North Central Tennessee Regional Water Supply Planning Pilot Study

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Presentation Outline

- Regional Need Statement
- Alternatives Under Consideration
- Tier 1 Alternative Screening Protocol
- Tier 1 Screening Summary and Results
- Tier 2 Alternative Screening Protocol
- Tier 2 Screening Summary and Results
- Recommended Regional Alternative
- Open Discussion – Next Steps
Regional Need Statement

- Principle Regional Source - Old Hickory Lake.
- White House and Gallatin Utilities satisfy 90% of existing demand.

- Existing regional demand 22.3 MGD
- 2030 regional demand 32.5 MGD
- Old Hickory Lake can meet this demand, but a charge for withdrawals may be instituted in the future and could impact water rates across the region.

- Portland’s existing source - small surface stream and lake
- Its average annual demand of 2 MGD cannot be met reliably.
- Portland purchases finished water from neighboring utilities
- With no formal contracts, security for the system is not provided.
Alternatives Under Consideration

- Regionalization – Water Sharing Among Utilities
- Caney Fork Creek Reservoir
- Raw Water Pipeline from Portland to Cumberland River
- Groundwater
Alternative Screening Protocol

- **Tier 1:**
  - **Reliable Capacity**
    - Need met with minimal risk
  - **Anticipated Project Cost**
    - Feasibility, Design, Construction
  - **Implementability**
    - Permitting, Public Acceptance, Property Acquisitions, Constructability
  - **Flexibility**
    - Phased Implementation, Drought Resistance
Tier 1 Screening Summary

- **Regionalization**
  - White House UD Connection to Portland - Requires Fewer Infrastructure Upgrades than Gallatin/Westmoreland Connection
  - Provides Reliable Capacity
    - 20% of Portland’s Projected Demand When Flow in WF Drakes Creek Cannot Meet Demand and City Lake is Less than Full
    - Any Peak Demands above Portland’s Current Water Treatment Capacity of 3 MGD
- **Anticipated Project Cost – Present Value**
  - $4.84 M in Capital Improvements to meet 2030 Demand Projections
  - Includes O&M, but not Cost of Water Purchased
- **Implementability**
  - Requires Cooperation and Coordination Between Utilities
  - No Outstanding Concerns with Infrastructure Construction
- **Flexibility**
  - Improves Resistance to Drought
  - Allows for Expansion of Service as Needed
  - Can be implemented in phases
Tier 1 Screening Summary

- Caney Fork Creek Project
  - Earthen Embankment/Roller Compacted Concrete Dam
- Reliable Capacity
  - Expected Project Yield – 2.08 MGD
- Anticipated Project Cost – Present Value
  - $13.2 M including Operation and Maintenance for 50 yrs
- Implementability
  - Significant Environmental Impacts
  - Permitting Issues
- Flexibility
  - Single Phase Project
  - Yield Limited
  - Not Highly Drought Resistant
Tier 1 Screening Summary

- **Raw Water Pipeline from Portland to Cumberland River**
  - 21 Miles of 10” Line
- **Reliable Capacity**
  - 1 MGD Capacity – Concept
- **Anticipated Project Cost**
  - $13.2 M in Capital Improvements
  - Includes WTP Expansion to 4 MGD
  - Does not include Operation and Maintenance Estimate
- **Implementability**
  - Moratorium on New Withdrawals from Old Hickory
- **Flexibility**
  - Can be Designed for Greater Capacity
  - Highly Drought Resistant
Tier 1 Screening Summary

- **Groundwater**
  - USACE - Nashville, TN Urban Water Supply Study (1979)
    - Well Field – 9 wells
    - Yield estimated at ~1.3 MGD
- **Reliable Capacity**
  - Firm Yield Not Established
  - Recent Study Indicates Poor Yield and Water Quality
- **Anticipated Project Cost**
  - Not Established
- **Implementability**
  - No Outstanding Concerns with Well Field Construction
  - Reliable Capacity Not Established; but Likely Not Acceptable
- **Flexibility**
  - Flexibility in Determining Well Field Size and Locations
### Tier 1 Evaluation Results

<table>
<thead>
<tr>
<th>Alternative</th>
<th>Reliable Capacity</th>
<th>Cost</th>
<th>Implementability</th>
<th>Flexibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regionalization (WHUD Connection)</td>
<td>+</td>
<td>$$</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Caney Fork Creek Reservoir</td>
<td>+</td>
<td>$$</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Portland Raw Water Pipeline to Cumberland</td>
<td>+</td>
<td>$$</td>
<td>+/-</td>
<td>-</td>
</tr>
<tr>
<td>Groundwater</td>
<td>-</td>
<td>$</td>
<td>+</td>
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</tbody>
</table>

- Reliable Capacity Criterion Most Important in this Evaluation
- Groundwater Alternative Eliminated from Further Consideration
Alternative Screening Protocol

- Tier 2:
  - Anticipated Project Cost
    - Direct Comparison
  - Water Quality
    - Raw and/or Finished
  - Environmental
    - Benefits and Impacts
  - Other Factors
Tier 2 Evaluation Results

<table>
<thead>
<tr>
<th>Alternative</th>
<th>Cost ¹</th>
<th>Finished Water Quality</th>
<th>Environmental Benefits or Impacts</th>
<th>Other Factors</th>
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</thead>
<tbody>
<tr>
<td>Regionalization (WHUD Connection)</td>
<td>$4.8 M</td>
<td>Potential Improvement</td>
<td>Slight impacts from infrastructure construction</td>
<td>Requires Cooperation Between Entities</td>
</tr>
<tr>
<td>Caney Fork Creek Reservoir</td>
<td>$13.2 M</td>
<td>No Change</td>
<td>Substantial alteration of aquatic resources</td>
<td>Conflicts with Clean Water Act Compliance</td>
</tr>
<tr>
<td>Portland Raw Water Pipeline to Cumberland River</td>
<td>$13.4 M</td>
<td>No Change</td>
<td>Slight impacts from pipeline construction</td>
<td>Treatment plant operations</td>
</tr>
</tbody>
</table>

(1) Includes estimate of potential future charge for withdrawals from Old Hickory, where applicable

- **Anticipated Project Costs**
  - Regionalization is Least Expensive and the Most Economically Feasible

- **Water Quality**
  - Expected Potential Improvement to Finished Water Quality with Regionalization
    - WHUD Uses Combination Conventional and Membrane Filtration – Future WTP Expansions Anticipated to be Membrane Filtration

- **Environmental**
  - Potential Slight Impacts due to Construction of Regionalization or Raw Water Pipeline Alternatives
  - Substantial Alteration of Aquatic Resources are Expected With Caney Fork Creek Reservoir Alternative

- **Other Factors**
  - Portland and WHUD Must Reach Agreement on Terms of Contract for Capital Improvements and Operational Costs to be Shared.
  - Environmental Impacts of Caney Fork are not Acceptable with Potentially Feasible Alternatives Available.
  - Operation and Maintenance Costs for the Raw Water Pipeline have the Potential to be Significant
Next Steps – Open Discussion

- Study Report Schedule
- Statewide OASIS License Initiative
- Other Topics/Questions?