

Mirror Mirror on the Wall... Does I/I Reduction Work at All

September 2023

Metropolitan St. Louis Sewer District

Andrew Kaufman, P.E.

Brittnee Wilson, P.E.

2023



INDIANAPOLIS

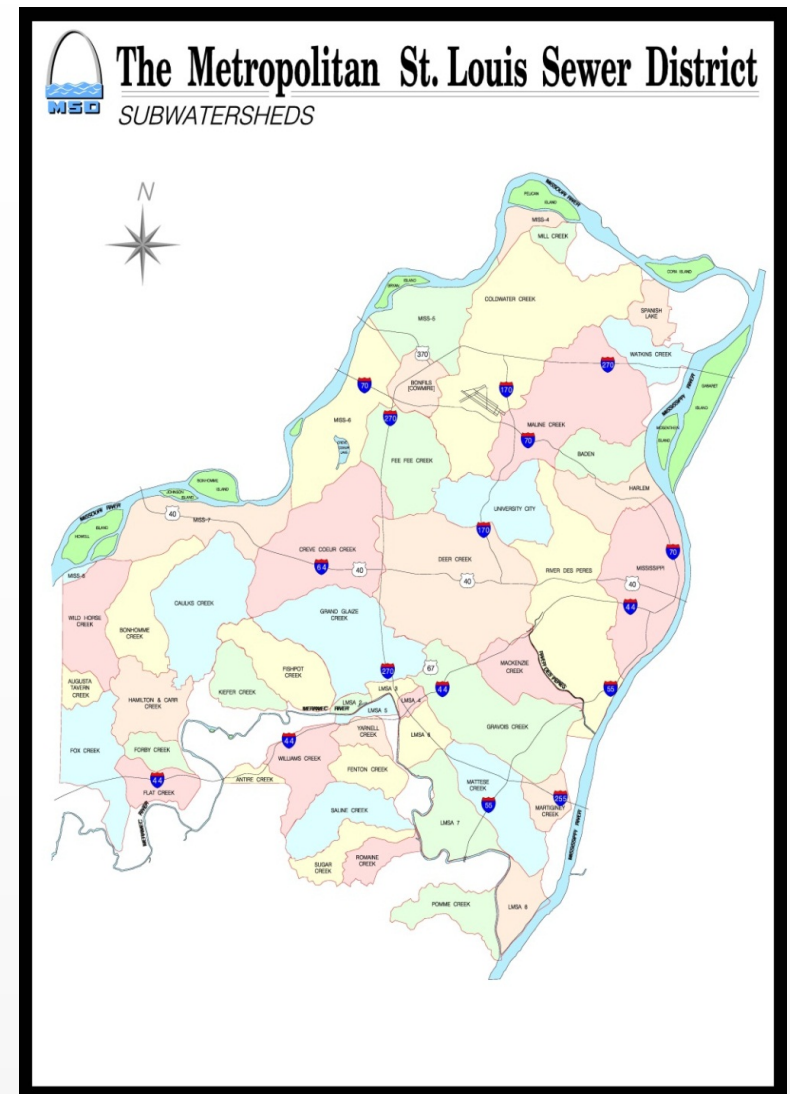
FIVE CITIES PLUS

Agenda

- Introductions
- Consent Decree Requirements
- Deer Creek Watershed
- I/I Investigation & Results
- Project Identification
- Flow Monitoring and Hydraulic Model Assessments
- Results
- Savings
- Conclusion

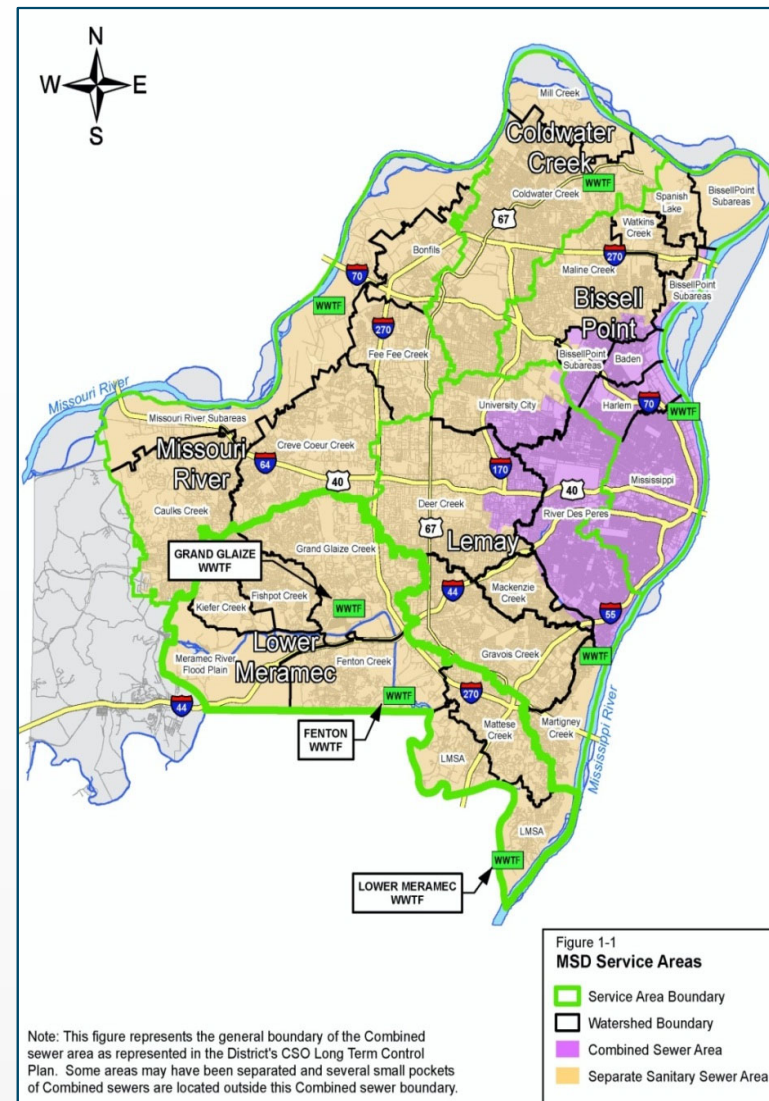
St. Louis MSD

- Formed in 1954
- 525 square miles
 - City of St. Louis & 90% County
 - 93 Municipalities
 - Serve - 1.4 million (519,000 accounts)
- Sewer Statistics
 - 3,000 miles Storm sewers
 - 4,800 miles Sanitary Sewers
 - 1,800 miles Combined sewers

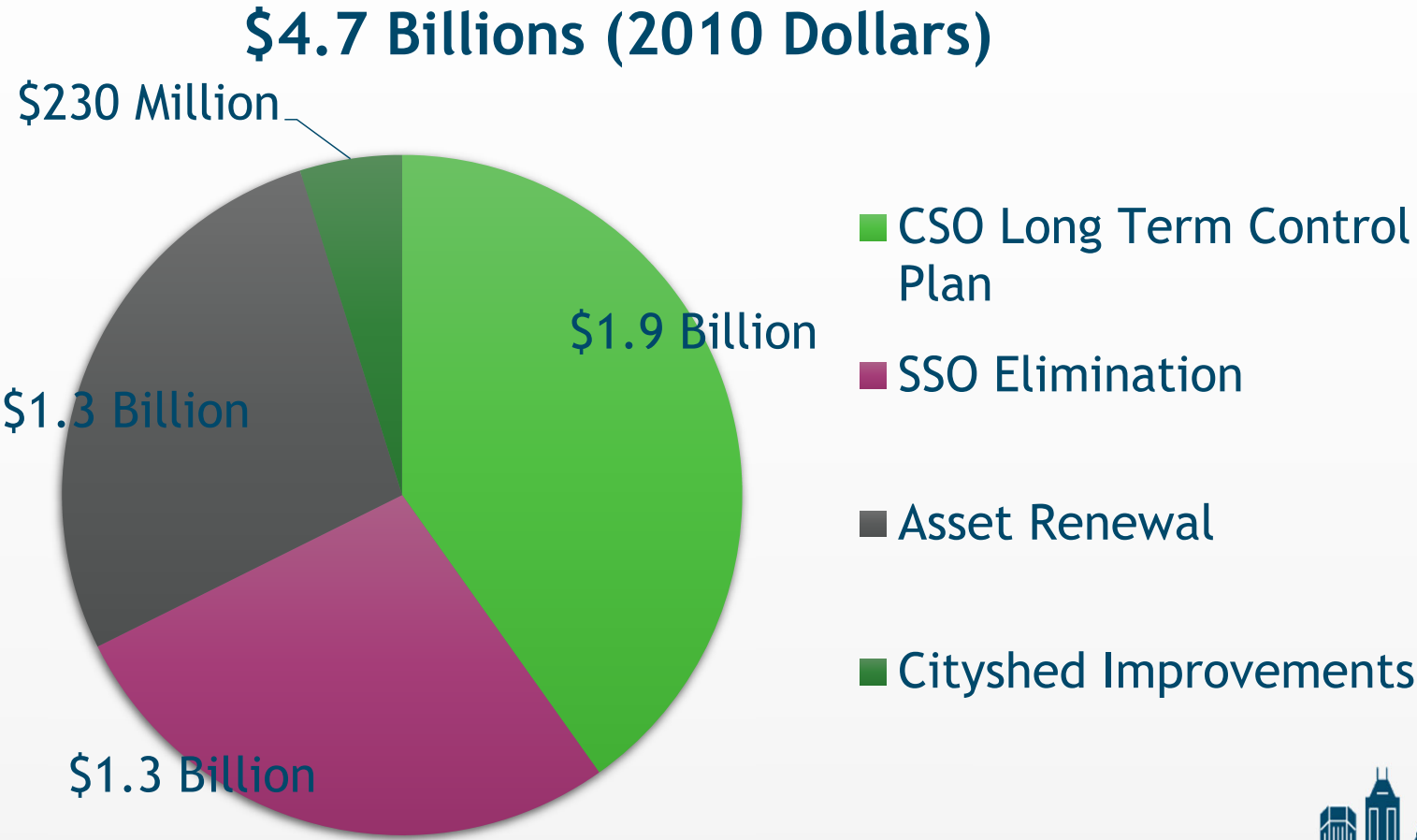


MSD Service Areas

- Bissell Point
- Coldwater Creek
- Lemay
- Lower Meramec
- Missouri river

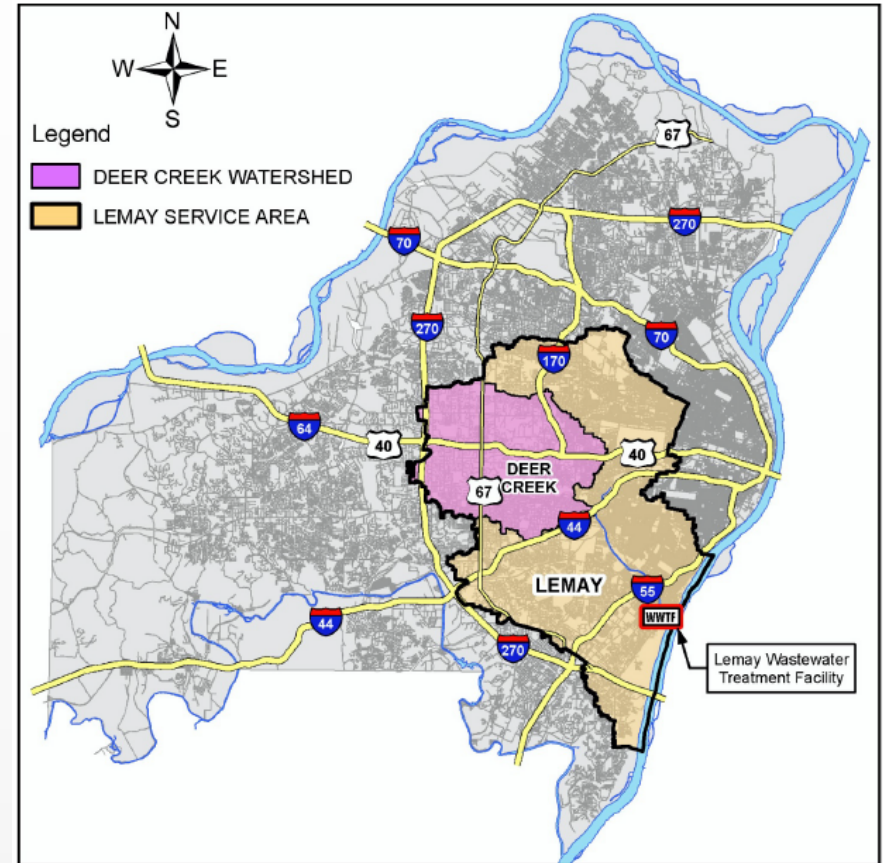
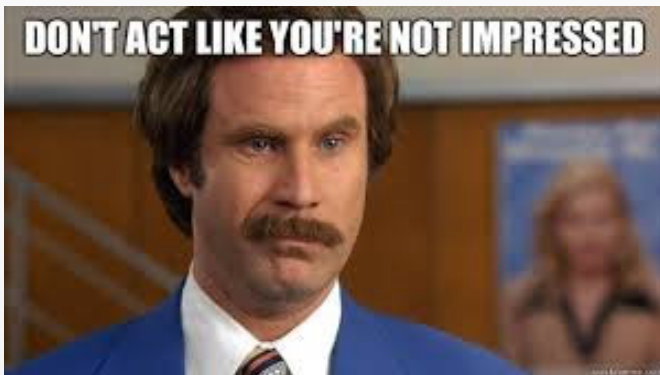


CD Requirements

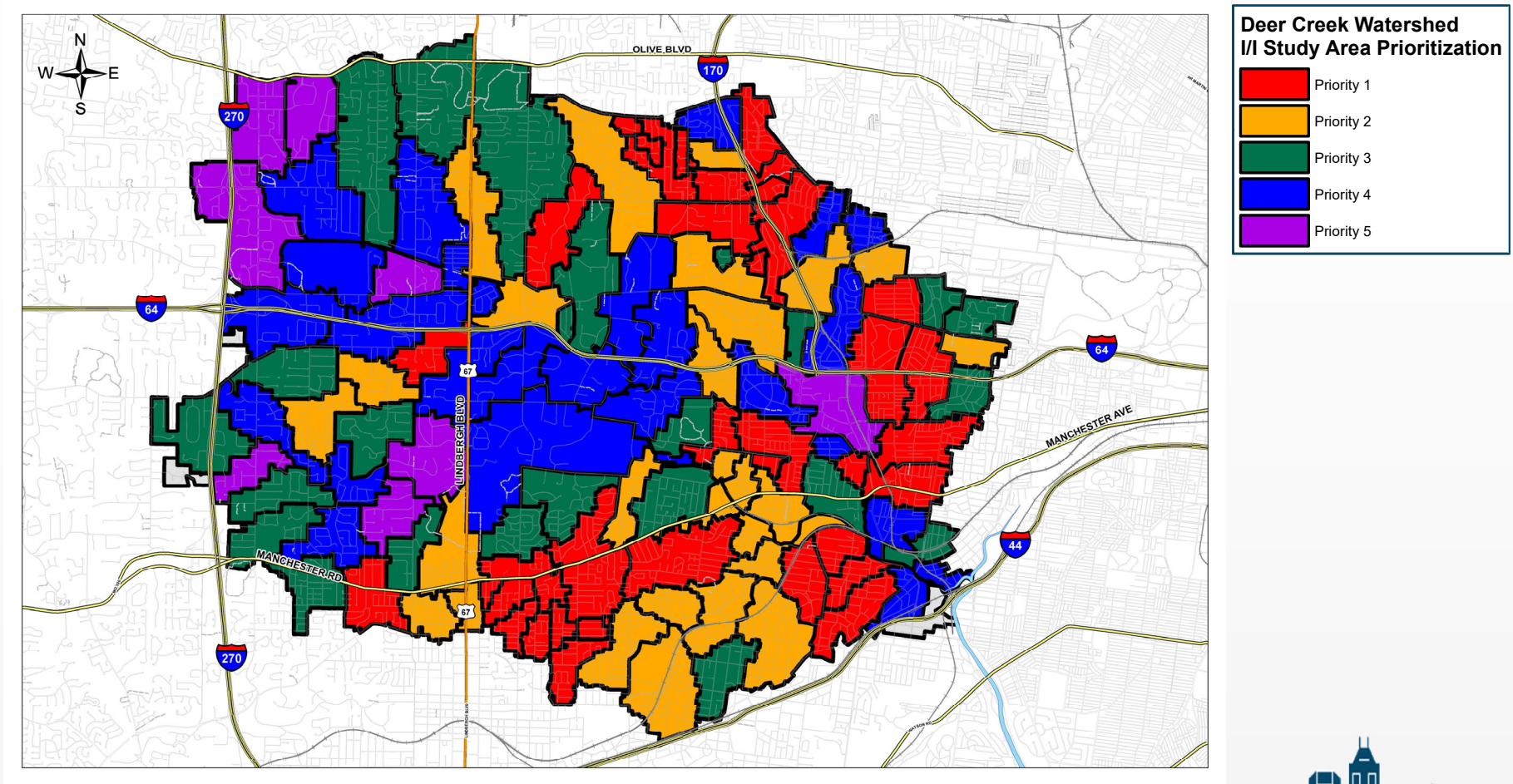


Deer Creek Watershed

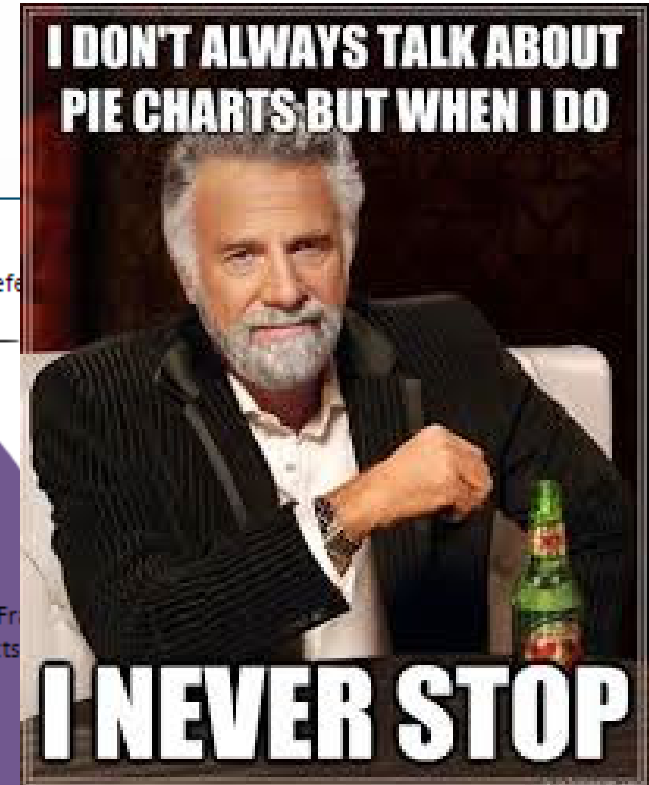
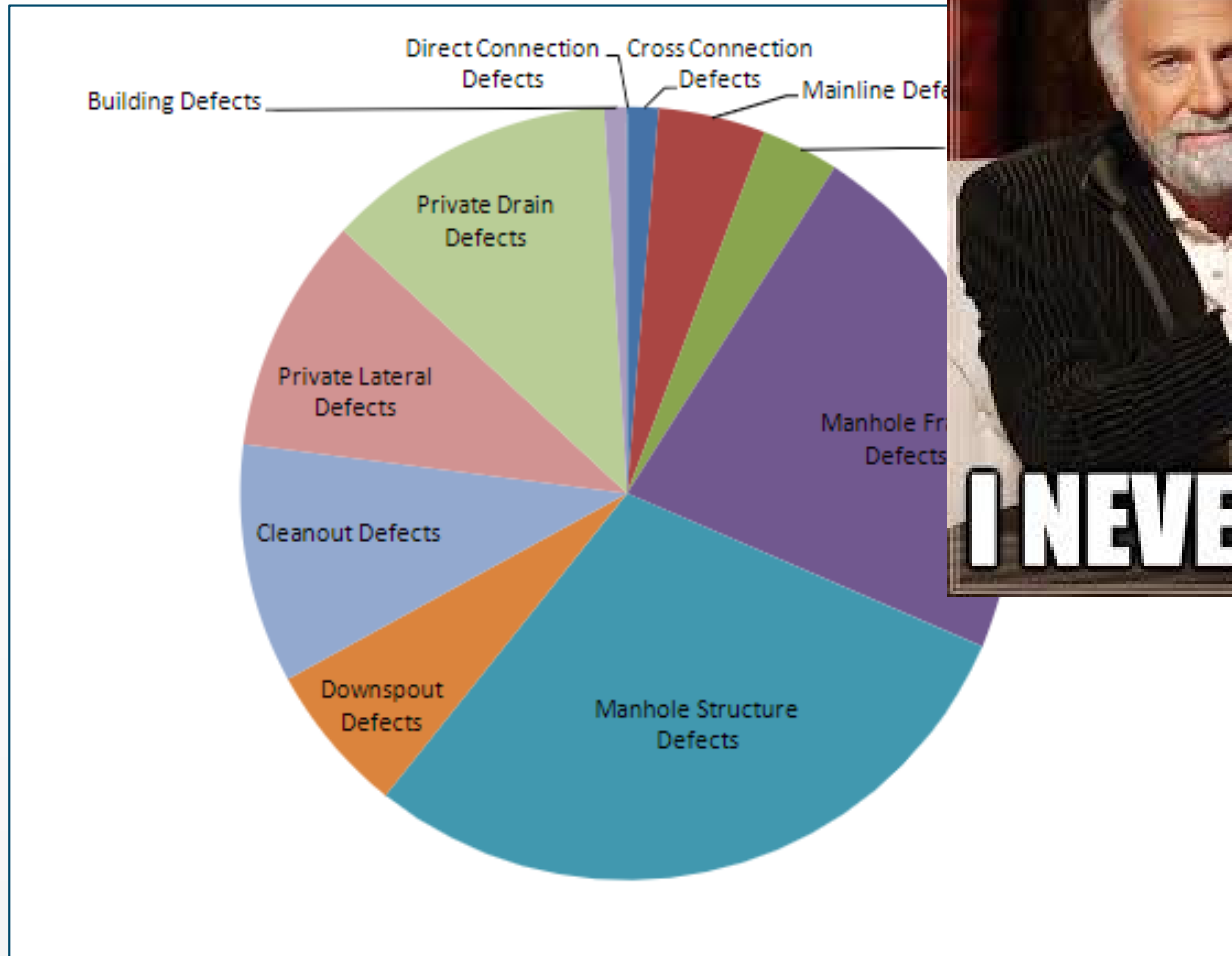
- Lemay Service Area
- Approx. 23,793 acres (37.2 square miles)
- 8 Sub-Watersheds
- Combined and Separated Sewers
- 95% Developed



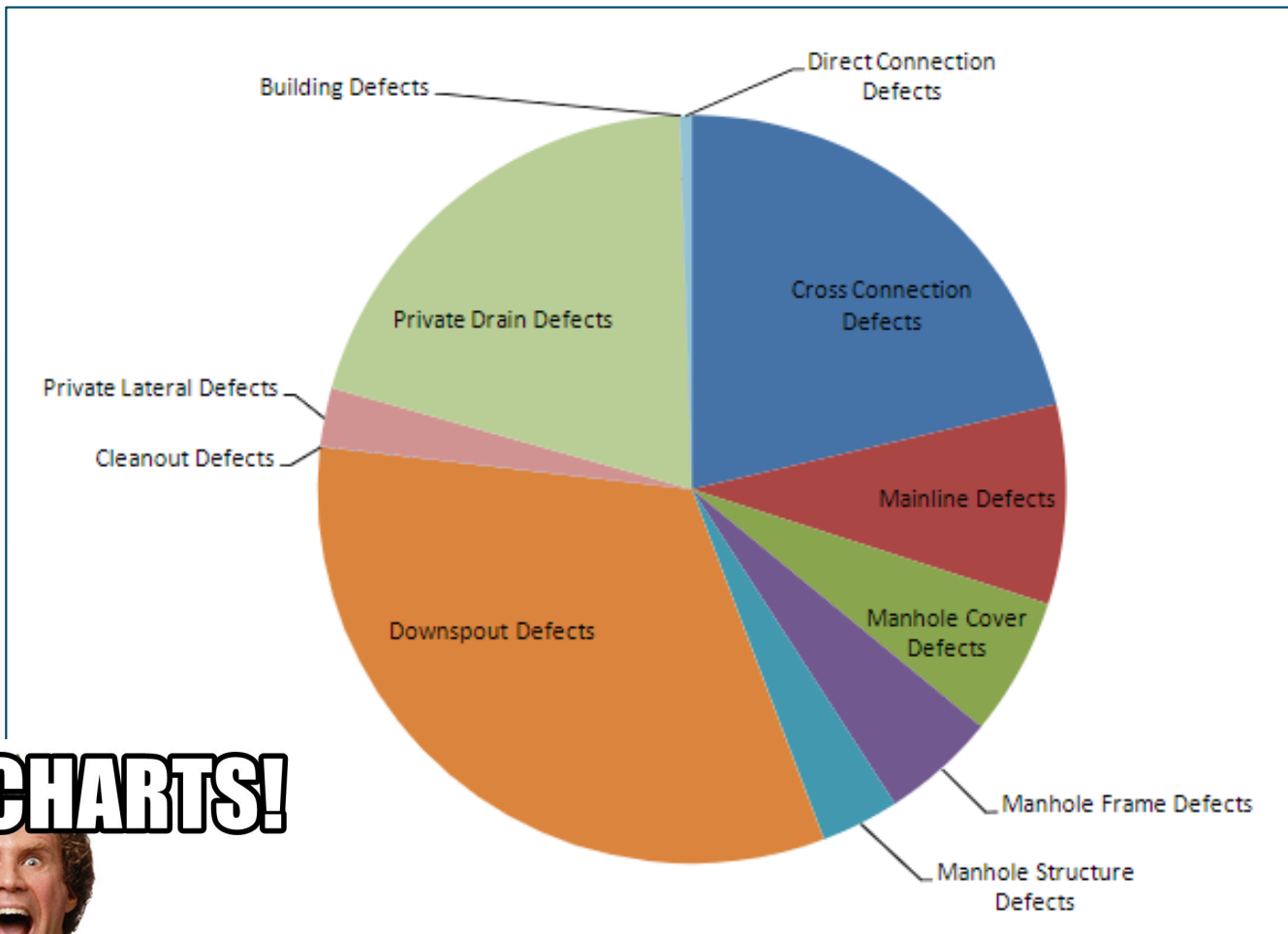
Deer Creek Watershed



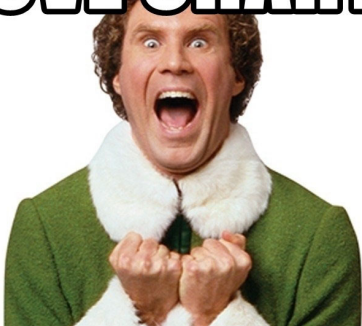
I/I Investigation Results



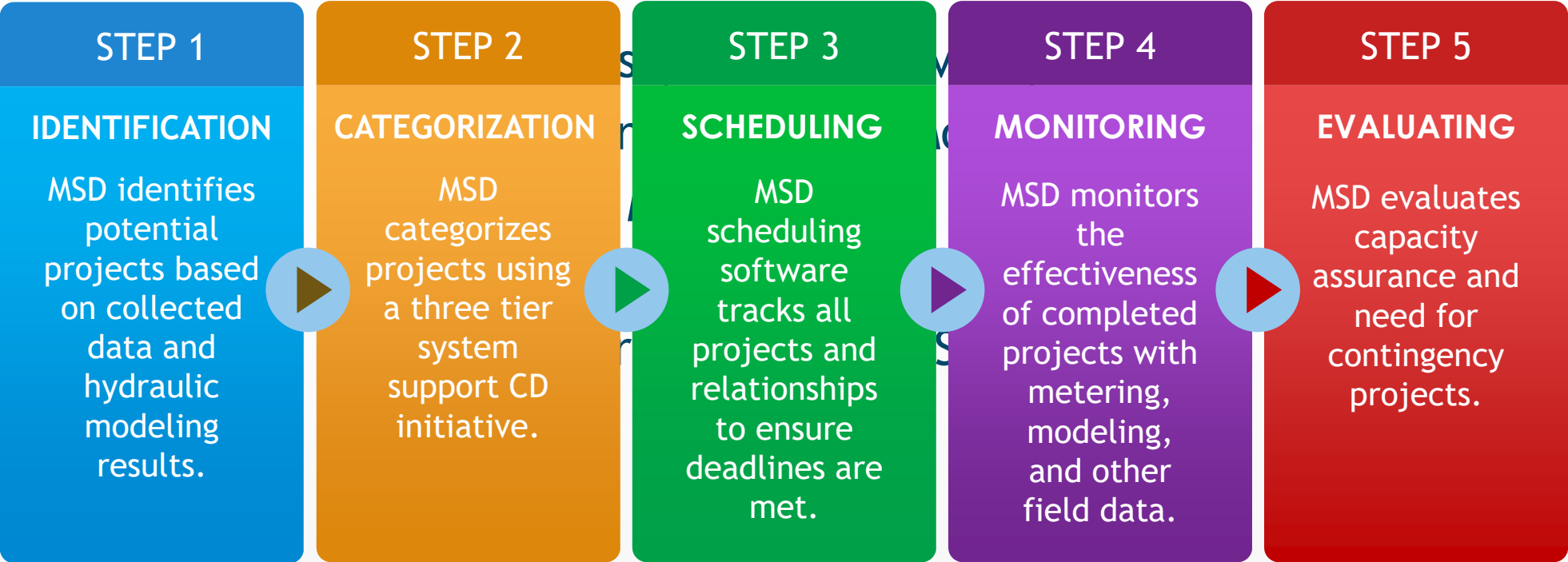
I/I Investigation Results



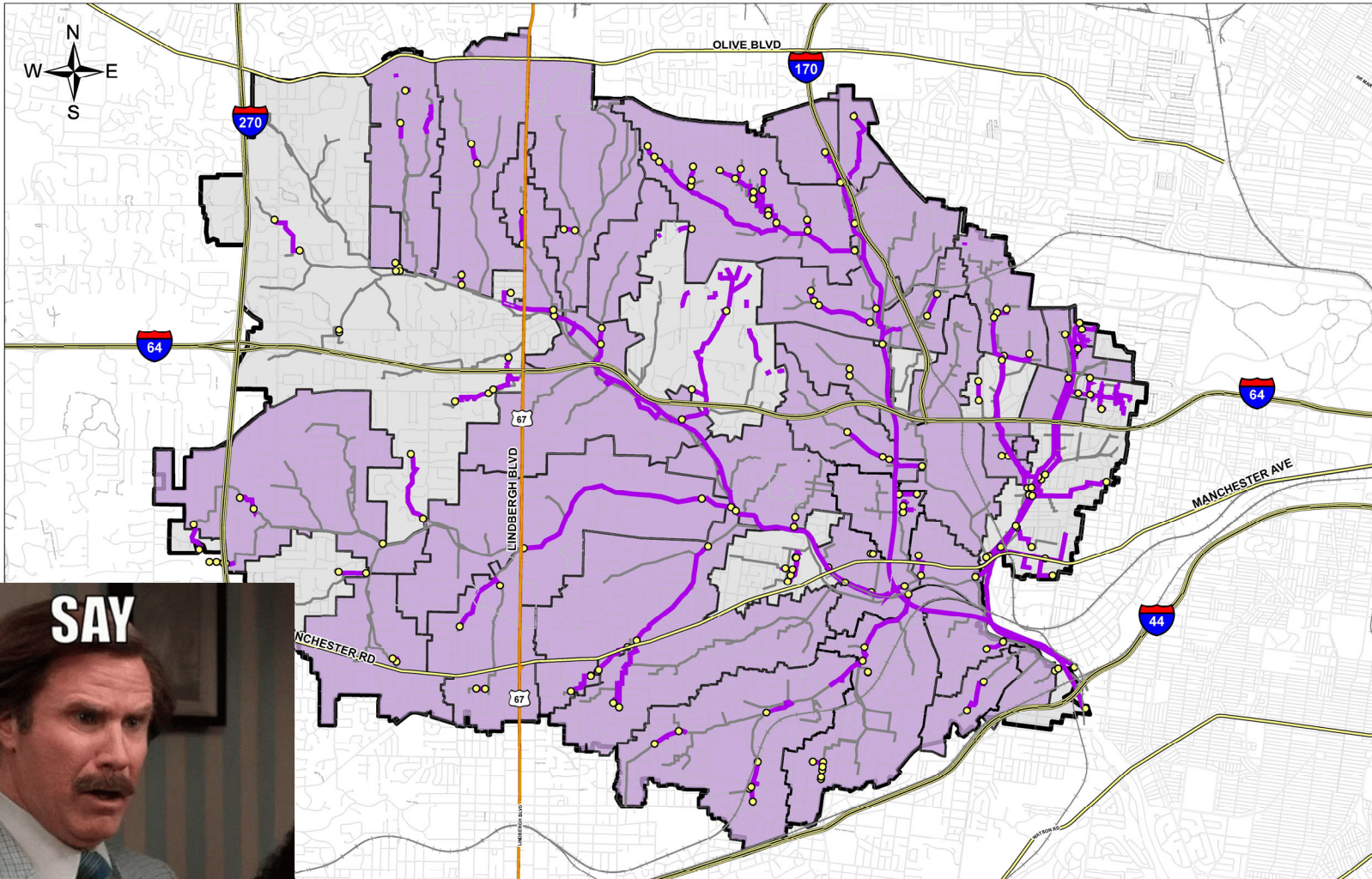
I LOVE CHARTS!



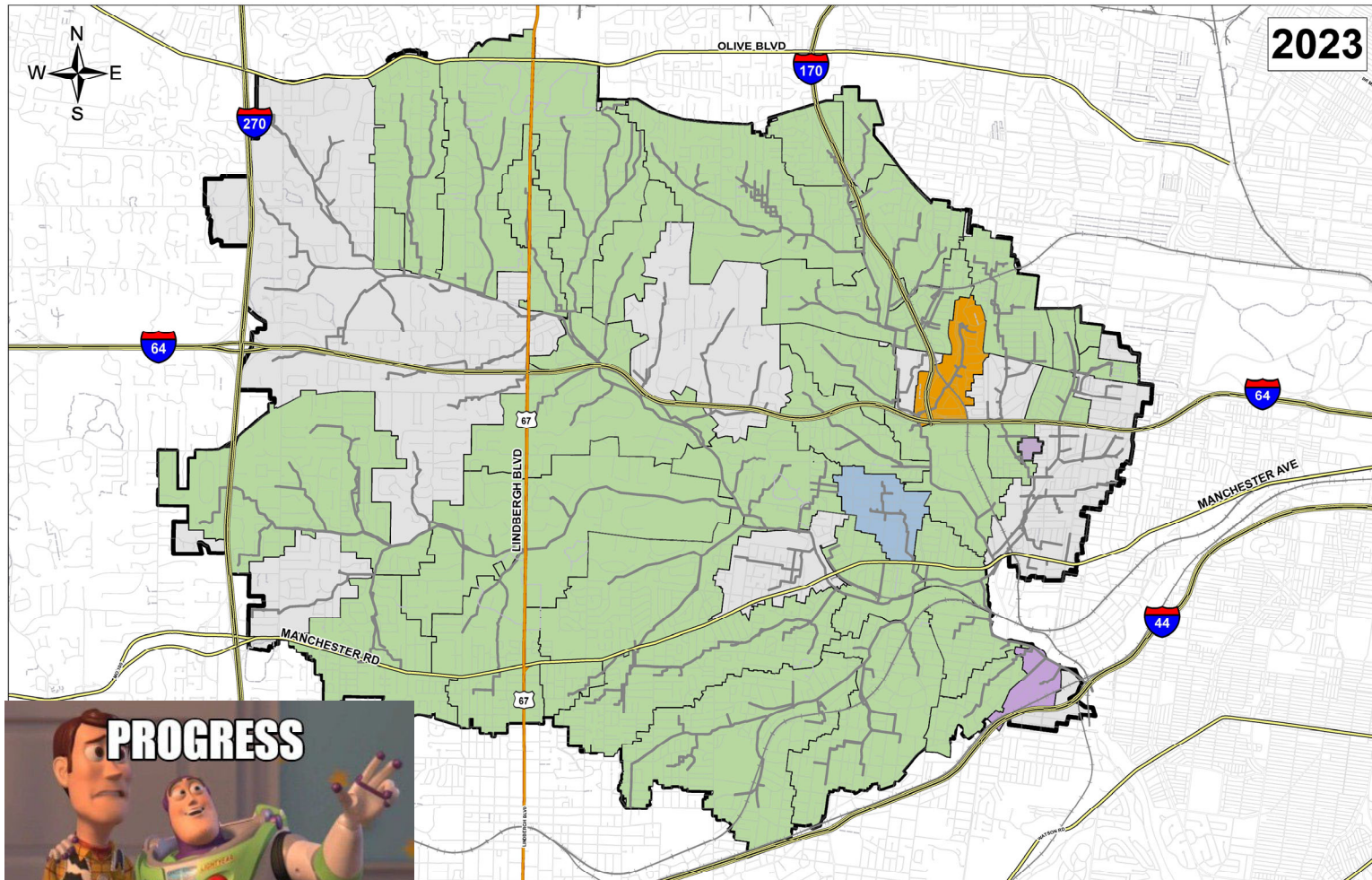
Capital Improvement Program - Project Identification



Deer Creek Identified Projects



Post-Construction and Hydraulic Model Assessment



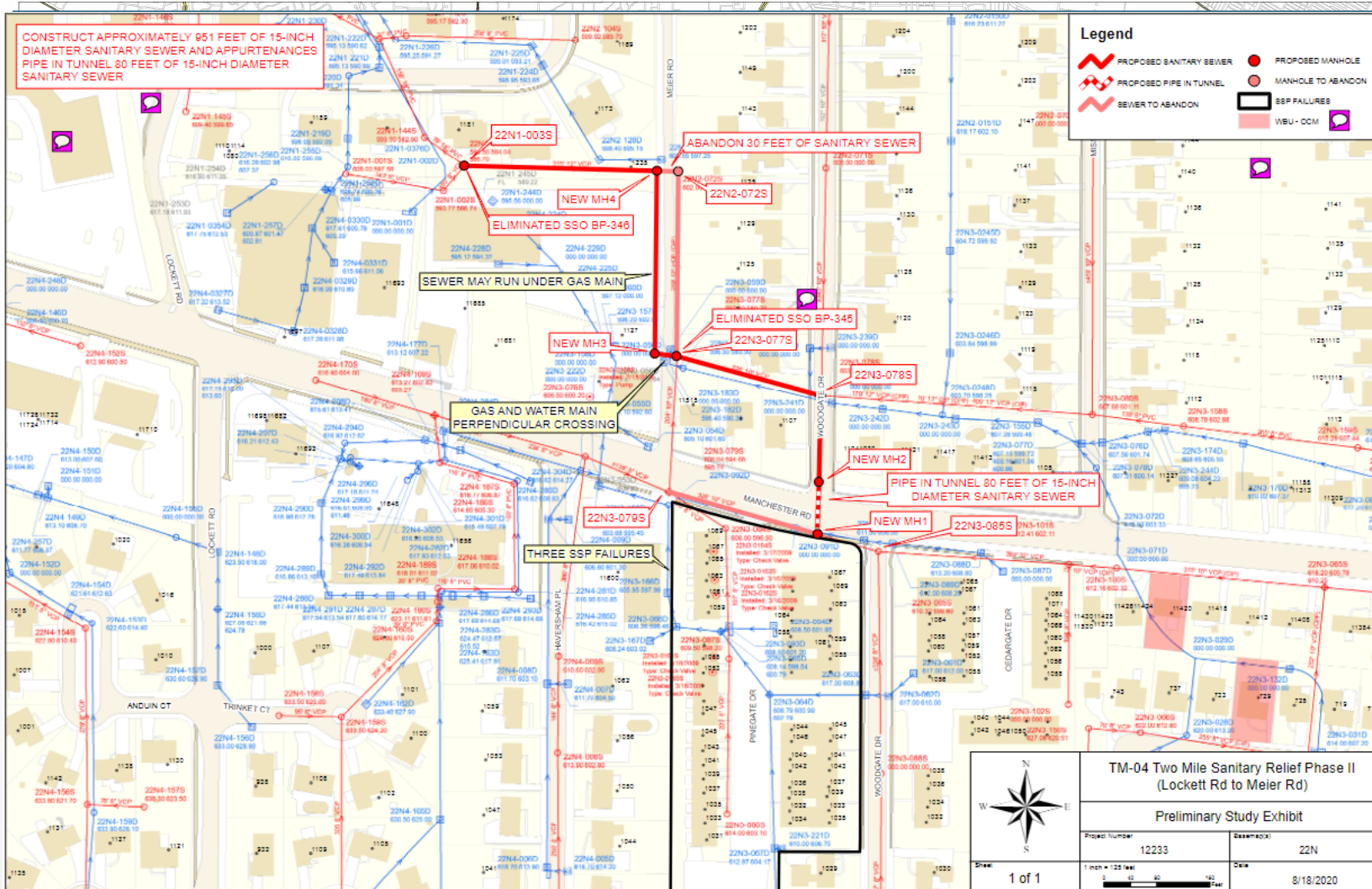
Mirror, Mirror...



n the Wall

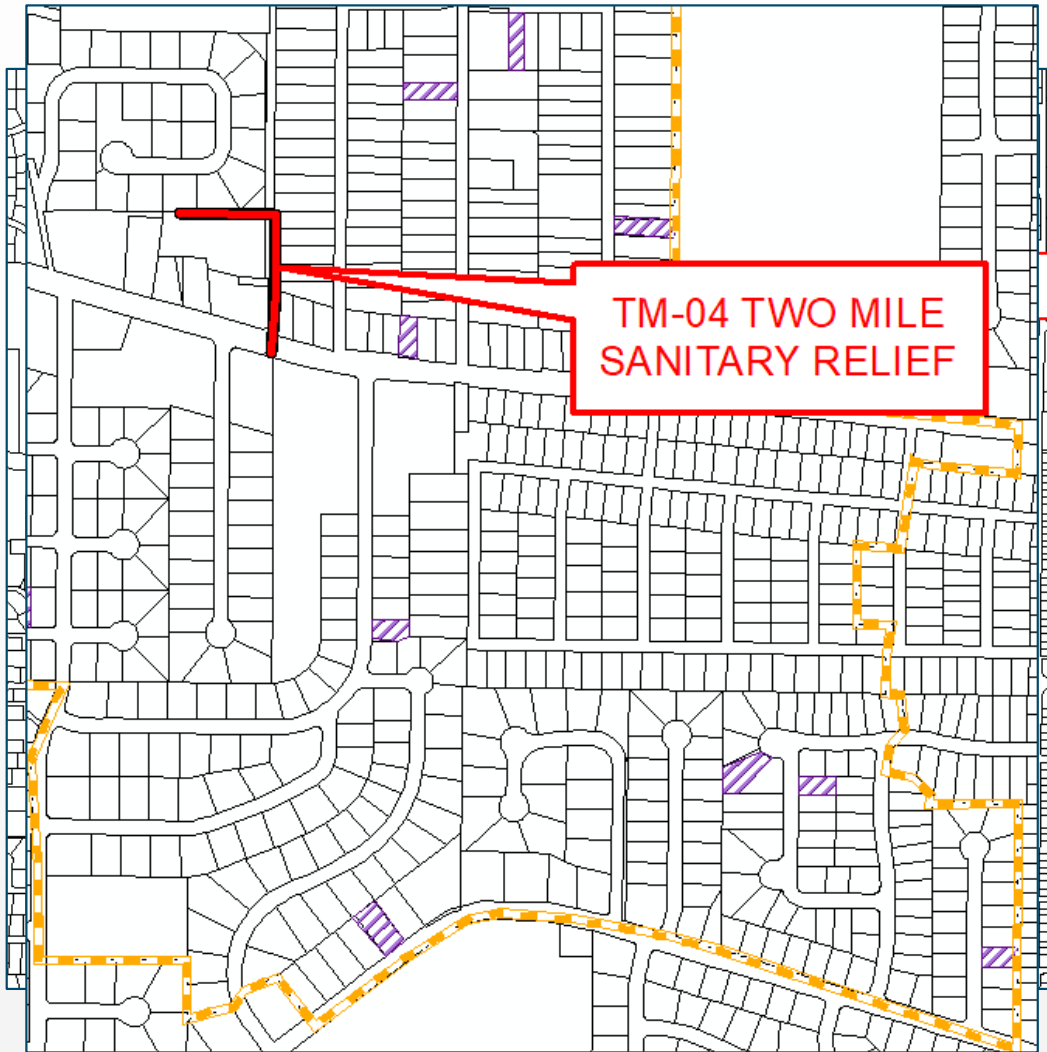
TM-04 Two Mile Sanitary Relief

- Construct Approx. 951 feet of 15-inch sanitary sewer & 80 feet of 15-inch pipe in tunnel
- Design Cost - \$225,000
- Construction Cost - \$1,099,000



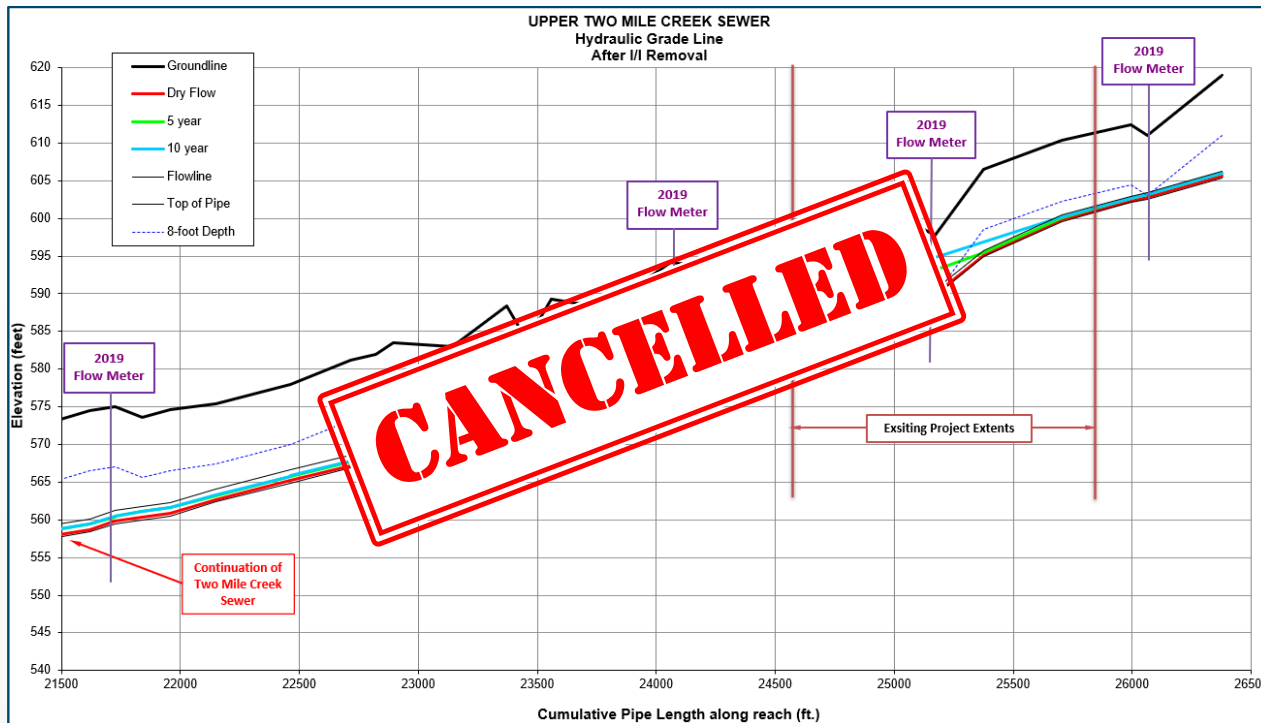
TM-04 Two Mile Sanitary Relief Phase II (Lockett Rd to Meier Rd)	
Preliminary Study Exhibit	
Project Number 12233	Case/Map 22N
Sheet 1 of 1	Date 8/18/2020

Fawn Valley, Pioneer Park, Westchester I/I Reduction Project



- Removed I/I sources of approx. 30 private properties
- 9 properties directly tributary to TM-04 Sanitary Relief
 - 10 - Disconnected Downspouts
 - 6 - Capped Cleanouts
 - 2 - Disconnect area drains
 - 3 - Private Lateral Lining (CIPP)
- Construction Cost - \$28,485
- Cost per Home - \$3,165

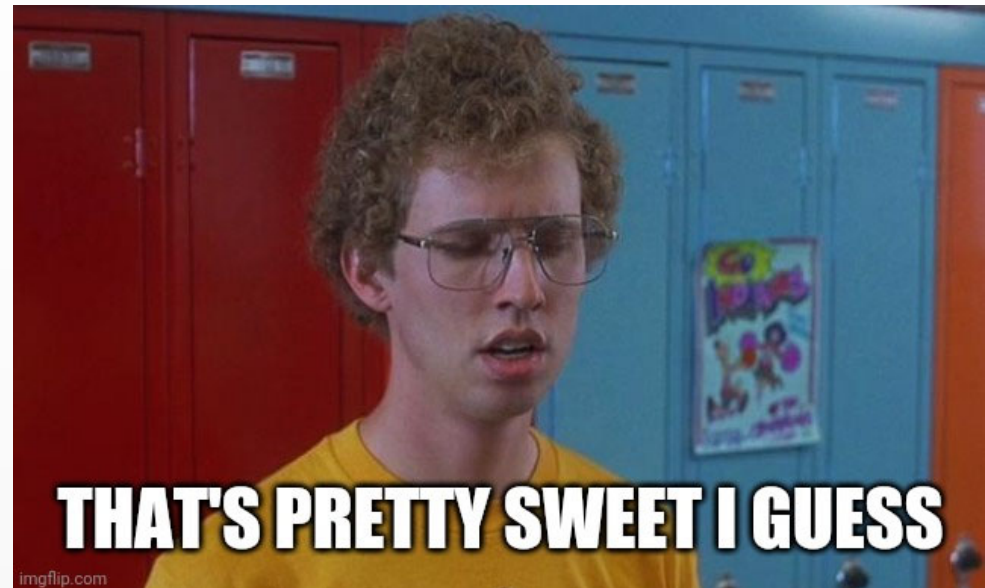
Pre & Post Construction Monitoring



- One Modeled Sewer Lateral
 - Upper Two Mile Creek Lateral
- Existing Conditions (Pre-I/I)
 - Capacity Issues for the 5-year and 10-year rain events
- Updated Model (Post I/I)
 - Utilized 2019 Flow Meter Data
 - Continued Capacity Issue for the 5-year rain event
 - 2 reaches
 - Approx. 22% of I/I reduction
- Other Data
 - Customer Complaints
 - CCTV

Savings???

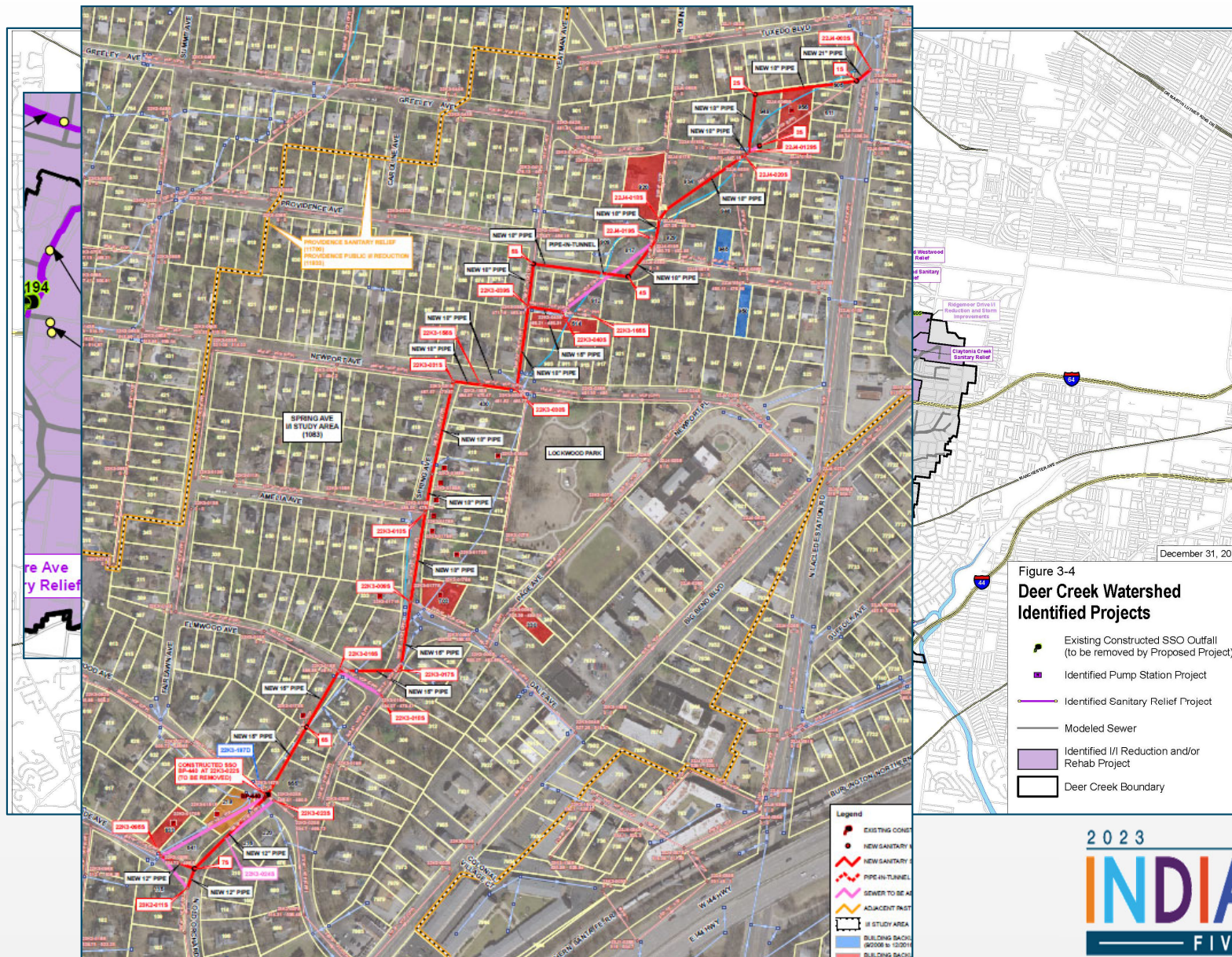
- 9 Properties
- 21 Defects Removed
- Construction Cost - \$28,485
- Sanitary Relief Cost - \$1,099,000



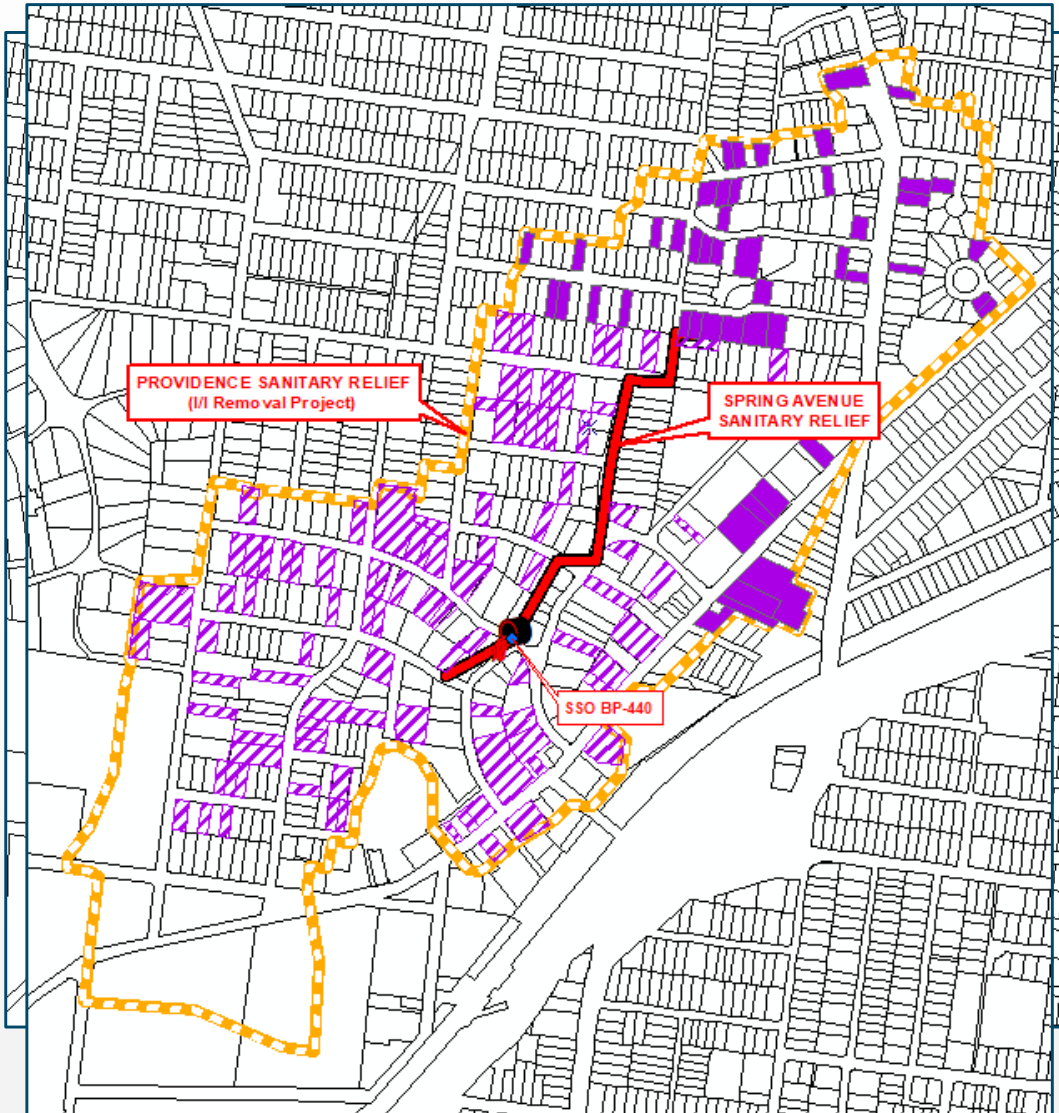
- SAVED ~ 1,070,500

Spring Avenue Sanitary Relief

- Eliminate Constructed SSO Outfall BP-440
- Construct Approx. 4,000 feet of 12-inch to 21-inch sanitary sewer
- Design Cost - \$736,000
- Construction Cost - \$4,333,000

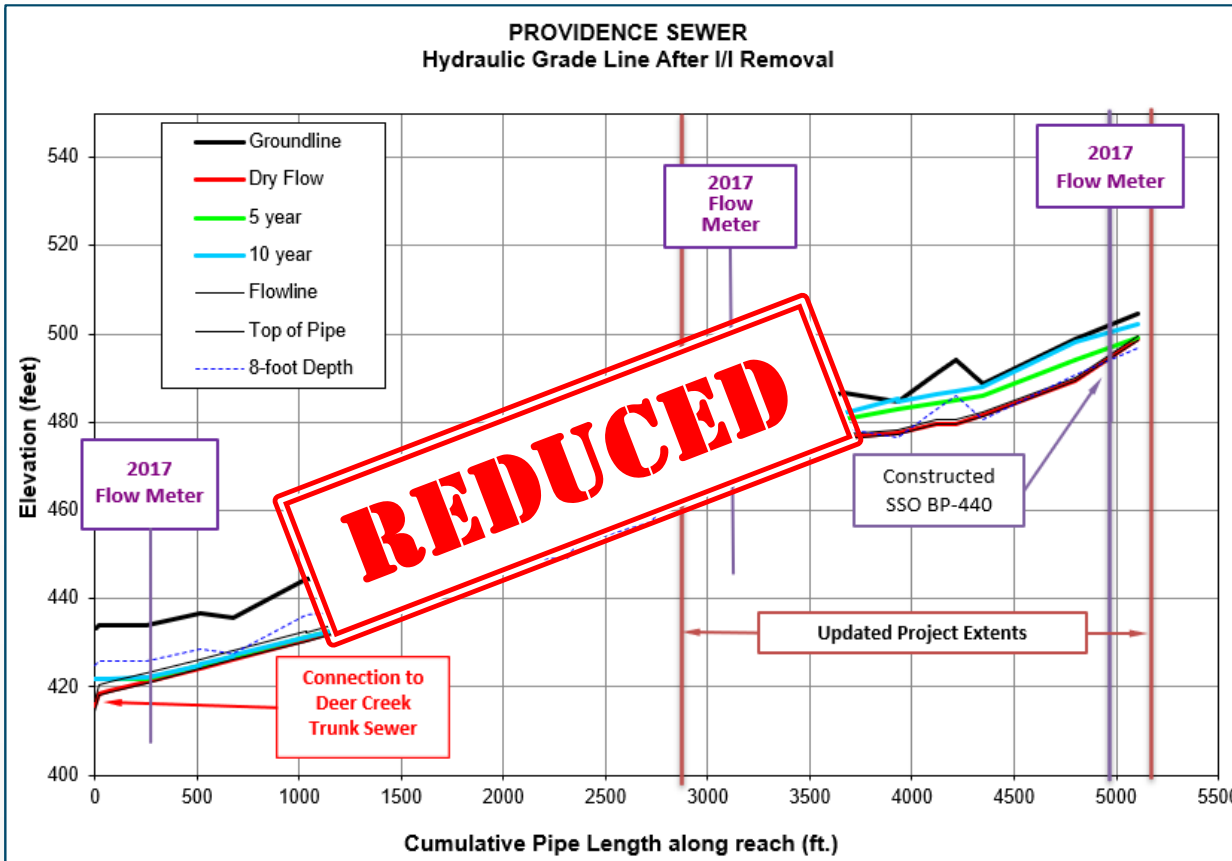


Providence Sanitary Relief (SKME-640) (I/I Removal Project)



- Removed I/I sources of approx. 147 private properties
- 93 properties directly tributary to Spring Avenue Sanitary Relief
 - 60 - Disconnected Downspouts
 - 94 - Capped Cleanouts
 - 7 - Disconnect area drains
 - 3 - Private Lateral Lining (CIPP)
 - 3 - Disconnected Sump Pumps
- Construction Cost - \$122,500
- Cost per Home - \$1,275

Pre & Post Construction Monitoring



- One Modeled Sewer Lateral
 - Providence Lateral
- Existing Conditions (Pre-I/I)
 - Capacity Issues for the 5-year and 10-year rain events
- Updated Model (Post I/I)
 - Utilized 2017 Flow Meter Data
 - Capacity for the 5-year and 10-year rain events for a portion of the Sanitary Relief
 - Approx. 35% of I/I reduction

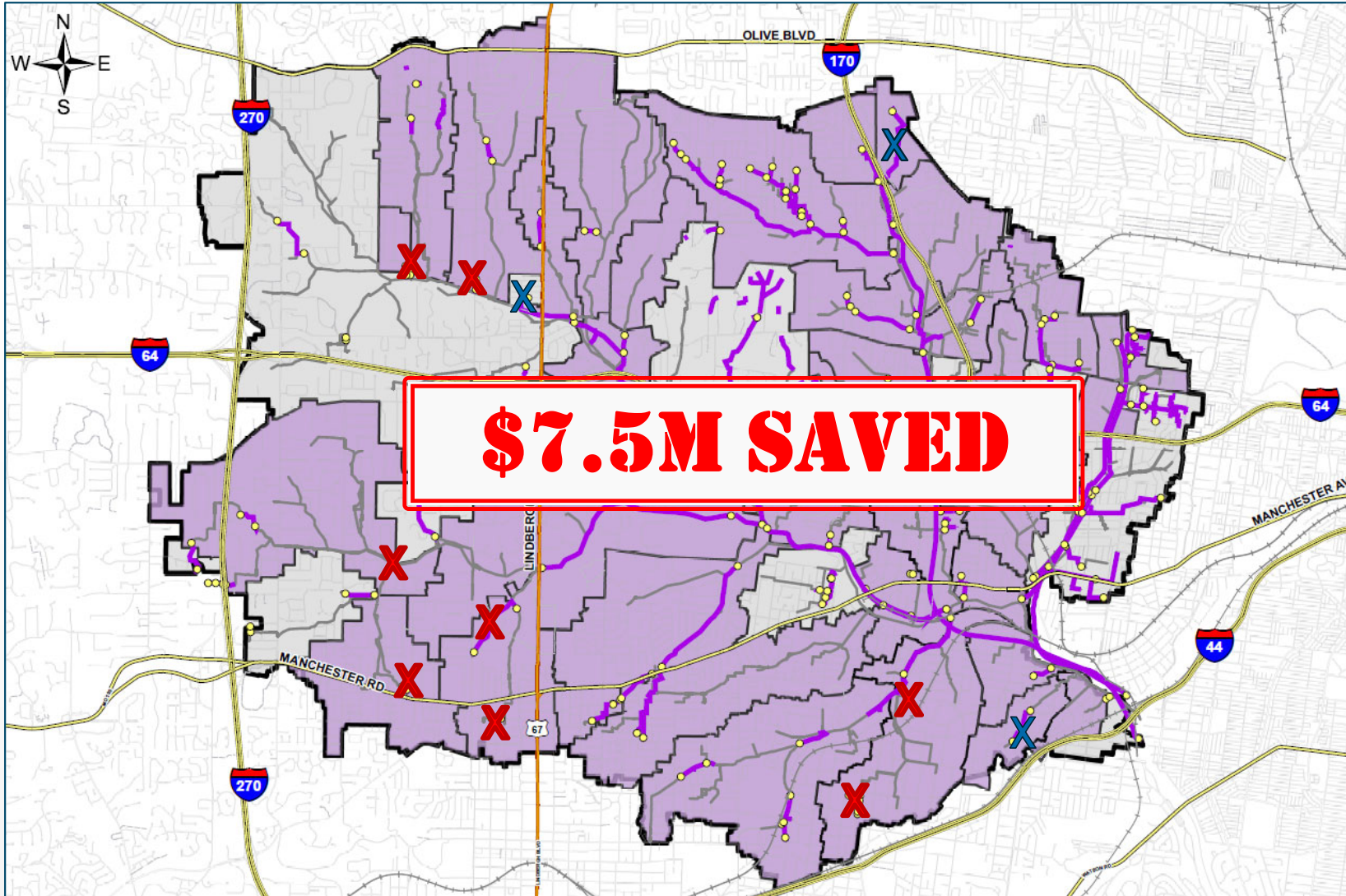
Savings??

REDUCED SANITARY RELIEF

- Eliminate Constructed SSO Outfall BP-440
- Construct Approx. 2,500 feet of 12-inch to **15-inch** sanitary sewer
- Design Cost - **\$450,000**
- Construction Cost - **\$2,390,000**
- Cost Savings - **\$2,106,500**



Deer Creek - Eliminated/Reduced Projects



Mirror Mirror on the Wall..in Conclusion





project
clear®

