CITY OF MEMPHIS DIVISION OF PUBLIC WORKS:
WASTEWATER SEWER SYSTEM DISCUSSION
Why are we conducting this meeting?

The purpose of the meeting is to:

- Overview of the City's wastewater program
- Overview and update of City of Memphis/EPA/TDEC Consent Decree (SARP10)
- Overview of wastewater flow/capacity status of Fletcher Creek.
- Update on the City's wastewater Master Planning for Collection systems.
- Questions and Answers
PANEL:

City of Memphis
- Robert Knecht, Director of Public Works
- Manny Belen, Director/City Engineer
- Paul Patterson, Administrator of Environmental Engineering
- Scott Morgan, Administrator of Environmental Construction
- Gary Vaden, Sewer Design Engineer
- Bobby Allen, Administrator of Public Works | SARP10

SARP10
- Bently Green, SARP10 Program Manager | Black & Veatch Corporation
- Michael Hooks, Jr., SARP10 Deputy Program Manager | Allworld PM
MEMPHIS SEWER SYSTEM AND HISTORY

- The first separate sewer system in the country
- Began construction in the 1870s
- Result of Yellow Fever and Cholera Epidemic that killed over 10,000 people
MEMPHIS SEWER SYSTEM

- 2,808 miles of sewer pipe within City boundaries
- Over 325 miles in unincorporated Shelby County
- 102 lift stations
- 2 Wastewater Treatment Facilities
MEMPHIS SEWER SYSTEM AND HISTORY

• Clean Water Act (1972) mandates treatment before discharge

• Mid 1970’s – City constructs two wastewater treatment facilities
  • Maxson (to the south) – Designed for 70 mgd
  • Stiles (to the north) – Designed for 135 mgd
Memphis has historically had very low sewer rates.

Latest survey of utilities by MLG&W indicated that Memphis had the lowest sewer rate nationally.

Sewer Rates pay for:
- System Maintenance
- System Renewal
- Capital Improvements or Expansion

### SEWER SYSTEM RATES

### RESIDENTIAL WASTEWATER BILLS

Rates in effect January 1, 2017

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<tr>
<th>City, State</th>
<th>Company</th>
<th>5 CCF</th>
<th>10 CCF</th>
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<td>Louisville, KY</td>
<td>Louisville &amp; Jefferson County Metropolitan Sewer District</td>
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10 CCF = 7,500 gallons
SEWER SYSTEM CAPITAL EXPENDITURES

- TE Maxson upgrades $170 m
- MC Stiles $150 m
- Consent Decree $350 m
- Biosolids $175 m
- Annual maintenance: $15-20 m

Numbers are in millions
OVERFLOW REGULATIONS AND RESPONSES

- **1994** EPA begins drive on overflow reduction throughout the country

- **2006** Memphis implements Fat Oil and Grease (FOG) and Capacity Management Operation and Maintenance (CMOM) programs; begins significant overflow reduction –

- **2012** City negotiates a consent decree with EPA and TN Clean Water Network
Comparison to other cities:
Birmingham............$3 billion
Atlanta................$3.9 billion
Toledo..................$600 million
St. Louis................$4.7 billion
San Antonio............$1.1 billion
MEMPHIS...............$350 million
CONSENT DECREES ASSESSMENT AREA

Consent Decree required rehabilitation of yellow area by February 2023.
**ADDITIONAL “HIGH VALUE” REHABILITATION & REPLACEMENT PROJECTS COMPLETED**

- **Loosahatchie River basin projects**
  - Old Loosahatchie (Hwy 51) 42-inch interceptor replacement
  - Todd Creek 30-inch interceptor CIPP lining
  - Woodview Area-10-inch replacement sewer
  - St. Elmo Ave. 8-inch pipe bursting

- **Wolf River basin projects**
  - Big Orange Lift Station replacement
  - Rodney Baber sewer replacement (in progress)
  - Lick Creek 20-inch through 36-inch interceptor CIPP lining
  - Wolf River 96-inch rehab

- **Nonconnah Creek basin projects**
  - Black Bayou interceptor sewer crossing
  - Harlem Ave 18-inch aerial sewer crossing replacement
  - Johns Creek 33-inch through 36-inch interceptor CIPP lining
  - Barksdale twin 12-inch barrel siphon replacement

- **Mud Island basin project**
  - Mud Island 60-inch rehab
$132 million invested on consent decree program to date.

SSO’s reduced significantly via cleaning and high value rehabilitation to date.

Program started in April 2013.
THE OLD WAY VS. OUR WAY
MASTER PLANNING
MASTER PLANNING DRIVERS

- Assess Capacity
  - against a "design" storm for consistent basin assessments against a standard
  - contrasts to the CD program, which focuses *primarily* on overflow reduction

- Understand
  - where future growth is forecast
  - where both DEFICIENT and EXCESS capacity exists
  - limitations of existing system both now and in the future

- Ensure
  - that the sewer system remains sustainable for its customers
  - both for level of service and sewer rates
MASTER PLANNING OBJECTIVES

- Determine areas where additional capacity is required
- Consider present (2018) and future capacity (Year 2040) to accommodate growth and development
- Develop high level alternatives and cost estimates for providing additional capacity
- Incorporate into long-term capital improvement program
Models and assesses flows that would occur in the event of a 2-year 24 hour storm event. Determines where overflows would occur.
TAKE-AWAYS

- Master plan modeling and assessments are currently on-going
- Current assessments indicate capacity limitations in the Fletcher Creek Interceptor
- Focusing on conveyance improvements to increase capacity
- Once the flow is conveyed, consideration would also need to be given to impacts on treatment facility capacity
- Factors affecting capacity are normal sewer flow as well as inflow that gets into the system during wet weather and high river levels
PATH FORWARD
AS IT RELATES TO FLETCHER CREEK BASIN

• Modeling indicated restricted capacity
• We completed visual assessments to verify flow conditions
• Installed flow monitoring with the final report due August (2018)
• Results will guide next steps which are:
  a) Allow development to connect based on available capacity
  b) Adding capacity or storage
WHAT DOES THE FUTURE LOOK LIKE?

• Compliance with our regulatory mandate is critical to our success

• Then city has a capital plan to reinvest in our collection and treatment systems

• We need capacity enhancements or other alternatives to help serve our growth

• Our intent is to be proactive both in terms of master planning and meeting growth/levels of service

• Memphis 3.0 will help guide us towards the future development decisions
QUESTIONS