Water and Wastewater Capital Improvement Plan Options and Revenue Requirements
The Master Plan’s objectives are to assess our needs and recommend Capital Improvement Plans that address the following:

- **Infrastructure Maintenance**
  - Including previously deferred and projected future needs

- **Community Growth**
  - Expands capacities to support projected community growth and future economic development

- **Regulatory and Product Quality Needs**
  - WWTP wet weather overloading
  - Future WWTP effluent nutrient reductions
  - Water contaminants of concern such as microtoxins
  - Taste and Odor of the drinking water
Agenda

- Introduction
- Master Plan Findings
- Efficiencies and Cost Controls
- Seven CIP Scenarios
- Rate Impacts
- Rate Comparison with Peers
- Scenario Comparisons
- Questions
Master Plan Findings

The Good News

• Water treatment capacity is sufficient for two decades due to recent expansion of the Clinton WTP.

• Sanitary sewer overflows have been significantly reduced as we have improved the mechanical reliability of lift stations and the WWTP, and rehabilitated the collection system.

• Budgeted FTEs and chemical usage has been reduced as staff has expanded their knowledge and the use of technology.

• Utilities staff responded to near record water demand in 2012 without incident because of previous investments in water treatment infrastructure.
Making better use of what we have…

• Using chemicals more effectively
• Using energy more efficiently
• Finding ways to reduce water consumption
• Focusing time on maintenance programs that pay back

.. all with fewer Full Time Employees (FTEs)
Utilities staffing levels...

Utilities department staffing has decreased by 5 FTEs since 2009. However, the department has started new programs and taken on additional responsibilities including:

• valve exercising
• storm water locates
• hydrant flow testing
• snow removal
Focus on system maintenance…

System maintenance programs have reduced service calls and sanitary sewer overflows saving staff time and reducing property damage.

**Sanitary Sewer Service Calls 1994-2012**

- Planned Sewer Maintenance Programs and Schedules Implemented in 1998
- Bar chart showing the number of sanitary sewer service calls from 1994 to 2012, with data points indicating a decrease over time.
Master Plan Findings

The Not-So-Good News

- The WWTP is significantly overloaded during rain events. Capacity is 65 MGD versus peak wet weather flows at 81 MGD.
- The existing WWTP is projected to be out of dry weather capacity as early as 2018.
- Infrastructure maintenance of current facilities has been deferred and is falling further behind.
  - Water lines - $19 million backlog of pipes that have exceeded expected design life, Oread Water Tanks (Ike and Hoover), previous major expansion projects’ equipment is reaching 15 years in service.
- There is insufficient collection system capacity along the 31st Street corridor during wet weather events, which limits growth west of K-10, south of 6th Street, and in southeast Lawrence.
The Not-So-Bad News…

We can implement programs that…

- Construct new WWTP capacity to meet projected community needs through 2030.
- Reduce wet weather flows to a manageable level.
- Address collection system limitations along the 31st street corridor.
- Catch up on deferred infrastructure maintenance and establish programs that keep up with future maintenance needs.
- Enhance systems to meet future regulatory requirements and improve quality of services.
All for an additional $404 to $520 for a typical customer over five years.
## Master Plan Findings

<table>
<thead>
<tr>
<th>Major Programs</th>
<th>Program Duration</th>
<th>Cost (in 2012 $)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Main Replacement Program</td>
<td>32-Year</td>
<td>$72.3 million</td>
</tr>
<tr>
<td>Wakarusa Wastewater Treatment Plant</td>
<td>5-Year</td>
<td>$54.7 million</td>
</tr>
<tr>
<td>Rapid Inflow/Infiltration Reduction Program</td>
<td>8-Year</td>
<td>$19.4 million</td>
</tr>
<tr>
<td>Sewer Rehabilitation, Replacement, Cured-In-Place-Pipe &amp; Manhole Rehabilitation Program</td>
<td>17-Year</td>
<td>$33.5 million</td>
</tr>
</tbody>
</table>
Wakarusa WWTP - Why now?

- The existing Sanitary Sewer Collection System along the 31st street corridor (that conveys flow from the majority of the Wakarusa Valley watershed) is overloaded during wet weather conditions.
- The existing WWTP is overloaded during wet weather conditions and near 90% utilization of its dry weather treatment design.
- It takes up to 5 years to design, construct, and get a new facility operational. Committing in 2013 is necessary to meet that timeline.
- The community continues to grow.
- Failure to address wet weather conditions and expand treatment capacity will limit future community growth and may result in regulatory agency interventions.
- Annexation west of K-10, south of 6th, and southeast Lawrence will not be recommended without a Wakarusa WWTP commitment.
Kaw WWTP – What’s left right now?

- Wet weather treatment capacity is overloaded
  Capacity is 65 MGD versus peak wet weather flows at 81 MGD
- About 2,000 lbs/day of “organic treatment capacity” remaining*
- Each person accounts for ~0.16 lbs/day of organic load.
- So 2,000 lbs/day organic capacity available at 0.16 lbs/day/person = 12,500 additional people (equivalents)

- Hallmark expansion in 2013 will add approximately 80 lbs of organic load which is equivalent to 500 people.
- A single process oriented industry such as those in St Joseph, MO generate 6,000 lbs of organic load a day which is equivalent to 38,000 people.

* 2012 load was 14,630 lbs per day. Design is 15,800 lbs per day with some additional capacity available in organic process units intended for future nutrient removal of about 1,000 lbs per day
Population

• Jan 1, 2013 – approx. 93,200 (assumes an annual growth rate of approximately 1.4% since 2010)

• In the 2000s the range of annual population growth was between 0.5% and 2.56%, with an average annual change between 2000 and 2009 of 1.43%

• The remaining capacity is **not** dependent on actual population. There is no more or less available capacity if actual population is different than 93,200.

• Given the remaining capacity of 12,500* population equivalents (pe), the following can be concluded:
  • Annual growth rate of 0.5% yields 25 years of growth (495 pe/year)
  • Annual growth rate of 1.0% yields 12 years of growth (985 pe/year)
  • Annual growth rate of 1.5% yields 8 years of growth (1,474 pe/year)
  • Annual growth rate of 2.0% yields 6 years of growth (1,960 pe/year)
  • Annual growth rate of 2.5% yields 5 years of growth (2,449 pe/year)
Master Plan Findings

BOD and Wet Weather Treatment Capacity of Existing WWTP

- Over Capacity: 125%
- Remaining Capacity: 88%

Organic Loading vs. Design Storm Wet Weather
Master Plan Findings

BOD and Wet Weather Treatment Capacity of Existing WWTP

- Organic Loading: 90%
- Design Storm Wet Weather: 125%

Growth Rate: 0.5%

Over Capacity: 125%
Master Plan Findings

BOD and Wet Weather Treatment Capacity of Existing WWTP

- **2018**
  - Over Capacity: 125%
  - Remaining Capacity:
    - Growth Rate: 92%

Organic Loading and Design Storm Wet Weather
Master Plan Findings

BOD and Wet Weather Treatment Capacity of Existing WWTP

- 2018
  - 1.5% Growth Rate
  - Organic Loading: 95%
- Over Capacity: 125%
- Remaining Capacity
- Design Storm Wet Weather
Master Plan Findings

BOD and Wet Weather Treatment Capacity of Existing WWTP

- **2018**: Over Capacity at 125%
- **2018 Growth Rate**: 2.0%
- **Remaining Capacity**: 97%
- **Design Storm Wet Weather**: 100%

Organic Loading vs. Over Capacity

- Organic Loading: 0% to 130%
- Over Capacity: 100% to 130%
- Remaining Capacity: 97%
- Design Storm Wet Weather: 100%
Master Plan Findings

BOD and Wet Weather Treatment Capacity of Existing WWTP

- 2018
- Over Capacity: 125%
- 2.5% Growth Rate: 100%
- No Remaining Capacity

Organic Loading vs. Design Storm Wet Weather
Population – Viewed another way...

• What is the cap on annual growth rate that Lawrence wants to be prepared for?
  • Scenario 1 - 2.5%
  • Scenario 2 - 2.5%
  • Scenario 3 - 2.5%
  • Scenario 4 - 1.0%
  • Scenario 5 - 2.5%
  • Scenario 6 - 1.5%
  • Scenario 7 - 0.5%
Conclusion:
- At a growth rate of 2.0% organic treatment capacity will be 100% utilized by 2019.
- Wet weather capacity is utilized at 125% now.

Wastewater Capacity Recommendation:
- Construct an additional 6 MGD of wet weather treatment capacity and divert flows from the 31st street corridor.
- Begin a program to reduce rapid inflow and infiltration into the lower collection system of the Kansas river watershed.
- Construct an additional 2,700 lbs/day of organic treatment capacity (2 MGD) by 2018.
Seven Scenarios for consideration…
Recommended - This CIP scenario represents the most recent and updated staff and master plan recommendations.

- Kaw WTP Intake
- Oread Storage Tanks
- Harper & Kasold Booster Stations
- Tower Protective Coatings
- Kaw Transmission Main
- Concrete Main Assessment
- Pipeline Replacement Programs
- Water Main Relocations for Roadway Projects
- Kaw & Clinton WTP Maintenance
- SLT Water Main Relocations
- Wakarusa WWTP complete by 2018
- Pump Station 32 & 23 Expansions
- Eliminate Pump Station 8
- KR – 5B & 6B Relief Sewers
- Rapid I/I Reduction Program
- Sewer Rehab – Replace, CI PP & MHs
- Co-Generation at Kansas River WWTP
- Sanitary Sewer Relocations for Roadway Projects
- Pump Station & WWTP Maintenance
- SLT Sewer Main Relocations
Scenario 2

Reduced Water – This CIP scenario extends or reduces projects for the water utility.

- Kaw WTP Intake
- Oread Storage Tanks
- Harper & Kasold Booster Stations
- Tower Protective Coatings
- Kaw Transmission Main
- Concrete Main Assessment
- Pipeline Replacement Programs - $0.5 million/year (25% of Need)
- Water Main Relocations for Roadway Projects
- Kaw & Clinton WTP Maintenance
- SLT Water Main Relocations

- Wakarusa WWTP complete by 2018
- Pump Station 32 & 23 Expansions
- Eliminate Pump Station 8
- KR – 5B & 6B Relief Sewers
- Rapid I/I Reduction Program
- Sewer Rehab – Replace, CI PP & MHs
- Co-Generation at Kansas River WWTP
- Sanitary Sewer Relocations for Roadway Projects
- Pump Station & WWTP Maintenance
- SLT Sewer Main Relocations
Deferred Maintenance/Reliability – This CIP Scenario modifies Scenario 1 by delaying projects and extending programs.

- Kaw WTP Intake
- Oread Storage Tanks
- Harper & Kasold Booster Stations
- Tower Protective Coatings
- Kaw Transmission Main delay start to 2017
- Concrete Main Assessment
- Pipeline Replacement Programs
- Water Main Relocations for Roadway Projects
- Kaw & Clinton WTP Maintenance
- SLT Water Main Relocations

- Wakarusa WWTP complete by 2018
- Pump Station 32 & 23 Expansions
- Eliminate Pump Station 8
- KR – 5B & 6B Relief Sewers
- Rapid I/I Reduction Program
- Sewer Rehab – Replace, CI PP & MHs
- Co-Generation at Kansas River WWTP
- Sanitary Sewer Relocations for Roadway Projects
- Pump Station & WWTP Maintenance
- SLT Sewer Main Relocations
Scenario 4

Deferred Maintenance/Reliability & Wakarusa WWTP – This CIP Scenario modifies Scenario 3 and adjusts completion of the Wakarusa WWTP to 2021.

- Kaw WTP Intake
- Oread Storage Tanks
- Harper & Kasold Booster Stations
- Tower Protective Coatings
- Kaw Transmission Main delay start to 2017
- Concrete Main Assessment
- Pipeline Replacement Programs
- Water Main Relocations for Roadway Projects
- Kaw & Clinton WTP Maintenance
- SLT Water Main Relocations

- Wakarusa WWTP complete in 2021
- Pump Station 32 & 23 Expansions
- Eliminate Pump Station 8
- KR – 5B & 6B Relief Sewers
- Rapid I/I Reduction Program
- Sewer Rehab – Replace, CI PP & MHs
- Co-Generation at Kansas River WWTP
- Sanitary Sewer Relocations for Roadway Projects
- Pump Station & WWTP Maintenance
- SLT Sewer Main Relocations
Scenario 5

Taste, Odor, & Microtoxins - This CIP scenario modifies Scenario 1 and accelerates projects for Taste, Odor, and Microtoxins.

- Kaw WTP Intake
- Oread Storage Tanks
- Harper & Kasold Booster Stations
- Tower Protective Coatings
- Kaw Transmission Main
- Concrete Main Assessment
- Pipeline Replacement Programs
- Water Main Relocations for Roadway Projects
- Kaw & Clinton WTP Maintenance
- SLT Water Main Relocations
- **Taste, Odor, Microtoxins at WTPs**
- Wakarusa WWTP complete by 2018
- Pump Station 32 & 23 Expansions
- Eliminate Pump Station 8
- KR – 5B & 6B Relief Sewers
- Rapid I/I Reduction Program
- Sewer Rehab – Replace, CI PP & MHs
- Co-Generation at Kansas River WWTP
- Sanitary Sewer Relocations for Roadway Projects
- Pump Station & WWTP Maintenance
- SLT Sewer Main Relocations
Scenario 6

Delay Wakarusa & Accelerate Rapid I/I - This CIP scenario modifies Scenario 1 by delaying the start of the Wakarusa WWTP and accelerating the Rapid I/I Reduction Program.

- Kaw WTP Intake
- Oread Storage Tanks
- Harper & Kasold Booster Stations
- Tower Protective Coatings
- Kaw Transmission Main
- Concrete Main Assessment
- Pipeline Replacement Programs
- Water Main Relocations for Roadway Projects
- Kaw & Clinton WTP Maintenance
- SLT Water Main Relocations

- Wakarusa WWTP complete in 2020
- Pump Station 32 & 23 Expansions
- Eliminate Pump Station 8
- KR – 5B & 6B Relief Sewers
- **Rapid I/I Reduction Program complete by 2017**
- Sewer Rehab – Replace, CI PP & MHs
- Co-Generation at Kansas River WWTP
- Sanitary Sewer Relocations for Roadway Projects
- Pump Station & WWTP Maintenance
- SLT Sewer Main Relocations
Roadway Relocations Only (No Wakarusa WWTP) - This CIP Scenario only addresses utility relocations in advance of roadway projects.

- Kaw WTP Intake
- Oread Storage Tanks
- Harper & Kasold Booster Stations
- Tower Protective Coatings
- Kaw Transmission Main
- Concrete Main Assessment
- Pipeline Replacement Programs
- Water Main Relocations for Roadway Projects
- Kaw & Clinton WTP Maintenance
- SLT Water Main Relocations
- Wakarusa WWTP complete by 2018
- Pump Station 32 & 23 Expansions
- Eliminate Pump Station 8
- KR 5B & 6B Relief Sewers
- Rapid I/I Reduction Program
- Sewer Rehab – Replace, CIIP & MHs
- Co-Generation at Kansas River WWTP
- Sanitary Sewer Relocations for Roadway Projects
- Pump Station & WWTP Maintenance
- SLT Sewer Main Relocations
<table>
<thead>
<tr>
<th>Scenario</th>
<th>Average Yearly Increase in Monthly Bill</th>
<th>Total Increase in Typical Monthly Bill From 2012 to 2017 *</th>
<th>Total Additional Cost Over the 5 Year Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - Recommended</td>
<td>$2.73</td>
<td>$13.66</td>
<td>$453.60</td>
</tr>
<tr>
<td>2 - Reduced Water</td>
<td>$2.20</td>
<td>$11.01</td>
<td>$384.12</td>
</tr>
<tr>
<td>3 - Deferred Maintenance/Reliability</td>
<td>$2.42</td>
<td>$12.10</td>
<td>$404.52</td>
</tr>
<tr>
<td>4 - Deferred Maintenance/Reliability &amp; Wakarusa WWTP</td>
<td>$1.71</td>
<td>$8.54</td>
<td>$291.48</td>
</tr>
<tr>
<td>5 - Taste, Odor, &amp; Toxins</td>
<td>$3.11</td>
<td>$15.56</td>
<td>$519.96</td>
</tr>
<tr>
<td>6 - Delay Wakarusa WWTP &amp; Accelerate Rapid I/I</td>
<td>$2.34</td>
<td>$11.70</td>
<td>$368.76</td>
</tr>
<tr>
<td>7 - Roadway Relocations Only - No Wakarusa WWTP</td>
<td>$0.28</td>
<td>$1.38</td>
<td>$72.48</td>
</tr>
</tbody>
</table>

*Based on current model assumptions.

**Total Increase in Monthly Bill From 2012 to 2017**

(4,000 Gallons Water & Wastewater)
Total Increase in Monthly Bill From 2012 to 2017
(4,000 Gallons Water & Wastewater)
What are SDCs?

SDCs are fees paid by new development to recover a portion of the capacity utilized or required by growth that fund new and existing water and wastewater infrastructure.
### SDCs for Scenario 1 - Recommended

#### Five-Year Rate Plan

**System Development Charges**

<table>
<thead>
<tr>
<th></th>
<th>Existing</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Water Utility</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residential</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5/8&quot;</td>
<td>1,560</td>
<td>1,590</td>
<td>1,580</td>
<td>1,570</td>
<td>1,560</td>
<td>1,550</td>
</tr>
<tr>
<td>1&quot;</td>
<td>3,900</td>
<td>3,980</td>
<td>3,960</td>
<td>3,930</td>
<td>3,910</td>
<td>3,880</td>
</tr>
<tr>
<td>1-1/2&quot;</td>
<td>7,800</td>
<td>7,950</td>
<td>7,900</td>
<td>7,850</td>
<td>7,800</td>
<td>7,750</td>
</tr>
<tr>
<td>2&quot;</td>
<td>12,480</td>
<td>12,720</td>
<td>12,640</td>
<td>12,560</td>
<td>12,480</td>
<td>12,400</td>
</tr>
<tr>
<td><strong>All Other</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5/8&quot;</td>
<td>1,560</td>
<td>1,590</td>
<td>1,580</td>
<td>1,570</td>
<td>1,560</td>
<td>1,550</td>
</tr>
<tr>
<td>1&quot;</td>
<td>3,900</td>
<td>3,980</td>
<td>3,960</td>
<td>3,930</td>
<td>3,910</td>
<td>3,880</td>
</tr>
<tr>
<td>1-1/2&quot;</td>
<td>7,800</td>
<td>7,950</td>
<td>7,900</td>
<td>7,850</td>
<td>7,800</td>
<td>7,750</td>
</tr>
<tr>
<td>2&quot;</td>
<td>12,480</td>
<td>12,720</td>
<td>12,640</td>
<td>12,560</td>
<td>12,480</td>
<td>12,400</td>
</tr>
<tr>
<td>3&quot;</td>
<td>23,400</td>
<td>23,850</td>
<td>23,700</td>
<td>23,550</td>
<td>23,400</td>
<td>23,250</td>
</tr>
<tr>
<td>4&quot;</td>
<td>39,000</td>
<td>39,750</td>
<td>39,500</td>
<td>39,250</td>
<td>39,000</td>
<td>38,750</td>
</tr>
<tr>
<td>6&quot;</td>
<td>78,000</td>
<td>79,500</td>
<td>79,000</td>
<td>78,500</td>
<td>78,000</td>
<td>77,500</td>
</tr>
<tr>
<td><strong>Wastewater Utility</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residential</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All Meters</td>
<td>1,470</td>
<td>1,680</td>
<td>1,860</td>
<td>2,050</td>
<td>2,230</td>
<td>2,410</td>
</tr>
<tr>
<td><strong>All Other</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5/8&quot;</td>
<td>2,970</td>
<td>3,510</td>
<td>3,890</td>
<td>4,280</td>
<td>4,660</td>
<td>5,040</td>
</tr>
<tr>
<td>1&quot;</td>
<td>7,430</td>
<td>8,780</td>
<td>9,740</td>
<td>10,690</td>
<td>11,650</td>
<td>12,600</td>
</tr>
<tr>
<td>1-1/2&quot;</td>
<td>14,850</td>
<td>17,550</td>
<td>19,460</td>
<td>21,380</td>
<td>23,290</td>
<td>25,200</td>
</tr>
<tr>
<td>2&quot;</td>
<td>23,760</td>
<td>28,080</td>
<td>31,140</td>
<td>34,200</td>
<td>37,260</td>
<td>40,320</td>
</tr>
<tr>
<td>3&quot;</td>
<td>44,550</td>
<td>52,650</td>
<td>58,390</td>
<td>64,130</td>
<td>69,860</td>
<td>75,600</td>
</tr>
<tr>
<td>4&quot;</td>
<td>74,250</td>
<td>87,750</td>
<td>97,310</td>
<td>106,880</td>
<td>116,440</td>
<td>126,000</td>
</tr>
<tr>
<td>6&quot;</td>
<td>148,500</td>
<td>175,500</td>
<td>194,630</td>
<td>213,750</td>
<td>232,880</td>
<td>252,000</td>
</tr>
</tbody>
</table>

The full table is included in the supporting memorandum.
System Development Charges (SDCs)…

Lawrence Home Builders Association & Lawrence Board of Realtors have met with staff and have provided letters, which are located in your packets.
We are not alone in 2013…

- Johnson County Wastewater – 7.3% revenue increase.
- Johnson County Water One – 3.2% revenue increase.
- Lee’s Summit – discussing 6% rate increase in early 2013.
- Olathe – 6.9% revenue increase for both water and wastewater.
- Manhattan – requesting a rate increase of 7% for water and 3% for wastewater.
- Topeka – requesting revenue increase of 3% for water and 4% for wastewater.
- Independence, MO – expect water minimum charge increase by 9%; wastewater revenues to increase by 4.5% annually until 2015. EPA wet weather consent order funded by a $6 charge per month that increases by 50% to $9 in early 2014.
- KCMO – increased water rates by 12% and wastewater rates by 17% in May 2012 due to consent order. 2013 rate increases will be discussed in early 2013.
- Unified Government (wastewater for KCKS) – 5% rate increase.
- Kansas City Board of Public Utilities (water for KCKS) – 5% rate increase.
- Lawrence – Scenario 1 would increase water revenue by 3% and wastewater revenue by 4% in 2013.
## Scenario Comparison

### Scenarios that Support Growth, Maintain Infrastructure, & Regulatory Compliance

<table>
<thead>
<tr>
<th>Scenario</th>
<th>WWTP Capacity Sufficient to</th>
<th>Total Increase in Typical Monthly Bill From 2012 to 2017</th>
<th>Total Additional Cost Over the 5 Year Period</th>
<th>GrowthSupported Outside Existing City Limits</th>
<th>Addresses Water &amp; Wastewater Infrastructure Needs</th>
<th>Regulatory Compliance**</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - Recommended</td>
<td>2030</td>
<td>$13.66</td>
<td>$453.60</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>2 - Reduced Water</td>
<td>2030</td>
<td>$11.01</td>
<td>$384.12</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>3 - Deferred Maintenance/Reliability</td>
<td>2030</td>
<td>$12.10</td>
<td>$404.52</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>4 - Deferred Maintenance/Reliability &amp; Wakarusa WWTP</td>
<td>2018</td>
<td>$8.54</td>
<td>$291.48</td>
<td>No*</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>5 - Taste, Odor, &amp; Toxins</td>
<td>2030</td>
<td>$15.56</td>
<td>$519.96</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>6 - Delay Wakarusa WWTP &amp; Accelerate Rapid I/I</td>
<td>2018</td>
<td>$11.70</td>
<td>$368.76</td>
<td>No*</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>7 - Roadway Relocations Only - No Wakarusa WWTP</td>
<td>2018</td>
<td>$1.38</td>
<td>$72.48</td>
<td>No*</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

* Annexation is not supported west of K-10, south of west 6th, and Southeast Lawrence.

** As it applies to wet weather overloading in the collection system and at the existing WWTP.
### Scenario Comparison

Scenarios that Support Growth, Maintain Infrastructure, & Regulatory Compliance

<table>
<thead>
<tr>
<th>Scenario</th>
<th>WWTP Capacity Sufficient to</th>
<th>Total Increase in Typical Monthly Bill From 2012 to 2017</th>
<th>Total Additional Cost Over the 5 Year Period</th>
<th>Growth Supported Outside Existing City Limits</th>
<th>Addresses Water &amp; Wastewater Infrastructure Needs</th>
<th>Regulatory Compliance**</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - Recommended</td>
<td>2030</td>
<td>$13.66</td>
<td>$453.60</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>3 - Deferred Maintenance/Reliability</td>
<td>2030</td>
<td>$12.10</td>
<td>$404.52</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>5 - Taste, Odor, &amp; Toxins</td>
<td>2030</td>
<td>$15.56</td>
<td>$519.96</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

* Annexation is not supported west of K-10, south of west 6th, and Southeast Lawrence.

** As it applies to wet weather overloading in the collection system and at the existing WWTP.
Master Plan Recommendation

Adopt the Recommended Five-Year Capital Improvement Plan and associated Rate Plan as outlined in Scenario #1
Questions