MOM: Lift Station Consolidation
Winsome Lift Station

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Proposed Winsome Lift Station

Presentation Outline

• Why Consolidate?
• Project Scope
• Project Components
• Existing Conditions – Upstream Planning
• Real Estate Issues
• Recommended Project
• Construction Impacts
• Estimated Construction Cost
• Project Benefits
• Questions - Answers
Proposed Winsome Lift Station

Why Consolidate?

• City of Houston Facility Consolidation Plan
  ➢ Replaces ageing lift stations and force mains
  ➢ Reduces facility maintenance and operating costs
  ➢ Improves system reliability by consolidation

• Improve resident QOL
  ➢ Reduces visual impacts by 75% - from 4 lift stations to 1.
  ➢ Reduce if not eliminate odor complaints
Proposed Winsome Lift Station

Recommended Project

- **New Winsome Lift Station**
  - 23.5 MGD, based on 2025 effective service area flows
  - Submersible, 5 pump layout
  - Odor control options

- **Force Main and Gravity Lines**
  - 48-inch gravity line from upstream manhole at Westheimer No. 1 to new Winsome Lift Station
  - 36-inch gravity line from upstream manhole at Gulfton to 54-inch
  - 36-inch FM from Winsome Lift Station to 54-inch sewer

- **Demolish 2 existing lift stations**
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Project Scope

• Winsome Lift Station
  ➢ Divert Westheimer No.1 via 1400 LF of 48-inch gravity sewer, followed by abandonment of existing lift station
  ➢ Build a Regional Lift Station at Winsome and Fountain View, sized for future diversion of San Felipe and Bering Lift Stations
  ➢ Project includes gravity lines, 36-inch diameter force main to 54-inch diameter trunk sewer (under construction)

• Abandon Gulfton Lift Station
  ➢ Divert flows via 175 LF of 36-inch diameter gravity sewer to connect to 54-inch diameter trunk sewer (under construction)

• Project includes:
  ➢ Hydraulic analysis, review of upstream conditions, need for odor control facilities, identification of feasible locations for new lift station site
  ➢ Consolidates flows of 4 existing lift stations
  ➢ Designed for future total flows of 23.5 MGD
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Project Components

- **Winsome Lift Station**
  - Project includes: 1400 LF of 48-inch diameter gravity sewer

- **Winsome Force Main**
  - Approximately 7,350’ of 36-inch diameter force main

- **54-inch sewer main**
  - Collects flows from Winsome Force Main and diverted Gulfton Lift Station, via 175 LF of 36-inch diameter gravity sewer

- **Odor control facilities**
  - As required. Receiving manhole to be equipped with vortex aeration for sulfide control
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Upstream Planning

- **Westheimer No.1**
  - Currently receives flows from San Felipe No 2, Bering and Chimney Rock Lift Stations
  - New lift station designed to handle future flows from same service area – design 23.5 MGD
  - San Felipe No. 2 and Bering diverted and abandoned in future
  - Chimney Rock Lift Station abandonment considered, but found not feasible for gravity diversion

- **San Felipe No. 2 Lift Station**
  - ‘Back lot’ sewers will be replaced under future separate project
  - Ensure design depth accommodates improved line velocities and flow lines, allow for depth of cover and clearance under Bering Ditch
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Real Estate Issues

• How Do You Site a Lift Station...?
  ➢ Cost of real estate
  ➢ Near major shopping/commercial areas
  ➢ NIMBY issues
  ➢ Partially residential

Gulfton Lift Station

Proposed Site
Existing Paving & Right-of-Way:

- Ave Traffic: 17,900 vehicles
- ROW: 80-100’
- Pvmnt width: 60-75’
- # of Lanes: 4
- Median: 20-25’
- Signals: 8
### Proposed Winsome Lift Station

## Estimated Construction Costs

<table>
<thead>
<tr>
<th>Facility Description</th>
<th>Construction Cost (Recommended Alternative)</th>
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<tr>
<td>36-inch/48-inch gravity diversion sewers &amp; 36-inch diameter force main</td>
<td>$12,503,000.00</td>
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<tr>
<td>New Winsome Lift Station</td>
<td>$4,300,000.00</td>
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<td>Abandonment of existing Westheimer No. 1 and Gulfton Lift Stations</td>
<td>$100,000.00</td>
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<td>Utility Adjustments</td>
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<tr>
<td>Total Estimated Cost, including 20% contingency</td>
<td>$17,153,000.00</td>
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Project Benefits

• Reduces number of operating lift stations, from 4 to 1, with 2 additional LS abandonments in future
• Reduces force main length by 80%
• Reduces potential for odor generation
• Reduces SSOs and resulting maintenance demand
• Improves resident’s quality of life:
  ➢ Removes footprint of 3 lift stations
  ➢ Reduces nuisance odor complaints
  ➢ Improves level of service by upgrade of neighborhood sewers and reduces SSOs
• Cost break point for project 20 years, previously 35 years
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Questions
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Construction Impacts

• **Crowded ROW**
  - Existing sanitary gravity sewers, dual 26-inch force mains, gas, electric, water, storm sewer and communications lines in project footprint
  - Must cross under two major freeways

• **Conventional vs. Trenchless Methods**
  - Minimize impact vs. maximize value
  - Limitations of various methods – need high accuracy for gravity sections
  - Accommodate laydown areas for pipe pulling/installation
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Construction Impacts

New 36-inch FM alignment