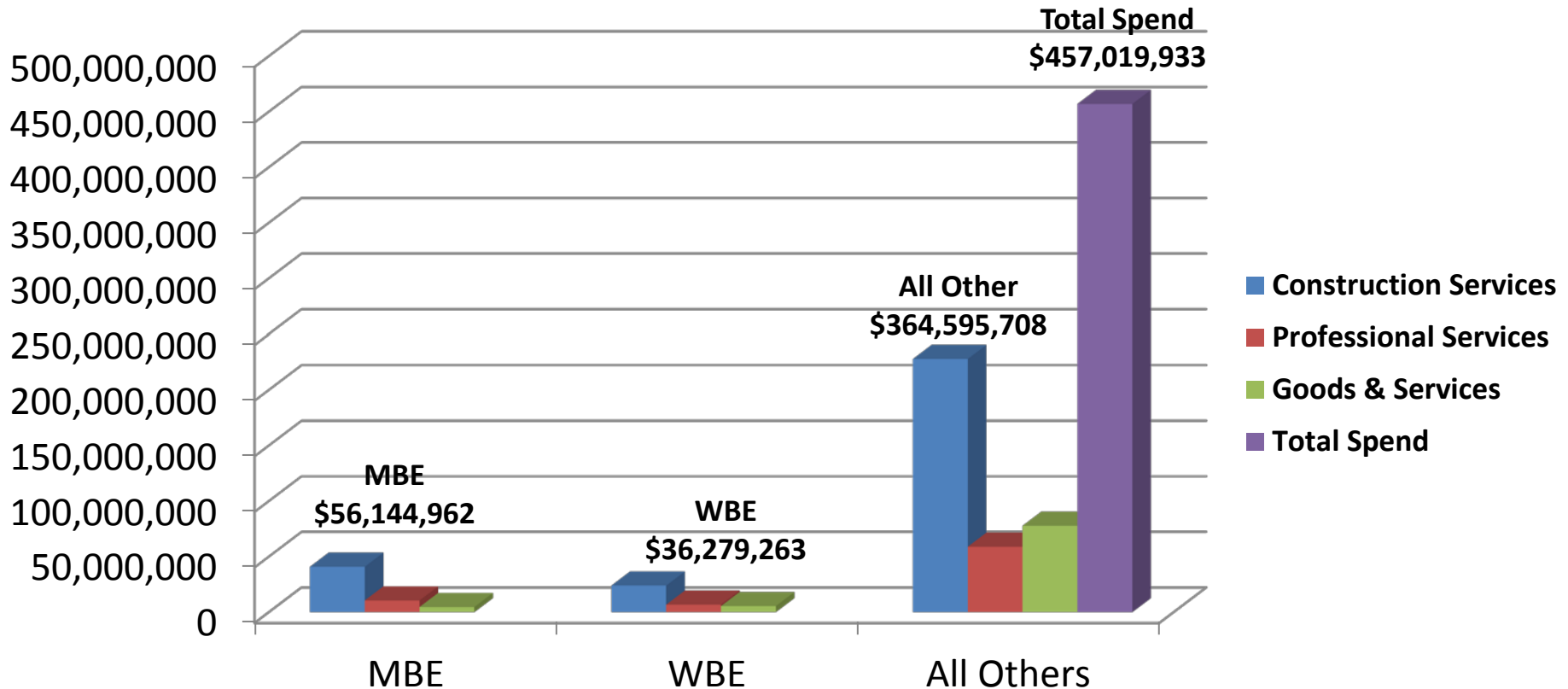
Every \$1 we  
invest = \$2.62  
for local  
economy

Source: U.S. Department of Commerce



# MBE/WBE Utilization

## July 1, 2014 – May 31, 2017



**MSD Supplier Diversity Program Participation Goals:**

Construction and Professional Services – **15% MBE and 6% WBE**

GOAL: Goods and Services – 5% MBE and 3% WBE

**ACTUAL: 12% MBE and 8% WBE**



# Morris Forman WQTC Upgrades







**Morris Forman WQTC**



# MFWQTC on April 8, 2015



# MFWQTC on April 8, 2015





# New High Voltage Yard





# New High Voltage Yard (Old High Voltage Yard in Background)



# New High Voltage Yard (left) and Ongoing Headworks Replacement



# New Oxygen Generation (center) with Old Oxygen Generation (right)





# New Oxygen Generation Facility



# New Oxygen Generation (left) and New Motor Control Center Building (behind truck)



# New Backup Generator for Final Effluent Pump Station





Questions ???

