As the effluent cascades down these steps at the Blue River Wastewater Treatment Plant, oxygen is added back into the water before it is sent to Negro Creek which eventually goes to the Blue River.
2014 in Review

Message to the Community

It is a great pleasure to present to you the 2014 Johnson County Wastewater (JCW) Annual Report. Each year we prepare a summation of our business and highlights of our accomplishments for your review online.

This past year we implemented the final phase of a combined bill, having first moved the Capital Charge from the Tax Bill to the wastewater bill in 2013. Effective in 2014, the capital charge is no longer a fixed rate for all single family residences. Instead, the calculation is based on both volume and fixed components and are shown on the bill as Combined Usage and Service Charge line items. This is a more equitable way to calculate the bills since customers are paying for our service based on the actual amount of water they consume.

We also changed the way in which sewer connection fees are charged, basing them instead on meter size rather than on the type of business the meter serves. These two changes in billing methodology make JCW billing policy consistent with the industry's best practices and standards.

In yet another effort to better serve our customers, December 2014 marked JCW's fifth bi-annual Customer Satisfaction Survey. JCW continues to rate favorably when compared to others in the industry. Ninety percent of the customers surveyed, who had an opinion, were either "very satisfied" or "satisfied" with the overall quality of wastewater service provided by JCW. A copy of the complete report is available online at http://www.jocogov.org/dept/wastewater/about-us/publications.

Other impressive numbers from this year's annual report include:

- JCW processed 16.3 billion gallons of wastewater in 2014, equivalent to filling the Sprint Center more than 78 times.
- JCW issued 1,313 connection permits in 2014 (252 commercial and 1,061 residential) and are back to 2006-07 entry levels.

Following is a status report on some of JCW's projects:

- Two of the department's projects this past year involve the conversion of homes on septic systems to low pressure sewers. Residents in both projects also benefitted from a State Revolving Fund Loan Program administered by the Kansas Department of Health and Environment. The program allows for a low-interest loan from the state for a 20-year period to residents in the proposed district. The loan from the Kansas Water Pollution Control Revolving Fund provided substantial savings to each homeowner, as well as to JCW. This program also calls for a 40 percent principal forgiveness (essentially, a federal grant) on the project, as well as offering financing for the installation of the grinder pump unit and connection fees for each home. Last fall, the Lone Elm Estates project was completed, connecting 57 home sites to low pressure sewers. A second project at Gardner Lake, will serve approximately 85 acres and 352 properties around the Gardner Lake area with low pressure sewers. The proposed district consists of a residential neighborhood of 279 homes which are served by septic tanks or holding tanks. The design phase of this project was completed by the end of 2014.
- JCW is conducting a project to help define what improvements are needed at the Tomahawk Creek Wastewater Treatment Facility. The goal of the project is to determine how to meet future regulations in the most cost-effective way. In addition, a 2013 study recommends expanding the Tomahawk Creek Facility to treat all wastewater flows from parts of Leawood, Olathe, Overland Park, and Prairie Village. Currently, a portion of the wastewater is sent to Kansas City, Missouri's Blue River treatment facility. While rates will increase for Johnson County Wastewater customers over time, the goal is to minimize those rate increases by applying the most cost-effective treatment. JCW is working to define necessary improvements and expects to present findings to the Johnson County Board of Commissioners in early 2016.

These are just a few of the matters of business we conducted in 2014. Please accept my invitation to read this report and learn more about Johnson County Wastewater's efforts to protect, serve, and enhance the exceptional quality of life in our communities.

John P. O'Neil
JCW's general manager

What We Do

Johnson County Wastewater (JCW) is responsible for the safe collection, transportation, and treatment of wastewater generated by residential, industrial, and commercial customers. Two basic tenets are the foundation of JCW's work:

Mission Statement
- Protecting our environment
- Serving our customers
- Enhancing our communities

Vision Statement
Johnson County Wastewater seeks to be locally respected and nationally recognized for leadership and excellence in:

- Water quality
- Customer service and stakeholder satisfaction
- Responsible and sustainable use of resources

We pride ourselves on maintaining a positive work environment that:

- Provides training and education.
- Empowers employee productivity, innovation, and transfer of knowledge.
- Emphasizes safe work habits and practices.

What We Believe

Core Values

Creativity We encourage employee innovation, seek continuous improvement, and embrace learning opportunities.

Humor We will laugh with one another, use humor in a sensitive manner, and recognize and celebrate our accomplishments.

Respect We value our diverse backgrounds and cultures, each other's contributions, and ideas from various perspectives.

Integrity We demonstrate trustworthiness by being truthful, openly sharing information, and taking responsibility for our actions.

Service We embrace public service as a personal commitment of our talents to the benefit of the people we serve.
JCW by the Numbers

JCW has more than 5,600 aboveground assets including six major treatment plants and 31 pump stations. Underground assets include more than 2,200 miles of sewer line pipe, approximately 57,000 manholes, approximately 23 miles of active low-pressure sewers, and 42 miles of active force mains. The estimated replacement value of the entire system is more than $2 billion. The miles of sewer line would span the distance between Johnson County’s Administration Building in Olathe to New York City and back.

Johnson County Wastewater (JCW) provides service to more than 400,000 people throughout the County.

In 2014, JCW’s active account base of nearly 138,000 was composed of:

- 5,907 commercial accounts (4.52 percent)
- 112 industrial accounts (0.09 percent)
- 17,049 multi-family accounts (12.31 percent)
- 114,893 single-family residential accounts (83.08 percent)

JCW issued 1,313 connection permits in 2014 (252 commercial and 1,061 residential) and are back to comparable numbers from 2006-07.

The wastewater system covers a service area of more than 172 square miles and 16 cities and unincorporated areas of Johnson County.

JCW operates a total treatment capacity of 63.9 million gallons per day.

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JCW operates a total treatment capacity of 63.9 million gallons per day.

In 2014, JCW has a 99.7 percent compliance rate with regard to National Pollutant Discharge Elimination System discharge violations. Of a possible 2,237 violations, the department recorded seven violations for the year.

In 2014, the department ended the year with connection fee revenue of $5,897,283.

Treatment accomplishments:
- 16,269.39 million gallons of flow treated in 2014
- 100 percent compliance on solids disposal

Collection accomplishments:
- 398.4 miles of sewer line cleaned
- Two odor complaints
- Two wet weather backups/bypasses and 15 dry weather backups/bypasses
- The department’s annual goal is less than 53/year of each.

The co-generation facility at the Douglas L. Smith Middle Basin Wastewater Treatment Plant produced 6,036,000 kWh of green power (power produced off the grid) in 2014.
Hannes Zacharias, county manager
Penny Postoak Ferguson, deputy county manager

The People of Johnson County Wastewater

The Johnson County Board of Commissioners

Jason Osterhaus, commissioner, Fourth District; Ed Eilert, chairman of the Board; and Michael Ashcraft, commissioner, Fifth District.

Steven Klika, commissioner, Third District; John Toplikar, commissioner, Sixth District; James Allen, commissioner, Second District; and C. Edward Peterson, commissioner, First District.

Johnson County Wastewater (JCW) operates as a department in Johnson County government, reporting directly to the deputy county manager under the direction of the county manager and the Board of County Commissioners. The county commissioners hold their regular business sessions, open to the public, every Thursday at 9:30 a.m., except on observance holidays, in the Board Hearing Room, 111 South Cherry, Third Floor, Olathe, Kansas.

Front row: [List of names]

Back row: [List of names]

The Johnson County Wastewater Leadership Team members are:
(front row left to right) Beth Brandel, director of Business Operations and Planning; Lori Sand, director of Communications; and Susan Pekarek, chief engineer.

(back row left to right) Kurt Winters, director of Operations and Maintenance; John O'Neil, general manager; Tony Holt, director of Water Quality Lab; and Lisa Davis, director of Customer Relations.

Johnson County Wastewater Leadership

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Each year the National Association of Clean Water Agencies (NACWA) recognizes public wastewater facilities for outstanding compliance with National Pollutant Discharge Elimination System (NPDES) permit limits. This recognition program consists of Peak Performance Awards in three categories—Platinum, Gold, and Silver.

Johnson County Wastewater (JCW) was recognized in July 2014 at the NACWA national conference held in Portland, Ore., for its outstanding compliance records in the 2013 calendar year and was presented with two Platinum Awards. In total, JCW earned six Peak Performance awards, one for each of its treatment facilities.

In 2013, JCW had a 99.7 percent compliance rate with regard to NPDES discharge violations. Of a possible 2,569 violations, the department recorded 10 violations for the year. For details, please read the full story at http://www.jocogov.org/dept/wastewater/about-us/news.

JCW News and Recognition

JCW brings home six NACWA Peak Performance awards

In order to charter a chapter, the membership had to be at 20. The organizers knew they weren’t going to be able to get 20 from JCW alone for the charter, so the group was opened to others in the County and membership took off. To date, the group has 52 members from 17 County departments, 19 of whom are JCW employees.

JCW involves 17 departments in leadership project

When three Johnson County Wastewater (JCW) employees were discussing their opportunity to present during the County’s leadership training for staff, a couple of them shared their concerns about speaking publicly. The third staff member has been involved with Toastmasters for many years and he suggested that they look into it. That was all it took for the three of them to organize the County’s first Toastmasters chapter.

JCW’s Antero to Lucity Conversion Project combines systems

Johnson County Wastewater (JCW) seeks opportunities to improve the management of asset data and save money by reducing the number of systems that must be maintained. The Antero to Lucity Conversion Project is in the process of accomplishing both.

A team of JCW staff from Asset Management, Operations and Maintenance, Business Operations and Planning, and Engineering along with staff from Lucity have been working to complete that effort. The project will include business process reviews, configuration of the Lucity system, conversion of data to the new system, and extensive training of JCW staff. The project will also continue to increase mobile data collection and ease access to as-built/operational data in the field. The project was started in 2014 and will conclude by mid-2015.

JCW earns State Collections Award

Johnson County Wastewater (JCW) received the Kansas Water Environment Association (KWEA) Collection Systems Award for Category III. Category III is for systems more than 500 miles long.

The award was presented during the annual KWEA conference held in Topeka, Kan., in August 2014 and is presented for outstanding and significant contributions in the area of wastewater collection.

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The Business of JCW: Division Highlights

Asset Management, Planning, and Public Projects Division

The Asset Management, Planning, and Public Projects Division includes the Asset Management Program which is the business framework that focuses on minimizing the lifecycle cost of asset ownership while meeting a desired level of service at an acceptable level of risk. It is especially important for Johnson County Wastewater (JCW) to manage its assets wisely since they represent an investment of more than $2 billion. The functions of planning and public projects provide information to the public and manage projects related to the consolidated main sewer district.

Department undertakes Asset Management Roadmap and CMOM Assessment Project

Johnson County Wastewater (JCW) first developed its Asset Management Program in 2008 with the organization’s first Asset Management Plan. The program provides a framework for the development of many strategies, processes, and tools to allow JCW to focus on minimizing the lifecycle cost of sewer system ownership, optimizing the use of available resources, and meeting levels of service at an acceptable risk and cost.

In 2014, JCW engaged consultant support to help with the development of the Asset Management Roadmap and Capacity, Management, Operation and Maintenance (CMOM) Assessment Project. An extensive review of JCW’s existing strategies, processes, and tools was conducted, and staff from all of JCW’s work groups and several other County departments were interviewed. The direction and goals of JCW’s Asset Management Program were also discussed.

The project will conclude in 2015 with a defined and prioritized list of initiatives that will provide JCW with the tools to further develop its Asset Management Program, allowing JCW to continue to be a high performing and nationally recognized wastewater utility while providing high levels of service at reasonable rates to the customers it serves.

Other highlights:

New sewer districts total 129 acres

One new enlargement of the Consolidated Main Sewer District and two contract districts were created in 2014, totaling 129 acres of service area. These new districts will serve both residential and commercial developments in Johnson County. The projects are in various stages of study, design, and construction and should all be completed within the next two years.

Snake issue resolved, Mill Creek No. 19 Sanitary Sewer Project completed

Following several years of discussions and negotiations, the Mill Creek No. 19 Sanitary Sewer Project was completed in a mere eight months after the contractor was finally given notice to proceed in April 2014. The project was delayed by the Kansas Department of Wildlife Parks and Tourism mitigation requirements that arose due to potential snake habitat along the alignment. In July 2013, with the help of the Johnson County Parks and Recreation Department, a Mitigation Agreement was reached that would satisfy the State requirements.

• The project extended roughly four miles of sewer in south Shawnee.
• Several houses have already connected to the main, and the current site development work of the adjacent subdivision indicates more connections will soon follow.

Rock was often encountered not far from the surface as is evident in this 20 foot deep bore pit for crossing under Monticello Road. This bore was one of six required on the project; in total, approximately 1,040 linear feet of bores with casing pipes ranging from 20” to 34” in diameter.
Lone Elm Low Pressure Sewer Project receives aid

The Lone Elm Low Pressure Sewer Project was completed under budget on Oct. 17, 2014. It provides public sanitary sewer service to homes served by septic tanks, some of which had failing septic systems which can negatively impact the watershed. The homes in the benefit district are built on small lots, have aging septic systems, and are located in a watershed containing water bodies that are impaired. The project was approved for 40 percent principal forgiveness, which is effectively a federal grant and a low interest loan from the Kansas Water Pollution Control Revolving Fund which provided substantial savings to each homeowner, as well as to JCW.

- Installed approximately 4,800 linear feet of main sanitary sewer line and 6,400 linear feet of sewer service line.
- A total of 57 home sites were connected to low pressure sewers.

For details, please read the entire story at: www.jocogov.org/dept/wastewater/engineering/public-projects/lone-elm-and-180th.

Business Operations and Planning Division

Business Operations and Planning (BOP) provides vital support services, including finance, accounting, budgeting, technology, human resources, and payroll to the other divisions of JCW. This division is the caretaker of JCW’s Strategic Business Plan, and its employees are involved in many ongoing projects aimed at automating and improving processes at JCW to enhance the mission of protecting our environment, serving our customers, and enhancing our communities.

Project Status Database is important to capital project management

The IT staff created a Project Status Database which is instrumental in the development and management of JCW’s five-year, $400 million+ Capital Improvement Program which is presented annually to the Johnson County Board of Commissioners.

The database tracks capital project schedules, finances, and bonding of capital projects. It is also valuable in developing cash flow requirements of capital projects in order for funding to be assessed.

Other highlights:

- The Division hired a Financial Manager and a Management Analyst.
- A visit from the Department of Homeland Security resulted in identification of security action items for hardware, software and “human” risk areas.
  - JCW staff gave a highly positive response to the IT satisfaction survey.
  - Staff developed fiber plans for Nelson and Mill Creek. Fiber is also part of the plan for the New Century Air Center Wastewater Treatment Plant.
  - Staff refreshed technology in JCW’s TV trucks.
  - Blue Beam software was implemented to assist staff with plan reviews.
  - Staff implemented a dashboard for JCW staff to automate monitoring of levels of service.
  - Written procedures for the entire department were fully updated.

Finance/Accounting Team
Members are: (left to right)
Leslie Bush McQuain, management analyst; Tom Robben, financial manager; Debbie Lage, project specialist; and Julie Moser, accountant

Ben Ehrlich, GIS technician; (left) and Jim Bills, AIMS coordinator

Above left, Kim Wasko, executive assistant
Trent Menssen (left) and Tony Hall are JCW’s technical support analysts

Shannon Mathes, senior engineering technician, (left) oversees some onsite work at 180th and Lone Elm where JCW installed a low pressure sewer system.
Other highlights:

- Staff worked with the Department of Technology and Innovation to add billing information layers to Johnson County’s Online Mapping system (AIMs), making it much easier for staff to identify parcels that have not been assessed System Availability Charges or User Charges.

- Fats, Oils and Grease (FOG) permits increased 4 percent since 2013.

- Twenty-one of the regulated Significant Industrial Users achieved 90 percent or better compliance with their Discharge Permit parameters and are on track to receive the JCW Environmental Excellence Award. This represents a 5 percent improvement over last year.

Customer service and billing complete multi-year project

In January 2014, Customer Relations staff completed a multi-year reconfiguration of its billing system in order to change its billing method to a unified rate. This means that the current JCW bills look similar to other utility bills such as water, gas, and electric and are now in line with industry best practices. The current JCW charge reflects both the costs to operate its system and to invest/reinvest in the capital improvements necessary to operate the system. Under the unified rate model, both operation and capital charges are based on a fixed Service Charge to provide customer service, and a variable Volume Charge based on the volume of water used and discharged to the sanitary sewer system for treatment. Previously, the capital cost was a uniform rate; all single family residences were charged the same capital amount, regardless of the impact they had on the system.

Josh Ashley, environmental compliance manager, is reviewing commercial project plans, including those for offices, restaurants, condominiums, townhouses, apartments, public swimming pools, and car washes, etc. JCW reviews plans for all projects other than single-family residential.

Customer Relations Division

The Customer Relations Division provides JCW with a single source or center for all key customer service activities regardless of customer type, service, or informational need.

Customer Relations Division

Pam Henry, environmental compliance manager, meets with Erich Hartsock, manager at the Pie Five’s Lenexa location, to review best management practices regarding grease disposal.

Shane Burnett, environmental compliance manager, checks the grease interceptor located at the Sunset Drive Office Building in Olathe. The standard is no more than six inches of grease and eight inches of solids. If the interceptor exceeds those limits, the pumping and hauling schedule must be modified.

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Operations and Maintenance Division

The Operations and Maintenance Division combines existing infrastructure engineering with all Operations and Maintenance functions. All organization entities involved with the planning, engineering, construction, operations, and maintenance of JCW’s existing infrastructure reside in the same division. This enhances efficiencies in communication and fosters cooperation with regard to key business processes such as the Capital Improvement Plan and the implementation of the Asset Management Plan.

Arc Flash Study results in safety improvements

An arc flash is a release of energy caused by an electric arc, and may occur around energized electrical equipment. The National Fire Protection Association (NFPA) 70E standards address electrical safety, including arc flash, and these standards were adopted by the Kansas Department of Labor.

Johnson County Wastewater (JCW) hired Black & Veatch Corporation to conduct an Arc Flash Study at all six wastewater treatment plants and 31 pump stations to model and analyze the potential power of an arc flash event for all three-phase electrical equipment. Site visits were made to visually inspect the equipment and the surrounding spaces, and a computer model was developed to determine the worst case incident energies scenarios.

At the conclusion, JCW received a report for each facility summarizing the existing arc flash hazards, personal protective equipment, and boundary restrictions to be used by plant staff while working in and around the equipment, and recommendations for improvements to reduce arc flash safety issues. The team also produced and installed arc flash labels on all applicable electrical equipment so that staff would immediately know the level of arc flash risk when working on site. JCW is proceeding with the first phase of arc flash safety improvements.

Water quality improves in Indian Creek following wastewater treatment upgrades

JCW completed treatment upgrades and changes to treatment processes in 2008–2009 at the Douglas L. Smith Middle Basin Wastewater Treatment Facility in Overland Park, Kan., with a significant portion of the project addressing nutrient removal facilities. Excessive nutrients can be harmful by degrading habitats and decreasing the amount of oxygen in the water.

According to JCW’s study, conducted by the U.S. Geological Survey and released in October 2014, nutrient levels decreased 40 to 55 percent in wastewater discharges and water tested downstream of the plant in Indian Creek from 2010-13.

For details, please read the full story at: http://www.jocogov.org/dept/wastewater/about-us/news.
The Water Quality Laboratory provides nationally accredited water quality monitoring for National Pollutant Discharge Elimination System permit compliance, industrial pretreatment, determination of the strength of wastewater treated by Kansas City, Missouri, for the Interconnection Monitoring Facility program, releases of sanitary waste to waterways, and Johnson County Wastewater (JCW) research studies.

Other highlights:

- An agreement was made with Public Works and the U.S. Geological Survey to analyze storm water samples from 25 sites in 2015 through 2020. This will be a five-year project and is revenue neutral.
- The lab is working with CDM Smith on a bench study to optimize Nelson Complex disinfection.
- The lab is assisting Black & Veatch to produce “granular sludge” at the Tomahawk Creek plant to improve future treatment capacity and nutrient removal.
- The lab produced the following analyses in 2014:
  - NPDES/Industrial Pretreatment: 15,487
  - Process Control/Special Studies: 10,416
  - Custom: 3,552
  - Interconnection Monitoring (KCMO): 401
  - Quality Control (NELAC): 344
- Total Number of Analyses: 30,117
- Total Number of Samples: 10,784

The lab plays important role in plant expansion projects

In early 2014, the lab planned and executed a 14-day sampling project with Johnson County Wastewater (JCW) engineering and Black & Veatch for the New Century AirCenter Wastewater Treatment Plant Expansion Project, performing hundreds of lab tests during that time.

The lab has also begun a very large lab and field project with JCW engineering and Black & Veatch to assess the storm water quality of Indian Creek, Tomahawk Creek, and Dyke’s Branch. This project will provide vital information for the Tomahawk Creek Wastewater Treatment Plant Expansion Project.

Pedro Calderon, senior lab technician, secures a portable sampler programmed to collect samples on an hourly basis during a 24-hour timeframe. The sampler base holds 24 bottles, each representing an hour composite. This model obtains a profile of what is passing through the site, Dykes Branch at Summit in Kansas City, Mo., during rain events. The Dykes Branch discharges downstream into Indian Creek.

Tony Holt, director of the Water Quality Lab
Area Served: Johnson County Wastewater

- Blue River Main
  2523 W. 151st Street
  Overland Park, KS 66224
  913-715-8745

- Blue River No. 4 (Lagoon)
  188th Street & Lackman Road
  Spring Hill, KS 66083
  913-715-8750

- New Century Air Center
  50 Leawood Drive
  New Century, KS 66031
  913-715-8766

- Mill Creek Regional
  20001 W. 47th Street
  Shawnee, KS 66218
  913-715-8593

- Myron K. Nelson Complex
  4800 Nall Avenue
  Mission, KS 66202
  913-715-8790

- Tomahawk Creek
  10701 Lee Boulevard
  Leawood, KS 66211
  913-715-8760

- Douglas L. Smith Middle Basin
  10001 College Boulevard
  Overland Park, KS 66210
  913-715-8700

- JCW Service Area
- City Boundaries

Tracking the Wastewater

Sewage, which is almost all water, contains material such as chemicals and bacteria. Only a tenth of 1 percent is solid matter.

Through gravity and pumps, sewage is moved through a system of pipes from houses and businesses to a treatment plant.

Hot Spots

Sources of sewage in your home

Wastewater originates from many sources in your home. Here are some of the more common points:

NOTE: Storm sewers or drains do not go to treatment plants. Water flows directly into waterways.
2014 Total Operating Fund

Total Operating Fund
$47,941,538

Operations and Maintenance
$38,027,039

Laboratory
$961,239 2.01%

Customer Relations
$4,029,566 8.41%

Business Operations and Planning
$4,923,694 10.27%

Operations and Maintenance
$38,027,039 79.32%

Collections
$6,982,648 18.36%

Existing Infrastructure Engineering
$1,229,481 3.23%

Middle Basin
$4,650,081 12.23%

Mill Creek
$2,315,927 6.09%

Nelson Complex
$4,019,112 10.57%

Blue River Plant
$2,524,074 6.64%

Administration
$973,644 2.65%

Airport
$1,030,128 2.71%

Tomahawk Creek
$14,301,944 37.61%

Kenyatta Myers, Jr.  n  Douglas Nolkemper  n  David Noyes  n  Tim O'Donnell  n  John P. O'Neil  n  Stephen Oskvig  n  Daniel Ott  n  Robert Paris, Jr.  n  Mary Pegg  n  Susan Pekarek  n  Douglas Penner
2014 Total Capital Expenses

Total Capital Expenses
$78,857,817

2014 Capital Project Spending YTD
$46,405,413
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<th>% of Increase (Decrease)</th>
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<td>Separation of Service</td>
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<td>Miles of Line Televised</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dry Weather</td>
<td>13</td>
<td>15</td>
<td>2</td>
<td>13.3%</td>
<td>53</td>
</tr>
<tr>
<td>Wet Weather</td>
<td>7</td>
<td>2</td>
<td>(5)</td>
<td>(250%)</td>
<td>53</td>
</tr>
<tr>
<td><strong>Response Time on Plan Reviews</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>First Submittals 14 Days</td>
<td>43.5%</td>
<td>35%</td>
<td>(8.5%)</td>
<td>(24.3%)</td>
<td>80%</td>
</tr>
<tr>
<td>Re-submittals 7 Days</td>
<td>68.2%</td>
<td>68%</td>
<td>(0.2%)</td>
<td>(0.3%)</td>
<td>80%</td>
</tr>
<tr>
<td><strong>Number of Treatment and Pump Station Work Orders Issued</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preventive Work Orders</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Treatment</td>
<td>13,178</td>
<td>16,001</td>
<td>2,823</td>
<td>17.6%</td>
<td>10-15% of total work orders</td>
</tr>
<tr>
<td>Collections, pump stations</td>
<td>3,506</td>
<td>894</td>
<td>(2,612)</td>
<td>(292.2%)</td>
<td>10-15% of total work orders</td>
</tr>
<tr>
<td>Corrective Work Orders</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Treatment</td>
<td>1,360</td>
<td>1,328</td>
<td>(32)</td>
<td>(2.4%)</td>
<td>&lt;10</td>
</tr>
<tr>
<td>Collections, pump stations</td>
<td>304</td>
<td>53</td>
<td>(251)</td>
<td>(473.6%)</td>
<td>&lt;10</td>
</tr>
<tr>
<td><strong>Odor Complaints</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Treatment</td>
<td>10</td>
<td>6</td>
<td>(4)</td>
<td>(66.7%)</td>
<td>&lt;10</td>
</tr>
<tr>
<td>Collections</td>
<td>7</td>
<td>2</td>
<td>(5)</td>
<td>(250%)</td>
<td>&lt;10</td>
</tr>
</tbody>
</table>
## Summary of Treatment Facilities

<table>
<thead>
<tr>
<th>Facility Name</th>
<th>Watershed</th>
<th>MGD</th>
<th>Plant Capacity</th>
<th>P.E. @100GPD</th>
<th>Average Daily Dry (a) Weather Flow</th>
<th>Average Daily Flow</th>
<th>P.E. @ 0.21 LBS/C/D (e)</th>
<th>P.E. Capacity Used</th>
<th>Process Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Turkey Creek MSD #1</td>
<td>Turkey Creek</td>
<td>8.00</td>
<td>80,000</td>
<td>4.53</td>
<td>6.35</td>
<td>53,192</td>
<td>66%</td>
<td>TF</td>
<td></td>
</tr>
<tr>
<td>2. Mission Main MSD #1</td>
<td>Brush Creek</td>
<td>7.00</td>
<td>70,000</td>
<td>4.42</td>
<td>6.31</td>
<td>45,077</td>
<td>64%</td>
<td>TF</td>
<td></td>
</tr>
<tr>
<td>3. Tomahawk Creek MSD #1</td>
<td>Indian Creek</td>
<td>4.00</td>
<td>40,000</td>
<td>5.71 (b)</td>
<td>6.44</td>
<td>41,456</td>
<td>104%</td>
<td>TF</td>
<td></td>
</tr>
<tr>
<td>4. Indian Creek Middle Basin</td>
<td>Indian Creek</td>
<td>14.50</td>
<td>145,000</td>
<td>8.05</td>
<td>10.37</td>
<td>252,939</td>
<td>174%</td>
<td>BNR</td>
<td></td>
</tr>
<tr>
<td>5. Blue River MSD #1</td>
<td>Blue River</td>
<td>10.50</td>
<td>105,000</td>
<td>3.82</td>
<td>5.09</td>
<td>33,690</td>
<td>32%</td>
<td>BNR</td>
<td></td>
</tr>
<tr>
<td>6. Blue River SSD #4</td>
<td>Blue River</td>
<td>0.02</td>
<td>200</td>
<td>NA (c)</td>
<td>NA (c)</td>
<td>NA (c)</td>
<td>NA (c)</td>
<td>LAGOOON</td>
<td></td>
</tr>
<tr>
<td>7. Little Bull Creek SSD #2</td>
<td>Bull Creek</td>
<td>110</td>
<td>63,000 (d)</td>
<td>0.4</td>
<td>0.59</td>
<td>34,062</td>
<td>54%</td>
<td>ACT</td>
<td></td>
</tr>
<tr>
<td>8. Mill Creek Regional</td>
<td>Mill Creek</td>
<td>18.75</td>
<td>187,500</td>
<td>6.71</td>
<td>8.74</td>
<td>74,284</td>
<td>40%</td>
<td>ACT&amp;ALL</td>
<td></td>
</tr>
<tr>
<td>9. KCMO Tomahawk diversion</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5.32</td>
<td>7.83 (f)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. KCMO all Sites</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10.31</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td></td>
<td><strong>63.87</strong></td>
<td><strong>690,700</strong></td>
<td><strong>38.96</strong></td>
<td><strong>54.20</strong></td>
<td><strong>534,700</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Legend**
- TF = Trickling Filter
- ACT = Activated Sludge
- LAGOOON = Waste Stabilization Lagoon
- AL = Aerated Lagoon
- BNR = Biological Nutrient Removal
- NA = Not Applicable

**Notes**

(a) Dry Weather Flows were estimated using the lowest monthly average flow for each facility.
(b) Flows into this facility are controlled between 4 and 7 MGD to allow for seasonal nitrification. Flows above these limits were diverted to Kansas City, Missouri (KCMO) for treatment.
(c) Influent BOD samples and flow measurement are not collected at the waste stabilization lagoon facility.
(d) Little Bull Creek SSD #2 capacity and P.E. are based on maximum 5 day average BOD.
(e) Pounds/Capita/Day
(f) Not included in flow total

---

*Keith Sells*, treatment crew leader (left) and *Mike Peppers*, treatment crew member, are on staff at the Blue River Wastewater Treatment Plant.
## Summary of Treatment Costs

<table>
<thead>
<tr>
<th>Plant</th>
<th>Direct Cost (1)</th>
<th>Indirect Cost (2)</th>
<th>Total Cost (3)</th>
<th>Flow, MG Total Annual</th>
<th>Flow, MG Average Daily</th>
<th>BOD5, lbs</th>
<th>$/MG</th>
<th>$/lb BOD5</th>
</tr>
</thead>
<tbody>
<tr>
<td>BRM</td>
<td>$1,715,533</td>
<td>$105,503</td>
<td>$1,821,036</td>
<td>1,858</td>
<td>5.09</td>
<td>2,582,375</td>
<td>$980</td>
<td>$0.71</td>
</tr>
<tr>
<td>ICMB</td>
<td>$4,650,081</td>
<td>$285,974</td>
<td>$4,936,055</td>
<td>3,785</td>
<td>10.37</td>
<td>19,387,705</td>
<td>$1,304</td>
<td>$0.25</td>
</tr>
<tr>
<td>MCR</td>
<td>$2,315,927</td>
<td>$142,427</td>
<td>$2,458,354</td>
<td>3,190</td>
<td>8.74</td>
<td>5,693,635</td>
<td>$771</td>
<td>$0.43</td>
</tr>
<tr>
<td>NC</td>
<td>$3,841,665</td>
<td>$236,258</td>
<td>$4,077,923</td>
<td>4,395</td>
<td>12.04</td>
<td>7,532,140</td>
<td>$928</td>
<td>$0.54</td>
</tr>
<tr>
<td>NCAC</td>
<td>$1,030,128</td>
<td>$63,352</td>
<td>$1,093,480</td>
<td>215</td>
<td>0.59</td>
<td>1,430,435</td>
<td>$5,078</td>
<td>$0.76</td>
</tr>
<tr>
<td>THM</td>
<td>$917,314</td>
<td>$56,414</td>
<td>$973,728</td>
<td>2,351</td>
<td>6.44</td>
<td>3,177,690</td>
<td>$414</td>
<td>$0.31</td>
</tr>
<tr>
<td>KCMO</td>
<td>$14,370,617</td>
<td>$883,775</td>
<td>$15,254,391</td>
<td>3,763</td>
<td>10.31</td>
<td>11,118,630</td>
<td>$4,054</td>
<td>$1.37</td>
</tr>
<tr>
<td>Totals</td>
<td>$28,841,266</td>
<td>$1,773,701</td>
<td>$30,614,967</td>
<td>19,557</td>
<td>53.6</td>
<td>50,922,610</td>
<td>$1,565</td>
<td>$0.60</td>
</tr>
<tr>
<td>With Collections</td>
<td>$35,823,914</td>
<td>$2,203,125</td>
<td>$38,027,039</td>
<td>19,557</td>
<td>53.6</td>
<td>50,922,610</td>
<td>$1,944</td>
<td>$0.75</td>
</tr>
<tr>
<td>Without KCMO</td>
<td>$21,453,297</td>
<td>$1,319,350</td>
<td>$22,772,647</td>
<td>15,794</td>
<td>43.3</td>
<td>39,803,980</td>
<td>$1,442</td>
<td>$0.57</td>
</tr>
</tbody>
</table>

### Legend

- **MG** = Million Gallons
- **BOD5** = 5 day biochemical oxygen demand

### Notes

1. Plant operation and maintenance cost.
2. Pro-rated O&M Administration and EI cost.
3. Does not include New Development Engineering or Wastewater Central Administration costs.
5. Includes O&M and capital portion of charge. Change from previous years.
History of Key Activity Indicators 2010-2014

Odor Complaints

2010 2011 2012 2013 2014

National Pollutant Discharge Elimination System Discharge Violations

99.7% Compliance in 2014

User Charge Delinquency Rate History

Johnson County Wastewater’s Annual Delinquency Rate measures calendar year invoices billed versus collections for that same period. The Annual Delinquency Rate allows for budget year comparisons and year-to-year trend analysis.

Increased delinquency in 2014 can be attributed, in part, to the addition of Capital Charges to the User Charge bills which doubled the customers’ bills. An even greater impact was made on those customers who use large amounts of water due to the unified rate model introduced in January 2014 where the variable Volume Charge is based on the volume of water used.

Due to collection efforts in 2014, the delinquency rate has dropped to 4 percent in early 2015.

99.7% Compliance in 2014
Permits, Plans and District Creations Summary

Preventive Line Maintenance Summary

Lines Cleaned (Miles)
Lines Televised (Miles)
Line & Manhole Repairs (No.)
This effluent outfall at the Nelson Complex empties into Turkey Creek.