No Silver Bullet:
TRA’s Bear Creek Large-Diameter Rehabilitation

Presented by:
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No Silver Bullet: Outline

• Trinity River Authority of Texas
• Project Overview
• Condition Assessment
• Rehab Alternatives
• OPCC Comparison
• Project Status
No Silver Bullet: Trinity River Authority of Texas

Trinity River Basin

- Nearly 18,000 square miles
- Most developed large watershed in Texas with 32 water-supply reservoirs
- Water supply for approximately half of Texas’ population.
No Silver Bullet: Trinity River Authority of Texas

• Established by Texas legislature in 1955
• Wholesale provider of water and wastewater treatment services
• Specialize in development and operation of multi-participant regional facilities
No Silver Bullet: **Trinity River Authority of Texas**

- **Northern Region**
- **Southern Region**
- **Bear Creek Interceptor**
No Silver Bullet: Trinity River Authority of Texas
No Silver Bullet: **Project Overview**

**BEAR CREEK INTERCEPTOR - LOCATION MAP**

- Parallel 84-Inch & 54-Inch Interceptors
  - 5,600 LF
  - 54” Constructed in 1970’s (RCP)
  - 84” Constructed in 1990’s (RCP)
  - Combined Peak Capacity of 110 MGD
  - Five (5) Combined Junction Boxes
  - Two (2) Siphons under Bear Creek
No Silver Bullet: **Condition Assessment**

- Traditional CCTV used for Interceptor & MH Inspection
  - Sonar Inspection used for Siphons
- **Condition Scoring System**

<table>
<thead>
<tr>
<th>Condition Grade</th>
<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Excellent</td>
</tr>
<tr>
<td>2</td>
<td>Good</td>
</tr>
<tr>
<td>3</td>
<td>Fair</td>
</tr>
<tr>
<td>4</td>
<td>Poor</td>
</tr>
<tr>
<td>5</td>
<td>Immediate Attention</td>
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</tbody>
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- 10 of 16 Pipeline Sections Graded at 5
- 17 of 23 Manholes Graded at 4
No Silver Bullet: **Condition Assessment**

**BEAR CREEK INTERCEPTOR - STRUCTURAL CONDITION ASSESSMENT GRADES**

![Map Diagram](image-url)

Legend:
- Manholes
- Fair (3)
- Poor (4)
- Immediate Attention (5)
- Limited/No Data

Release Date: July 2014
Lockwood, Andrews & Newnam, Inc.

This map is NOT suitable for survey purposes and does not purport to depict or establish boundaries between land owners or locations of utility infrastructure where survey data is available and field locations have been established.
No Silver Bullet: **Condition Assessment**
No Silver Bullet: **Rehab Alternatives**

- **Option A:** 84” Sliplining & 54” CIPP
- **Option B:** 90” Parallel
- **Option C:** 84” Sliplining & 54” Replace
- **Option D:** 84” CIPP & 54” CIPP
- **Option E:** New 84” & 90” Parallel
No Silver Bullet: Design Considerations

• Alternatives were designed for combined 2060 flow projections (97 MGD)

• Bypass Pumping
  • Manage up to 29.5 MGD daily average flow
  • Manage up to 125% peak flow (50 MGD)

• Best utilize existing assets
  • Permanent easements
  • Existing pipes
No Silver Bullet: Rehab Alternatives

Option A: 84” Sliplining & 54” CIPP

Pros:
- Minimal surface impact
- Can utilize existing easements/infrastructure
- Sliplining can be completed in live flow which reduces bypass pumping

Cons:
- Potential for contractor markup on half the job
- Limited ability to fully inspect joint integrity while sliplining
- Additional insertion MHs may be needed for CIPP Install

OPCC: $9,650,000
No Silver Bullet: Rehab Alternatives

Option B: 90” Parallel

Pros:
- New pipe in the ground – max design life
- Existing 84” can be used for diversion to reduce bypass pumping

Cons:
- TRA will be left with large abandoned asset in the ground – costly to fill with flowable fill.
- New permanent easements will be required

OPCC: $11,500,000
No Silver Bullet: Rehab Alternatives

**Option C: 84” Sliplining & 54” Replace**

**Pros:**
- Sliplining can be completed in live flow which reduces bypass pumping
- New 54-Inch pipe in the ground – max design life

**Cons:**
- New permanent easements will be required for 54” installation
- Limited ability to fully inspect joint integrity while sliplining

**OPCC: $10,800,000**
No Silver Bullet: Rehab Alternatives

Option D: 84” CIPP & 54” CIPP

Pros:
• Minimal surface impact
• Can utilize existing easements
• One CIPP contractor can prime the job – eliminate sub markup on other technologies

Cons:
• Additional insertion MHs may be needed for CIPP Install
• Ability to make improvements to access and maintenance is minimal
• Little opportunity to use existing system for flow diversion – extensive bypass pumping

OPCC: $11,700,000
No Silver Bullet: Rehab Alternatives

Option E: New 84” & 90” Parallel

Pros:
• New pipe in the ground – max design life
• Existing 84” can be used for diversion to reduce bypass pumping

Cons:
• Additional footprint of pipeline
• New temporary and permanent easements will be required
• Tunneled crossing of Belt Line Road – TxDOT permitting

OPCC: $12,150,000
## No Silver Bullet: OPCC Comparison

<table>
<thead>
<tr>
<th>Rehab Option</th>
<th>OPCC</th>
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<tbody>
<tr>
<td>Option A: 84” Sliplining</td>
<td>54” CIPP</td>
</tr>
<tr>
<td>Option B: 90” Parallel</td>
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</tr>
<tr>
<td>Option C: 84” Sliplining</td>
<td>54” Replacement</td>
</tr>
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<td>Option D: 84” CIPP</td>
<td>54” CIPP</td>
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<td>Option E: New 84”</td>
<td>90” Parallel</td>
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</tbody>
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*Could fluctuate +/- $1,000,000 depending on bypass design and contractor’s creativity.
No Silver Bullet: Project Status

• Option A Selected
  • Cost
  • Utilizes existing infrastructure
  • Sensitive land rights – minimizes need for additional permanent easements
  • Smaller construction footprint
• Currently Under Final Design
• Anticipate Bid in Mid to Late 2017
QUESTIONS

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