THE PATH FORWARD:
Flood Tunnel

presented by
Brian Gettinger, PE
We have to get water to the Bay faster to prevent flooding.

Houston needs more conveyance.
An ounce of prevention is worth a pound of cure

- Benjamin Franklin

Why Now?
Why Not? Disproving the Myths

Too Expensive
Ground is No Good
Groundwater Table is too High
Never Done it Here Before
Can’t Move Enough Water
Inlet:
Barker Reservoir
Elevation: 95.5 feet (1% Pool) Max 104 feet

Outlet:
Houston Ship Channel
WSEI Elevation: ~0 – 10 feet

Additional Potential Inlet Locations
Spring Branch – Memorial - Galleria

How it Works

Large Diameter Tunnel, 30-40 ft diameter
30 – 50 million gallons storage per mile, 50 – 150 acre-ft storage per mile
Key Tunneling Project Drivers:

- Urban Constraints
- Minimize Environmental Impacts
- Minimize Community Impacts

Tunneling: The Future is Now
Tunneling is a Proven Solution
San Antonio River Tunnel

- 3 miles long
- 24 foot diameter
- 150 feet deep
- Built by SARA and USACE in 1997
- 6,700 cfs flow rate
San Antonio River Tunnel - Inlet
San Antonio River Tunnel - Outlet
How is it built?
Significant Technological Advances
State-of-the-Art Excavation Methods

- Air lock
- Bulkhead
- Cutting wheel
- Excavation chamber
- Mixing arms
- Screw conveyor
- Erector
- Belt conveyor
- Thrust cylinders
- Tailskin
- Backfilling
- Tunnel lining

Earth Pressure Balance TBM
<table>
<thead>
<tr>
<th>City</th>
<th>Project</th>
<th>Length</th>
<th>Diameter</th>
<th>Cost (2018$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dallas</td>
<td>Mill Creek Tunnel</td>
<td>5 miles</td>
<td>35 foot</td>
<td>$206 million</td>
</tr>
<tr>
<td>San Antonio</td>
<td>San Antonio River Tunnel</td>
<td>3 miles</td>
<td>24 foot</td>
<td>$230 million</td>
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<tr>
<td></td>
<td>San Pedro Creek Tunnel</td>
<td>1 mile</td>
<td>24 foot</td>
<td>$110 million</td>
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<td>Austin</td>
<td>Waller Creek Tunnel</td>
<td>1.1 miles</td>
<td>20-26 foot</td>
<td>$163 million</td>
</tr>
</tbody>
</table>
The Super Tunnel Alternative

- Tunnel Length: 23 miles
- Tunnel Diameter: >30 feet
- Flow Rate: 10,000-15,000 cfs
Buffalo
Cypress Creek
Halls/Hunting
Metro Wide Benefits
There is light at the end of the tunnel.
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