The City of Columbia Department of Utilities & Engineering regularly reports on the City's Drinking Water and Wastewater systems to City Council and the public. This section includes presentations to Council and press releases given since January, 2014, all Clean Water 2020 staff newsletters, and the latest status of deliverables for the Consent Decree.
February 17, 2015
- Water and Wastewater Update and Information
- Water Revenue Savings Audit
- Rate Study Update

January 27, 2015
- Water and Wastewater Update and Information

November 18, 2014
- Utilities & Engineering Update

August 19, 2014
- Satellite Sewer System Agreements
- AMR/AMI Update

July 15, 2014
- Water and Wastewater Update and Information

June 10, 2014
- FY 14/15 Proposed Water & Sewer Budget - Revised

May 20, 2014
- Water and Sewer Rate Discussion

April 1, 2014
- Everbridge Citizen Alerts: Expanding the City's Boil Water Advisory Notification Capabilities
Presentation Overview

- Consent Decree Status
- Cash Reserve
- 5 Year Capital Improvement Program
- Customer Audit (Utility Revenue Management)
- Rate Study (Black & Veatch)
## Status of Consent Decree (CD) Items

**Date of Entry – May 21, 2014**

<table>
<thead>
<tr>
<th>CD Deliverable</th>
<th>First Due Date</th>
<th>% Complete</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sewer Mapping Program (SMP)</td>
<td>7/21/2014</td>
<td>100%</td>
</tr>
<tr>
<td>CAP List (Checkbook)</td>
<td>8/21/2014</td>
<td>100%</td>
</tr>
<tr>
<td>Maintenance Management System (MMS)</td>
<td>5/21/2015</td>
<td>50%</td>
</tr>
<tr>
<td>Satellite Sewer System Agreements (SSSA)</td>
<td>5/21/2015</td>
<td>100%</td>
</tr>
<tr>
<td>Transmission System Operations and Maintenance Program (TSOMP)</td>
<td>5/21/2015</td>
<td>100%</td>
</tr>
<tr>
<td>Continuing Sewer Assessment Program (CSAP)</td>
<td>6/9/2015</td>
<td>100%</td>
</tr>
<tr>
<td>WWTP Operations Program</td>
<td>11/21/2015</td>
<td>15%</td>
</tr>
<tr>
<td>Contingency and Emergency Response Plan (CERP)</td>
<td>11/21/2015</td>
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</tr>
<tr>
<td>WCTS Training Program</td>
<td>11/21/2015</td>
<td>15%</td>
</tr>
<tr>
<td>Information Management System Program (IMS)</td>
<td>11/21/2015</td>
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</tr>
<tr>
<td>Financial Analysis Program</td>
<td>11/21/2015</td>
<td>5%</td>
</tr>
<tr>
<td>Gravity Sewer System Operations and Maintenance Program (GSOMP)</td>
<td>11/21/2015</td>
<td>55%</td>
</tr>
<tr>
<td>Infrastructure Rehabilitation Program (IRP)</td>
<td>2/8/2016</td>
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<tr>
<td>WWTP Training Program</td>
<td>5/21/2016</td>
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<tr>
<td>IR Report for the WCTS</td>
<td>2/10/2018</td>
<td>0%</td>
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<tr>
<td>Sewer System Hydraulic Model Report</td>
<td>11/10/2018</td>
<td>0%</td>
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<tr>
<td>Supplemenal Environmental Project Implementation (SEP)</td>
<td>5/21/2019</td>
<td>1%</td>
</tr>
<tr>
<td>SEP - Quality Assurance Project Plan (QAPP)</td>
<td>7/21/2014</td>
<td>100%</td>
</tr>
<tr>
<td>Capacity Assurance Program (CAP)</td>
<td>6/11/2019</td>
<td>0%</td>
</tr>
<tr>
<td>Supplemental IR Report</td>
<td>11/15/2020</td>
<td>0%</td>
</tr>
</tbody>
</table>

**Notes:**
1. First Due Date represents the initial submittal of the required Plan to complete the Program.
2. Following the submittal and approval of each Plan, the implementation of the Plan begins and may last for several years.
3. Some future due dates may change based on the timing of approval of earlier Plans.
Cash Reserve FY 14/15*  
(Estimate as of 1/31/15)  
*Unaudited, Preliminary, & Subject to Change

All Resources $274,694,443
Available Bond Balance $57,443,180
Cash & Investments $217,251,263
Cash Reserve $134,065,364
Wastewater Encumbrances $61,071,568
O&M Encumbrances $14,226,161
Water Encumbrances $65,331,350

5 Year CIP Projections

City Council Approved Water and Wastewater Contracts Encumbered per Fiscal Year  
(Professional Services & Construction)
Customer Audit Update

2/17/2015

Water Revenue Savings Audit: Background

• Firm Selection
  – RFP issued on September 13, 2013
  – URM contracted on December 10, 2013

• Scope of Audit
  – “Assist in ensuring that users of retail water and sewer service provided by Columbia are properly and equitably billed for such service”
Water Revenue Savings Audit: Outcome

• Findings
  – 17,805 accounts audited
    • All customers except single family residential
  – 1,471 (8.3%) flagged for field investigation
  – 441 (2.5%) verified to have potential increased revenue

• Projected Impact
  – Estimated $1.95 M annually

Proposed Ordinance Changes
Section 23-141

<table>
<thead>
<tr>
<th>Item</th>
<th>Current</th>
<th>Proposed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title</td>
<td>Security Deposits</td>
<td>Water Service Origination Fee</td>
</tr>
<tr>
<td>Move-in fee</td>
<td>$30 + $15</td>
<td>$45</td>
</tr>
<tr>
<td>Move-out fee</td>
<td>None</td>
<td>$40 field service + $45 administrative</td>
</tr>
</tbody>
</table>

Section 23-144

<table>
<thead>
<tr>
<th>Item</th>
<th>Current</th>
<th>Proposed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fee for turning on water</td>
<td>No charge</td>
<td>No charge</td>
</tr>
<tr>
<td>Delinquency fee</td>
<td>$10</td>
<td>$40</td>
</tr>
<tr>
<td>Re-connect fee</td>
<td>$15 – normal business hours</td>
<td>$40 – normal business hours</td>
</tr>
<tr>
<td></td>
<td>$30 – all other hours</td>
<td>$80 – all other hours</td>
</tr>
<tr>
<td>Testing backflow</td>
<td>$45</td>
<td>$150</td>
</tr>
</tbody>
</table>
### Proposed Ordinance Changes

<table>
<thead>
<tr>
<th>Item</th>
<th>Current</th>
<th>Proposed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Special water service fees 23-144 (f)</td>
<td>Charges to constitute lien; discontinuation of service authorized. All fees and charges for water service shall be a lien on the property served as provided by contract with the water customer. Services shall be discontinued for any account which is two months in arrears; provided that the city manager or his designee may authorize continued service in a hardship case upon the execution of an acceptable payment schedule which will bring the account current in not more than six months with payment in full for continued service.</td>
<td>Charges to constitute lien; discontinuation of service authorized; unpaid accounts referred to collections. All fees and charges for water service shall be a lien on the property served as provided by contract with the water customer. Services shall be discontinued for any account which is two months in arrears; provided that the city manager or his designee may authorize continued service in a hardship case upon the execution of an acceptable payment schedule which will bring the account current in not more than twelve months with payment in full for continued service. Unpaid accounts after this time period will be referred to a City of Columbia contracted collection agency as per State statute.</td>
</tr>
</tbody>
</table>

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### Proposed Ordinance Changes

<table>
<thead>
<tr>
<th>Item</th>
<th>Current</th>
<th>Proposed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Account revisit or service calls</td>
<td>No charge</td>
<td>No charge for 1st visit $40 for 2nd business hrs visit $50 for all after business hrs</td>
</tr>
<tr>
<td>Account re-read</td>
<td>No charge</td>
<td>No charge for 1st re-read $20 for subsequent re-read</td>
</tr>
<tr>
<td>Meter test</td>
<td>No charge</td>
<td>$50 for meters 2” and below $100 for compound meters</td>
</tr>
<tr>
<td>Meter replacement</td>
<td>No charge</td>
<td>$50+ for ¾” meter and below if meter functioning properly * in addition to Meter Test</td>
</tr>
<tr>
<td>Unauthorized use fee</td>
<td>No charge</td>
<td>$50 plus water and wastewater usage on meter</td>
</tr>
<tr>
<td>Straight connection fee</td>
<td>No charge</td>
<td>$150 plus estimated usage at current rates</td>
</tr>
<tr>
<td>Lock meter fee</td>
<td>No charge</td>
<td>$40 plus cost of lock</td>
</tr>
<tr>
<td>Remove meter fee</td>
<td>No charge</td>
<td>$40</td>
</tr>
<tr>
<td>Emergency cut-off</td>
<td>No charge</td>
<td>No charge for 1st request $40 for additional requests in a calendar year</td>
</tr>
</tbody>
</table>
### Proposed Ordinance Changes

#### Section 23-145

<table>
<thead>
<tr>
<th>Item</th>
<th>Current</th>
<th>Proposed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Installation of water meters &amp; cross connection control devices</td>
<td>None</td>
<td>Any water meter installed for use in the City of Columbia Water System must adhere to Sec. 23-62. – Application for service for selection and installation of water meters. If installed without approval of the City Engineer or his designee, the monthly water and associated wastewater bill will be estimated based on usage volume as determined by the City Engineer or his designee. The customer will have sixty days to have the appropriate meter installed according to Sec. 23-62. - Application for service. Failure to comply within sixty days will result in termination of water service.</td>
</tr>
</tbody>
</table>

2/25/2015

#### Section 23-147

<table>
<thead>
<tr>
<th>Item</th>
<th>Current</th>
<th>Proposed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Installation of water meters serving fire protection sprinkler systems</td>
<td>Charges for water meters serving fire protection sprinkler systems shall be the city's cost of the meter times 1.15.</td>
<td>Charges for water meters serving fire protection sprinkler systems shall be the city's cost of the meter times 1.15. Monthly charges for water registering on the meter will include the base charge, water and sewer volume charges, unless verified that the fire protection sprinkler system is not tied into the internal building plumbing system.</td>
</tr>
</tbody>
</table>

2/25/2015
Proposed Ordinance Changes

Section 23-149

<table>
<thead>
<tr>
<th>Item</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Consumers using water cooling towers for air conditioning</td>
<td>Consumers using water cooling towers for air conditioning systems shall be given a credit of 30 cubic feet per ton per month during the service periods commencing in the months of April through October.</td>
<td>Consumers using water cooling towers for air conditioning systems shall be given a credit of 30 cubic feet per ton per month during the service periods commencing in the months of April through October. An updated Cooling Tower Credit Request Form must be submitted annually no later than January 31st of each year. Failure to do so will result in the cooling tower evaporation credit being revoked for that year.</td>
</tr>
</tbody>
</table>

Rate Study Update
Water Revenue Savings Audit ENGRFP0005-13-14
Utility Customer Fee Recommendations
February 2015

Water Revenue Savings Audit ENGRFP0005-13-14
Utility Customer Fee Recommendations

• RFP for the “Water Revenue Savings Audit” ENGRFP0005-13-14 issued on September 13, 2013.

• URM selected to perform the Audit on December 10, 2013.

• URM proposed to conduct a review of the Utility and Finance Department’s policies, procedures and practices as they relate to the City’s financial relationship with its Utility customers.

• The fee proposals detailed on the following pages respond directly to existing services provided to Columbia Utility customers.
• These recommendations were predominantly developed using similar information obtained from twelve (12) other public utilities in the United States, one (1) with a customer base of over one million, three (3) between 500 and 750 thousand, one (1) between 250 and 500 thousand, and seven (7) between 50 and 250 thousand.

• The Columbia Utility falls within the 50 and 250 thousand customer range along with these seven (7) other public utilities.

• Four (4) or thirty-three per cent (33%) of these twelve (12) public utilities, namely Charleston, Mount Pleasant, Rock Hill and Greenville are in the state of South Carolina. Including Columbia, these are the five (5) largest municipalities in the state.

• The basic principles underlying these fee recommendations include certainty and equity. The City Council, sitting as the Board of Directors of the Columbia Utility System, should ensure that all their Customers are being treated equitably. The Staff should have clear legislative direction from the Council as to how to administer policy in similar situations to ensure that they do treat all their Customers equitably. The Utility Customers should be able to read the ordinances governing these fees to know that the staff will treat them fairly based on Council directive.

• These recommended fees are also structured to be internally consistent.

• Based on that analysis, the above underlying principles of fairness and equity, experience with the unique characteristics of the City of Columbia Utility and Finance operations, the following recommendations have been developed for your consideration.
City of Columbia Code of Ordinances
Proposed Amendments

Sec. 23-141. Security Deposits. Change to read “Water Service Origination Fee”.

- **Move-in**. (a) Add: $40 field service fee plus a non-refundable application/transfer fee in the amount of $30 (existing; change to $45.00) is required to establish or re-establish a water account.
- A non-refundable and non-transferable fee of thirty dollars ($30.00) per account is required to establish a default customer account.
  - Discussion. Setting up a new Customer’s account is critical to a successful financial relationship between the Utility and the Customer. Making positive contact in the office, either face-to-face, or by phone will ensure the new customer account is coded correctly and the customer will be billed correctly. Customer contact in the field is critical to ensure that there is no damage to the structure when the water is turned on.
  - “Normal business hours” is defined as 8:00 a.m. to 4:30 p.m.
- **Move-out**. $40 field service fee plus $45 administrative fee.
  - Discussion. The same considerations apply to the Move-out process. Obtaining an accurate final read in a timely manner and having a valid forwarding address for the final bill is critical to ensure the customer receives a timely and accurate bill.

Sec. 23-141. Security Deposits. Change to read “Water Service Origination Fee” (cont.).

- Add new subsection (c) Under billing and Over billing of a customer’s account. In the event a customer has been over billed, the customer will be entitled to a refund for the difference between the correct monthly bill and the over bill for a period of up to three (3) years. If a customer has been under billed, the Utility can recover the under billing for up to a three year period. In either case, the repayment period will be the number of billing periods when the over or under billing occurred up to three (3) years.
  - Discussion. There will be circumstances when a customer will be either over or under billed. This proposed subsection (c) clarifies the rights of the customer and the Utility under such circumstances.

Sec. 23-144. Special Water Service Fees.

- Existing subsection (a) Fee for turning on water. Remove. This fee is covered under other Sections of the City Code of Ordinances.
- New subsection (a) Delinquency fee. (Non-payment disconnect).
  - A fee of $10.00 will be charged....Change $10.00 to $40.00
  - Discussion. Nine (9) of the twelve (12) Utilities evaluated had very clear policies concerning terminating service for non-payment and charging a fee for that field work. Fees ranged from a low of $35 to a high of $152.
Sec. 23-144. Special Water Service Fees (cont.).

• Existing subsection (d) Restoration of discontinued service; service calls in connection with delinquent accounts.
  • **Re-connect fee.** $15. Change to $40. $30. Change to $80 for all after hours, weekend and holiday reconnects.
  • **Discussion.** The need for this process is due to the fact that someone was negligent in paying their bill and their service was discontinued. Fees for this process by seven (7) of the twelve (12) Utilities evaluated ranged from $40 to a high of $150 during normal business hours. After hours fees ranged from $100 to $200 dollars.
    1) Workdays during “Normal business hours” (defined as 8:00 a.m. to 4:30 p.m.): $40.00.
    2) All other hours, weekend and holiday reconnects: $80.00.

• Existing subsection (g) Testing of backflow devices.
  • A fee of $45.00 (Change to $150.00) per backflow device shall be charged for the annual testing and certification of a reduced pressure backflow device. **This fee will be charged in the event that the customer does not have his backflow device tested annually and the Utility must dispatch a crew to perform the test.**
  • **Discussion.** This is a function that is normally performed by the private sector. The Utility should not be involved in this business, but if required to provide the service, should be based on actual cost-of-service and should be competitive with the private sector.

Sec. 23-144. Special Water Service Fees (cont.).

• Existing subsection (f)
  • **Charges to constitute lien; discontinuance of service authorized; Add:** unpaid accounts referred to collections. All fees and charges for water service shall be a lien on the property served as provided by contract with the water customer. Services shall be discontinued for any account which is two months in arrears; provided that the city manager or his designee may authorize continued service in a hardship case upon the execution of an acceptable payment schedule which will bring the account current in not more than **six (change to twelve)** months with payment in full for continued service. **Add:** Unpaid accounts after this time period will be referred to a City of Columbia contracted collection agency as per State statute.
  • **Discussion.** This is a clarification to the existing practice of Customer Care.

• Account Revisit or Service Call.
  • **No charge for the first visit, $40 for the second visit and $50 for all after normal business hours visits during a twelve month period.**
  • **Discussion.** The Customer may have a utility-related service issue at their home or business, and have asked for help from Columbia Utilities in analyzing that problem. As a part of customer service being provided by Columbia Utilities, the Utility should attempt to resolve the issue at no cost to the Customer. If the Customer continues to call the Utility back to address the same concern they should be charged for that return service.
  • Other Utilities’ fees for return service range from $10 to over $100.
Sec. 23-144. Special Water Service Fees (cont.).

• Account re-read.
  • No charge for the first re-read, and $20 for each subsequent re-read.
  • Discussion. If the Customer questions the validity of a particular meter read, they should rightfully expect their Utility to investigate the potential meter read error. After the Utility has investigated the issue, and the Customer continues to question the read or re-read, there should be a charge associated with any further investigative services.
  • Other Utilities’ service fees have ranged from $10 to $30.

• Meter test.
  • $50 for meters two (2) inches and below. $100 for compound meters. If the meter test reveals that meter is inaccurate, there will be no customer charge.
  • Discussion. Proper meter testing, whether in the field or shop, is a labor and equipment intensive process. If a Customer questions the accuracy of their meter, the Utility is obligated to evaluate the accuracy of the meter’s operation. However, after the Utility tests the meter at the request of the customer and there is no problem with the functioning of the meter, the customer shall be obligated to pay for the meter test.
  • Six (6) of the twelve (12) Utilities evaluated followed a practice similar to this recommendation, with fees ranging from $50 for small meters to over $350 for large compound meters.

Sec. 23-144. Special Water Service Fees (cont.).

• Meter Replacement.
  • $50 fee to replace a small meter (3/4 and 5/8 inch) at the request of the customer if the meter is functioning properly.
  • Discussion. This fee is in addition to the meter test fee above. All other meters will be replaced only if they are not functioning according to adopted water meter testing guidelines.
  • There is no justification to replace a meter that is functioning properly. However, under certain circumstances, small residential meters can be replaced at the request of the customer. Larger meters will be replaced when they no longer test within adopted water meter testing guidelines.

• Unauthorized Use Fee (Consumption registering on an Inactive Account meter).
  • $50 plus water and wastewater usage on the meter.
  • Discussion. This proposed fee addresses directly the situation where an individual occupies a structure, is receiving water and wastewater service, but fails to set up a utility service agreement with Columbia Customer Care. The customer is receiving service from the City and is not paying for that service.
  • Other Utilities’ service fees for this situation have ranged from $50 to as high as $250.
Sec. 23-144. Special Water Service Fees (cont.).

- **Straight Connection Fee.** (Straight connections, tampering, theft of service).
  - $150 plus estimated usage at current Council adopted rates.
  - **Discussion.** Any type of theft is a serious matter. In the case of water service, seven (7) of the twelve (12) Utilities evaluated had very clear policies and related fees for service theft, with the fees ranging from a low of $150 to a high of $700, with that Utility being in South Carolina.

- **Lock water meter.**
  - $40 plus cost of lock.
  - **Discussion.** At this point in the Utilities relationship with their Customer, the Customer has refused to pay the bill, refused to make arrangements to pay the bill, or made arrangements to pay the bill and then broken that payment arrangement. This approach to curtail service theft is the least destructive and time consuming to the Utility as opposed to removing the meter or crimping the service line.

- **Six (6) of the twelve (12) Utilities evaluated had specific policies with respect to locking meters, with fees ranging from $40 to $162.**

Sec. 23-144. Special Water Service Fees (cont.).

- **Remove meter.**
  - $40.
  - **Discussion.** When a Customer has continually tampered with his or her service, turning their service back on, breaking a lock installed by the Utility, bypassing the meter and still not paying their bill, the Utility has the option of physically removing the meter. This action is both costly and disruptive to Utility operations, but sometimes necessary. At some point in time the Utility will have to send a meter crew back out to that location to reinstall the meter. While all Utilities from time to time resort to this extreme measure, not all publish the cost to the Customer for this action.

- **Other Utilities’ published service fees for this situation have ranged from $50 to $150.**

- **Emergency cut-off.**
  - **No charge for first request. $40 for each additional request during a twelve month period.**
  - **Discussion.** Situations may arise where a Customer needs the help of the Utility in shutting off their water service. However, if this becomes routine or occurs more than once in a twelve month period, it is no longer an “emergency cut-off” and the fee for service is a Customer obligation due to the expense of making this recurring trip to the property.
• **Sec. 23-145. - Installation of water meters and cross connection control devices.**
  - **Add:** new (6) Any water meter installed for use in the City of Columbia Water System must adhere to Sec. 23-62. – Application for service for selection and installation of water meters. If a domestic water meter is installed without approval of the City Engineer or his designee, the monthly water and associated wastewater bill will be estimated based on usage volume as determined by the City Engineer or his designee. The customer will be notified in writing that they have sixty days to have the appropriate meter installed according to Sec. 23-62. - Application for service. Failure to comply within sixty days will result in termination of water service.
  - **Discussion.** Every water meter in the Columbia Utilities’ water system must meet certain criteria as detailed in Section 23-62 of the City Code of Ordinances. The meter is an asset of the water system and the responsibility of the Utility to maintain.

• **Sec. 23-147. - Installation of water meters serving fire protection sprinkler systems.**
  - (b) Charges for water meters serving fire protection sprinkler systems shall be the city's cost of the meter times 1.15. **Add:** Monthly charges for water registering on the meter will include the base charge, water and sewer volume charges, unless verified that the fire protection sprinkler system is not tied into the internal building plumbing system.
  - **Discussion.** This is a clarification to the existing practice of Customer Care.

• **Sec. 23-149. - Sewer service rates.**
  - (b) Consumers using water cooling towers for air conditioning. Consumers using water cooling towers for air conditioning systems shall be given a credit of 30 cubic feet per ton per month during the service periods commencing in the months of April through October.
  - **Add:** An updated Cooling Tower Credit Request Form must be submitted annually no later than January 31st of each year. Failure to do so will result in the cooling tower evaporation credit being revoked for that year.
  - **Discussion.** This is a clarification to the existing practice of Customer Care.
Leak Adjustments

- **A leak adjustment is a privilege, not a right** that a customer is granted by a Utility.

- By Columbia City Council enacted Ordinance, a customer is charged a fee for the water that is registering on the customer’s meter each billing period along with the associated wastewater service.

- It is the customer’s responsibility to maintain the piping and plumbing systems on his or her property or business in good working order so as not to waste water and consequently incur unusually high water and associated wastewater charges.

- The Utility relies on its customers to maintain their private water and wastewater pipes and plumbing fixtures and to pay their bills on a timely basis. This will allow the Utility to have the funds necessary to provide essential water supply, treatment, distribution, wastewater collection and treatment services on behalf of all its customers. The Utility is funded at a level to provide these essential services, and not make a profit.

- However, City Councils, Utility Boards and Commissions have recognized that situations do arise where there are malfunctions to a customer’s piping and plumbing fixtures on their side of the meter, and have attempted to provide an incentive for the customer to correct these malfunctions and maintain their piping and plumbing fixtures by granting reasonable leak adjustments.

Leak Adjustment Analysis

- Fifteen (15) Public Utilities’ leak adjustment policies (including the CoC policy) in the United States were reviewed by URM.

- Fourteen (14) or approximately ninety-three percent (93%) of the fifteen (15) utilities sampled granted leak adjustments.

- The leak adjustment credits granted ranged between twenty-five (25) and fifty (50) percent of the difference between the water consumption during the period of the leak and the average consumption, or the consumption from the same time period the previous year.

- Some utilities granted water credits for refilling a swimming pool after repairs with documentation of those repairs.
Leak Adjustments

• **Recommendation.**
  1. It is recommended that the City of Columbia Utilities and Finance Departments continue the practice of granting leak adjustments in certain circumstances.
  2. It is further recommended that as the Board of Directors of the Utility, the City Council adopt this policy by Ordinance, in order to provide the customer, the staff and the Council with certainty and equity in administration of Leak Adjustments.

• **Discussion.**
  • The customer can read the leak adjustment ordinance and know what to expect, including that he or she will be treated the same as every other customer in a similar situation with respect to granting leak adjustments.
  • The staff will be able to administer a policy that only the City Council can modify, ensuring that the leak adjustment policy will not be subject to different practices in different situations with different customers.
  • The Council will have the assurance that all their Utility customers and City constituents will be treated fairly and equitably under the terms of the ordinance, and only they can set policy, not the staff.

Proposed Policy to be adopted by Ordinance

• **It is recommended that the City Council adopt a leak adjustment policy with the following components:**
  1. Grant leak adjustments based on fifty percent (50%) of the difference between the high usage bill or bills, and the average consumption for the preceding twelve month period.
  2. Grant leak adjustments for water and wastewater billing, since wastewater bills are based on water consumption.
  3. Grant leak adjustments for up to three (3) monthly billing cycles per year to customers that meet the criteria of the proposed ordinance. If the documented leaks occur in three (3) non-consecutive monthly billing cycles, up to three (3) individual adjustments can be granted in one (1) calendar year.
  4. Grant leak adjustments only if plumbing repair receipts and/or parts and fixture receipts are provided to the Utility within thirty (30) days of the discovery and repair of the leak.
  5. Grant leak adjustments for outdoor use and refilling a swimming pool after leak or swimming pool repair with adequate documentation of the repairs presented to the Utility.
These recommendations are consistent with current industry practice and the existing practice of the City of Columbia Utilities and Finance Departments, Customer Care and Field Service units.
CITY OF COLUMBIA, SOUTH CAROLINA
RATE STUDY UPDATE

Richard Campbell
Jeff Dykstra

RATE STUDY UPDATE

PURPOSE

REVENUE REQUIREMENTS

CAPITAL FINANCING

BILL COMPARISON

NEXT STEPS AND QUESTIONS
**PURPOSE**

- Present the preliminary draft results of the revenue requirements used for the cost of service and rate study.

**STUDY APPROACH**

**Pricing:** How should the revenue be collected from the customer classes?

**Cost Allocation:** Who should pay and how much should each customer class pay?

**Financial Planning:** What are the annual revenue requirements of the utility?

**Rate Design**

**Cost of Service**

**Revenue Requirements Forecast**

**Operating & Capital Costs**

**Rate Revenues & Miscellaneous Revenues**

**Objectives, Policies & Rate Setting Principles**
A rigorous, methodical, and transparent approach leads to defensible rates.

REVENUE REQUIREMENTS – 5 YEAR PROJECTION

- O&M: FY 2015 Budget as Starting Point = $79 Million
- No change in O&M for FY 2016 from FY 2015 Budget
- Annual Increase in O&M of 3% thereafter for modeling purposes, reviewed and adjusted annually.
  - Recognition of general market inflation and Clean Water 2020 efforts
  - Outstanding Debt Service = $29 Million Annually
- New Money Revenue Bond Issuances Annually from 2016-2020.
  - Annual Capital Spending of $120 million
- Annual “Pay-go” of $11.2 million funded from rate revenue adjusted annually based on actuals
### PRELIMINARY FINDINGS: COMBINED UTILITY REVENUE REQUIREMENTS

**Draft Water and Sewer Revenue Requirements – Test Year 2016**

<table>
<thead>
<tr>
<th>Line No.</th>
<th>Description</th>
<th>Operating Expense</th>
<th>Capital Cost</th>
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<tr>
<td></td>
<td>Statement of Net Revenue Requirements (Cash Basis)</td>
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<td>Revenue Requirements</td>
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<td>Transfer to Internal Services</td>
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<td>Funding to Operating Reserve</td>
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<td>9</td>
<td>Subtotal</td>
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<td>Less Revenue Requirements Met from Other Sources</td>
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<td>Net Revenue Requirements</td>
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<td>125,787,580</td>
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*Based on preliminary projections, to be adjusted based on City Staff review*

### CAPITAL FINANCING PLAN

- **2016-2020 CIP = $120 million annually**
  - $205 million Water and $395 million Wastewater
- **Annual Revenue Bond Issuances**
  - 2016 - $98 million
  - 2017 - $107 million
  - 2018 - $108 million
  - 2019 - $108 million
  - 2020 - $109 million
- **Annual “Pay-go” of $11.2 million funded from rate revenue adjusted annually based on actuals**
- **Anticipated Capital Contributions from West Columbia over next 5 years included**
- **Revenue/Billing Adjustments from URM Water Revenue Savings Audit included**
• Combined Water/Wastewater Bill

Residential - Inside City

- Room to increase rates yet maintain competitiveness in the region

Residential - Outside City

- Room to increase rates yet maintain competitiveness in the region
NEXT STEPS

• Present Projected Five Year Revenue Requirements, Cost of Service, and Proposed Rates at March 3, 2015 Meeting

• Provide Draft Report May 2015
Building a **world** of difference.®

Together
Water and Wastewater Update and Information

City Council Work Session
January 27, 2015

Presentation Overview

- CW2020 Update
- Customer Audit Findings
- Rate Study Status
# Status of Consent Decree (CD) Items

**Date of Entry – May 21, 2014**

<table>
<thead>
<tr>
<th>CD Deliverable</th>
<th>First Due Date</th>
<th>% Complete</th>
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<tbody>
<tr>
<td>Sewer Mapping Program (SMP)</td>
<td>7/21/2014</td>
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<td>CAP List (Checkbook)</td>
<td>8/21/2014</td>
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<td>Maintenance Management System (MMS)</td>
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<td>Satellite Sewer System Agreements (SSSA)</td>
<td>5/21/2015</td>
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<td>Transmission System Operations and Maintenance Program (TSOMP)</td>
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<td>Continuing Sewer Assessment Program (CSAP)</td>
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<td>WWTP Operations Program</td>
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<td>Contingency and Emergency Response Plan (CERP)</td>
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<td>WCTS Training Program</td>
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<td>Financial Analysis Program</td>
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<td>Infrastructure Rehabilitation Program (IRP)</td>
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<td>IR Report for the WCTS</td>
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<td>Sewer System Hydraulic Model Report</td>
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<td>Supplemental Environmental Project Implementation (SEP)</td>
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<td>SEP - Quality Assurance Project Plan (QAPP)</td>
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<td>Capacity Assurance Program (CAP)</td>
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<tr>
<td>Supplemental IR Report</td>
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</table>

Notes: 1. First Due Date represents the initial submittal of the required Plan to complete the Program. 2. Following the submittal and approval of each Plan, the implementation of the Plan begins and may last for several years. 3. Some future due dates may change based on the timing of approval of earlier Plans.
Continuing Sewer Assessment Program (CSAP)

- One page summary describes program
- Full document available
- Consent Decree requires 30-day Public Comment Period
- Establishes process for performing Condition Assessment on our existing Collection System
- Information is used to prioritize and schedule future Capital Improvement Projects
- Estimated cost to complete the assessment is approximately $32M over the next ten years

Satellite Sewer System Agreement (SSSA)

- One page summary describes requirements
- Content of SSSA complies with:
  - US EPA Guidance
  - 40 CFR Section 403.8(f) (Pretreatment Regulations)
  - South Carolina Regulation 61-9.122.2 (Water Pollution Control Permits)
- Holds Satellite Sewer Systems responsible for compliance with regulations as Columbia is held responsible
- Columbia becomes the Regulator and is accountable to DHEC & EPA
- Must submit to EPA by May 2015
Industrial Pretreatment Program (IPP)

- Significant mandatory updates to current IPP
- Complete rewrite of Chapter 23, Article IV of City Code by July 2015
- Issue new IPP permits (may be significantly more than current)

Clean Water 2020 Major Accomplishments

- Completed System-Wide Pump Station Condition Assessment
- Sewer Mapping Program Underway
- Cityworks Improvements
- Staff Improvements
  - Apprenticeship Programs
  - Voluntary Collection System Operator Exams Passed by WWM and WWTP Staff
  - SC Biological Wastewater Operator Exams Passed by WWTP Staff
Dramatically Improved Performance – Metro WWTP

**DMR Treatment Excursions by Month and Calendar Year**

*Neither confirmed laboratory errors nor "acts of God" are included in these*

Water System Major Accomplishments

- Wales Garden Tank Wins Recognition in National Tank Contest
- The Water works department pumped 21.1 Billion gallons of water to its customers in the 2013/2014 fiscal year.
  - This is an average of 57.4 Million gallons per day!
- Since the inception (1999) of the Area-Wide Optimization Program (AWOP)
  - Lake Murray Water Treatment Plant – 11 AWOP Awards
  - Canal Water Treatment Plant – 5 AWOP Awards
  - Both WTPs won AWOP Award last year
- 2nd Place in SC Best Tasting Water Competition at 2014 SCEC
  - Top 3 in each of last 5 years
Water System Project Summary

• Projects Completed
  – Waterline Replacement Earlwood Drive
  – Waterline Replacement at Rosewood & Beltline
  – Waterline Replacement in Eau Claire
  – Waterline Replacement on South Assembly
  – Waterline Replacement in Shandon Area (Maple, Wilmot, Wheat, and Amherst)
  – Canal and Lake Murray Water Treatment Plant Process Optimization Evaluation

• Projects to Bid / Construction
  – Watermain Replacement on Sylvan Dr, Shannon Springs, and Briarfield
  – Watermain Replacement along Mountain Drive and Clement Rd
  – Watermain Replacement along Wesley, Keats, and Ashton
  – Reservoir Dredging and Basin Improvements
  – Lake Murray WTP Disinfection, Residuals Handling & Pumping Improvements

• Projects Under Design
  – Harden Street Pump Station Improvements
  – 60-inch waterline from Lake Murray WTP to Broad River Rd
  – 42-inch & 24-inch waterline along Rimer Pond and Hardscrabble Rd
  – Horseshoe Pump Station Improvements
  – Canal WTP High Service Rooms 2 & 3 and Clearwell Improvements
What Are Capacity Limited Areas?

• Areas of Collection or Transmission System with Insufficient Capacity
• New Developments cannot be added without causing or contributing to Sanitary Sewer Overflows (SSOs)
• Determined by existing pipe capacity and flows and is governed by terms within the Consent Decree
Capacity Limited Areas

- Previous
  - Burnside Area no longer limited due to a completed CIP project
- Currently Known
  - Crane Creek Basin (Project under design)
  - Lake Katherine Area (Project under design)
  - Small, localized pockets of Capacity Limited Areas
- Potential Developments are currently unable to connect to the system in Capacity Limited Areas, and the City is required to continue limitations until CIP projects are completed
  - Additional Capacity Limited Areas are predicted using the Hydraulic Model
Current Major Capacity Limited Areas

Future Capacity Limited Areas

• On-Going development of a Hydraulic Model is predicting near-term future Capacity Limited Areas are likely
  – Growth
  – Future Capacity Rules based on Consent Decree
• Capital Improvement Projects are needed to eliminate Major Capacity Limitations or reduce the timeframes of the limitations
  – Must have CIP funding to complete these newly identified projects
  – Projects often take 3-4 years to implement
Projected Future Capacity Limited Areas

Recent Major Wastewater CIP Efforts
Wastewater CIP Needs

Projected 5 Year CIP - Wastewater Needs

- **Capacity**: $29,385,000.00
- **Other**: $47,727,500.00
- **Total**: $77,112,500.00

- FY 13/14: Approved Budget
- FY 14/15: Approved Budget
- FY 15/16: Projected Budget
- FY 16/17: Projected Budget
- FY 17/18: Projected Budget
- FY 18/19: Projected Budget
- FY 19/20: Projected Budget
Water CIP Needs

Projected 5 Year CIP - Water Needs

Future Challenges & Opportunities

- Resources to meet Growth and Regulatory Requirements
- Public Private Partnerships (RFEI)
  - BioSolids
  - Efficiencies
Customer Audit Update

Water Revenue Savings Audit: Background

• Firm Selection
  – RFP issued on September 13, 2013
  – URM contracted on December 10, 2013

• Scope of Audit
  – “Assist in ensuring that users of retail water and sewer service provided by Columbia are properly and equitably billed for such service”
Water Revenue Savings Audit: Outcome

• Findings
  – 17,805 accounts audited
    • All customers except single family residential
  – 1,471 (8.3%) flagged for field investigation
  – 441 (2.5%) verified to have potential increased revenue

• Projected Impact
  – Estimated $1.95 M annually

Rate Study Update
Rate Study Status Update

• 5-Year Financial Forecast and Cost of Service Results for February 17, 2015 Council meeting
• Rate Recommendations for March 3, 2015 Council Meeting

Rate Study Considerations

• Achieve Financial Sustainability for each Utility
• Cost of Service – Equitably distribute costs between customer classes
• Develop a new large/”mega” user rate class
• Potential Rate Increases
  – Long-term Sustainable Infrastructure to Maintain Level of Service and Support New Growth
  – Support Utility Best Practices and Operations
  – Driven by Consent Decree (Wastewater)
  – Driven by New Capacity for Growth (Water)
Rate Study Considerations
• Combined Water/Wastewater Bill Comparison

- Room to increase rates yet maintain competitiveness in the region
Industrial/Large-User Rates

- Water sold to a significant industrial or commercial user

- Who would be impacted
  - Existing large commercial and potential new commercial or industrial customers

- Pros/Cons:
  - Pros: Could be a lower rate to encourage new customers, economic growth, and revenue
  - Cons: Often requires capacity agreements, equity concerns with other customer classes

Wholesale Rates

- Water sold to a customer at major points of delivery for re-sale

- Who would be impacted
  - City has multiple water and wastewater wholesale contracts

- Pros/Cons:
  - Pros: Cost of service-based rates
  - Cons: Risk of non-owner user, political and public pressures, controversial, potential legal challenges
Wrap Up

Questions & Comments
Utilities & Engineering Update

Overview

• Clean Water 2020 Update
• Additional Items
  • Rate Study Timeline
  • Customer Water Audit Update
  • Use of Innovative Technologies
  • Public / Private Partnership Opportunities
Clean Water 2020 Update

Timeline

* Consent Decree Date of Entry (DOE): May 21, 2014

<table>
<thead>
<tr>
<th>Deliverable Milestones</th>
<th>Current CD Timeline</th>
<th>Comments</th>
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<tr>
<td>Sewer Mapping Program</td>
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<td>SMP Submitted to EPA via Certified Mail</td>
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<td>Continuing Sewer Assessment Program for the WCTS</td>
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<td>EPA Required Lateral Notification Letter Template Approved by City Legal</td>
<td>February 17, 2015</td>
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<td>CSAP EPA Mandated Public Comment Period Start</td>
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<td>Maintenance Management System</td>
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### Timeline

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<th>Deliverable Milestones</th>
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<td>SSSA City Legal Review Period Start</td>
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<td>SSSA Due Date to EPA</td>
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<td>Revised Chapter 23 of City Ordinance Legal Review Period Start</td>
<td>May 29, 2015</td>
<td>Pending Approval of SS7312 Professional Services Contract and Schedule</td>
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<td>City Council Review of Revised Chapter 23 of City Ordinance, with Supporting and Related Documentation</td>
<td>July 21, 2015</td>
<td>EPA Approved SSSA Template must be used for all Satellite Sewer Systems, including the 19 Permitted Industrial Pretreatment Users. Chapter 23 outlines the requirements and enforcement of the Industrial Pretreatment Program and is referenced within the SSSA.</td>
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<tr>
<td>City Council Approval of SSSA for each of the 19 Permitted Industrial Pretreatment Program Permittees, upon expiration of current contract term</td>
<td>Based on Each Contract's Term</td>
<td>EPA requires that upon expiration, renewal, or issuance of an SSS Agreement, the EPA approved SSSA Template must be used.</td>
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</tbody>
</table>

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<th>Deliverable Milestones</th>
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<tr>
<td><strong>Transmission System Operations and Maintenance Program</strong></td>
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<tr>
<td>City Council Review of TSOMP Summary Sheet</td>
<td>February 17, 2015</td>
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<td>TSOMP EPA Mandated Public Comment Period Start</td>
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<td>TSOMP Due Date to EPA</td>
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<td><strong>WWTP Operations Program</strong></td>
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<td>September 15, 2015</td>
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<td>WWTP Operations Program Due Date to EPA</td>
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<td><strong>Contingency and Emergency Response Plan</strong></td>
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<td>City Council Review of CERP Summary Sheet</td>
<td>August 18, 2015</td>
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<td>CERP EPA Mandated Public Comment Period Start</td>
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<td>CERP Due Date to EPA</td>
<td>November 21, 2015</td>
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<td>WCTS Training Program Due Date to EPA</td>
<td>November 21, 2015</td>
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<td><strong>Information Management System Program</strong></td>
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<td>City Council Review of IMS Program Summary Sheet</td>
<td>September 15, 2015</td>
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<td>IMS Due Date to EPA</td>
<td>November 21, 2015</td>
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<tr>
<td><strong>Gravity Sewer System Operations and Maintenance Program</strong></td>
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<tr>
<td>City Council Review of GSOMP Summary Sheet</td>
<td>July 21, 2015</td>
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<td>GSOMP EPA Mandated Public Comment Period Start</td>
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<td><strong>Financial Analysis Program</strong></td>
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<td>FAP Rate Study and Proposed Financing Plan Completed</td>
<td>February 1, 2015</td>
<td>Pending Rate Consultant Approval and Schedule</td>
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<tr>
<td>FAP Review Rate Study Results and Proposed Financing Plan with City Council</td>
<td>February 17, 2015</td>
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<td>Develop Remaining FAP Components</td>
<td>July 1, 2015</td>
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<tr>
<td>FAP Due Date to EPA</td>
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Additional Items

- Rate Study Timeline
- Customer Water Audit Update
- Use of Innovative Technology
  - SL-RAT
  - “Smartcover” Manhole
- Public / Private Partnership Opportunities
Sewer Line Rapid Assessment Tool

• About the SL-RAT
  • Acoustic signaling between 2 devices locates pipe blockage in real time

• City’s Use Since September 29, 2014
  • Inspected over 240,000 ft. of sewer lines
  • Average 8,500 ft. per day with 2 person crew
  • Proactively identify blockages BEFORE they cause SSOs

“Smartcover” Manhole

• About the Smartcover
  • Ultrasonic sensor for water levels
  • Satellite communications connection allows for:
    • 24/7 monitoring
    • Warning of rising levels that might lead to SSOs
    • Predictive maintenance due to slowly rising levels

• City’s Use Since November 10, 2014
  • Pilot of 4 covers at critical locations
  • 3 sewer, 1 storm drain
Satellite Sewer System Agreements

August 19, 2014

Agenda

* Review of Consent Decree Requirements
* SCDHEC’s Definition of Satellite Sewer Systems (SSS)
* Categories of SSS Agreements (SSSA)
* EPA Guidance - Elements of SSS Agreements
  * Sewer Use Ordinance
  * Local Limits
  * Control Mechanism
  * Transfer of Records
  * Right of Entry/Inspection and Sampling
  * Enforcement
  * Remedies for Breach
  * Residential Areas
Major Considerations

* Develop City-wide SSSA Policy
* Significant Legal Review (*closely related to IPP*)
* Conversations with Major SSS
* Approval/Adoption by City Council
* Submit Final SSSA Template to EPA

Review of Consent Decree Requirements: Certification

24. **Certification.** Columbia shall, by a person who meets the requirements for reports and other information under 40 CFR § 122.22(b), sign and certify all Deliverables, notices, documents or reports submitted to the United States and State pursuant to this Consent Decree as follows:

   I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering such information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.
Review of Consent Decree Requirements: Satellite Sewer System Agreements

“Within one (1) year...a proposed form of Satellite Sewer System Agreement for new or the renewal of existing agreements that cover collection, conveyance and treatment...as that term is defined in SC Regulation 61-9.122.2...”

Review of Consent Decree Requirements: What must the SSSA contain?

* At a minimum, the agreement must contain language requiring the SSS to:
  * Manage, operate and maintain collection/conveyance system (MOM)
  * Minimize peak flows
  * Exclude excess surface/groundwater intrusion
  * Control, monitor and enforce Pretreatment Program
  * Address term/life of agreement, method for modifying, enforcing, physical disconnection
SCDHEC’s Definition of Satellite Sewer Systems

- **Satellite Sewer Systems:**
  - Are owned/operated by one person
  - Discharges to system owned/operated by another

- **From DHEC’s website:**
  - Wastewater system not covered by either a NPDES permit or a State Land Application Permit

- **There are two basic situations that would normally apply:**
  1. Sewers serving more than one building (apartments, subdivisions, industrial complexes, etc.)
  2. Pretreatment systems at industries

Categories of SSS Agreements

1. **Major Contributors** (with Complex Agreements)
   a) Permitted Industrial Dischargers (19)
   b) West Columbia
   c) Fort Jackson
   d) Bay Berry Mews
   e) Riverbanks Zoo
   f) Ni America
   g) East Richland

2. **Covered Under DHEC’s General Operating Permit**

3. **Others to be Determined** (Apts., Hospitals, Trailer Parks, etc.)
EPA Guidance: Elements of SSS Agreements

a) Sewer Use Ordinance
   * Contributor – adopt pretreatment sewer use ordinance ... no less stringent.

b) Local Limits
   * Contributor – adopt local limits for industrial discharges ... at least as stringent or specific maximum total mass loading of pollutants.

c) Control Mechanism
   * Who is responsible for issuing control mechanism to industrial users?
EPA Guidance: Elements of SSS Agreements

d) Transfer of Records
   * Contributor – grant access to all records compiled ...
     Pretreatment Program. Notices of key activities (e.g.,
     enforcement, permit issuance).

e) Right of Entry/Inspection and Sampling
   * Contributor – grant power to enter facilities of industrial
     users to verify compliance.

f) Enforcement
   * Who is responsible for enforcement? If Contributor, then
     City should have right if Contributor fails to.

g) Remedies for Breach
   * If Contributor has primary responsibility for permitting,
     compliance monitoring, and/or enforcement but is unable
     or unwilling to do so, City should be granted that right.

h) Residential Areas
   * If no industrial users are located within Contributor’s
     jurisdiction, agreement should state:
     1) No industrial users are currently located within.
     2) None shall be allowed unless prior notification is provided
        and new agreement entered into.
Schedule Moving Forward

* Extremely time-sensitive

* Develop Draft SSSA Templates – May 2014 COMPLETE
* City Legal Review Period – November 2014
* City Council – January 2015
* Submit Final SSSA Template to EPA – May 2015

Questions/Discussion
AMR/AMI Update

Background
What is AMR / AMI
Pilot Project
Next Phase
What’s next
Recommendations and Cost Estimates
**Background**

- The City has 138,602 billed water accounts
  - Most have a single water meter
  - Some have multiple meters
- 584 routes leads to serious challenges
  - Fuel & man power
  - Estimated reads
  - Hidden meters
  - Rereads/ Misreads

---

**What is AMR? AMI?**

- **AMR:** Automatic meter reading
  - Remote read
  - Route based
- **AMI:** Advanced metering infrastructure
  - Fixed network
  - Remote access (i.e. computer terminal)
Compared to Other Cities

* Cities in SC with AMI
  * Columbia is one of the few in SC

* Cities in SC with AMR
  * Spartanburg – Completely AMR
    ~58,000 meters
  * Greenville – Completely AMR
    ~170,000 meters
  * Charleston – Using AMR in ~ ½ system
    ~56,000 meters out of 110,000

City Pilot

* City pilot tested both
  * ~850 meters total

* 3 test routes
  * AMR: 2 Residential Routes
  * AMI: 1 Commercial Route (Prison)

* Both worked well
Ultimate Goal: Service Area Wide

Next Phase
What’s Next?

* Begin replacing meters in a key area
  * Variety of customer types
  * Sample in each Council District and outside City limits
  * Continue using standard meters in other areas until transition complete

* Develop the RFP or RFEI
  * Finalizing location
  * Developing the RFP/RFEI
  * Final approach based on estimated cost savings

* Anticipated results
  * Significant increase in meter accuracy
  * Reduction in manpower needs

What’s Next?

* Anticipated total costs
  * For ALL meters $20M - $40M

  * For Phase 2 only
    * $16 Million
    * $4 Million each for 2A, 2B, 2C, and 2D

  * For dual (standard and AMR/AMI) meter reading capability
    * To read standard and AMR meters
    * Anticipated cost: $100k-$150k
What’s Next?

* Recommendation
  * Standard O&M Purchase
    * Approximately 4500 standard meters currently budgeted for FY 2014/2015
    * For new/replacement meters outside Phase 2 area
  * CIP Phase 2 Purchase
    * 53,500 AMR meters
    * 5 years at $4M per year
  * Continue to explore options to upgrade equipment

Questions?
Presentation Overview

• **Status of Consent Decree Items**
  – Consent Decree
    • Deliverable Update
• **FY 13/14 CIP and Major Activities**
  – FY 13/14 CIP Summary
    • Proposed and Actual Projects by Type
  – Significant Accomplishments
    • Projects and Internal Initiatives
Presentation Overview

• FY 14/15 and Future CIP
  – Improvements in CIP Tracking and reporting
  – FY 14/15 $40M Water & Sewer CIP
  – Impacts of a Reduced CIP & Future Projections
  – Workload Approach
  • Staffing and Projects

• Future Goals and Initiatives
  – Major Initiatives and Opportunities for the City
  – Public Private Partnerships (P3)
  – Public Awareness

Status of Consent Decree (CD) Items
### Status of CD Deliverables

**Date of Entry – May 21, 2014**

<table>
<thead>
<tr>
<th>CD Deliverable</th>
<th>First Due Date</th>
<th>% Complete</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sewer Mapping Program (SMP)</td>
<td>7/21/2014</td>
<td>99%</td>
</tr>
<tr>
<td>CAP List (Checkbook)</td>
<td>8/21/2014</td>
<td>100%</td>
</tr>
<tr>
<td>Continuing Sewer Assessment Program (CSAP)</td>
<td>3/19/2015</td>
<td>55%</td>
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<tr>
<td>Maintenance Management System (MMS)</td>
<td>5/21/2015</td>
<td>5%</td>
</tr>
<tr>
<td>Satellite Sewer System Agreements (SSSA)</td>
<td>5/21/2015</td>
<td>5%</td>
</tr>
<tr>
<td>Transmission System Operations and Maintenance Program (TOS)</td>
<td>5/21/2015</td>
<td>21%</td>
</tr>
<tr>
<td>Infrastructure Rehabilitation Program (IRP)</td>
<td>11/19/2015</td>
<td>0%</td>
</tr>
<tr>
<td>WWTP Operations Program</td>
<td>11/21/2015</td>
<td>10%</td>
</tr>
<tr>
<td>Contingency and Emergency Response Plan (CERP)</td>
<td>11/21/2015</td>
<td>75%</td>
</tr>
<tr>
<td>WCTS Training Program</td>
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<tr>
<td>Information Management System Program (IMS)</td>
<td>11/21/2015</td>
<td>10%</td>
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<tr>
<td>Financial Analysis Program</td>
<td>11/21/2015</td>
<td>1%</td>
</tr>
<tr>
<td>Gravity Sewer System Operations and Maintenance Program (GSO)</td>
<td>11/21/2015</td>
<td>15%</td>
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<tr>
<td>WWTP Training Program</td>
<td>5/21/2016</td>
<td>4%</td>
</tr>
<tr>
<td>IR Report for the WCTS</td>
<td>11/17/2017</td>
<td>0%</td>
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<tr>
<td>Sewer System Hydraulic Model Report</td>
<td>8/19/2018</td>
<td>0%</td>
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<tr>
<td>Supplemental Environmental Project Implementation (SEP)</td>
<td>5/21/2019</td>
<td>1%</td>
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<tr>
<td>SEP - Quality Assurance Project Plan (QAPP)</td>
<td>7/21/2014</td>
<td>95%</td>
</tr>
<tr>
<td>Capacity Assurance Program (CAP)</td>
<td>6/18/2019</td>
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<tr>
<td>Supplemental IR Report</td>
<td>11/15/2020</td>
<td>0%</td>
</tr>
</tbody>
</table>

**Notes:**
1. First Due Date represents the initial submittal of the required Plan to complete the Program.
2. Following the submittal and approval of each Plan, the implementation of the Plan begins and may last for several years.
3. Some future due dates may change based on the timing of approval of earlier Plans.

---

### Mandatory CD Requirements

- **Plans Required by the CD**
  - Must be submitted to and approved by EPA
  - Must be implemented as scheduled during the remainder of the life of the CD
  - Generates an increased number of projects and operational improvements

- **Deferred Maintenance & Project Implementation**
  - Risk of non-compliance with CD
  - Risk of continued SSOs
  - Risk of additional capacity restricted areas
FY 13/14
Major Activities and Capital Improvement Program (CIP)

Sample of Active Water & Wastewater Contracts

<table>
<thead>
<tr>
<th>Project - Description</th>
<th>Project Amount as of 06/30/2014</th>
<th>Expenses as of 06/30/2014</th>
<th>% Paid as of 06/30/2014</th>
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</thead>
<tbody>
<tr>
<td>WM308401 - WM Improvements in Eau Claire - read contract</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Construction budgeted starting in FY2012 and completed as of 06/30/2014</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WORKING BUDGET</td>
<td>1,793,585.00</td>
<td>82,000.00</td>
<td>90.90%</td>
</tr>
<tr>
<td>ALLIANCE CONSULTING ENGINEERS INC</td>
<td>1,548,337.50</td>
<td>1,630,337.50</td>
<td>90.90%</td>
</tr>
<tr>
<td>CAROLINA TAP AND BORE INC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Construction budgeted starting in FY2012 and completed as of 06/30/2014 Total</td>
<td>1,793,585.00</td>
<td>1,630,337.50</td>
<td>90.90%</td>
</tr>
<tr>
<td>Advertising budgeted starting in FY2011 and completed as of 06/30/2014</td>
<td>744.19</td>
<td>744.19</td>
<td></td>
</tr>
<tr>
<td>PRINT MACHINE OF COLUMBIA INC</td>
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<tr>
<td>Advertising budgeted starting in FY2011 and completed as of 06/30/2014 Total</td>
<td>744.19</td>
<td>744.19</td>
<td></td>
</tr>
<tr>
<td>Professional Services budgeted starting in FY2012 and completed as of 06/30/2014</td>
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<td></td>
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</tr>
<tr>
<td>WORKING BUDGET</td>
<td>272,725.00</td>
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<td></td>
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<tr>
<td>ALLIANCE CONSULTING ENGINEERS INC</td>
<td>181,000.00</td>
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<td></td>
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<tr>
<td>STAR REPORTER CORPORATION</td>
<td>75.00</td>
<td></td>
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</tr>
<tr>
<td>STATE MEDIA COMPANY, THE</td>
<td>549.72</td>
<td></td>
<td></td>
</tr>
<tr>
<td>STATE OF SOUTH CAROLINA</td>
<td>725.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Professional Services budgeted starting in FY2012 and completed as of 06/30/2014 Total</td>
<td>272,725.00</td>
<td>182,169.72</td>
<td>66.86%</td>
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<tr>
<td>WM308401 - WM Improvements in Eau Claire - read contract Total</td>
<td>2,066,310.00</td>
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<td>87.76%</td>
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<tr>
<td>WM363701 - Eng Srvs/ WM/ Chapin Water Tank</td>
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<tr>
<td>Professional Services budgeted starting in FY2012 and due to complete June 2016</td>
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<tr>
<td>WORKING BUDGET</td>
<td>413,305.00</td>
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<tr>
<td>CHAO AND ASSOCIATES INC</td>
<td>243,086.41</td>
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<td></td>
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<tr>
<td>LEXINGTON COUNTY</td>
<td>325.00</td>
<td></td>
<td></td>
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<tr>
<td>SCMCA DHEC ENVIRONMENTAL HEALTH</td>
<td>725.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Professional Services budgeted starting in FY2012 and due to complete June 2016 Total</td>
<td>413,305.00</td>
<td>244,136.41</td>
<td>59.07%</td>
</tr>
<tr>
<td>WM363701 - Eng Srvs/ WM/ Chapin Water Tank Total</td>
<td>413,305.00</td>
<td>244,136.41</td>
<td>59.07%</td>
</tr>
</tbody>
</table>
Clean Water 2020 Major Accomplishments – FY 13/14

- Initiatives
  - Cityworks Pilot at Metro WWTP
  - Sewer Mapping Plan Implementation Approval
- Business Process Improvements
  - CIP Standard Guidelines and SOPs
  - Procurement Standardization
  - Data Management Standardization
  - Standard Rehabilitation Specifications
- Operations
  - WWM Overtime costs reduced by more than 70%
  - Major Reduction in Work Order Backlog

Projects Completed
- Metro WWTP Headworks Improvements
- Saluda River & West Columbia Pump Stations
- 42-Inch Force Main from WCPS to Metro WWTP

Projects to Construction
- 4 SSES/Rehab
- WWTP Train 2 Aeration Improvements

Projects Starting Design
- Lake Katherine Capacity Enhancements
- 3 SSES/Rehab Projects
- Metro WWTP Digester Improvements
Water System Major Accomplishments – FY 13/14

• Awards Received
  – SCDHEC Area Wide Optimization (AWOP) Award for both Water Treatment Plants
  – Top 3 for 5 Years in a Row!

• Water Operator Apprenticeship Program
  – Initiated National Water System Operator Apprenticeship Program
  – 1st Utility in SC to offer a “student apprenticeship”

Water System Major Accomplishments – FY 13/14

• Completion of New Pump Stations at Canal WTP
  – Raw Pump Stations
  – High Service Pump Station

Raw PS Before
Raw PS After
High Service PS Before
High Service PS After
Water System Major Accomplishments – FY 13/14

• Projects Completed
  – Canal WTP Raw Water and High Service Pumping Improvements
  – Chapin Booster Pump Station Improvements
  – 2 Water Main Replacement Projects (Shandon Area & Eau Claire Area)

• Projects to Bid / Construction
  – Winterwood Pump Station Improvements
  – 24-inch Waterline to Chapin (Phase 2)
  – Three 2 MG Elevated Storage Tanks (Ballantine, Killian, Genstar)
  – Lake Murray WTP Disinfection, Residuals Handling, & Pumping Improvements
  – Canal WTP Raw Water Reservoir and Sedimentation Basin Improvements
  – Waterline Replacement at Rosewood and Beltline
  – Lake Katherine Waterline Improvements (Phase 1)

• Projects Under Design
  – 60-inch waterline from Lake Murray WTP to Broad River Road
  – 42-inch & 24-inch waterline along Rimer Pond and Hardscrabble Roads
  – Horseshoe Pump Station Improvements
  – Canal WTP High Service Rooms 2 & 3 and Clearwell Improvements

FY 14/15 and Future CIPs
Clean Water 2020
Master Project Schedule & Budget

Note: SS7280 is provided as an example; however, all Wastewater projects are tracked in this program

Individual Project & Summary
CIP Tracking – Coming Soon
Impact of FY 14/15 CIP Reductions

- Potential Future Effects of CIP Reductions
  - Risk of Failure to comply with CD
  - Increased Wastewater Capacity Limitations
  - Continued Deferred Maintenance and Infrastructure Improvements
  - Unrealized Operational Efficiencies
  - Unsustainable Backlog of Work
    - Creates an inefficient ‘peak’ of future work
    - Delays the future completion of needed projects
TYPICAL MAJOR PROJECT LIFE CYCLE

<table>
<thead>
<tr>
<th>YEAR 1</th>
<th>YEAR 2</th>
<th>YEAR 3</th>
<th>YEAR 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Procurement Process &amp; Council Approval</td>
<td>Engineering</td>
<td>Bidding &amp; Council Approval</td>
<td>Construction &amp; Closeout</td>
</tr>
<tr>
<td>ENCUMBRANCE of TOTAL PROJECT FUNDING</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- 100%
- 75%
- 50%
- 25%
- 0%

MILESTONES OF PROJECT

- Prioritization of CIP funding for Design.
- Prioritization of CIP funding for Construction.
- Project completed & benefits of project realized.
Impact of Deferring Maintenance and Infrastructure Improvements

• Increased Costs
  – Reactive Repairs more costly than Proactive Improvements

• Increased Emergencies
  – Pipe Collapses
  – Roadway Closures

• Continued SSOs & Boil Water Advisories
  – EPA fines per SSO begin 5/21/2016

FY 14/15 Wastewater CIP Reduction Impact Examples

• Annual Sewer Pipe Lining & Replacement (Downtown Area)
  – SS6966 Reduced CIP from $4.5M to $2.5M to $0
  – Impacts
    • Increase in Likelihood of Costly Reactive Repairs
    • Loss of EPA Capacity Credits
    • Delay of 5 Year Sanitary Sewer Rehabilitation Plan

• Pump Station Improvements at 6 sites
  – SS706012 Reduced CIP from $3M to $1.5M to $0
  – Impacts
    • Increase in Risk of SSOs
FY 14/15 Water CIP Reduction Impact Examples

- Lake Katherine Waterline Improvements Phase 2
  - WM4000-02 Reduced CIP from $3M to $0
  - Impacts
    - Water Quality
    - Area Fire Protection
- Water System SCADA Improvements
  - WM4164 Reduced CIP from $2.5M to $0
  - Impacts
    - Canal WTP Controlled Tanks and Pump Station will not be converted from phone to radio telemetry

Staffing and Project Workload Approach
Annual City Council Approval Comparison

City Council Approved Water and Wastewater Contracts Encumbered per Fiscal Year
(Professional Services & Construction)

- 5 Year CIP before FY 14/15 Cuts (Water)
- 5 Year CIP before FY 14/15 Cuts (Wastewater)
- Water Contracts Encumbered
- Wastewater Contracts Encumbered
- Estimated Water to be Encumbered
- Estimated Wastewater to be Encumbered

Cash Reserve FY 13/14*
(Estimate as of 6/30/14)
*Unaudited, Preliminary, & Subject to Change
Cash Reserve FY 14/15*
(Estimate as of 6/30/14)
*Unaudited, Preliminary, & Subject to Change

CD Required
Financial Analysis Plan

- Due to EPA no later than November 21, 2015
- Draft by 12/2014 & City Council Approved by 2/15
- “…tracks the sufficiency of funds for operations and maintenance, capital projects financing, and debt service coverage associated with WCTS.”
- Required Components
  - Cost Analysis
  - Capital Improvement Financing Program
  - Budget and Customer Rate Setting Analysis
- Required Tracking and Reporting
  - Operation and Maintenance costs by the type of activity (corrective, preventative, and emergency) and Capital Improvement costs
  - Implementation Schedule specifying dates and actions
Future Goals and Initiatives

Improving Efficiencies & Capabilities

• Efficiency Improvements Underway
  – Staff Training Programs
  – Robust, Long-Term Proactive Asset Management using Cityworks
  – Business Processes
  – Wastewater Modeling
  – Assessment of Wastewater System
  – Project Management Procedures
Revenue Findings

• Water and Sewer Customer Audit
  – Started January 2014
  – Reviewed 10,500 individual commercial customer accounts to date
  – Staff is very knowledgeable, professional, and has been very supportive of and involved in project
  – Setup on large meters is very effective and they are in good mechanical condition
  – Evaluation of all commercial customer accounts estimated to be complete by December 2014

Industrial Pre-Treatment Program (IPP) & Satellite Sewer System Agreements (SSSA)

• What is Required
  – Overhaul of Current IPP
  – Must Negotiate New SSSAs
• Source of Revenue to meet CD & Regulatory Mandates
• Work with City Council & Staff to move Process Forward Quickly
  – Must submit to EPA by May 2015
Public/Private Partnerships (P3)

- Request for Expression of Interest (RFEI)
  - Standard Method to Gage Interest
  - Allows Private Companies to Explain Details
- Upcoming RFEIs
  - Metro WWTP BioSolids
  - Others Coming Soon

Public Meetings and CW2020 Branding
Questions & Comments
FY 14/15 Proposed Water & Sewer Budget – Revised
FY 14/15 Proposed Storm Water
Capital Improvement Program
FY 14/15 General Capital Projects
Park Projects & Public Safety

June 10, 2014

Agenda

- FY 14/15 Proposed Water & Sewer Budget – revised
- FY 14/15 Storm Water Capital Budget
- FY 14/15 General Capital Projects
FY 2014/2015 Proposed Water & Sewer

- Proposed budget is $127,585,095
  - a reduction of $9,895,470 from the budget originally proposed to City Council
  - $623,290 reduction from the current year operating budget.

- Staff has revised the proposed Water & Sewer budget to reflect no rate increase at this time.
FY 2014/2015 Proposed Water & Sewer

Revenues

- Water & Sewer revenues are proposed at $127,585,095; a reduction of $623,290 from the current year budget and $9,895,470 from the original proposed budget.

- Sewer sales are projected at $43,385,205; a reduction of $7,985,910 or -16%. The reduction is due primarily to the sale of a portion of the sewer system.

- Water sales are proposed at $82,508,290; an increase of $7,281,020 or 10%. The increase is based on growth in the system, the billing audit that is underway and renegotiated contracts for services.

Expenditures

- The following reductions have been made to balance the budget within the projected revenues:

- Department reductions include funding for the cost of living adjustment and health care adjustments, $300,000 and various departmental reductions, $450,000.

- Transfers to Capital Improvement Projects is budgeted at $11,673,149; a reduction of $8,926,851 from the current year and $5,818,030 from the original proposed budget.

- Reduced Debt Service by $3 million

FY 14/15 Capital Improvement Projects

- The requested capital projects budget for FY 14/15 is $91,990,000.
  - Water Capital Improvement Projects are $35,350,000
  - Sewer Capital Improvement Projects are $57,640,000

- Total available funding of $40,000,000
  - Transfers from FY 14/15 Water & Sewer Operating budget; $11,673,149
  - Use of fund balance or cash for capital projects is $28,675,925

- Utilities and Engineering Department budget includes more than $10,000,000 in non-capital projects that are in addition to the Capital Budget.

- Management is working with Utilities and Engineering, CDM Smith, and rate consultant to evaluate options and the projects that can be completed during FY 14/15 that so that we can continue to make investments to improve the system and meet our obligations.
## Water & Sewer Fund Balance

**As of May 31, 2014**

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Available Bond Proceeds</td>
<td>92,865,499</td>
</tr>
<tr>
<td>Available Cash</td>
<td>208,872,228</td>
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<tr>
<td>Total Revenue</td>
<td>$301,737,727</td>
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<tr>
<td>Capital Project Encumbrances</td>
<td>(114,111,327)</td>
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<tr>
<td>Operating Encumbrances</td>
<td>(22,937,671)</td>
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<tr>
<td>Total Encumbrances</td>
<td>($137,048,998)</td>
</tr>
<tr>
<td>Cash less encumbrances</td>
<td>164,688,729</td>
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<tr>
<td>Projects to be encumbered by 6/30/14</td>
<td>(35,547,480)</td>
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<tr>
<td>Year End Projected Remaining Cash</td>
<td>$129,141,249</td>
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<tr>
<td>Year end projected cash</td>
<td>$130,000,000</td>
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<tr>
<td>Liquidity Cash Target for bond rating</td>
<td>$102,324,075</td>
</tr>
</tbody>
</table>

**Fund Balance Available for FY 14/15 Capital Projects**

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY 14/15 Operating Budget Transfer &amp; Reserve</td>
<td>12,673,149</td>
</tr>
<tr>
<td>Total Available for FY 14/15 Capital Projects</td>
<td>$40,349,074</td>
</tr>
</tbody>
</table>

## Water & Sewer CIP Highlights:

Select Projects Over $1 M

**Legend**

- **Sewer**
  - $1-2 M
  - $2-3 M
  - $3-4 M
  - $4-5 M
  - $5-6 M
  - $6-24 M

- **Water**
  - $1-2 M
  - $2-3 M
  - $3-4 M
  - $4-5 M
  - $5-6 M
  - $6-24 M

We Are Columbia. Together we will build a first class city.
## FY 14/15 Water Capital Projects

<table>
<thead>
<tr>
<th>Project</th>
<th>Description</th>
<th>Proposed</th>
</tr>
</thead>
<tbody>
<tr>
<td>WM</td>
<td>North Main Street Streetscape</td>
<td>$2,000,000</td>
</tr>
<tr>
<td>WM3069</td>
<td>Doris Drive</td>
<td>$950,000</td>
</tr>
<tr>
<td>WM3099</td>
<td>700 LF of 8&quot; W.M from Exc. Centre to Cornhill Rd. via Eastlawn Rd.</td>
<td>$75,000</td>
</tr>
<tr>
<td>WM3870</td>
<td>3,000 LF 16&quot; WM &amp; 4,500 LF of 12&quot; along Longtown Road West</td>
<td>$1,000,000</td>
</tr>
<tr>
<td>WM300013</td>
<td>Annexations (Annual)</td>
<td>$200,000</td>
</tr>
<tr>
<td>WM300113</td>
<td>Water Quality Projects City Wide (Services &amp; 2-inch water line replacement) (Annual)</td>
<td>$1,000,000</td>
</tr>
<tr>
<td>WM3091</td>
<td>Lawand, Morninghill and Lotenia Drives (Annual water line rehab)</td>
<td>$600,000</td>
</tr>
<tr>
<td>WM335513</td>
<td>Utility Conflicts (Annual)</td>
<td>$500,000</td>
</tr>
<tr>
<td>WM335813</td>
<td>Pay Difference Agreements Various Subdivisions (Annual)</td>
<td>$150,000</td>
</tr>
<tr>
<td>WM363701</td>
<td>20,000 LF of 16 inch and 5000 LF of 12 inch from Chapin I-26 Exit to New Tank at Broom Straw</td>
<td>$4,000,000</td>
</tr>
<tr>
<td>WM3767</td>
<td>2,000 LF of 18&quot; WM from Rimer Pond Rd along Longtown Rd &amp; 9,800 LF of 12&quot; along Longtown Rd</td>
<td>$2,000,000</td>
</tr>
<tr>
<td>WM379102</td>
<td>Sylvan Drive from Briarwood to Trenholm Road to Rockbridge Road</td>
<td>$1,375,000</td>
</tr>
<tr>
<td>WM396513</td>
<td>Major Utility Cut Repairs (Annual on-going Resurfacing DOT Streets via CIP work) (Annual)</td>
<td>$500,000</td>
</tr>
<tr>
<td>WM4000-02</td>
<td>Lake Katherine Waterline Improvements Phase 2(Annual Rehab)</td>
<td>$3,000,000</td>
</tr>
<tr>
<td>WM4164</td>
<td>Water System SCADA improvements</td>
<td>$2,500,000</td>
</tr>
<tr>
<td>WM4269</td>
<td>Lakecrest</td>
<td>$550,000</td>
</tr>
<tr>
<td>WM_MISC</td>
<td>Unforeseen Projects</td>
<td>$2,000,000</td>
</tr>
<tr>
<td>WM_B5</td>
<td>Bull Street Water System Improvements</td>
<td>$3,000,000</td>
</tr>
<tr>
<td>WM3993</td>
<td>Covenant Road and Harrison Road Area Water System Improvements (Engineering Only)</td>
<td>$400,000</td>
</tr>
<tr>
<td>WM3906</td>
<td>Satchel Ford (Including work from WM3043)</td>
<td>$1,400,000</td>
</tr>
<tr>
<td>WM409202</td>
<td>Lincolnshire II</td>
<td>$600,000</td>
</tr>
<tr>
<td>WM4134</td>
<td>Eng. Design of 54-inch and 36-inch Waterline from the Canal WTP</td>
<td>$3,800,000</td>
</tr>
<tr>
<td>WM4133</td>
<td>Eng. Design of 42-inch Waterline from the Canal WTP</td>
<td>$2,500,000</td>
</tr>
<tr>
<td>WM4298</td>
<td>Waterline Extension to Service State Park Acres (Engineering Only)</td>
<td>$250,000</td>
</tr>
<tr>
<td>TOTAL WATER PROJECTS</td>
<td></td>
<td>$34,350,000</td>
</tr>
</tbody>
</table>

## FY 14/15 Sewer Capital Projects

<table>
<thead>
<tr>
<th>Project</th>
<th>Description</th>
<th>Proposed</th>
</tr>
</thead>
<tbody>
<tr>
<td>SS7288</td>
<td>Unforeseen &amp; Miscellaneous Projects</td>
<td>$1,000,000</td>
</tr>
<tr>
<td>SS7282</td>
<td>FM Field Condition Assessment - Project A</td>
<td>$600,000</td>
</tr>
<tr>
<td>SS7283</td>
<td>FM Field Condition Assessment - Project B</td>
<td>$600,000</td>
</tr>
<tr>
<td>SS7292</td>
<td>Zoom Camera Rapid Assessment</td>
<td>$500,000</td>
</tr>
<tr>
<td>SS723614</td>
<td>CD Program Management</td>
<td>$5,400,000</td>
</tr>
<tr>
<td>SS7275</td>
<td>Metro WWTP - Non-Potable Water System Improvements</td>
<td>$3,200,000</td>
</tr>
<tr>
<td>SS7285</td>
<td>Thickening &amp; Dewatering Improvements</td>
<td>$2,500,000</td>
</tr>
<tr>
<td>SS7284</td>
<td>Liquid Treatment Train 1 Upgrades</td>
<td>$2,500,000</td>
</tr>
<tr>
<td>SS706012</td>
<td>Pump Station Improvements at 6 Sites</td>
<td>$1,500,000</td>
</tr>
<tr>
<td>SS7260</td>
<td>Annual General Services Maintenance</td>
<td>$1,500,000</td>
</tr>
<tr>
<td>SS6786</td>
<td>Annual for Gravity Sewer Manhole Lining &amp; Replacement</td>
<td>$1,500,000</td>
</tr>
<tr>
<td>SS696614</td>
<td>Annual Rehab on Manholes and lines less than 15&quot;</td>
<td>$2,500,000</td>
</tr>
<tr>
<td>SS691601</td>
<td>North Main Street Streetscape Sewer</td>
<td>$1,000,000</td>
</tr>
<tr>
<td>SS695401</td>
<td>Crane Creek Phase I</td>
<td>$9,000,000</td>
</tr>
<tr>
<td>SS6000</td>
<td>Sewer Service for City Annexations</td>
<td>$150,000</td>
</tr>
<tr>
<td>SS6099</td>
<td>Sewer Utility Conflicts</td>
<td>$600,000</td>
</tr>
<tr>
<td>SS7286</td>
<td>CE Projects not yet Defined</td>
<td>$2,000,000</td>
</tr>
<tr>
<td>SS676402</td>
<td>30&quot; Forcemain from Mill Creek PS to WWTP</td>
<td>$12,500,000</td>
</tr>
<tr>
<td>SS6833</td>
<td>Upgrade Piney Grove Lift Station</td>
<td>$1,100,000</td>
</tr>
<tr>
<td>SS7281</td>
<td>Pump Station Rehab (Various Sites)</td>
<td>$500,000</td>
</tr>
<tr>
<td>SS7287</td>
<td>Collection System SSE5</td>
<td>$1,000,000</td>
</tr>
<tr>
<td>SS6864</td>
<td>Major Utility Cut Repairs</td>
<td>$150,000</td>
</tr>
<tr>
<td>SS7259</td>
<td>Replacement of 24&quot; Smith Branch Outfall underneath I-277</td>
<td>$1,340,000</td>
</tr>
<tr>
<td>TBA</td>
<td>MMS Software</td>
<td>$500,000</td>
</tr>
<tr>
<td>TBA</td>
<td>Bull Street</td>
<td>$1,000,000</td>
</tr>
<tr>
<td>SS7251</td>
<td>Blossom Street &amp; Huger Street (Phase II)</td>
<td>$3,500,000</td>
</tr>
<tr>
<td>TOTAL SEWER CAPITAL PROJECTS</td>
<td></td>
<td>$57,640,000</td>
</tr>
</tbody>
</table>
Rate Study Objectives

* The primary goals and objective of the water & wastewater rate study include:
  * Full cost recovery for utility expenditures
  * Cost-based rate structure
  * Equity among customer classes
  * Administrative efficiency
  * 5-Year financial plan
  * Reduced reliance on inter-fund support from water to wastewater
Customer Count by Meter Size

- 5/8" 89%
- 1" 4%
- 1.5" 3%
- 2" 2%
- 3" 1%
- 4" 1%
- 6" 1%
- 8" 1%
- 10" <1%
- Total 100%

* One of the two meters in the dual-meter pair is this size.

Proposed Rate Changes

**Water**

Sec. 23-143, Water service rates. Generally, except as otherwise provided by contract, monthly water service charges shall be as follows:

<table>
<thead>
<tr>
<th>Monthly Water Use</th>
<th>In City</th>
<th>Out of City</th>
</tr>
</thead>
<tbody>
<tr>
<td>5/8&quot; 500 cubic feet</td>
<td>$6.00</td>
<td>$10.20</td>
</tr>
<tr>
<td>1&quot; 1000 cubic feet</td>
<td>$6.00</td>
<td>$10.20</td>
</tr>
<tr>
<td>1.5&quot; 1000 cubic feet</td>
<td>$6.00</td>
<td>$10.20</td>
</tr>
<tr>
<td>2&quot; 1000 cubic feet</td>
<td>$6.00</td>
<td>$10.20</td>
</tr>
<tr>
<td>3&quot; 1000 cubic feet</td>
<td>$6.00</td>
<td>$10.20</td>
</tr>
<tr>
<td>4&quot; 1000 cubic feet</td>
<td>$6.00</td>
<td>$10.20</td>
</tr>
<tr>
<td>6&quot; 1000 cubic feet</td>
<td>$6.00</td>
<td>$10.20</td>
</tr>
<tr>
<td>8&quot; 1000 cubic feet</td>
<td>$6.00</td>
<td>$10.20</td>
</tr>
<tr>
<td>10&quot; 1000 cubic feet</td>
<td>$6.00</td>
<td>$10.20</td>
</tr>
<tr>
<td>Additional charge per 100 cubic feet</td>
<td>$0.00</td>
<td>$0.00</td>
</tr>
</tbody>
</table>

Volumetric Charges are based on the customer category.

<table>
<thead>
<tr>
<th>Monthly Water Use</th>
<th>Residential</th>
<th>Irrigation</th>
<th>All others</th>
</tr>
</thead>
<tbody>
<tr>
<td>Each 100 cubic feet</td>
<td>$3.13</td>
<td>$3.46</td>
<td>$5.32</td>
</tr>
</tbody>
</table>

**Sewer**

Sec. 23-149, Sewer service rates. Generally, except as otherwise provided by contract, the monthly sewer service charge shall be as follows:

<table>
<thead>
<tr>
<th>Size of Meter</th>
<th>In City</th>
<th>Out of City</th>
</tr>
</thead>
<tbody>
<tr>
<td>5/8&quot;</td>
<td>$10.20</td>
<td>$10.20</td>
</tr>
<tr>
<td>1&quot;</td>
<td>$10.20</td>
<td>$10.20</td>
</tr>
<tr>
<td>1.5&quot;</td>
<td>$10.20</td>
<td>$10.20</td>
</tr>
<tr>
<td>2&quot;</td>
<td>$10.20</td>
<td>$10.20</td>
</tr>
<tr>
<td>3&quot;</td>
<td>$10.20</td>
<td>$10.20</td>
</tr>
<tr>
<td>4&quot;</td>
<td>$10.20</td>
<td>$10.20</td>
</tr>
<tr>
<td>6&quot;</td>
<td>$10.20</td>
<td>$10.20</td>
</tr>
<tr>
<td>8&quot;</td>
<td>$10.20</td>
<td>$10.20</td>
</tr>
<tr>
<td>10&quot;</td>
<td>$10.20</td>
<td>$10.20</td>
</tr>
<tr>
<td>Each 100 cubic feet</td>
<td>$2.50</td>
<td>$2.55</td>
</tr>
</tbody>
</table>
Typical Bill Comparison: Inside City Combined Water & Wastewater Bill*

* Includes Water & Sewer Portion Only

Comparison with Other Utility Systems: Residential Combined Water & Sewer Inside City
Comparison with Other Utility Systems:
Residential Combined Water & Sewer
Outside City

Assumes an outside-City residential customer receiving 800 cubic feet
(approx. 6,000 gallons) per month of water and wastewater service.

Average of Other Utilities

FY 2015 Revenue Requirements

<table>
<thead>
<tr>
<th>Description</th>
<th>Water</th>
<th>Wastewater</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total O&amp;M</td>
<td>$36,116,333</td>
<td>$41,590,773</td>
<td>$77,707,106</td>
</tr>
<tr>
<td>Debt Service</td>
<td>14,504,097</td>
<td>14,504,095</td>
<td>29,008,192</td>
</tr>
<tr>
<td>Other Expenditures</td>
<td>12,512,551</td>
<td>11,702,097</td>
<td>24,214,648</td>
</tr>
<tr>
<td>Gross Requirements</td>
<td>$63,132,981</td>
<td>$67,796,965</td>
<td>$130,929,946</td>
</tr>
<tr>
<td>Less Other Revenues</td>
<td>(3,894,088)</td>
<td>(2,352,897)</td>
<td>(6,246,985)</td>
</tr>
<tr>
<td>Net Requirements</td>
<td>$59,238,893</td>
<td>$65,444,068</td>
<td>$124,682,961</td>
</tr>
</tbody>
</table>
Allocation of FY 2015 Expenditures

Customer Growth Projections: Water & Wastewater Systems
Recommendations/ Next Steps

* Proceed with approving volumetric increase

Thank You
Everbridge
Citizen Alerts

Expanding the City’s Boil Water Advisory Notification Capabilities

About the Everbridge System
About Everbridge

* Everbridge provides industry-leading interactive communication and mass notification solutions to organizations in all major industries and government sectors.
* The system is capable of sending 150,000 messages per 10 minute period.
* The system is pre-loaded with available landline phone numbers.
  * Landline holders will receive emergency alerts without signing up.

Everbridge Features

* System can be accessed anywhere, even from mobile smartphones.
* Map-based contacts
  * Existing database of landlines
  * Opt-in for text, e-mail & cell
  * Opt-in for additional locations like work, school & home
Columbia-Richland Alerts

The City of Columbia and Richland County have launched a new alerts program called the Columbia-Richland Alerts System (CRA) to provide time-sensitive information for public safety and community awareness.

TYPES OF ALERTS

Public safety
- Power outage
- Missing persons
- Community events

Road closures
- Public meetings
- Traffic safety
- Boil Water Advisories

How Citizens Can Register

Citizens can register online through the City’s website or over the phone through the Customer Care Center. Citizens have the ability to choose which alerts they would like and choose where CRA sends the alert. At any time, citizens can modify their alert preferences through their online profile.

ALERTS SENT TO

- Home phone
- Business phone
- Cell phone
- Text message
- Email
- Telecommunications Device for the Hearing impaired
- And more!
Using Everbridge for Boil Water Advisories

Boil Water Advisories & Repeals

* If 25 or fewer customers affected
  * Door hanger
* If more than 25 affected
  * Media advisory issued & posted to City’s website
  * Affected hospitals or other water distribution systems receive BWA notifications
Boil Water Advisories & Repeals: Additional Efforts

* City has recently added these methods

* **2011 – Nixle**
  * Online database of active BWA & Repeals
  * Posts to City’s Facebook and Twitter feeds

* **2014 – Everbridge**
  * Access to database of landlines in Richland County
  * Any customer can opt-in for cell phone, text and email alerts
February 23, 2015
• A Closer Look At Clean Water 2020: $29M of City’s Sewer Investment Correcting Almost Two-Thirds of 2014 Spills

February 20, 2015
• Update: City Seeks Efficiency Ideas, Not Privatization Proposals
• City Extends Deadline to Submit Water/ Sewer Public Private Partnership Ideas

February 18, 2015
• Avoiding and Detecting Cold Weather Leaks

January 29, 2015
• Columbia’s Engineering Division Offers Design State Review of Projects As Part of Wastewater Capacity Assurance Program

August 20, 2014
• 60-inch Water Transmission Main Engineering Design Briefing

February 17, 2014
• Columbia Waterworks Wins Award, Plans to Unveil Water Treatment Plan Upgrades

January 24, 2014
• Avoiding and Detecting Cold Weather Leaks

January 2, 2014
• City to Host Fats, Oils & Grease Workshops for Commercial Kitchens
FOR IMMEDIATE RELEASE

A Closer Look At Clean Water 2020:
$29M of City's Sewer Investment Correcting Almost Two-Thirds of 2014 Spills

Columbia—February 23, 2015—"Nobody likes to see those numbers, that's why we are diligently working on projects and processes to curb the number and especially the volume of spills" says Bill Davis, Wastewater Engineer for the City of Columbia in response to a recent report by the Congaree Riverkeeper. That report lists the City as the biggest contributor to sewage overflows in the Midlands. "But it's not the complete picture."

"I could say consider how much we treat as the largest plant in the state," says Davis—over 13.3 billion gallons each year. "I could tell you about all the rain events. I could even tell you that comparing our spill numbers to other systems is like comparing apples to oranges," – the City reports every spill where others are only required to report spills over 500 gallons unless they enter a waterway— "but at the end of the day, it's about keeping sewage in our pipes and treating it properly in our plant. That's our goal. That's what we're working so hard to achieve."

The City has been working hard to meet that goal. In December 2014, the City completed a $6.5 M project that removed the problematic Burnside Pump Station from service and replaced it with over 3 miles of new 30" gravity sewer. This pump station was responsible for repeated wet-weather overflows in 2014 before it could be taken offline. Near Lake Katherine, a project scheduled for completion in 2017 and estimated to cost $8 M will address another problem area. Together, these projects upgrade sites that accounted for over half of the spill volume in the Gills Creek Watershed in 2014.

Perhaps most impactful of all will be the work in the Crane Creek area near North Brickyard Rd. Almost 980,000 gallons spilled by the City last year was caused by a 1.3 mile section of 36" pipe that has capacity issues during wet weather. The City is preparing to break ground on an estimated $15 M project to replace this line with 48" pipe, which will add capacity to the area. While the final line will not be

The Burnside Gravity Sewer Main project installed over 3 miles of 30" gravity sewer in the Southeast Service Area and removed a problematic pump station from the system.

The Crane Creek project will replace ~1.3 miles of 36" pipe with 48" pipe. A temporary bypass will allow for additional capacity before this project is complete.
completed until 2017, the City will be putting in a temporary by-pass that will allow the lines in that area to move sewage as if the 48" pipe were complete. This bypass system will be designed to prevent sewer overflows while the new line is under construction. The by-pass is expected to be completed by fall of this year.

Together, the Crane Creek, Burnside and Lake Katherine projects address problems in areas that accounted for almost 2/3rds of the City's total spill volume in 2014. Burnside was completed late last year, Crane Creek bids this week and will be capable of handling wet-weather events by fall, and Lake Katherine is scheduled for completion in 2017. "We're working hard on these critical projects, and we have more improvements planned for the near future as part of our Clean Water 2020 program," says Davis, "but large engineering projects don't happen overnight." From identifying a problem to funding, designing, and building the project that addresses it, large Capital Improvement Projects can take up to four years to complete.

These three projects are not the only ones the City is working on right now. "It's a really big system," says Davis, with over 1,000 miles of pipe serving some 63,000 sewer customers. "We're committed to aggressively and systematically evaluating our entire system and making the repairs and upgrades needed to protect our local waters and the people living near them."

Over the next few weeks, the City will be highlighting the over $100 M in wastewater improvements that have already taken place, its plans for managing the system into the future, and the day-to-day work that goes into taking care of the largest wastewater system in the state. Together, these efforts are improving the City's wastewater system and realizing the Clean Water 2020 mission of "a sustainable, well-maintained, and reliable wastewater system that fully complies with regulatory requirements."

######

For questions about the City’s wastewater improvement efforts, contact the Clean Water 2020 program at info@cleanwater2020.com or Victoria Kramer at 545-3227. To learn more about the City of Columbia’s Clean Water 2020 program, visit www.cleanwater2020.com. To learn more about the City of Columbia's Department of Utilities and Engineering, visit www.columbiasc.net/utilities-engineering.
UPDATE: City Seeks Efficiency Ideas, Not Privatization Proposals

Update – February 20, 2015 – Columbia's City Council adopted Resolution R-2015-015 at the City Council Meeting on February 17, 2015, amending the Efficiency Opportunities Related to the Operation and Maintenance of the Water & Wastewater Treatment and Distribution Systems Public Private Partnership Request for Expression of Interest currently available through the City's Bid Online portal.

This resolution allows the City to proceed with the RFEI but restricts the types of proposals that will be considered. Proposals for "sale, lease, service concession arrangement or certain public-private financing or refinancing of the system or any related capital improvement projects" will not be considered. Firms recommending all other ideas still have until 5:00 PM on February 23, 2015 to submit their proposals.

Resolution R-2015-015 can be found online in the Council Meeting Revised Agenda for Tuesday, February 17, 2015, available at www.columbiasc.net/city-council/agendas. The Request for Expression of Interest: Efficiency Opportunities Related to the Operation and Maintenance of Water and Wastewater Treatment and Distribution Systems, Public Private Partnership can be found online at www.columbiasc.net/depts/purchasing/engrfi002b-14-15_efficiency_opportunities.pdf. For more information about the City's water and sewer systems, visit www.columbiasc.net/utils-engineering. For more information on City procurement opportunities and Bid Online, visit www.columbiasc.net/purchasing/opportunities.

City Extends Deadline To Submit Water/ Sewer Public Private Partnership Ideas

Columbia, SC – February 3, 2015 – The City of Columbia has recently extended the deadline for proposals in its Request for Expression of Interest: Efficiency Opportunities Related to the Operation and Maintenance of Water and Wastewater Treatment and Distribution Systems, Public Private Partnership. Firms interested in the RFEI, which was issued on January 8, 2015, will have until 5:00 PM on February 23, 2015 to submit their proposals.

This RFEI was issued to solicit input and feedback from companies with significant expertise in the water and sewer industries on how the City's water and sewer system might be operated and maintained more efficiently. The City expects a wide variety of proposals, including those for system and equipment efficiencies and improvements, new opportunities based on advancing techniques or technology, process and training-related efficiencies and improvements, and offers to purchase or manage the City's water and/or wastewater utilities.

In recent years, the City has been moving forward with significant investments in its water and sewer infrastructure with particular emphasis on improving its wastewater system and reducing the number of sanitary sewer overflows the system experiences during wet weather. As a result, the City has received multiple inquiries and unsolicited proposals from firms claiming to be able to undertake these needed investments at a reduced cost to the City and its rate payers. To more systematically evaluate these claims, and to make this process as public as possible, the City has chosen to issue the RFEI.
Any effort to sell or privatize management of the City's water or sewer systems would carry significant federal and state requirements and would have to be initiated by the City's policymakers. No such action has occurred. It would also have to make sense for the City, its residents, its businesses, its customers, and its stakeholders. Public input and transparency would be critical if such a proposal were to move forward.

Although the City anticipates receiving some RFEI proposals reflective of selling or privatizing operations, not every proposal is likely to be so complex. Simpler recommendations might include new training, equipment or techniques the City had not previously considered. These could result in future City projects through the City's traditional bidding processes.

The RFEI does not obligate the City to honor any proposal submitted nor does it limit the City to work with firms that have submitted any particular type of proposal. Firms do not need to submit an RFEI response in order to be considered for any future projects that come out of this process. The City can also reject proposals that are deemed not in the City's best interest. To find the full RFEI, current as of January 8, 2015, visit the City's Procurement Opportunities Page. Firms interested in submitting proposals should register with the City's Bid Online portal. There they can receive updates to the RFEI, addenda, and instructions for submittal.

The Request for Expression of Interest: Efficiency Opportunities Related to the Operation and Maintenance of Water and Wastewater Treatment and Distribution Systems, Public Private Partnership can be found online at www.columbiasc.net/depts/purchasing/engrfr002b-14-15_efficiency_opportunities.pdf. For more information about the City’s water and sewer systems, visit www.columbiasc.net/utilities-engineering. For more information on City procurement opportunities and Bid Online, visit www.columbiasc.net/purchasing/opportunities.
FOR IMMEDIATE RELEASE

Avoiding and Detecting Cold Weather Leaks

Columbia, SC – February 18, 2015 – With temperatures likely to dip below freezing this evening, the City of Columbia reminds its water customers to take precautions to protect your pipes.

Inside:
- Leave your faucets dripping.

Outside:
- Disconnect any hoses or lines from your outside spigots.
- Turn OFF all outside spigots.
- Cover all outside spigots with blankets or insulated covers. These covers can be found at most hardware stores.

If you believe you have a leak, check for it as soon as you can to minimize water loss. One way to detect a leak is to turn off all spigots then check to see if your water meter is still running. If it is, you may have a leak. For more plumbing tips, visit http://www.columbiasc.gov/customer-care/utility-billing/plumbing-tips/.

If you have had a leak or other plumbing problem, you may be eligible for a charge reduction on your bill after you have fixed it. To find out more about qualifying for this assistance program, visit http://www.columbiasc.gov/customer-care/utility-billing/plumbing-adjustments or call (803) 545-3300.

By taking these few simple steps, you may be able to prevent the hassle and mess of a broken water line at home!

Please contact the City of Columbia Department of Utilities and Engineering at 545-3400 or Victoria Kramer (vlkramer@columbiasc.net) at 545-3227 if you have questions. If you would like to learn more about the City of Columbia’s Customer Care Center, visit columbiasc.gov/customer-care. If you would like to learn more about City of Columbia Department of Utilities and Engineering, visit columbiasc.gov/utilities-engineering.
FOR IMMEDIATE RELEASE

Columbia’s Engineering Division Offers Design Stage Review of Projects As Part of Wastewater Capacity Assurance Program

The City of Columbia’s Engineering Division is proud to announce the Pre-Capacity Assurance Program Analysis (Pre-CAP Analysis), a new optional planning level review program for proposed developments that would need new wastewater service. Property owners who choose to have their proposed projects analyzed under this program can determine if current sewer service in the area is capable of handling their project before making a significant investment. While the assessment is non-binding for either the City or the developer—meaning if conditions change, final approval may change—the Pre-CAP Analysis can be a useful tool in helping local developers better plan their investments.

The Pre-CAP is part of the City’s ongoing effort to implement a comprehensive sewer assessment and rehabilitation program for its wastewater system. It is also supports smart growth both for the City and local developers. By being clear with local developers about where the City’s system has capacity before they have even purchased a property, developers can protect their investment while the City protects current sewer customers and the environment. The program also allows the City to work with local developers to prevent sanitary sewer overflows (SSOs)—something which benefits everyone.

The Pre-CAP Analysis is an extension of the current wastewater Capacity Assurance Program (CAP). Under the CAP, all new projects that contribute additional flow are required to undergo review. The City may allow minor connections without a detailed capacity analysis. This review follows specific criteria to determine whether the City’s collection, transmission, and treatment system has sufficient capacity to accept new connections and increased flows. For more details on this program, see the Letter to Local Engineers: City of Columbia Capacity Assurance Program.

Currently, the City has identified portions of Northeast Columbia known as the Crane Creek Basin and areas around Lake Katherine as being capacity limited (see Map of Current Capacity Limited Areas below). Projects are planned or underway and should be completed soon in these areas to address capacity limitations.

To date, the City has completed 15 major capital improvement projects that have relieved or prevented capacity limitations across its wastewater service area (see Map of Capacity Enhancement Work To Date below), with several more in design or underway. The completed projects have contributed to a 70% reduction in the number of sanitary sewer overflows the City has experienced since the 2008/2009 fiscal year.

Picture Title: Map of Current Capacity Limited Areas
Picture Caption: The Crane Creek Basin and areas around Lake Katherine (shown in red) currently are sewer capacity limited. Projects are underway in both areas to address these limitations. The Burnside area (shown in green) had capacity limits lifted after a capacity enhancing project was completed in November, 2014.
The City has completed 15 capacity enhancement projects with several more in design or under construction. The completed projects have contributed to a 70% reduction in the number of sanitary sewer overflows since fiscal year 2008/2009.

Please contact Victoria Kramer with the City of Columbia Department of Utilities and Engineering at (803) 545-3227 or Info@CleanWater2020.com if you have questions. If you would like to learn more about improvements to the City of Columbia's wastewater treatment plant and wastewater collection system, visit www.CleanWater2020.com. If you would like to learn more about the City of Columbia’s Department of Utilities and Engineering, visit www.columbiasc.net/utilities-engineering.
January 29, 2015

Re: City of Columbia
Capacity Assurance Program

To Whom It May Concern:

As you are aware, the City of Columbia (Columbia) entered into a Consent Decree with the U.S. Department of Justice, the U.S. Environmental Protection Agency (EPA), and the South Carolina Department of Health and Environmental Control (DHEC) to resolve alleged Clean Water Act violations related to the operation of Columbia’s wastewater collection and treatment system. On May 21, 2014, the U.S. District Court approved the Consent Decree in the matter captioned *The United States of America and State of South Carolina by and through the Department of Health and Environmental Control vs. the City of Columbia*, Civil Action No. 3:13-2429-TLW. A copy of the Consent Decree is available at www.columbiasc.net/utilities-engineering.

The Consent Decree requires Columbia to implement a comprehensive sewer assessment and rehabilitation program and to develop other programs related to the operation and maintenance of Columbia’s wastewater sewer system. Additionally, in order to reduce and eliminate sanitary sewer overflows, the terms of the Consent Decree impose certain limitations on the City’s ability to accept wastewater from new service connections and increased wastewater flow within all areas served by Columbia’s wastewater system, including all satellite sewer systems that discharge to Columbia’s wastewater system.

Pursuant to Paragraph 12.e of the Consent Decree, Columbia must implement a capacity assurance program (CAP). Under the current CAP, all new service connections and increased wastewater flow contributing more than 4,000 gallons per day must be reviewed in accordance with the City’s CAP. This 4,000 gallons per day threshold is calculated based on the total connections for a proposed development, which will include all phases within a larger common plan of development. The CAP outlines specific criteria by which Columbia determines whether
its collection, transmission, and treatment system has sufficient capacity to accept new
connections and increased flows. Proposed wastewater flows of 4,000 gallons per day or less
may be approved without further analysis at the discretion of the City.

There are two levels of review that Columbia’s Engineering Division may perform as a part of
the CAP process. The planning level review, referred to as a Pre-CAP Analysis, provides the
prospective developer/engineer with an initial non-binding assessment of the City’s ability to
collect, transmit, and treat the additional estimated wastewater flow from a proposed
development. The second level of review, referred to as a CAP Determination, is performed as
a part of the Columbia’s sub-division review once a project design is complete. All other
requirements of the sub-division review process apply to any proposed development.

There are portions of Columbia’s collection and transmission system with limited capacity such
that Columbia’s approval of additional connections and increased wastewater flow may be
substantially constrained under the CAP. Therefore, it is strongly recommended that any new
service connection and increased wastewater flow contributing more than 4,000 gallons per day
be submitted to the Columbia’s Subdivision Review staff for a planning level review Pre-CAP
Analysis in the early stages of planning for a proposed development. See the attached
Capacity Assurance Program Flow Request Form for information required for Columbia to
perform the planning level analysis of the proposed development.

Should you have any questions please feel free to contact myself or John Riggs at (803) 545-
3400.

Regards,

William H. Davis, P.E.
Wastewater Engineer

cc: Joey Jaco, PE, Utilities Director
    Dana Higgins, PE, City Engineer
    John Riggs, PE, Hydraulic Engineer
    Scott Rogers, Subdivision Review Manager
Capacity Enhancing Projects

Congaree River Sewer Force Main Project (SS711502)

Project Status:
CONSTRUCTION COMPLETE

Cost: $9.5 M

Special Note:
Benefits Downtown, West Columbia, Crane Creek Basin, & Saluda Basin

Project Description:
Added over 4 miles of 42" force main along the Congaree River

Public Benefits of Project:
• Improved Transmission to Metro Wastewater Treatment Plant
• Increased Collection System Capacity
• Reduced Sanitary Sewer Overflow Potential

West Columbia Pump Station Improvements (SS711501)

Project Status:
CONSTRUCTION COMPLETE

Cost: $9.5 M

Special Note:
Benefits Downtown, West Columbia, Crane Creek Basin, & Saluda Basin

Project Description:
Pump station redesigned and overhauled for efficiency and to survive flooding

Public Benefits of Project:
• Improved Design to Survive Flooding
• Increased Pump Station Capacity
• Reduced Sanitary Sewer Overflow Potential
Major Outfall Rehabilitation (SS7073)

**Project Status:**

- [ ] Feasibility & Evaluation
- [ ] Feasibility & Select
- [ ] Design & Permit
- [ ] Construct
- [ ] Operate & Maintain

**Cost:** $15 M

**Special Note:**
Benefits Downtown & Crane Creek Basin

**Project Description:**
Rehabilitated 2.5 miles of large diameter sewer lines that serve 1/3 of the City's sewer customers

**Public Benefits of Project:**
- Improved Transmission to Metro Wastewater Treatment Plant
- Increased Collection System Capacity
- Reduced Sanitary Sewer Overflow Potential

North Columbia Pump Station Improvements (SS7102)

**Project Status:**

- [ ] Feasibility & Evaluation
- [ ] Feasibility & Select
- [ ] Design & Permit
- [ ] Construct
- [ ] Operate & Maintain

**Cost:** $4 M

**Special Note:**
Benefits Crane Creek Basin

**Project Description:**
Improved the pump station's ability to handle solids in the influent stream and provided better access for pump removal

**Public Benefits of Project:**
- Increased Operational Efficiency and Reliability
- Reduced Sanitary Sewer Overflow Potential
- Reduced Operating Costs
Crane Creek Phase 2 (SS695402)

**Project Description:**
Installed a 48” sewer line from Monticello Rd. to Brickyard Rd. north of I-20

**Public Benefits of Project:**
- Improved Transmission to Metro Wastewater Treatment Plant
- Increased Collection System Capacity
- Reduced Sanitary Sewer Overflow Potential

Cost: $4.3 M

Special Note:
Benefits Crane Creek Basin

Broad River Pump Station Improvements (SS7101)

**Project Description:**
Addressed existing hydraulic, electrical, structural, and HVAC deficiencies and increased the pump station’s pumping capacity

**Public Benefits of Project:**
- Reduced Sanitary Sewer Overflow Potential
- Increased Pump Station Capacity by 80%

Cost: $5.4 M
Saluda River Pumping Station Upgrade (SS711601)

**Project Status:**

- **Cost:** $19 M

**Project Description:**
Upgraded the pump station's capacity, equipment, and downstream force main for efficiency and reliability

**Public Benefits of Project:**
- Increased Pump Station and Downstream Gravity Sewer Capacity
- Reduced Sanitary Sewer Overflow Potential
- Increased Pump Station Reliability and Efficiency

**Special Note:**
Benefits West Columbia & Saluda Basin

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Burnside Gravity Sewer Main (SS7076)

**Project Status:**

- **Cost:** $6.5 M

**Project Description:**
Installed over 3 miles of 30" gravity sewer in Southeast Service Area and removed a problematic pump station from the system

**Public Benefits of Project:**
- Increased Operational Efficiency and Reliability
- Reduced Sanitary Sewer Overflow Potential

**Special Note:**
Benefits Southeast Service Area
Crane Creek Phase 1 (SS695401)

Project Status:
Budget: $4.3 M.

Special Note:
Benefits Crane Creek Basin

Project Description:
Project will replace ~1.3 miles of 36" pipe with~1/3 miles of 48" pipe. A temporary bypass will allow for additional capacity before this project is complete.

Estimated Bid Date: February, 2015*
* All future dates are estimated and subject to change.

Public Benefits of Project:
• Improved Transmission to Metro Wastewater Treatment Plant
• Increased Collection System Capacity
• Reduced Sanitary Sewer Overflow Potential
Capacity Assurance Program: Frequently Asked Questions

Questions Answered in This FAQ

About the Capacity Assurance Program
1. What is the Capacity Assurance Program?
2. What projects will be reviewed?
3. What triggers result in a capacity limitation for an area?
4. Does a capacity limitation mean development has to stop?
5. Do capacity enhancing projects really ease capacity limitations?
6. What is the City planning to do about current areas with capacity limitations?

About Project Review
7. I have heard about the Pre-CAP review. When should new projects undergo Pre-CAP review?
8. How early can I submit my project for Pre-CAP review?
9. I submitted a project and received a "Denial" or "Revise and Resubmit" letter. What does that mean?
10. I submitted a project and received a letter stating a capacity enhancement project would have to be completed before the system could handle my proposed flows. What does this mean?
11. Will the City authorize taps on projects for which a valid and unexpired wastewater construction permit has been issued, but the taps have not yet been purchased?

More Information
12. I'd like to know more about this hydraulic model. When does the City use it to determine if there are capacity issues?
13. I'd like to request a CAP review, a Pre-CAP review, or get more information on this program.

About the Capacity Assurance Program

1. What is the Capacity Assurance Program?
The Capacity Assurance Program (CAP) is a program to review all new sewer service connections and increased wastewater flow. This review follows specific criteria to
determine if the City's wastewater system has sufficient capacity to accept new connections and increased flows.

The CAP is a part of the City’s comprehensive program to reduce and prevent sanitary sewer overflows. The City is required to implement a CAP that meets federal and state approval.

2. **What projects will be reviewed?**

Any new sewer service connections or proposed increased wastewater flow are subject to the CAP review.

3. **What triggers result in a capacity limitation for an area?**

There are two main triggers that could result in an area being flagged as capacity limited.

1. If an area has experienced repeated capacity-related sanitary sewer overflows (SSOs) in the past 12 months. Capacity-related SSOs might be caused by:
   - Heavy rains and wet-weather flows
   - Undersized pumps
   - Undersized pipes
   - Other events that might cause increased peak flow.

   They do not include SSOs from:
   - Equipment failures
   - Mechanical failures
   - Unanticipated industrial discharges
   - Other errors

2. If a desktop analysis or hydraulic model (see below) determine any proposed additional flows are likely to cause an SSO. This analysis determines:
   - If there is room in the pipe to hold the additional proposed flow
   - If existing pump stations can move the extra volume quickly enough to keep room in the pipe
   - If the wastewater treatment plant can handle the additional proposed flow
   - If the system is also capable of handling the additional proposed peak flow
   - If there are any other known potential capacity issues downstream.

   This analysis is done for all projects over 4,000 gallons per day even if there have not been any recent SSOs.
4. Does a capacity limitation mean development has to stop?

No! Depending on the area, the City may have capacity enhancing projects underway that, once completed, will add capacity to the area in question.

If an area does not already have a capacity enhancing project planned or underway, the City will determine if upgrades to the system would allow for the proposed project.

Once an area has been upgraded, projects will be re-evaluated based on the new conditions and approved if CAP requirements are met.

5. Do capacity enhancing projects really ease capacity limitations?

Yes! Recently, the Burnside Gravity Sewer Main Project (SS7076) was completed in southeast Columbia. The project included adding over 3 miles of 30" gravity sewer to the system and removing a problematic pump station from service. Once completed, capacity limitations were eased in the area.

6. What is the City planning to do about current areas with capacity limitations?

As part of its Capital Improvement Program, the City regularly identifies projects that could improve sewer capacity. The City has completed numerous projects that have avoided many capacity limitations within the system, including upgrading all of its major sewer pump stations, rehabilitating a major sewer outfall, and upgrading capacity at the wastewater treatment plant.

The Crane Creek Basin located northeast of Columbia is known to have capacity limitations. A project to replace almost a mile and a half of 36" pipe with 48" pipe is entering its final phases. Part of the project includes installing a temporary by-pass which will provide capacity relief before the permanent line is completed. Under the current project timeline, this by-pass is expected to be in service by Fall 2015 to ease capacity limitations in the area.

About Project Review

7. I have heard about the Pre-CAP review. When should new projects undergo Pre-CAP review?

The City offers an optional Pre-CAP review for anyone who has a project they are considering submitting in the future. The City will then determine if current sewer service in the area is capable of handling the project. While the assessment is non-binding for either the City or the developer—meaning if conditions change, final
approval may change—the Pre-CAP Analysis can be a useful tool in helping local developers better plan their investments.

The City recommends every project be submitted for Pre-CAP review before the property owner or developer makes a significant investment in the project.

8. How early can I submit my project for Pre-CAP review?
A project can be submitted for Pre-CAP review at any time. If you are considering purchasing a property for development or developing a property you already own, the City recommends you contact us for a Pre-CAP review.

The City recommends every project be submitted for Pre-CAP review before the property owner or developer makes a significant investment in the project.

9. I submitted a project and received a "Denial" or "Revise and Resubmit" letter. What does this mean?
Projects that do not meet federal, state or local regulations or standards will be denied before capacity is even considered. If you received a denial, the letter should identify any issues with the proposed project and a corrective action plan. Denied projects may be revised and resubmitted.

10. I submitted a project and received a letter stating a capacity enhancement project would have to be completed before the system could handle my proposed flows. What does this mean?
Depending on the area, the City may have capacity enhancing projects underway that, once completed, will add capacity to the area in question.

If an area does not already have a capacity enhancing project planned or underway, the City will determine if upgrades to the system would allow for the proposed project.

Once an area has been upgraded, projects will be re-evaluated based on the new conditions and approved if CAP requirements are met.

11. Will the City authorize taps on projects for which a valid and unexpired wastewater construction permit has been issued, but the taps have not yet been purchased?
The City will authorize the purchase of taps for any project for which a valid wastewater construction permit was issued prior to the U.S. District Court’s approval of the Consent Decree with EPA and DHEC on May 21, 2014, as long as that permit has not yet expired.
12. I'd like to know more about this hydraulic model. When does the City use it to determine if there are capacity issues?

The City is currently in the process of developing a hydraulic model for the entire system. Portions of the model have already been developed and may be used to examine projects. This model will be continually improved as the City gathers more system data.

13. I'd like to request a CAP review, a Pre-CAP review, or get more information on this program.

For more information on the CAP program or to request a review of your project, contact us at 545-3400.
Map of Current Capacity Limited Areas

The Crane Creek Basin and areas around Lake Katherine (shown in red) currently are sewer capacity limited. Projects are underway in both areas to address these limitations. The Burnside area (shown in green) had capacity limits lifted after a capacity enhancing project was completed in November 2014.

Version: January 29, 2015
The City has completed 15 capacity enhancement projects with several more in design or under construction. The completed projects have contributed to a 70% reduction in the number of sanitary sewer overflows since fiscal year 2008/2009.
Project Status: This project is currently under engineering design.

Project Description:
This project is for the engineering/design of 43,000 feet of new 60-inch water main that will run from the City's Lake Murray Water Treatment Plant to an existing 30-inch water line at the intersection of Broad River Rd. and Geology Rd. Once design is complete, this project will be considered for future construction.

Project Purpose:
The objective of the new water main is to increase the capacity and efficiency of moving water from the Lake Murray Water Treatment Plant to the St. James Elevated Storage Tank near Broad River Rd. and Geology Rd. This project will also serve as the initial phase of a water main designed to connect the Lake Murray Water Treatment Plant and the Canal Water Treatment Plant.

Project Facts:
- Although a specific date for construction cannot be set at this time, engineering design for projects of this size typically occurs 1-2 years before construction starts.
- 60-inch mains are among the largest diameter pipes in the City's drinking water transmission system.
- 43,000 feet is over 8 miles of pipe.
Columbia Waterworks Wins Award, Plans to Unveil Water Treatment Plant Upgrades

February 17, 2014

Columbia, SC - The City of Columbia is proud to announce the completion of its Raw Water and Finished Water Pump Station upgrades made at its Columbia Canal Water Treatment Plant in downtown Columbia.

The City and URS Corporation also received an Engineering Excellence Award for the Raw Water and High Service Pump Station portion of these improvements on Tuesday, February 5, 2014 from the American Council of Engineering Companies (ACEC) of South Carolina. This award goes to projects that exemplify cooperation, innovation, and excellence in engineering and construction.

"The ACEC award is a great honor, and it recognizes the significant commitment we've made to continually improving our infrastructure while keeping abreast of all drinking water regulations. These investments help us ensure our drinking water remains some of the best tasting in the state," says Bud Summers, Waterworks Superintendent for the City of Columbia. The City, which began these improvements in June of 2010, has held one of the top three spots each year since 2010 in a statewide taste test sponsored by the South Carolina Chapter of the American Water Works Association.

The City will unveil these improvements at a press conference to take place at 10 a.m. on Wednesday, February 19th at the downtown plant located at 300 Laurel St. Following the presentation there will be a tour of the plant for citizens to observe the recent upgrades. Anyone interested in attending the press conference or the tour will need to pre-register by e-mailing Victoria Kramer at vlkramer@columbiasc.net or calling (803) 545-3227.

A view of the City's new Raw Water Pump Station from Riverfront Park on the Columbia Canal.

Please contact the City of Columbia Department of Utilities and Engineering at 545-3400 or Victoria Kramer (vlkramer@columbiasc.net) at 545-3227 if you have questions. For more about the City of Columbia’s Drinking Water program, visit www.columbiasc.net/drinking-water. For more about the City’s Department of Utilities and Engineering, visit www.columbiasc.net/utilities-engineering.
Facts About the Columbia Canal Water Treatment Plant's ACEC Engineering Excellence Award

Summary:

- Raw water pumps replaced to increase capacity from 71 MGD to 84 MGD.
- Finished water pumps replaced to increase reliable pumping capacity by 25 MGD and increase efficiency.
- Finished water piping replaced to provide capacity for future expansion.
- Electrical system upgraded to operate pumps more efficiently.
- Upgraded the raw water pump bypass pipe to prepare for future work.
- Repaired crumbling stormwater tunnel under the water treatment plant.
Before & After

Raw Water Pump Area 2010

Raw Water Pump Area 2014

Finished Water Pump Area 2010

Finished Water Pump Area 2014

Please contact the City of Columbia Department of Utilities and Engineering at 545-3400 or Victoria Kramer (vlkramer@columbiasc.net) at 545-3227 if you have questions. For more about the City of Columbia’s Drinking Water program, visit www.columbiasc.net/drinking-water. For more about the City’s Department of Utilities and Engineering, visit www.columbiasc.net/utilities-engineering.
Avoiding and Detecting Cold Weather Leaks

Columbia, SC – January 24, 2014 –

With temperatures likely to dip below freezing this evening, the City of Columbia reminds its water customers to take precautions to protect your pipes.

**Inside:**
- Leave your faucets dripping.

**Outside:**
- Disconnect any hoses or lines from your outside spigots.
- Turn OFF all outside spigots.
- Cover all outside spigots with blankets or insulated covers. These covers can be found at most hardware stores.

If you believe you have a leak, check for it as soon as you can to minimize water loss. One way to detect a leak is to turn off all spigots then check to see if your water meter is still running. If it is, you may have a leak. For more plumbing tips, visit [http://www.columbiasc.gov/customer-care/utility-billing/plumbing-tips/](http://www.columbiasc.gov/customer-care/utility-billing/plumbing-tips/).

If you have had a leak or other plumbing problem, you may be eligible for a charge reduction on your bill after you have fixed it. To find out more about qualifying for this assistance program, visit [http://www.columbiasc.gov/customer-care/utility-billing/plumbing-adjustments](http://www.columbiasc.gov/customer-care/utility-billing/plumbing-adjustments) or call (803) 545-3300.

By taking these few simple steps, you may be able to prevent the hassle and mess of a broken water line at home!

#####

*Please contact the City of Columbia Department of Utilities and Engineering at 545-3400 or Victoria Kramer (vlkramer@columbiasc.net) at 545-3227 if you have questions. If you would like to learn more about the City of Columbia’s Customer Care Center, visit [columbiasc.gov/customer-care](http://www.columbiasc.gov/customer-care). If you would like to learn more about City of Columbia Department of Utilities and Engineering, visit [columbiasc.gov/utilities-engineering](http://www.columbiasc.gov/utilities-engineering).*
FOR IMMEDIATE RELEASE
City to Host Fats, Oils & Grease Workshops for Commercial Kitchens

Columbia, SC – January 2, 2014 –

The City of Columbia will host two training sessions on managing fats, oils & grease in commercial kitchens on:

• Tuesday, January 7th from 9:30 AM to 10:30 AM at the Lourie Center (1650 Park Circle), and
• Wednesday, January 8th from 2:00 PM to 3:00 PM at the Martin Luther King Jr. Community Center in Martin Luther King Jr. Park on Greene Street.

Managers and owner/operators of commercial kitchens should attend. The two training sessions will focus on fats, oils & grease management to meet City sewer and stormwater regulations. Attendees will learn about:

• Recent changes to the City's fats, oils & grease regulations;
• Grease traps, grease interceptors and other grease capturing devices; and
• Best management practices for handling fats, oils & grease in commercial kitchens.

City regulatory staff will also be on hand to answer any questions about the City's fats, oils & grease inspection program and stormwater inspection program.

Please contact the City of Columbia Department of Utilities and Engineering at 545-3400 or Victoria Kramer (vlkramer@columbiasc.net) at 545-3227 if you have questions. For more about the City of Columbia’s Fats, Oils & Grease Program, visit www.columbiasc.net/wastewater. For more about the City's Stormwater Program, visit www.columbiasc.net/stormwater. For more about the City’s Department of Utilities and Engineering, visit www.columbiasc.net/utilities-engineering.
SAVE THE DATE!
Fats, Oils & Grease Workshops for Commercial Kitchens

Dates:
The City will host two training sessions on managing fats, oils & grease in commercial kitchens on:

- **Tuesday, January 7th** from 9:30 to 10:30 AM
  Lourie Center, 1650 Park Circle

- **Wednesday, January 8th** from 2:00 to 3:00 PM
  MLK Jr. Community Center, MLK Park on Greene St.

Who should attend:
Managers and owner/operators of commercial kitchens (i.e. food service establishments like restaurants, schools, hotels, and other food prep facilities)

What will be covered:
The two training sessions will focus on fats, oils & grease management to meet City sewer and stormwater regulations. Attendees will learn about:

- Recent changes to the City's fats, oils & grease regulations;
- Grease traps, grease interceptors and other grease capturing devices; and
- Best management practices for handling fats, oils & grease in commercial kitchens.

City regulatory staff will also be on hand to answer any questions about the City's fats, oils & grease inspection program and stormwater inspection program.

For more information:
Victoria Kramer
(803) 545-3227
vlkramer@columbiasc.net

Hosted by the City of Columbia Department of Utilities & Engineering
www.columbiasc.net
Clean Water 2020 Newsletter, Volume 3, Number 1
Clean Water 2020 Newsletter, Volume 2, Number 3
Clean Water 2020 Newsletter, Volume 2, Number 2
Clean Water 2020 Newsletter, Volume 2, Number 1
Clean Water 2020 Newsletter, Volume 1, Number 3
Clean Water 2020 Newsletter, Volume 1, Number 2
Clean Water 2020 Newsletter, Volume 1, Number 1
Apprenticeship Program and Training Continues Strong

With the closing of 2014, both the Metro Wastewater Treatment Plant (WWTP) and the Wastewater Maintenance Division (WWM) are celebrating successes in employee training. The Wastewater Operator Apprenticeship Program at the Metro Wastewater Treatment Plant successfully completed its second year and the Collection System Operator Apprenticeship Program for the Wastewater Maintenance Division completed its first year. Formal, continued training, for all wastewater employees from both divisions, has provided opportunities to attend 295 classes which covered 78 topics and earned staff more than 5,000 hours of training.

The Apprenticeship Programs for both divisions are nationally recognized by the U.S. Department of Labor. Eight operators have successfully completed the Wastewater Operator Apprenticeship Program with five operators currently employed at the WWTP including: Adrian Martin, Jan Janikowski, Ray Bishop, Ed Washington, and Tom Wiggins.

<table>
<thead>
<tr>
<th>Wastewater Training Activities</th>
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</thead>
<tbody>
<tr>
<td>78 Topics Covered</td>
</tr>
<tr>
<td>295 Classes Given</td>
</tr>
<tr>
<td>5,070.5 Total Group Hours Earned</td>
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From the Desk of the Wastewater Engineer

On February 6, 2015, the Clean Water 2020 family was devastated by the loss of Marvis Lavar Myers, and we are still reeling from the tragic events surrounding his death. During this time, I ask that each of you continue to support one another and pray for Marvis’ family as we mourn him.

Marvis joined the City staff on November 18, 2013 as a Laborer II for the Wastewater Maintenance Division. He was diligently working his way through the Apprenticeship Program to further his Voluntary Collection System Operator licensure.

WWM Superintendent, Robert Judy, recently expressed his thoughts about Marvis when he said, "Marvis had a smile and warmth each and every day that brought forth a comfort for his co-workers and supervisors. His presence will be missed tremendously."

Immediate family surviving his death includes his wife, Brianny P. Harris Myers; sons, Tavaris Antonio Bell, Jr. and Marvis Lavar Myers, Jr.; mother, Jacqueline Myers; brothers, Corey J. Myers and Ronald Ramsey; sisters, Megan J. Simmons and Shequetta S. Hamilton.

Funeral services for Mr. Myers were held on February 14, 2015 at New Mt. Zion A.M.E. Church, in Jamestown, SC. Condolences for Mr. Myers can be made at www.mccollom-myers.com.

I am sure I speak for everyone when I say our thoughts and prayers are with Marvis’ family during this difficult time. Our deepest sympathies go out to his family. If you would like to help his family, our Wastewater Maintenance Division has established a memorial fund at all branches of First Citizens Bank. To contribute to the fund, please stop by any First Citizens location or contact Gertie Irving at 545-3400. Be sure to reference the "Marvis Myers Memorial Fund" when making your contribution.

Bill Davis, PE
Wastewater Engineer
Wastewater Apprenticeship Programs

2 Approved Apprenticeship Programs

100 Apprentices Enrolled

8 Number of Completed Apprenticeships

5 Number of Journeymen Employed

Training Topics from July – December 2014 for Wastewater Maintenance Division:

- July-2014 Wastewater Maintenance Orientation
- July-2014 City of Columbia Orientation
- July-2014 Key Check & Storage/Vehicle Accident Reporting
- July-2014 Right of Way Maintenance
- Aug-14 C&D Certification Class
- Aug-14 Line Repair Locate Procedures
- Sep-14 A&B Certification Class
- Sep-14 C&D Certification Class
- Nov-14 Annual SORP Training
- Nov-14 Standard First Aid/CPR/AED
- Nov-14 WW Cleanout Install/Yard Restoration/WW Service & Mainline Repair
- Nov-14 City of Columbia Ethics
- Dec-14 Defensive Driving

Wastewater Maintenance Employees Who Passed the Voluntary Collection System Operator Certification Exam(s)

<table>
<thead>
<tr>
<th>Employee Name</th>
<th>License Held</th>
<th>License(s) Passed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daniel Brannon</td>
<td>C</td>
<td>A</td>
</tr>
<tr>
<td>Travos Brown</td>
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<td>B</td>
</tr>
<tr>
<td>James Caldwell</td>
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<td>C</td>
</tr>
<tr>
<td>Benjamin Chatman</td>
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<td>C</td>
</tr>
<tr>
<td>Ryan Coleman</td>
<td>D</td>
<td>C</td>
</tr>
<tr>
<td>Dexter Diggs</td>
<td>B</td>
<td>A</td>
</tr>
<tr>
<td>David English</td>
<td>D</td>
<td>C</td>
</tr>
<tr>
<td>Nathaniel Freeman</td>
<td>D</td>
<td>C</td>
</tr>
<tr>
<td>James Gadson</td>
<td>D</td>
<td>C</td>
</tr>
<tr>
<td>Ashanta Gilyard</td>
<td>D</td>
<td>C</td>
</tr>
<tr>
<td>Dwayne Hoefer</td>
<td>D</td>
<td>C</td>
</tr>
<tr>
<td>Carl Horton</td>
<td>D</td>
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</tr>
<tr>
<td>Kevin James</td>
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<td>A</td>
</tr>
<tr>
<td>Michael Johnson</td>
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<tr>
<td>Bryon Jones</td>
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<td>B</td>
</tr>
<tr>
<td>Christopher Lofton</td>
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<td>A</td>
</tr>
<tr>
<td>Vincent McGee</td>
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<td>A</td>
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<td>Rodric Moultrie</td>
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<td>Terron Murray</td>
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<td>Marvis Myers</td>
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<tr>
<td>Jonathan Parker</td>
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<td>Robert Prevatte</td>
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<td>Dekota Radden</td>
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<td>A</td>
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<td>Reginald Tyler</td>
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<td>Alejandra Veal</td>
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<tr>
<td>Ned Woods</td>
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</table>

*passed two certification tests in a six month period

"With training, we have ensured every employee is now empowered to perform their job at a higher standard. By increasing efficiency and reorganizing staff every position can be fully utilized.

- Bill Davis, P.E."
Below is a List of Training Topics from July – December 2014 for Metro Wastewater Treatment Plant:

<table>
<thead>
<tr>
<th>Year</th>
<th>Course Title</th>
<th>Date</th>
<th>Training Topic</th>
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<tr>
<td>2014</td>
<td>CSUS - Operation of WW Treatment Plants, Vol I</td>
<td>Oct-14</td>
<td>TSOMP Inventory Management Training</td>
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<tr>
<td>2014</td>
<td>CSUS - Advanced Treatment</td>
<td>Nov-14</td>
<td>HACH Meter Training</td>
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<tr>
<td>2014</td>
<td>CSUS - Manage for Success: Effective Utility Leadership practices</td>
<td>Nov-14</td>
<td>Annual SORP Training</td>
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<td>2014</td>
<td>Plant Orientation</td>
<td>Nov-14</td>
<td>WEF-WW Worker Safety - Addressing Concerns on Ebola in WW</td>
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<td>Laboratory Orientation (Operators Only)</td>
<td>Nov-14</td>
<td>How We &quot;See&quot; Pathogens</td>
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<tr>
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<td>City of Columbia Orientation</td>
<td>Nov-14</td>
<td>Operator Conference</td>
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<tr>
<td>Aug-14</td>
<td>Arc Flash Training</td>
<td>Nov-14</td>
<td>Procurement Training</td>
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<tr>
<td>Aug-14</td>
<td>Southern Ionics - Sodium Bisulfite Training</td>
<td>Nov-14</td>
<td>City of Columbia Ethics Training</td>
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<td>Aug-14</td>
<td>WEASC - Laboratory Workshop</td>
<td>Dec-14</td>
<td>SCADA &amp; OIT Training</td>
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<tr>
<td>Sep-14</td>
<td>Addressing Common Mixing &amp; Aeration Problems/Improving Efficiency</td>
<td>Dec-14</td>
<td>Gas Detector Training</td>
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<td>Metro CityWorks Training</td>
<td>Dec-14</td>
<td>The Women's Conference</td>
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<tr>
<td>Sep-14</td>
<td>WEASC - Midyear Meeting</td>
<td>Dec-14</td>
<td>IPP Workshop</td>
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<tr>
<td>Sep-14</td>
<td>Front Lobby/Reception SOP</td>
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Metro WWTP Employees Who Passed a Certification Exam(s)

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<thead>
<tr>
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<th>License(s) Passed</th>
<th>Type of License</th>
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<td>Brandon Trapp</td>
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<td>South Carolina Biological Wastewater Operator</td>
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<tr>
<td>Tom Wiggins</td>
<td>B</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>Lisa Blankenship</td>
<td>TR</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td>Cyndi Roland</td>
<td>D</td>
<td>C</td>
<td></td>
</tr>
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<td>Brandon Wilcox</td>
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<td>B</td>
<td></td>
</tr>
<tr>
<td>Candace Mathis</td>
<td>D</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>Patrick Branson</td>
<td>TR</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td>Freddy Alexander*</td>
<td>C</td>
<td>A</td>
<td>Voluntary Collection System Operator</td>
</tr>
<tr>
<td>Allen Etheredge*</td>
<td>C</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>James Williams*</td>
<td>C</td>
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<tr>
<td>Carl Dais</td>
<td>D</td>
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<td></td>
</tr>
<tr>
<td>John Boyd</td>
<td>D</td>
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<td></td>
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</tbody>
</table>

* passed two certification tests in a six month period
City Engineering staff has been working to continue implementing, refining, and improving the existing Capacity Assurance Program (CAP). These improvements are preparing us for compliance with the Consent Decree’s (CD) requirements for the final approved CAP scheduled for submittal to the EPA. Through the dedication of City staff, proposed increases and decreases in wastewater flow contributions throughout the entire sewer system are being reviewed and tracked for the availability of capacity in the existing collection, transmission, and treatment system.

The current CAP process began in 2011, and only captured new developments. Since then it has been continuously improved to include changes in use, increases or decreases in wastewater flow from existing facilities, and the capturing of flow changes from satellite sewer systems such as the City of West Columbia and NI America.

The tracking and analysis of these flows through the CAP process is a critical component of the CD. The CAP process determines the capacity of the City’s existing sanitary sewer system and helps determine if the existing system is capable of conveying the new wastewater flow from proposed developments. During the CAP review, if a capacity restriction is identified downstream of a proposed connection or increase in wastewater flow, the City will communicate to the developer/property owner that the City is currently unable to receive wastewater from the proposed new development until the capacity limitation is removed. At this time, the City begins to review options for removing the capacity limitation on the portion of sewer system identified. The CAP process also enables previously approved flow to be removed from the City’s sewer system if a development or business closes or relocates. This process is a critical link in the City’s goal of reducing and ultimately preventing capacity related sanitary sewer overflows (SSOs).

“The CAP process is continuously being refined, but we are very pleased with our results to date” says Davis. Improvements include, but are not limited to the development and implementation of standard operating procedures, increase in public communication, documented workflows, CAP request and analysis tracking, and document retention. City staff is also incorporating and using tools such as SharePoint, GIS, flow monitoring, hydraulic modeling, and O&M staff to aid in fieldwork and decision making, tracking information required by the CD, and keeping all information at a centralized location for more streamlined and repeatable planning and development tool.
Sanitary Sewer Overflows (SSOs)

July 1, 2014 through December 31, 2014

In the first half of fiscal year 2014-2015 (FY 14/15), the Wastewater Collection and Transmission System (WCTS) experienced 51 SSOs. In comparison, 67 events were logged during the same time period in FY13/14. This is a net decrease of 16 SSOs.

Department of Utilities and Engineering Sanitary Sewer Overflows Metrics December 2014

<table>
<thead>
<tr>
<th>MONTH</th>
<th>JUL</th>
<th>AUG</th>
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<th>NOV</th>
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<td>0</td>
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<tr>
<td><strong>TOTAL</strong></td>
<td><strong>6</strong></td>
<td><strong>8</strong></td>
<td><strong>10</strong></td>
<td><strong>5</strong></td>
<td><strong>6</strong></td>
<td><strong>16</strong></td>
<td><strong>51</strong></td>
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<tr>
<td><strong>EST. VOLUME (GAL)</strong></td>
<td>2,658</td>
<td>18,913</td>
<td>11,956</td>
<td>379,502</td>
<td>4,509</td>
<td>454,487</td>
<td>882,025</td>
</tr>
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</table>

4.64 SSOs per 100 Miles of Pipe

Root Cause SSO Analysis (RCA) Program

The Wastewater Maintenance Division (WWM) has established an aggressive Root Cause Analysis (RCA) program to answer why Sanitary Sewer Overflows (SSOs) occur in the system. The program is part of ongoing work to comply with the Consent Decree, specifically, to identify “causes” of all of the system’s SSOs and undertake “actions” that should resolve them. The WWM has done an outstanding job in developing their RCA Program, seeking to first correct the blockage, and then dispatch a Closed Circuit Television (CCTV) unit to video the pipe. Once a video is taken, crews determine the root cause then correct the problem to prevent it from happening again. This is a very comprehensive effort involving significant coordination between Wastewater Section staff.

“WWM Crews determine the root cause [of an SSO] then correct the problem to prevent it from happening again.”
The 2014 Wastewater Treatment Plant Employee Christmas Party was held December 18, 2014. All the managers and supervisors joined together to provide the meal and vendors generously supplied the giveaways. The event was held in the upstairs training room of the WWTP. Assistant Superintendent, Gene House, and Sr. Staff Assistant, Tracy Beymer, cooked for 60-70 employees. The meal included: BBQ, ham, mac-n-cheese, mashed potatoes, green beans, corn, rolls, sweet tea and a table full of delicious desserts. Annual awards were presented following the meal and fellowship.

**Employee of the Year**

*Charles Green* received Employee of the Year for setting an example of dedication, initiative and work ethic necessary to achieve the team’s long term goals.

**Cloaca Maxima Award**

In recognition for passing a minimum of two certification exams in a twelve month period with outstanding achievement and professionalism. *Cloaca Maxima* translated from Latin means Greatest Sewer. In order to have the Greatest Sewer, the City aims to have the greatest trained employees. Those employees who have passed a minimum of two certification exams in a 12 month period with outstanding achievement and professionalism are considered *Cloaca Maxima* employees. 2014 *Cloaca Maxima* WWTP employees are: Ray Bishop, Candace Mathis, Tom Wiggins, Brandon Wilcox, James Williams, John Allen and Fred Alexander.

**Phantom Racer Award**

Lisa Blankenship received the "Phantom Racer Award " for her ability to provoke the phantom driver into curb jumping and downhill rolling.”

**Lime Bag Award**

John Boyd received the Lime Bag Award in recognition of over achieving in the Arts of Wastewater Sciences.

**Olympic Award**

Martin Griffin received the Olympic Award for his synchronization of rotations and twists, scoring 7.5 and 9.9 for the dismounts into the aeration basins—twice.

**Hollywood Award**

Thorsten Killius received the Hollywood Award for his outstanding televised performance with the famous quote, “Thanks, Lady.”

**Chivalry Award**

Carl Dias received the Chivalry Award for a Knight’s life includes being courteous, generous, devout and rescuing damsels not in distress.

**Grill Master Award**

Allen Etheridge received the Grill Master Award for mastery of rib rubbing and saucing the hog.
The 2014 Wastewater Maintenance Employee Christmas Party was held December 12, 2014, at the Print Shop. WWM Superintendent Robert Judy addressed the group prior to the awards saying, “Thank you to everyone for an outstanding job! Office staff has improved processes and work order tracking. We have reduced overtime and I think the most significant accomplishment we have made during this past year is the Apprenticeship Program implementation. Improving performance with professional certification and training leads to a decrease in carelessness, accidents, and employee turnover in the WWM division.”

Judy remarked on additional improvements that employees will see in the coming year: tablet computers will be used to place work orders, more SMART Manhole Covers will be installed to monitor wet weather, and a new camera truck will also be put to work.

Employee of the Year - 2014

Vincent McGee has been with WWM for 15 years. In 2014 he received his Wastewater Collection System Operator Class C, B, and A certifications. Vincent often volunteers for on-call duty and demonstrates safety and dependability each day. He exemplifies excellent cross training skills for new operators and pipe layers.

Jennifer Williams started out with WWM as a temporary employee in July 2013, and was quickly promoted to Administrative Secretary in October 2014. Jennifer goes out of her way to boost morale and create a positive work environment. She has assisted with Cityworks® by implementing and organizing inventory data and was assigned to the new-hire process.

Foreman of the Year – 2014

Prentiss Brooks has been with WWM since June 1994. As a top performer demonstrating an outstanding work ethic, he has always been a mentor to staff and assists in training.

Martin Golston started in February 2000 and worked his way to Wastewater Collections Foreman. He is extremely knowledgeable of equipment inventory and proves to be the go-to person to get the information needed.

Appreciation for Service Award

David Mackey started with the City in May 1983 and retired after 31 years only to be re-hired by the WWM in August 2013. With his experience, David has been a vital asset to the WWM division. He has created new Standard Operating Procedures and has been an excellent instructor for safety and the WW Collection Certification Apprenticeship Program.
Water Environment Association of South Carolina (WEASC) Capital District Awards

Employees from the WWTP and WWM Divisions were presented WEASC Capital District Awards on January 15, 2015 from the Capital District.

Wastewater Operator of the Year Award

Young Professional of the Year Award

Rookie of the Year

Boland-Bates Membership Award

For suggestions or questions regarding the newsletter, please contact:
Email: info@CleanWater2020.com
Transmission System Operation and Maintenance Program (TSOMP)

Zebedee Palmer performs a general station check and logs pump run time in log book.

As part of the Clean Water 2020 Program, the City of Columbia (City) is developing a Transmission System Operation and Maintenance Program (TSOMP) to address operation and maintenance activities associated with the Pump Stations and Force Main Easements within the Wastewater Collection and Transmission System (WCTS).

Specific activities to be addressed are:

**Pump Station Activities**

The City maintains 56 pump stations and approximately 40 miles of sanitary sewer force main within their collection system ranging in size between two and 42 inches. At a minimum, the TSOMP will include methods of communication between pump stations, field crews and supervising staff; technical specifications of each pump station; and evaluation on the monitoring system which monitors, reports, and transmits information for each pump station.

**Force Main Easement Activities**

*Inspection of Force Main Easements* – Engineer will conduct a workshop with key City staff to understand current practices and discuss industry best practices related to force main inspection procedures currently being performed by personnel.

*Inspection of Force Main Standard Operating Procedures (SOPs)* – Existing Force Main Standard Operating Procedures (SOPs) will be reviewed to ensure compliance with the TSOMP. Inspection procedures will include written reports and photographs or videos of items being inspected.

*Reporting SSOs* – Review of reporting observed SSOs with the necessary documentation. These procedures for identifying and mitigating an SSO in a Force Main Easement will be documented and become part of the City of Columbia Sewer Overflow Response Plan (SORP).

*Easement Maintenance Schedule* – Development of an annual maintenance schedule to include the use of in-house resources and contractors to maintain the City’s wastewater easements. The annual maintenance schedule will include the frequency and budget to complete the work.

*Inventory Management System Activities* 

*Inventory Management* – As an upgrade to the City’s current inventory management system, the new system will provide greater accuracy in tracking on-hand quantities and will alert the Inventory Control Manager when re-order trigger points are reached. Inventory data will be provided in a format that will be loaded into the City’s Computerized Maintenance Management System (CMMS).
Sanitary Sewer Overflow Statistics
FY2013/ 2014

In Fiscal Year 2013/14, the Wastewater Collection and Transmission System (WCTS) experienced 148 Sanitary Sewer Overflow (SSO) events, an increase of 17 SSOs from the 131 logged in FY 2012/13. Twenty-three of the events were the result of wet weather and 125 occurred during dry weather. The total number of SSOs per 100 miles of pipe for the City of Columbia is approximately 13.45.

Although there has been a slight increase in SSOs as a result of wet weather events, staff has continued to accurately collect data on SSO causes and to direct resources for correcting and mitigating future SSOs.

<table>
<thead>
<tr>
<th>MONTH</th>
<th>PERF</th>
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* SSO causes and direct resources data from July 2013 to June 2014

Everyone Needs a Little Validation
- An Update on the City's Sewer Collection System Model

Last year, Clean Water 2020 began developing a hydraulic model of the City’s sewer collection system. The consultant leading the modeling project, Hazen and Sawyer, has been busy over the past year building the model and validating it against actual flow data. This model will be used to identify capacity limitations and determine capacity-enhancing improvements to better serve the City’s growing population. Ultimately, this model will be a key component in determining system needs to support growth and avoid capacity restrictions that could result from inadequate sewer capacity. Additionally, CW2020 has used the model to evaluate specific proposed developments within the service area and to provide data for a Capacity Assurance Program (CAP) Tool that is also being built to help City staff track wastewater permit applications and monitor available capacity throughout the system.

The model represents over 115 miles of the City’s major gravity sewers (over 15-inches in diameter). In order to be included in the model and to properly determine capacity within the system, pipe size, pipe slope, manhole depth, and other physical parameters were collected for the entire infrastructure. Pump capacity, pump operation, and force main size were also needed for each of the major sewer lift stations in the system. Additional data needed to construct the model has been collected by consulting firms who have inspected manholes to fill in the gaps and verify existing Geographical Information System (GIS) data.

All of this information was used to update the GIS, which was then transferred into the hydraulic modeling software.

Before being used to identify capacity needs, the model was validated to ensure accurate response of the sewer system under two different scenarios: sewer flow during periods of dry weather and sewer flow during periods of wet weather. Dry weather sewer flow consists of wastewater...
from homes, businesses, and industry, known as sanitary flow. Sanitary wastewater flow makes up the bulk of the volume of wastewater conveyed by the system during dry, non-rainy days. Gravity sewer pipes which have been in the ground 30 years or more are not watertight. Therefore, when groundwater builds up on the outside of the pipe, it can intrude or infiltrate into the sewer pipe. This contribution to sewer flow is called groundwater infiltration or GWI. Together, these two components – sanitary flow and GWI – make up the dry weather sewer flow.

When it rains, sewer flow can increase tremendously, ranging from 2 to 10 times the average dry weather flow. This increase occurs for several reasons. First, as rainfall infiltrates the soil and groundwater, levels rise and more water enters the sewer pipe through defects in aging pipe and manholes. Second, surface runoff from rainfall can enter the sewer through manholes with missing, broken, or leaking lids or directly through broken pipes or other illicit connections to the sewer system. Together, this increased contribution to the collection system is known as rainfall-dependent infiltration and inflow, or RDII.

Hydraulic models must simulate each of the three main sewer flow components. Sanitary flow can be based on population and flow projections, billing data, and/or unit contributory flows. This information is stored in the model for each loading point (e.g., manhole) in the system in terms of equivalent served population, a unit flow per equivalent capita, and major trade flow in areas with large commercial or industrial meters.

RDII is a little trickier in that the rainfall and sewer system response must be representative of actual system conditions during wet weather periods. One way to simulate wet weather events and RDII is using the RTK Unit Hydrograph model. This model helps define how much of the rainfall falling on the service area becomes RDII and the time it takes this RDII to enter the sanitary sewer system. This helps to diagnose where RDII can cause capacity problems in the city’s sanitary sewer system as well as develop improvement recommendations to improve capacity.

Strict parameters for validation are defined for both dry weather and wet weather flow calibration scenarios. These include comparison of modeled and actual data for peak flow rate, total flow volume, depth of flow within the gravity sewers, shape and timing of flows in the system. Further, the model should be able to accurately predict future occurrences at manholes that have had previous overflow incidents in the system. Upon review of all of the validation analyses for the City’s collection system hydraulic model, the results were deemed to be representative of the observed flow data based on the pre-defined modeling standards. The hydraulic model accurately simulated the operation and performance of the collection system infrastructure, and is of sufficient detail to meet the analytical needs of the project. Thus, the model is now validated!

Going forward, CW2020 will be using the model to identify capacity limitations and determine necessary improvements to handle current and future sewer flows. The model will look at scenarios for new pipes, expansion of existing pipes, addition of parallel pipes, collection system equalization storage, reductions in stormwater infiltration, and capacity expansions at lift stations to determine the most cost-effective solutions and the timing of these needed improvements.

**High Priority Goals Set By Wastewater Management**

Recently, leaders of the Wastewater Section came together to discuss how to put the Mission of the Clean Water 2020 Program into action. Based on the Mission Statement, section leaders submitted the top five goals they felt were needed to ensure the success of the CW2020 Program. Individual goals presented by participants were listed, then grouped together in five categories. Tally marks were given to each to determine the top five goals. The goals, listed below, were identified as Highest Priority Goals for the CW2020 Program:

1. Systematically operate and maintain an efficient, modern, and reliable wastewater system which is in compliance with regulatory agencies.
2. Provide adequate staffing, pay, training, tools, business processes, and a quality work environment for our employees.
3. Repair, replace, and expand the City’s wastewater system as economically as possible while maintaining quality.
4. Meet the expectations of upper management and Council by responding in a timely and ethical manner. Improve vertical and horizontal communication.
5. When representing the City, always conduct ourselves in a courteous and professional manner.

All Metro WWTP and WWM employees were given a wallet-sized card, for quick reference, listing the CW2020 Mission Statement, and the five High Priority Goals for Wastewater treatment. We believe keeping these goals out in front of each employee will help us maintain focus and help us continue to improve the excellent service we provide the City of Columbia and the communities we serve.
The Operator Training Apprenticeship Program for the Wastewater Maintenance Division became effective January 26, 2014 after the extensive work of many dedicated City of Columbia employees and Clean Water 2020 staff.

The Program includes:

- A method to help prepare newly hired and existing employees for certification examinations, to increase their practical knowledge and skillsets, and receive national certification from the U.S. Department of Labor
- Guidelines requiring all operations and maintenance personnel, hired and retained, complete the Program within a specified timeline
- Levels with specific goals, objectives, and timeframes for completion
- Requirements based on the Association Boards of Certification (ABC) Need-to-Know Criteria for Wastewater Treatment Operators establishing essential tasks and capabilities identified as core competencies

All wastewater operator positions are required to reach a minimum of class “C” certification within a two-year time frame. With increased knowhow and experience, crews have reduced repetitive work and improved efficiency performing repair work and follow up restorations. WMD has also seen a drastic decrease in complaints as a result of the training program, reinforcing the dedication of the employees to maintain a higher level of customer service.

Since the Operator Training Apprenticeship Program went in to effect, the results have been positive.

During the first six months of the Apprenticeship Program, training has included:

### COC WASTEWATER MAINTENANCE

<table>
<thead>
<tr>
<th>Month</th>
<th>Training</th>
<th># of Classes</th>
<th>Length of Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>14-Jan</td>
<td>Trenching &amp; Excavation</td>
<td>4</td>
<td>1 hour</td>
</tr>
<tr>
<td></td>
<td>D&amp;C Certification Class</td>
<td>4</td>
<td>8 hours</td>
</tr>
<tr>
<td></td>
<td>A&amp;B Certification Class</td>
<td>4</td>
<td>8 hours</td>
</tr>
<tr>
<td>14-Feb</td>
<td>Permit Required Confined Space</td>
<td>3</td>
<td>1 hour</td>
</tr>
<tr>
<td></td>
<td>Foreman’s Meeting</td>
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<td>1 hour</td>
</tr>
<tr>
<td></td>
<td>A&amp;B Certification Review</td>
<td>1</td>
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<td>D&amp;C Certification Class</td>
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<tr>
<td></td>
<td>C Certification Review</td>
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</tr>
<tr>
<td></td>
<td>D Certification Review</td>
<td>1</td>
<td>8 hours</td>
</tr>
<tr>
<td>14-Mar</td>
<td>A&amp;B Certification Class</td>
<td>4</td>
<td>8 hours</td>
</tr>
<tr>
<td></td>
<td>HAZCOM</td>
<td>3</td>
<td>1 hour</td>
</tr>
<tr>
<td></td>
<td>Vactor 2100 Training</td>
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<td>4 hours</td>
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<td></td>
<td>D&amp;C Certification Class</td>
<td>4</td>
<td>8 hours</td>
</tr>
<tr>
<td>14-Apr</td>
<td>Blood Borne Pathogens</td>
<td>3</td>
<td>1 hour</td>
</tr>
<tr>
<td></td>
<td>D&amp;C Certification Class</td>
<td>8</td>
<td>8 hours</td>
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<tr>
<td></td>
<td>A&amp;B Certification Class</td>
<td>3</td>
<td>8 hours</td>
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<tr>
<td>14-May</td>
<td>D&amp;C Certification Class</td>
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<td></td>
<td>A&amp;B Certification Class</td>
<td>4</td>
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<tr>
<td></td>
<td>SORP Refresher (Foremen)</td>
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<td>3 hours</td>
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<tr>
<td>14-Jun</td>
<td>Flagger Training</td>
<td>4</td>
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<tr>
<td></td>
<td>Utility Emergency Procedure SOP</td>
<td>1</td>
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<tr>
<td></td>
<td>Vactor 2100 Training</td>
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<td>1 hour</td>
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Based on training, the following employees have increased certification levels:

### COC METRO WASTEWATER TREATMENT PLANT

<table>
<thead>
<tr>
<th>Month</th>
<th>Training</th>
<th># of Classes</th>
<th>Length of Class</th>
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<tbody>
<tr>
<td>14-Jan</td>
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<td>14-Feb</td>
<td>Polymer Feed System</td>
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<td>C&amp;D Biological WW Operator School</td>
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<td>14-Mar</td>
<td>Blood Borne Pathogens</td>
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<td></td>
<td>Biological SOP</td>
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<td>2.5 hour</td>
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<tr>
<td>14-Apr</td>
<td>Permit Required Confined Space</td>
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<td>1 hour</td>
</tr>
<tr>
<td>14-May</td>
<td>Fastenal Machine Training</td>
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<td>45 mins</td>
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<tr>
<td>14-Jun</td>
<td>Annual Polymer Training</td>
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<td>1 hour</td>
</tr>
<tr>
<td></td>
<td>Cerlic Training</td>
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<td>2 hours</td>
</tr>
<tr>
<td></td>
<td>Control of Hazardous Energy - Lock Out/Tag Out</td>
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### Metro WWTP Employees Who Passed a Certification Exam(s)

<table>
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<tr>
<th>Employee Name</th>
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<th>License(s) Passed</th>
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<tr>
<td>Candace Mathis *</td>
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<td>D » C</td>
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<tr>
<td>Tom Wiggins</td>
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<tr>
<td>Brandon Wilcox</td>
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<td></td>
</tr>
<tr>
<td>Fred Alexander</td>
<td>C</td>
<td>B</td>
<td>Voluntary Collection System Operator</td>
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<tr>
<td>Gene House</td>
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</table>

* *passed two (2) certification tests in a 6 month period*

### Wastewater Maintenance Employees Who Passed a Certification Exam(s)

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<th>Employee Name</th>
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<td>Dexter Diggs</td>
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<td>Dekota Radden</td>
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<td>Zachary Reed</td>
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<td>Edward Spencer</td>
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<td>Johnny Henry</td>
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<td>Jimmie Thomas</td>
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<td>Dwayne Hoefer</td>
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<td>Carl Horton</td>
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<td>Darnell Jackson</td>
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<td>Nevin Jamison</td>
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<td>Antonio Williams</td>
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<tr>
<td>Michael Johnson</td>
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<td>Robert Williams</td>
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<td>Bryon Jones</td>
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<td>Terrence Williams</td>
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<tr>
<td>Jerry Lindsay</td>
<td>B</td>
<td>A</td>
<td>Ned Woods</td>
<td>Trainee</td>
<td>D</td>
</tr>
</tbody>
</table>

*These employees have a Voluntary Collection System Operator License.*
Pump Station Compliance Check-List

In order to ensure the basic standards of the S.C. Department of Health & Environmental Control (S.C. DHEC) are met, Lift Station Supervisor, Ashley Dove, worked with his team to prepare a check-list for pump station standards. S.C. DHEC has always monitored South Carolina wastewater standards and is required to spot check and randomly evaluate pump stations which are maintained by the City’s WWTP. Each pump station must pass the random inspection.

Dove said, “We don’t want to just meet the minimum of S.C. DHEC’s standards, we want to go above and beyond.” Dove made sure the S.C. DHEC check-list for pump station standards also included specific maintenance checks required by WWTP and the Consent Decree guidelines. “Put it in writing is always the best way to ensure and regulate compliance,” said Dove.

To ensure efficiency, Dove added seven maintenance check questions to the 23 S.C. DHEC had listed on their Evaluation Report. Document/date requirements were also included with another six of the standard S.C. DHEC questions.

Pump standardization and pump station compliance:

- Pumps have been standardized (type and make) so staff can be thoroughly trained on one type of pump.
- Training on pumps will be standardized and focused on the actual pumps in inventory. Most of the maintenance staff has completed a “Product Maintenance Course” that covers installation, operation, maintenance and repair of their submersible pumps.
- Some spare parts and pumps are interchangeable, reducing the costs of inventory.
- Most stations have spare pumps that are rotated on an annual basis, the City employs the odd pump in the odd year and even pump in the even year. The pump that is taken out of rotation each year is thoroughly checked out and repainted to be put back in inventory as the spare.
- Continued maintenance and pump station compliance helps reduce surprise overflows due to pump failure.
- Compliance inspections are a follow-up measure to ensure tasks are being completed and that every effort is being made to protect the environment.

The pump station compliance check-list now exceeds requirements set by S.C. DHEC, and WWTP staff makes it a routine to guarantee the compliance check-list is maintained for every pump, Dove explained, "Every question has been tailored for an acceptable answer to be “yes.” If the answer is “no” then there is work to be done."

Awards

Several City employees were acknowledged by the Water Environment Association of SC (WEASC) at the Capital District meeting held January 16, 2014. WEASC is made up of a community of professionals who protect the state’s water environment so that this most precious resource can be preserved for generations to come. WEASC serves more than 3,000 members across 10 districts throughout our state. WEASC is also affiliated with the Water Environment Federation, which is composed of affiliates and members throughout the world.
Joey Jaco said, “We have some great folks who are deserving of recognition.”

**Engineer of the Year**

(State & District):

Bill Davis was awarded both the Capital District Engineer of the Year and the WEASC Engineer of the Year for over 20 years of leadership in the wastewater industry. Under his current position as Wastewater Engineer, Davis has provided long-term planning and strategic direction to the wastewater department, delivered oversight on major engineering projects, negotiated a Consent Decree with the USEPA that will shape major improvements in the City’s system over the next decade, and established the Clean Water 2020 Program to rebuild and modernize the City’s sewer collection system and treatment facilities.

The Engineer of the Year Award is presented annually to an engineer working in one of the following areas: consulting, municipal or industry and who is responsible for the design of a facility, or has demonstrated excellence by managing, directing, operating, education, research or pollution prevention on a project in the field wastewater collection, treatment or residual management.

**Operator of the Year:**

Robert Judy received the Dennis Pittman Collection Systems Operator of the Year Award which is given annually to an Association member for excellent achievement in the maintenance of a wastewater collection system in South Carolina. Judy has served more than 30 years as an operator and manager of wastewater collection systems and treatment plants. He currently oversees the operations and maintenance of the City of Columbia’s wastewater collection system. He has served as WEASC’s Chair of the Safety Committee, the PWO Committee for three years and a past member of the Publications Committee.

The Operator of the Year award is named in honor of Dennis Pittman of Taylors Fire and Sewer District who, by his dedication and tireless endeavors, was the driving force in the formulation of the Collection System Division of the Water Environment Association and the training school it sponsors. The nominees’ service must have been in any of the following areas: Management, overall planning, operation and maintenance, education training or research. Judy also received the WEASC Life Membership Award.

Ashley Dove received the Larry Boland Membership Award for having recruited the most WEASC members in a year. Dove has been a member of WEASC for 20 years.

Wastewater Treatment Plant Operator of the Year:

Raymond Bishop received the Wastewater Treatment Operator of the Year Award which is presented annually to a wastewater treatment plant operator for excellent achievement in the direct operation of a wastewater system in South Carolina. Bishop is organized, efficient, and willing to do what is needed to finish a task on-time or ahead of schedule. His cooperative attitude and good cheer are appreciated by coworkers as he consistently tries to improve his surroundings and attacks special projects with great vigor and resolve.

Rookie of the Year:

James Williams received the Capital District Rookie of the Year Award which recognizes outstanding performance by individuals with at least three months but not more than two years’ experience at the time of nomination.

Mr. Williams has been employed with the City of Columbia since October 22, 2012. He has proven to be an asset for the City through his initiative and drive to learn new skills. He recently passed his “C” Level Collection System Certification, became certified in OSHA Crane & Derrick standard CFR1926.550, and completed Product Maintenance Course Certificate for Flygt/Xylem submersible pumps and mixers.

With a smile on his face, looking forward to what may lay ahead, he readily accepts new assignments and makes an effort to gain an understanding of other related positions. He works well with others and holds fast to the spirit of team work.
Employee of the Year:
Marion Aiken was selected City of Columbia's Employee of the Year. He was recognized at the Tuesday, February 4, 2014 City Council Meeting. Mr. Aiken began his career with the City as a truck driver running the Sewer Jet Vac truck. He taught himself to be a Heavy Equipment Operator and was promoted to Motor Equipment Operator II in January 2005. After mastering the equipment he was promoted in November 2010 to Motor Equipment Operator III. With Dennis Austin’s retirement, Aiken filled the Foreman II position. Having done an excellent job as foreman, he made changes to his crew’s work habits, which improved morale and productivity. With perfect attendance in 2013, Aiken held a Class B Wastewater Collection Certification and passed certification for Class A in February 2014.

Promoting Awareness through Public Meetings

It is the mission of the CW2020 Program to effectively communicate with the public while meeting internal and external stakeholder expectations. Public input, through neighborhood meetings, is a vital component to all sewer projects.

The Clean Water 2020 Program is well underway making improvements to portions of Columbia’s sanitary sewer system. Lake Katherine, along with the Saluda River and West Columbia Basin areas are currently investigating the needs for new construction/rehabilitation of existing aging sewer infrastructure. These improvements will help with increased sewer demands and reduce sanitary sewer overflows.

Residents in the Lake Katherine, Saluda River and West Columbia Basin areas who may be affected by these projects, have been invited to attend several different public meetings at which the City will have the opportunity to answer questions and help residents understand more about the improvements taking place in their neighborhoods and the impact on their properties.

With the pending Lake Katherine project coming to fruition, a public meeting was held for neighborhood residents on July 17, 2014, at the Quail Lane Swim and Racquet Club in Columbia. Attending residents were given the opportunity to better understand the scope of the CW2020 Program and ask questions about the impact of the upcoming construction on their property.

The Saluda River and West Columbia Basin areas held public meetings on Tuesday, September 9, 2014 at the South Carolina Baptist Convention in Columbia and at Union United Methodist Church Gymnasium in Irmo. These were informal drop-in meetings. Information concerning the CW2020 Program in conjunction with the construction within each basin was presented at each meeting.
From the Desk of the Wastewater Engineer

As we move beyond 2013 and step forward into 2014 with a fresh outlook, I would like pause for a moment to reflect on the great year we had in 2013 and thank all of you in our Wastewater Section for your dedication and hard work. Not only did you admirably fulfill your normal, day-to-day job requirements, but you showed exceptional dedication to the City of Columbia as we embarked on the Clean Water 2020 journey with the lodging of the Consent Decree.

Since the introduction of the Clean Water 2020 initiative, we have been on a fast track to managing, maintaining, and improving our wastewater system. Each of you has committed to following through with the improvements and upgrades needed in our wastewater system. You have also committed to personal advancement by taking the training to broaden your skills so that we can ensure our system will be managed and maintained properly for years to come.

Certification and training of our employees not only brings value to the City and our department as a whole, but to each employee individually. As we grow, you will see more training opportunities, our new apprenticeship programs will be launched, and we will provide incentives for you to help us ensure long term employment for Wastewater Section employees.

I am proud to showcase two of our devoted employees who have shown a long-term commitment to the City of Columbia and their jobs. Laxmi Nagaraj has been a major part of our Wastewater Section since 1982—more than 30 years. He is currently serving as Interim Superintendent of the Metro Wastewater Treatment Plant. Myrann Hampton is also a 30+ year employee and will finish her career with the City in January, 2014. Long-term employment of this magnitude is rare, so please join me in thanking them both for their dedication and service to the City!

Congratulations again for a very successful year. I can’t wait to begin our 2014 journey with all of you at my side!

Bill Davis, PE
Wastewater Engineer

Leaders Meet to Develop Goals for 2014/2015

The City’s Wastewater Section Division managers met on November 14, 2013 to discuss priority goals for fiscal year 2014/2015. The visions included in the session were Metro Operations, Metro Maintenance, Wastewater Maintenance (WWM), and Wastewater Compliance.

Several of the priority goals that were developed by each division included:

**Metro Maintenance**
- Improve work order handling
- Increase in-house maintenance for pumps and wet wells
- Complete compliance inspection at all lift stations
- Start implementation of new Comprehensive Maintenance Management System (CMMS) Program
- Develop full internal inspection of all RAS Pumps (T1 & T2)
- Start the Maintenance Apprenticeship Program
- Transition to Preventative Maintenance (PM) vs. Corrective Maintenance (CM)

**Metro Operations**
- Compliance with National Pollutant Discharge Elimination System (NPDES) will be maintained and tracked
- Supervisory Control and Data Acquisition (SCADA) system will be fully functional
Metro Operations (cont’d)
- Improvement of staff professionalism
- Improve communications between staff in operations and maintenance, and shift change

Metro Compliance
- Improve the Fats, Oils and Grease (FOG) program by increasing the number of traps inspected
- Improve Industrial Pretreatment Program
- Improve Customer Service and Response time
- Sanitary Sewer Overflow (SSO) reduction

WWM
- Comply with Consent Decree (CD) to Reduce SSOs
- Transition to Preventive Maintenance from Corrective Maintenance
- Improve Customer Service and Response
- Reduce Accidents and Liability Claims

After a thoughtful and thorough discussion, Key Performance Indicators (KPI) were developed for each goal. KPIs will be used to track and measure the progress and success of each goal on a quarterly basis.

Rapid Investigation and Priority Sequencing with Zoom Cameras

The assessment of sewer pipelines in order to determine existing damage in need of repair is mandatory when determining the priority of repairs and replacements, but reaching that conclusion can be a costly process. Currently, the City uses CCTV, which provides exceptional information and is PACP compliant; however, the expense and time it takes to utilize this method limits the amount of pipeline footage per year that can be budgeted.

Rapid Investigation and Priority Sequencing (RIPS) is a new assessment method that helps speed up the process while cutting costs. RIPS uses a pole-mounted video camera that can be easily maneuvered in the field without all of the complicated CCTV equipment. It allows the operator to remotely inspect a manhole and pipeline visually without entering the structure. This increases both the safety and speed at which inspections occur.

The pole camera has a function that allows the operator to zoom the lens while looking through the pipes upon entering or exiting the manhole(s).

This is a great tool that can reveal pipe blockages, roots, and other problems within the pipeline. These are the types of problems not normally seen by visual inspection of a manhole. If excessive or undetermined conditions appear, the CCTV method can be brought in to further assess the situation.

Expense and timing are priority determinants when preparing for pipeline inspections. Using both RIPS and CCTV methods allow for quicker turnaround and the ability to prioritize repairs while helping to better maintain annual inspection budgets.
Sanitary Sewer Overflow Statistics from July 1-December 31, 2013

Fiscal year 2014, extends from July 1, 2013 through June 30, 2014. The first half of the fiscal year ended with 67 SSOs. The Wastewater Collection and Transmission System experienced one additional SSO event between July 1 and December 31, 2013 as compared to the same time period in 2012. Due to extreme record breaking wet weather in July 2013, 48.5% of the total SSO volume spilled occurred in that month. As CW2020 efforts continue to grow, it is anticipated that SSO numbers will decrease substantially.

With increased construction during the summer, accidental breaks in gas lines typically increase. However, locating gas lines before digging and careful preplanning helped to keep the 2013 summer months accident free for the City of Columbia.

Training and Certifications Lead to Apprenticeship Program

The Wastewater Treatment Plant, Wastewater Maintenance, and Wastewater Compliance Divisions are all involved in an extensive Capital Improvement Program that is focused on rehabilitating and improving our collections system, pump stations, and treatment plant. In order to protect this investment, the Clean Water 2020 Program has made developing and implementing a comprehensive employee training program a priority. This training program will prepare current and new employees to effectively operate and maintain new and improved facilities.

Staff is trained to ensure the upkeep of equipment and to identify areas of potential improvement in personnel, tasks, equipment, and facilities associated with the operation and maintenance of the wastewater program.

The new Apprenticeship Program (AP) prepares employees for certification examination and improves their practical knowledge and skillsets. The program has received national certification from the U.S. Department of Labor.

Requirements for the AP include:
- Guidelines for completion
- Levels and timeframes for goals and objectives
- Requirements for Core competencies on how to:
  - Operate equipment
  - Evaluate and maintain equipment
  - Maintain and restore collection system
  - Monitor, evaluate and adjust collection system
  - Perform security, safety and administrative procedures

Apprentices receive work experience and job related education in all phases of their occupation. Employees will be required to rotate through the various work processes to ensure a well-rounded, high-performance, professional workforce that will be individually recognized by the Department of Labor.

City Receives Award for Most Improved in Safety

The Midlands Chapter of the Utilities Coordinating Committee (MUCC) presented the City of Columbia with the 2013 Damage Prevention and Safety Award at the SC811 Annual Contractor’s Seminar on November 13, 2013. This award is given for demonstrating the best improvement in a safety record during 2013.

The City credits this accomplishment to, among other efforts, a series of Damage Prevention and Safety workshops for contractors. These workshops covered precautions that need to be taken when digging where gas lines and other utilities may be located.
Laxmi Nagaraj Retires

After more than 30 years of service with the City of Columbia’s Wastewater Treatment Plant, Laxmi Nagaraj retired December 31, 2013 from his position as Interim Superintendent. It is Laxmi’s hope that the Plant will prove to be the best in the state, and eventually become the best in the Southeast.

Retirement will not slow Laxmi down; he plans to dedicate his newfound free time to family, travel, and volunteering at the Children’s Cancer Center in Atlanta, GA.

CW2020 Employee Christmas Parties
Consent Decree is Announced

During the August 13, 2013 City Council meeting, City Council considered an ordinance brought before them to authorize the execution of a proposed consent decree (CD) with the United States Environmental Protection Agency (EPA), the United States Department of Justice (DOJ), and the South Carolina Department of Health and Environmental Control (SCDHEC). An ordinance must be considered twice in order to be approved by City Council. The second reading of the ordinance was approved by Council on September 3, 2013. The proposed CD will resolve claims against the City for alleged violations of the federal Clean Water Act and the SC Pollution Control Act in connection with the City’s operation of its wastewater collection and treatment system. One of the primary issues raised in the CD was the occurrence of sanitary sewer overflows (SSOs) in the City’s wastewater collection system. Notwithstanding these allegations, the City has been proactive in the management of its wastewater collection and treatment system. One of the primary issues raised in the CD was the occurrence of sanitary sewer overflows (SSOs) in the City’s wastewater collection system. Notwithstanding these allegations, the City has been proactive in the management of its wastewater collection and treatment system.

The consent decree (CD) includes a civil penalty and requires the City to author the execution of a proposed consent decree (CD) with the United States Environmental Protection Agency (EPA), the United States Department of Justice (DOJ), and the South Carolina Department of Health and Environmental Control (SCDHEC). An ordinance must be considered twice in order to be approved by City Council. The second reading of the ordinance was approved by Council on September 3, 2013. The proposed CD will resolve claims against the City for alleged violations of the federal Clean Water Act and the SC Pollution Control Act in connection with the City’s operation of its wastewater collection and treatment system.

The wastewater system improvements identified in the CD are integral to the City’s Clean Water 2020 (CW2020) Program. CW2020 incorporates a comprehensive approach to infrastructure and business process improvements to the City’s wastewater treatment and collection system. The ultimate goal is to reduce SSOs from the City’s wastewater system. Significant investments have already been made to meet this goal including:

- Investing $40 Million in the Metro Wastewater Treatment Plant (WWTP) designed to increase system capacity and allow the plant to better manage the inflow of wastewater following heavy rains;
- Initiating the development of a state-of-the-art hydraulic modeling program to allow the City to determine where the system will need to grow to meet long-term customer needs; and
- Implementing a Fats, Oils, and Grease (FOG) inspection program which led to a 68% reduction in grease-related SSOs between fiscal years 2008 and 2013.

Additionally, the City has established a public outreach program to increase awareness of the need to reduce the release of FOG from residences into the City’s sewer system.

From the Desk of the Wastewater Engineer

During recent years, we have been making tremendous progress with the upkeep of our aging wastewater collection and treatment system while adding new lines to support growth in our service area. We have also been diligent in renovating our larger wastewater pump stations and upgrading the Metro WWTP. With current and future goals in motion to help us manage, maintain, and improve our existing wastewater system, the CW2020 Program was initiated as a way to engage our employees and share these goals with the community. The City is committed to positive change which ensures that Columbia will have the best wastewater collection and treatment system in the state, if not the entire southeast.

We all know that our wastewater system is getting older and in need of major renovation. This knowledge has given us renewed motivation to help us develop standard operating procedures and programs to prioritize this effort. The initial step in this process started back in 2009 with our staff asking for help from our customers to “Trash the Grease.” The FOG program has proven to be bigger than we thought as SSOs have been reduced by 68% since we started inspecting commercial grease traps and interceptors. In fact, we even won a WEASC Capital District award for our efforts! We are now looked at as leaders in this area by many of our neighboring municipalities and sewer systems across the state.

The 2013/2014 fiscal year marks the City’s official signing of a CD which the City of Columbia, in discussion with the EPA, the DOJ, and the SCDHEC agreed to embark upon. The complaints issued in this CD are of no surprise to the City as we have been keeping the EPA, DOJ and SCDHEC well informed of efforts we have already been making to improve our system.

As we begin this path to excellence, the CW2020 Program will be our answer to implementing the requirements of the CD over the next seven to 10 years. Our City Staff and the CW2020 team are equipped to ensure success. I want to thank you all for your dedication to the City of Columbia and our environment and for your work ethic and heartfelt commitment to our customers.

Bill Davis, PE
Wastewater Engineer
CW2020 Program and the Consent Decree: Public Information

The City of Columbia has been in negotiations with the DOJ, the EPA and the SCDHEC on a settlement for an enforcement action against the City’s wastewater system and plant.

A proposed CD outlining the settlement is available for public comment. The City anticipates that this proposed CD will be accepted and become final within the next few weeks.

Chances are, as a City employee, you will be asked about the CW2020 Program and CD, the process, or the City’s wastewater system. Only answer questions which you have complete knowledge about, for example, a project you are working on yourself.

When responding to questions, take the opportunity to emphasize the fact that the City is working on long-term improvements and upgrades to the Metro WWTP and our wastewater collection system.

Direct those with further questions to:
Website: www.CleanWater2020.com
E-mail: info@CleanWater2020.com

Media and Public Information contact:
Victoria Kramer, Public Awareness Coordinator
Phone: (803) 240-9207

Current Upgrades Underway

The City is ensuring more effective and efficient operations by demonstrating a commitment to continue improvements to the wastewater system’s physical infrastructure and upgrade management systems. Projects which have been started, are currently under way, or were previously completed prior to being mentioned in the CD include:

- **Rehabilitation and capacity enhancements to the City’s five major pump stations:**
  - Saluda River Pump Station and storage facility
  - West Columbia Pump Station
  - Broad River Pump Station
  - Mill Creek Pump Station
  - North Columbia Pump Station

- **Sewer line infrastructure projects:**
  - Crane Creek Phase II improvements and 48-inch gravity sewer
  - New 30-inch gravity sewer from the Burnside Pump Station to the Gills Creek Outfall
  - 42-inch force main from the West Columbia Pump Station to the Metro WWTP
  - Rehabilitation of 48, 54, and 60-inch sanitary sewer mains including the downtown portion of the major interceptor to the Metro WWTP

- **Metro WWTP Improvement projects:**
  - New Headworks facility
  - Clarifier improvements
  - Alternative disinfection project to eliminate liquid chlorine

- **System-wide sewer improvements:**
  - Sanitary sewer evaluation studies
  - Initiation of a hydraulic model and capacity allocation program for the collection system
  - System Assessment and Mapping, including major manhole inventory, survey, and field assessments
  - New Customer Care Center that combines customer service and emergency calls to a single 24/7/365 operation

Investing in Our Employees with Training

The City’s Department of Utilities and Engineering, Wastewater Section is implementing comprehensive Operations & Maintenance (O&M) Training Programs for both of the wastewater divisions. This program is built around assessing division staffed positions, which call for the establishment of core competencies and certification requirements, and development and implementation of training programs that address the competency and certification needs of the staff.

At the Metro WWTP Division, the Operator Training Program consists of a comprehensive set of modular courses. The courses will reinforce fundamental treatment concepts and theories, use Metro WWTP data and facilities, and include...
supervised practical application of the theories and concepts covered by Metro WWTP operations in the classroom and field.

At the WMD, the efficient operation and management of the City’s wastewater collection system assets is critical to minimizing performance failures and potential adverse effects. The courses at the WMD will also emphasize fundamental collection system operations and maintenance practices, and include a comprehensive certification program.

Under the CW2020 Program, and as part of the CD, the Department of Utilities and Engineering, WMD will complete a full assessment of the current operation and maintenance program, and from this assessment, the Division will address the following areas:

- **Wastewater Maintenance Division (WMD):** The City will adopt and implement a comprehensive training program that will focus on skill-based training to ensure the proper operation and maintenance of the City’s wastewater collection system. The training will emphasize the need for employees to stay informed about new operational standards, professional development, and technological advances.

- **Information Management Systems (IMS) to Track our Performance:** Under the CW2020 Program, an IMS will be developed and maintained on the current system to provide reliable and accurate information for wastewater collection system personnel. Keeping records of maintenance activities is essential to track performance, optimize maintenance and identify areas requiring frequent attention.

- **Sewer Overflow Response Plan (SORP):** As part of the CW2020 Program, a SORP, will be in place, and staff will receive annual training on the implementation of the SORP. The SORP will provide the necessary resources to effectively respond, control, report, and mitigate an event.

- **WWTP Operations and Maintenance Training Program:** The City’s Metro WWTP is implementing comprehensive Operations and Maintenance Training Programs for each of the operations and maintenance departments. The two programs, the Operator Training Program and the Plant Maintenance Technologist Training Program, are built around organizational position assessments for each department’s staffed position, establishment of core competencies and certification requirements, and development and implementation of training programs that addresses the competency and certification needs of the staff. The Program will create a pathway for existing operations and maintenance staff to understand plant operations, excel and reach a higher level of understanding of equipment maintenance and thereby achieve higher certification and growth; but it also provides a method to help prepare newly hired operators and maintenance technicians for certification examinations and to increase practical knowledge and skill sets. The program provides a path for advancement to all operators and maintenance staff, as well as, solidifying the knowledge and skills necessary to be considered subject matter experts. The program also provides guidelines for placement of retained associates into the Plant Maintenance Technologist Training Program.

  - **The Operator Training Program** is structured to reinforce fundamental treatment concepts and theories, utilize Metro WWTP data and facilities, include supervised practical application of learned theories and concepts to Metro operations both in the classroom and field, and include instructional material on wastewater treatment technologies to better build the attendees understanding of all facets
of wastewater treatment operations and thereby prepare them for certification examination.

- **The Plant Maintenance Technologist Training Program** will consist of a combination of structured Maintenance Technologist training courses, equipment manufacturer training and off-site training opportunities. Each grade level and perquisite training is structured to reinforce fundamental maintenance concepts and theories. Training will include basic Metro WWTP operations concepts, utilize Metro WWTP equipment and facilities, include supervised practical application of learned maintenance concepts, workbench demonstrations and assessments, and certification examination.

**SSO Reductions to Date**

The City’s wastewater divisions have been working to reduce the occurrences of SSOs from an infrastructure and operational approach. Through this dedication of City Staff, SSOs have been greatly reduced since 2008.

[Graph: Total Number of Sanitary Sewer Overflows by Fiscal Year]

In 2008, the City began recording detailed information about all SSOs and determined grease and/or roots clogging pipelines were a significant contributor to this problem. For example, in 2010, an estimated 61% of SSOs were caused by grease and/or roots. Recognizing the need to reduce grease-related SSOs, the City launched its FOG program in 2009. A “Trash the Grease” educational campaign was developed, and since its inception, the FOG staff has performed over 5,500 inspections. This program, along with capital improvements to the wastewater collection system, has resulted in significant reductions in grease-related SSOs.

The total number of SSOs during the 2008/2009 FY was 455; during the 2012/2013 FY, this number dropped to 131, a 71% reduction in the total number of SSOs in four years. In FY 2008/2009, 188 were grease-related overflows, and during the 2012/2013 FY that number was reduced to 60 grease-related overflows, a 68% reduction.

The City is committed to making the necessary improvements to the wastewater system’s physical infrastructure and to upgrading the City’s management systems required to effectively and efficiently operate the system.

**Local Business Opportunities**

In anticipation of the major workload for upgrading the sewer system, City Manager, Teresa Wilson, spoke with business owners at an August 13 press conference about the growing need for local, minority-owned, women-owned and other small or growing businesses to take part in the revitalization efforts in the coming years. Subcontracting work locally is a priority for the City, with the initiative resulting in opportunities for creating jobs and growing local businesses.

Introducing CleanWater2020.com

On May 7, 2013, the Clean Water 2020 (CW2020) Program website was officially launched. The site, www.cleanwater2020.com, is the central location for all public program-related communications. It was developed with various stakeholder groups in mind and covers basic CW2020 Program information.

Exploring the site is easy using either the top bar menu or the home page navigation sections. Use the Learn tab to find out more about CW2020 and Program Staff and to see a map of the Wastewater System. Under the Community tab, users can click Get Involved to sign up for alerts and announcements using the Nixle sign up form or view current announcements live from the Alerts and Announcements page. Measuring Progress includes more detailed information about CW2020, including facts and initiatives under the Program Highlights page. Looking for the latest news? Check out the News and Events tab which features the ability to view recent news articles and employee newsletters.

In addition, users can link directly to the City’s Engineering Bids page, read Contract FAQs under the Contract Opportunities tab, or find contact information quickly under the Contact Us tab.

The current CW2020 site is in the first phase of a multiphase launch that will showcase new and informative content and features. In the next few months, we will add more capabilities, including a sortable project list that provides summary information about on-going and upcoming projects, interactive maps of CW2020 projects and related information, program FAQs, and a program schedule. As the CW2020 Program matures, so too will the website. Come back often to see exciting new content as it is revealed!

From the Desk of the Wastewater Engineer

As April showers continued into May, we have definitely had our fair share of rain. Our rivers took on even more with the upstate runoff flowing to the Columbia area. It was when we got more than our fair share of rain that problems arose. A few weeks ago heavy rains led to a rapidly rising river and threatened to inundate the ongoing construction project that is underway at the West Columbia Pump Station.

This emergency situation was a prime example of our team of Wastewater Section employees collaborating with our engineers, contractors, and local authorities to ensure that we are protecting our rivers, environment, and public. Our team certainly proved their capabilities and dedication during this event.

While the citizens of the Columbia area may never truly understand the level of commitment it takes to deal with this type of emergency and the countless other situations you face each and every day, you as City of Columbia Wastewater Section employees can be assured your City management understands and appreciates your work ethic.

Our Assistant City Manager, Missy Gentry, recently said “Thank you all for being so committed to the City and the mission of operating and maintaining our utility system as effectively as possible. It is noticed, and I say without hesitation, that the City has never had more capable and dedicated staff willing to stay at the job as long as necessary to accomplish tasks at hand. Where there is a will, there is a way.”

Keep up the good work everyone, and as always, it’s an honor to serve with you.

Bill Davis, PE
Wastewater Engineer
Introducing WWM Superintendent

Robert L. Judy recently joined the Metro Wastewater Maintenance (WWM) Division serving as Superintendent under Bill Davis. Mr. Judy previously worked as System Maintenance Superintendent for the North Charleston Sewer District where he was responsible for collection systems operations and maintenance from 1995-2013. During this time, he was responsible for reducing customer service calls by 35%; rehabilitating 80% of gravity mains; reducing Sanitary Sewer Overflows (SSOs) to less than three per year that averaged an excess of 5,000 gallons; and preparing and managing a $20 million Capital Improvement and Operation and Maintenance (O&M) Budget annually.

Mr. Judy also held positions as North Charleston Sewer District Regulations Coordinator (1993-1995) and Plant Superintendent (1987-1993). In this period, he served as Water/Wastewater Superintendent for both Dorchester County Water and Sewer and the Town of St. George Water Department.

Robert L. Judy is an active member of the WEASC and WEF since 1983. He has served and chaired several WEASC committees including: Safety, Publications, PWO and Audit.

“I am committed to utilizing my vast experience and education in the maintenance field to preserve vital assets and maximize efficiency by reducing expenditures for the City of Columbia,” said Mr. Judy. He looks forward to working with all of the Metro WWM employees.

Pump Station Upgrades Continue

Over the past five years, the City of Columbia has been upgrading its North Columbia and Saluda River pump stations in an effort to improve the efficiency and reliability of its sanitary sewer collection system. These pump stations form the backbone of Columbia’s sanitary sewer system and their importance cannot be overstated. A properly functioning wastewater collection system is vital to the local community. The City’s improvements to the North Columbia and Saluda River pump stations will ensure dependable service.

North Columbia Pump Station

The North Columbia pump station has undergone two rounds of rehabilitation in the past five years. Upgrades to the pump station began in 2007, as existing hydraulic, electric and equipment deficiencies were addressed. Existing piping, valves and major equipment were all renovated as part of this project. Additionally, the capacity of the pump station was increased from 21 million gallons per day (mgd) to 27 mgd. Bypass pumping was also installed so the City’s largest pump station could remain in operation throughout the entire rehabilitation process.

The second round of upgrades began in 2011 when channel grinders were added to protect the pumps from large damage-causing debris. Variable frequency drives, a bridge crane system and a gas detection system were installed as well. The upgrades to the North Columbia pump station were completed in December 2012.

Saluda River Pump Station

The Saluda River pump station upgrades include the installation of two reinforced concrete basins adding approximately 10 million gallons of storage capacity to the sanitary sewer collection system. Because wastewater will be stored in these basins during periods of high demand, they will allow the City to accept larger amounts of wastewater without causing overflows in the collection system. When demand decreases, the basins will release stored wastewater into the collection system, and the operation process will return to normal. The new basins will also help reduce SSOs associated with large rain events. Upon completion, in the fall of 2015, this project will be the first of its kind in the State of South Carolina.
Employee Training Oversight and Process Control Committees

Over the next ten years, the Metro Wastewater Treatment Plant Division and the Wastewater Maintenance Division will be part of a major Capital Improvement Program (CIP) that will focus on rehabilitating and improving the City’s collections system, pump stations and treatment plant. This CIP, which will include significant changes to existing facilities, also requires development and implementation of a comprehensive employee training program that will prepare employees to effectively operate and maintain the new and improved facilities. Some changes have already taken place, and staff will continue to see significant changes in operations and maintenance over the next several years, including:

- Full implementation of Cityworks as a Comprehensive Maintenance Management System.
- Replacement of the old headworks with a much larger and more efficient headworks facility.
- Rehabilitation of secondary clarifiers.
- New pump station upgrades on the five major stations and many other smaller stations.
- Major rehabilitation and mapping of our collection system.

In order to provide direction and leadership in identifying and meeting the training needs required to fulfill these upgrades the Employee Oversight Committee (EOC), Process Control Committee (PCC), and Employee Training Oversight Committee (ETOC) have been charged with seeing that staff get training and other resources necessary to make the transition to these new systems.

Employee Oversight Committee

The EOC reports directly to Bill Davis and includes Gene House, David Wiman and Robert Judy. The committee also includes Fred Yandle who will be the facilitator and secretary of the committee. The committee will draw technical advice from the entire organization and from Mark Wessel, William Adams, and others from the CW2020 Program Management Team as needed. The committee will address a number of emerging issues, including the following items:

- Development of and recommendations for a comprehensive training program that meets internal needs, industry standards and is compliant with the Environmental Protection Agency (EPA) and SC Department of Health and Environmental Control (SCDHEC) requirements.
- Finalization and implementation of the Apprenticeship program for the Metro WWTP operators.
- Development of an Apprenticeship style program for the Metro WWTP and Lift Station maintenance staff.
- Development of standardized procedures and specifications for directing outside consultants and contractors on how to provide training to staff, while providing oversight and ongoing recommendations on the effectiveness of the training program and supporting systems.
- Creation and distribution of a periodic newsletter for our employees, updating everyone on the progress of the training program.

Process Control Committee

The PCC is comprised of Tommy Faulk, Laxmi Nagaraj, David Wiman, Madeline Zimmerman and Jake Little. The Committee has already achieved many milestones core to its mission. Milestones achieved to date are noted below.

- The first of its kind comprehensive plant Operations Manual has been developed.
- A complete internal plant process sampling and analysis matrix was assessed and compiled.
- All process operations Key Performance Indicators (KPI) and target values were indexed.
- An inventory was created and assessed of monitoring and control instrumentation state, service and reliability.
- The Operations Data Management System (ODMS) was secured, developed and rolled-out.

The Operations Manual, process sampling and analysis matrix, KPI indexes and instrumentation assessment were critical in developing the ODMS. As part of the larger ODMS software suite, the City has chosen Hach as the vendor to provide its WIMS™ (Water Information Management System) software component for the wastewater treatment plant which is also in use at the water treatment plant. The Hach WIMS™ software allows operators, laboratory staff and management to:

- Input operations and laboratory data.
- See real-time process operations data.
- Complete data queries and generate what-if scenarios, which can be used to create easily customized data trends and graphs.
- Generate many customizable reports.
- Provide a dashboard for quick insight into plant operations.

The Hach WIMS™ program, in combination with the Operations Manual, will advance the Operator Training Program and result in proactive informed decision making by the PCC and plant staff.

Employee Training Oversight Committee

The ETOC, with Gene House, David Wiman, Prentiss Brooks, Madeline Zimmerman, David Mackey and Robert Judy, has developed Operations and Maintenance Training Programs for each department. The two programs are built around
organizational position assessments for each division’s staffed positions, the establishment of core competencies and certification requirements, and the development and implementation of training programs that addresses the competency and certification needs of the staff.

**Operations Training Program**

The Operations Training Program will create a pathway for existing operations staff to gain a deeper understanding of plant operations and a means to earn higher certifications. It also provides a method to prepare newly hired operators for Metro WWTP operations and certification examinations, as required by the SCDHEC and the City of Columbia. The program applies to all of the Wastewater Plant Operator and Lead Operator positions at the City of Columbia Metro WWTP facility and aligns with the position descriptions and required core competencies. The program also provides guidelines for placing licensed associates into the Operations Training Program.

The Operations Training Program course consists of a comprehensive 10 module training program. The training course is structured to:

- Reinforce fundamental treatment concepts and theories.
- Use Metro WWTP data and facilities.
- Include supervised practical application of the learned theories and concepts to Metro operations both in the classroom and in the field.
- Include instructional material on wastewater treatment technologies to better build the attendees’ understanding of all facets of wastewater treatment operations and thereby prepare them for certification examination.

**Plant Maintenance Technologist Training Program**

The Plant Maintenance Technologist Training Program consists of a four-tiered grade level training and certification program made of structured classroom training, workbench sessions and guided assessments for each of the four grade levels. Maintenance Technologists will be certified using the Association of Boards of Certification (ABC) Maintenance Technologist certification levels I, II, and III. The IV grade level is structured as an achievement-based demonstrative and quantitative type compliance testing. Training will consist of a combination of structured Maintenance Technologist training courses, equipment manufacturer training and off-site training opportunities. Each grade level and prerequisite training is structured to reinforce fundamental maintenance concepts and theories. Each level will include:

- Basic Metro WWTP operations concepts.
- Use of Metro WWTP equipment and facilities.
- Supervised practical application of learned maintenance concepts.
- Workbench demonstrations, assessments, and certification examination.

Like the Operations Training Program, this program will allow existing maintenance staff to improve their understanding of equipment maintenance and help them qualify for higher certification. It will also give newly hired maintenance technicians the means to become certified and increase their practical knowledge and skill sets. The program applies to all Wastewater Maintenance Technologist positions, including Trainees and Specialists, assigned to the City’s Metro WWTP facility. The program also provides guidelines for placing associates into the Plant Maintenance Technologist Training Program.

**Award Winning Personnel**

The Water Environment Association of South Carolina (WEASC) recently honored the City for staff who have gone above and beyond to build a professional wastewater program. Two of the City’s Wastewater Maintenance managers won the WEASC Golden Manhole Award. WEASC gives this award to up to four wastewater management staff each year, and Columbia took home two of them! Congratulations to:

- **Jody Harley**, Assistant Superintendent for Wastewater Maintenance, was recognized for his years of work in establishing and developing a program to reduce inflow and infiltration, a problem where ground water, rain or other sources of water seep into a wastewater system and put extra strain on the wastewater system. Harley is also responsible for helping the City build a state of the art maintenance program for its wastewater vehicle fleet.

- **David Mackey**, District II Supervisor for Wastewater Maintenance, was recognized for his work in training City wastewater staff. Mackey was instrumental in implementing the Wastewater Maintenance Division’s Safety Program. He continues to mentor and teach the next generation of collection system workers for the City of Columbia.
Developing a Hydraulic Model of the City’s Wastewater Collection System

Everyone knows that wastewater flows downhill, but how does it flow through more than 1,200 miles of piping within the City’s wastewater collection system to the Metro WWTP? The City has recently begun a project under the Clean Water 2020 program to construct a computer simulation tool of the City’s wastewater collection system.

Known as a hydraulic model, this simulation tool will help the City better understand the existing system and plan for infrastructure and operational improvements to ensure sufficient long-term collection system capacity. It is one more component in the Clean Water 2020 program to improve and enhance the operation and function of the City’s wastewater collection system. The City has engaged Hazen and Sawyer to develop the hydraulic model and to use the model to evaluate the collection system.

Hydraulic models solve complex mathematical equations to determine flow rates and pressure conditions within piping systems and, thus, allow examination of everything from the capacity of a certain pipe, to where manhole overflows may occur, to how the system will respond after an intense rain storm. As such, the computer-based hydraulic model will allow the City to test different flow conditions and potential changes within the system without having to conduct expensive, on-going testing in the field. Understanding how the system will perform under various flow conditions and how much capacity is in the existing system will better allow the City to optimize operations and plan for infrastructure upgrades to improve the system limitations.

From the Desk of the Wastewater Engineer

Welcome! In this month’s newsletter, I want to talk about the work we do to make Columbia a magical place. As City of Columbia Wastewater Treatment Plant and Wastewater Maintenance Division employees, we perform magic every day as we protect our neighbors and our rivers by making sure our collection, transmission and treatment systems are running efficiently and effectively. Several of you were recently recognized by the Water Environment Association of SC for your excellent performance.

The City was also recently recognized by the American Council of Engineering Companies for the innovative rehabilitation of one of our major outfall lines. You can read about this project in this issue. The outfall serves about one third of our customers and included three miles of by-pass pipe that had to be routed through, among other places, the historic and environmentally sensitive Columbia Canal, one of the primary sources of the City’s drinking water.

We are also proud of the recent upgrades to our Broad River and Mill Creek pump stations, two of our largest pump stations. These renovations, which have been six years in the making, have added capacity, backup redundancy, reliability and sustainability that will help extend the useful lives of these stations for many years!

However, the most important magic comes from our people. We each represent the “face of Columbia” and are a vital part of the Clean Water 2020 Program. As we go about our day, we should remember that we aren’t just punching a time clock, we’re also serving and protecting the health our customers and the environment we live in. You may be the only contact our customers have with the City, therefore it’s up to you to make each contact a “magical” and positive experience.

I am truly honored to serve with you,
Bill Davis, PE
Wastewater Engineer
A lot of information is needed to build a sewer hydraulic model. This information includes pipe locations, pipe diameters, pump station information, pipe elevations, system flow data and historical rainfall intensity. Brown and Caldwell is leading a team of engineers and consultants to gather physical system information and flow data for the City’s sewer system. This information is critical to developing the model.

After the data is collected, the next step is to build a representation of the physical sewer system within the hydraulic modeling software. The City’s hydraulic model will include all gravity lines, force mains or other pipes 15-inches in diameter and larger. The model will also include pump stations that receive flow from these gravity lines or discharge to these force mains.

The model will use population projections, customer billing data, and industrial/commercial wastewater discharge data to assign wastewater flows to specific areas (and specific manholes or pump stations) within the collection system. In addition, the City has been collecting flow data using over 60 flow meters strategically located throughout the system for about four months.

By using the model to consider both current flows and projected future flow increases, the City will be able to determine required capacity improvements, to develop a sewer system capital improvement plan and to manage future system capacity well into the future. As part of this same project, a Capacity Assurance Program (CAP) will define the process the City will use to manage available system capacity in the future.

Hydraulic model construction, system evaluation and capacity assurance process development will be completed over the next three years with multiple reports and status updates delivered throughout. This project represents a major investment by the City, and the results will help the City to:

- Develop a comprehensive knowledge-base of the current system capacity.
- Develop a sewer system hydraulic model that can be used now and in the future to make system improvement decisions.
- Minimize capacity-related Sanitary Sewer Overflows (SSOs).
- Develop a strategic plan for bolstering system capacity and performance.
- Define and develop a process to review and approve future system flow requests.

All of the members of the Clean Water 2020 program are looking forward to the results of this model and are proud to be helping the City ensure long-term capacity and cost-effective planning for the wastewater collection and treatment system.

**Pump Station Upgrades Nearing Completion**

The City of Columbia is currently completing major upgrades to the five largest sanitary sewer pump stations. These stations, along with major sewer trunk lines, form the backbone of our sanitary sewer system, and their importance to the efficient collection and transmission of wastewater cannot be overstated. The initiative to rehabilitate and upgrade these major pump stations began in 2007 with the Mill Creek pump station, followed by the Broad River pump station in 2009. Prior to the recent upgrades, these stations were characterized by unreliable service and high maintenance costs. However, the future looks bright for both the Broad River and Mill Creek pump stations as the upgrades will improve reliability, increase capacity and decrease SSOs.

**Mill Creek Pump Station:**

The Mill Creek pump station upgrades consist of a complete renovation of all major equipment, piping and valves. Four 125 horsepower variable speed sewage pumps were installed to efficiently handle the flow of wastewater throughout the day. To protect the new pumps from large solids, like rags and other large debris flowing in the sewage system, a channel grinder was added to shred solids prior to entering the wet well. Finally, the capacity was increased from four million gallons per day (MGD) to 13 MGD, which is an increase of approximately 13.5 Olympic-size swimming pools!
Broad River Pump Station:
An evaluation of the Broad River pump station’s existing conditions prior to its improvements revealed hydraulic, electric, structural and HVAC deficiencies. These issues were the focus of the pump station’s rehabilitation, as the design called for a total renovation of all major equipment, piping and valves. Variable speed pumps, a channel grinder, a 600 kW generator and a new pump station control system were installed to improve the station’s reliability. The Broad River pump station’s capacity was also affected by this project, as the capacity increased from 5 MGD to 9 MGD. Additionally, a gas detection system was installed to monitor toxic and explosives gases that are often associated with wastewater, giving operators more tools to manage any gas build-ups.

Ashley Dove, Wastewater Lift Station Supervisor for the City of Columbia, described the upgrades by saying, “The upgrades to the Broad River and Mill Creek pump stations will help us to better maintain our sanitary sewer collection and transmission system. The new technologies, combined with preventative maintenance, will improve the reliability of our pump stations and help to decrease the risk of sanitary sewer overflows.” According to Dove, by preventing sanitary sewer overflows, these upgrades will help to protect our beautiful rivers.

Making Wastewater Customer Service Disney Magical: It Starts With You!
Disney World, Disney Land; it’s magical and heartwarming. It’s a go-to place no matter what your age. People favor the rides, food, games, fun, family and the cast members. Cast members? Yes, every Disney staff person is called a cast member, and it’s the “cast” that makes the customer’s trip memorable. Whether its Disney staff dressing as the character Mickey Mouse, Pluto or Snow White or a staff person greeting you at the ticket office, checking you in at the hotel, serving your dinner or providing electrical maintenance for rides—they are considered part of the cast. It is the responsibility of the cast, regardless of their position, to provide the customer with exemplary service.

This kind of customer service is the “magic” that Walt Disney expects and provides for all customers, young and old. It’s not just Disney “magic,” it is an example that can spread a positive image on any business. Lee Cockrell, Vice-President of Disney Operations, says this unique culture is a simple formula: “Committed, responsible, inspiring leaders create a culture of care, which leads to measurable business results and a strong competitive advantage.” This formula can be applied to any business.

With every interaction with the public, Columbia’s wastewater employees have the opportunity to offer a positive experience that builds overall customer satisfaction. When you meet a member of the public, remember that you are the face of our organization and that you represent the entire Department and the City. It is everyone’s responsibility within the WWTP and WWM Divisions to develop and maintain a customer focused culture that we all can be proud of. By recognizing the success of Disney and utilizing the following strategies, our reputation can soar to high levels. As Columbia Business Monthly columnists Mike DuBose and Blake DuBose recommend in their recent column “Making Your Business Magical,” organizations can apply the following initiatives to capture some of that Disney “magic:”

• Share respect – Treat every employee as you want to be treated.
• Develop clear guidelines – It’s important that organizations have clear structures so prompt, good decision-making can occur and employees clearly know approval processes. Review all guidelines annually to ensure they help the organization to be efficient and effective.
• Hire the people who fit best – Employees are “the face of the company.” Surround yourself with talented, smart, self-motivated employees to energize the organization.
• Teach and train – Leaders should act as positive mentors, coaches, and teachers.
• Identify and confront problems early – It’s easier to be proactive than having to be reactive after the problem blows up. Admit mistakes, learn from them and avoid repeating them.
• Give pats on the back – Demonstrate that you care about and are grateful for employees’ contributions. Look for things that employees do well and let them know.
• Seek constant improvement – Great leaders never become complacent, and they keep the flexibility to change course if needed. Encourage employees to be innovative and “think outside the box” when problem-solving and planning for the future.

As the Clean Water 2020 program moves forward, you will notice the City advancing on many of these initiatives.
According to Mike and Blake, the bottom line is this: “Develop an exciting culture where everyone looks forward to coming to work most days. In order to succeed, everyone must work together as one in the same, agreed-upon direction.”

This story is drafted from “Making Your Business Magical” written by Blake DuBose and Mike DuBose. Mike and Blake DuBose own four companies, two of which are Columbia Conference Center and DuBose Web Group. All of the profits from these two companies go to charity.

Award Recognition for Rehabilitated Sewer Lines

The City of Columbia was recognized by the American Council of Engineering Companies for its recently completed project to repair a significant portion of one of its major sewer outfall lines. The project, which rehabilitated major sewer lines that ranged from 48” to 60” in diameter, earned a National Recognition Award. This annual award is given by the ACEC to projects that “demonstrate exceptional achievement in engineering.” To become eligible, this project was first selected as a National Finalist by the South Carolina Chapter of the ACEC at its annual award banquet on February 5, 2013.

This project, which involved restoring over 2.5 miles of large diameter sewer line, was complex both from an engineering design perspective and a constructability perspective. Prior investigations of these lines revealed an urgent need to rehabilitate and replace a critical piece of infrastructure that traversed a congested and environmentally sensitive area. It also proved challenging for operation and maintenance staff during the construction phase. URS Corporation provided the engineering design and supported the construction phase of the project.

One of the more challenging aspects of replacing and rehabilitating such a sizeable section of a major sewer outfall was that it serves one third of the City’s sewer customers and carries a large volume of flow. Because of the volume of wastewater collected by these lines, wastewater had to be rerouted through two 24” bypass lines. It was no small task to find a route suitable for them. This project was more difficult than typical sewer construction challenges of going through multiple blocks of busy city streets due to the limited area suitable for construction. The City also faced the daunting task of routing these lines along the historic Columbia Canal from the famous Elmwood Cemetery through Riverfront Park, across multiple railroad crossings, over ravines, under I-126, and eventually along the banks of the Congaree River.

Jody Harley, the City of Columbia’s Wastewater Maintenance Assistant Superintendent, pointed out the complexities of the work and initially proposed routing these large bypass lines along the Canal. After reviewing all viable routes for the bypass, the engineer chose Harley’s idea which ultimately proved to be the most practical and cost effective option for the City. To do this, the contractor had to set up a 30 million gallon per day bypass pumping system with approximately three miles of redundant, parallel, high-density polyethylene piping that ran along the Columbia Canal.

This high-tech bypass system had to safely and efficiently re-route wastewater to a discharge point near the USC Baseball Field. In order to ensure system integrity and to protect public health, the by-pass pumps were monitored in real-time by a specialized computer system that could instantly detect and alert staff of any pressure anomalies. This allowed water plant operators to constantly monitor and respond if needed. In addition, the by-pass pumps were manned 24 hours a day, and the entire length of by-pass line was inspected every four hours.

Both the installation of the permanent pipe and the temporary system that allowed crews to install this pipe were significant engineering accomplishments. “We are very pleased with the completed product,” says Bill Davis, City of Columbia’s Wastewater Engineer. “It was a difficult project, but with proper planning, the right team, an elaborate monitoring and notification system, and a well thought out emergency plan, we were able to repair this vital part of the City’s Wastewater system and protect public health and the environment.”

Visitors at the 2nd Annual Summer Celebration of Water in 2011 paddle and tube the Columbia Canal. In the background, the two 24” bypass lines run along the Columbia Canal’s waste weir.
Over the last month, the City of Columbia’s Department of Utilities and Engineering has begun to roll out a new program that will result in the rebuilding and modernization of the entire Wastewater Collection and treatment system. As many have heard across the country, the nation’s infrastructure is getting old and crumbling and is in need of major upgrades. The City of Columbia’s infrastructure is aging as well. Some of our wastewater collection and treatment systems have served us for well over 100 years in many areas of the city, and they now need to be substantially upgraded to meet the growing needs of our community and our citizens. In addition, the time has come to upgrade the overall management, maintenance and operational systems that we use to manage our infrastructure; in essence the City will be deploying new state of the art management practices that will ensure that the City’s investments are maximized and protected for the next hundred years.

Columbia’s infrastructure, including our sewers, is a lifeline for the City and the foundation of our economy which needs to be protected. The sewer system is important to the City, preventing untreated sewage and stormwater from contaminating our neighborhoods, surrounding water and green spaces. Failing and clogged pipes can shut down the flow of sewers and cause backups and overflows that can seep into our homes, neighborhoods and rivers, causing potential health hazards to our environment and our personal surroundings. Our quality of life in Columbia is dependent on a sound and efficiently operating system.

“Clean Water 2020” is a program with a vision and will be implemented over the next seven to 10 years. Additionally, The Clean Water Act and regulatory requirements enforced by the South Carolina Department of Health and Environmental Control (SCDHEC) and the United States Environmental Protection Agency (USEPA) have all been contributing factors to Columbia recognizing and understanding the need to adhere to a plan for our future. “Clean Water 2020” is a program with a vision and will be implemented over the next seven to 10 years.
The Clean Water 2020 (CW2020) Program was introduced to Wastewater and Engineering staff in December of 2012. The CW2020 mission is to “provide the City and its customers with a sustainable, well-maintained, and reliable wastewater system that fully complies with regulatory requirements. The Program implementation will be efficient, well-documented, and effectively communicated to meet internal and external stakeholder expectations.”

While this program now has an official name, CW2020 initiatives have actually been in progress for several years. Sewer overflows and backups peaked back in 2008, and since then City staff have taken seriously the task at hand of reducing sanitary sewer overflow (SSOs). These improvements and reductions are the result of a combination of things and include educating the public about their responsibilities. We have also initiated regulatory requirements for restaurants’ and industries’ fats, oils and grease reductions, implemented a more proactive inspection and cleaning program, and standardized the overall maintenance program.

As SSOs are continually being reduced, Columbia City Council has recently contracted with CDM Smith to serve as the Program Manager for CW2020. CDM Smith will be working with the City to develop updated management, operations, and maintenance procedures, reflecting industry best practices. CDM Smith will be serving as an extension to City staff, supplementing internal capacity and will be responsible for assisting the City in the implementation of CW2020. Their role will include tracking schedules and budgets related to CW2020, providing technical support and capacity, providing additional staff to help manage the temporary increase in workload, developing design and construction standards, defining work processes, recommending improvements, and developing tools and information systems to assist City staff.

While the saying “if it ain’t broke, don’t fix it” may have worked in the past, Columbia’s wastewater staff can be proud to say they recognize that just because it’s not “broke,” doesn’t mean it doesn’t deserve some attention anyway. With this preventive maintenance attitude and with the CW2020 program, the City will continue to reduce overflows and provide all of the area’s stakeholders with a clean and healthy environment.

Kick off meetings with many of the department’s employees have already been initiated and the CW2020 team will be meeting with many of our employees to get further input into the ongoing development of the program. Your participation and input are important to the success of the program and we look forward to working with all of our employees to make our vision a reality.

City of Columbia Achieves Significant Results in Reducing Fats, Oils and Grease Blockages

Reducing SSOs is the City’s top priority. Since overflows peaked in 2008, City staff have been working full time to identify problems in the system and to work out the best ways to generate immediate reductions. Fats, Oils and Grease (FOG) have been and continue to present a big problem to the City’s sewer system. Improper cleanup practices by food service establishments and residential customers allow FOG to enter the sanitary sewer system which ultimately impacts the whole system and creates environmental and public health concerns.

<table>
<thead>
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<th>Year</th>
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<td>41.32%</td>
<td>52.68%</td>
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<td>41.32%</td>
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<td>FY 10/11</td>
<td>64.89%</td>
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<tr>
<td>FY 11/12</td>
<td>32.44%</td>
<td>64.89%</td>
<td>27.66%</td>
</tr>
<tr>
<td>1Q FY 12/13</td>
<td>27.66%</td>
<td>32.44%</td>
<td>27.66%</td>
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When not disposed of properly, FOG forms thick layers inside the sewer system and prevents normal flow. This build-up can ultimately clog sewer lines and potentially result in sewer backups, overflows and odor problems. FOG also attracts insects and small animals, causing additional concerns within the City’s sewer system. By providing education FOG in conjunction with implementing and regulating our City sewer ordinance for compliance, we were able to take a big first step in initiating a drastic reduction in SSOs caused by FOG.

FY2008-2009 saw 455 SSOs overflows, which equated to 2,006,476 gallons of sewage. With City staff working tirelessly to manage conditions which cause overflows, including an aggressive sewer cleaning and inspection program, the City’s SSOs have been reduced significantly. While there is still a lot of work to do, the staff of the Wastewater Maintenance Division and Metro Division have already made a major contribution to achieving our goal.

Recent statistics show that since July of 2008, the City has reduced the number of grease-related SSOs by an average of 22% each fiscal year. Hats off to the entire wastewater section for their relentless determination in achieving these reductions!

**City’s Metro Wastewater Treatment Plant is an International Hot Spot**

With all of the system upgrades and major Capital Improvement Projects underway at the City’s Metro Wastewater Treatment Plant, it has become somewhat of a destination for international guests. “We like to show off all the hard work we’ve been up to, teach our visitors about our system and even learn some about how other countries handle their wastewater,” says Bill Davis, the City’s Wastewater Engineer.

The most recent tour on December 3, 2012 was for a South Korean delegation made up of Chung-Ang University scientists, a Korean wastewater utility director, and a member of the Korea Environment Corporation. “Next year we have to decide – is it ok to allow some food waste to go into the sewer system,” said Dr. Jeill Oh, a professor at Chung-Ang University, explaining the reason for their visit. Davis reassured the Korean visitors that the small amount of ground up food coming from garbage disposals “has not really ever been a problem for the City because our process design takes this load into consideration.”

The real problem coming from kitchens is grease. “You need to discourage grease going down the drain,” cautioned Davis. Any grease – a little olive oil left in a pan after sautéing chicken, bacon grease from this morning’s breakfast or even mayonnaise left in the measuring cup after making deviled eggs – can cause clogs in sewer pipes. When grease from multiple houses comes together and cools off in the pipe it can form a clog, and that could lead to big problems like sanitary sewer overflows. Davis stressed the need for educating residents on what is ok to put down their pipes and what can lead to real problems.

Educating the end user on how to use and protect the wastewater system is something that Davis also stressed earlier in the year to a small legion of Ghanaian and Tanzanian government ministers and entrepreneurs brought over by Representative Joseph Neil, South Carolina 70th District in a Legislator Exchange Program. Their reason for visiting the Metro Wastewater Treatment Plant was simple: to understand how wastewater utilities function in the U.S. and get ideas on how to develop fee-for-service utilities in developing areas that might not be familiar with them. Yet the impact of that visit may be transformative for these communities. For the Ghanaian ministers, their challenge was to help their communities understand that paying for wastewater treatment reduces water pollution, improves health and paves the way for economic growth and investment.

One of the major issues the delegation mentioned was how “plastics” and other sewer related pollutants were littering their beaches. Davis

Representative Joseph Neal and a small delegation of Ghanian and Tanzanian government officials and entrepreneurs learn about the wastewater treatment processes the City uses.
pointed out one way to gain favor with the citizens would be to point out how “tourism is a significant mechanism for raising revenue and by educating the citizenship about how not having a sewer treatment system in place is costing the country a lot of money and is posing a significant health risk to them and their children.”

City Invests Over $40,000,000 for Major Upgrades to the Metro Wastewater Plant to Protect Community and Waterways

As part of the City’s ongoing wastewater Capital Improvement efforts, anyone visiting the Metro Wastewater Treatment Plant should notice the new Headworks and Pretreatment Facility currently being constructed at the northeast end of the property. The most visible part of this work is the new Headworks, which includes four large screw pumps, with space for a 5th pump, each capable of moving up to 20 million gallons per day (MGD) of wastewater as they turn. The current plant is only designed for an average of 60 MGD, but the plant is scheduled to be upgraded to 80 MGD within the next decade. Bill Davis, the City of Columbia’s Wastewater Engineer, described the upgrades to the wastewater plant saying, “We are expanding the plant incrementally, with a goal of building redundant processes to enable us to operate for the next 20 years.” When the plant is permitted for 80 MGD, it will need to be capable of handling a peak flow of up to 2.5 times its typical daily rate, or 200 MGD.

As Davis implied, the Headworks upgrade is part of a bigger plan to improve the Metro plant’s ability to handle the wet weather wastewater surges that come in conjunction with large rain events. The typical flow from city residents and businesses typically discharge around 34 MGD, but after a heavy rain, the wastewater inflow can top 100 MGD, an almost three fold increase, which really puts a strain on the current system. To put this amount of flow in perspective, 100 MGD is equivalent to more than 150 Olympic sized swimming pools! According to Davis, current plant operation requires the operators to manually control when flow goes to the plant’s equalization basin and only makes provision for a limited amount of flow to be directed to one side of the plant. The new Headworks project, coupled with other system capacity upgrades, will allow the plant to handle peak flows of up to 150 MGD and ultimately 200 MGD, after the 5th pump is added, during heavy rain events. The operations staff will be able to completely and automatically control and direct flows to the equalization basin and both of the plant’s treatment trains.

Heavy rain events can cause elevated flows because of inflow and infiltration (I&I) which happens when surface water or groundwater enters the wastewater collection system through open manholes, fractured pipes, fractured manholes and defective pipe connections. I&I is a common problem faced by aging utilities across the nation. The biggest challenge that I&I poses is that it can introduce more water into the wastewater system than the pipes were designed to carry. This can cause the system to surcharge and spill or leak out in what is known as a sanitary sewer overflow (SSO). By increasing the pumping capacity at the wastewater plant, this extra flow can be delivered through the City’s pipes and into the plant for treatment. These plant upgrades are critical in helping to protect our communities and waterways from SSOs and for our overall plan to expand to 80 MGD.
## Consent Decree: Status of Deliverables

**Date of Entry - May 21, 2014**

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Notes: 1. First Due Date represents the initial submittal of the required Plan to complete the Program.
2. Following the submittal and approval of each Plan, the implementation of the Plan begins and may last for several years.
3. Some future due dates may change based on the timing of approval of earlier Plans.