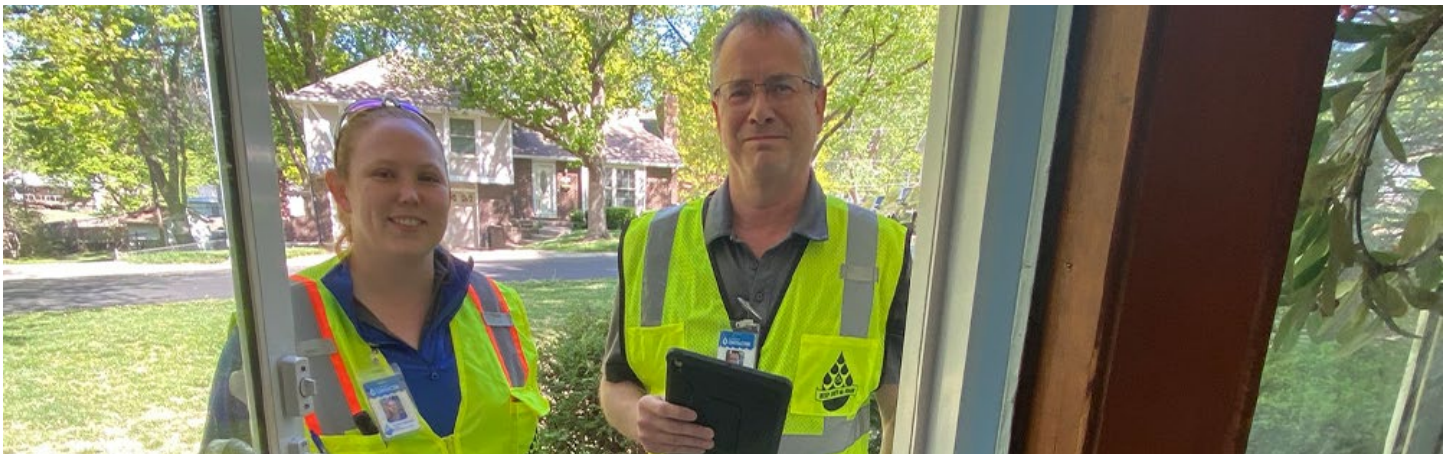
CASE STUDY

Technology, Resident Collaboration Enable Removal of Rainwater From Sewer System

Through the combined efforts of GIS technology and resident support, the City of Kansas City, Missouri, and our team are finding new ways to improve overall water and wastewater services by removing rainwater from the city's sanitary sewer system.



Challenge

An average of 6.4 billion gallons of wastewater overflow is produced each year from rainfall in Kansas City, Missouri, creating water quality issues and impacting public health. To address the issues this massive amount of overflow was producing, the city entered into a federally mandated agreement with the Environmental Protection Agency (EPA), resulting in the $2.3 billion Smart Sewer Program, which aims to capture and treat 85% of combined sewer overflows and eliminate sanitary sewer overflows during heavy rainfall within a 30-year period.

Alterations to sewers and residential plumbing mandated by the agreement would impact the separate sewer system in the newer parts of the city, an area covering over 300 square miles. This meant that getting a high level of voluntary participation from residents would be necessary to complete project goals. Additionally, the team would need the ability to share large amounts of data with field staff, coordinate and track the work being performed, and analyze the program's effectiveness toward removing rainwater from the sanitary sewer system.

Project Stats

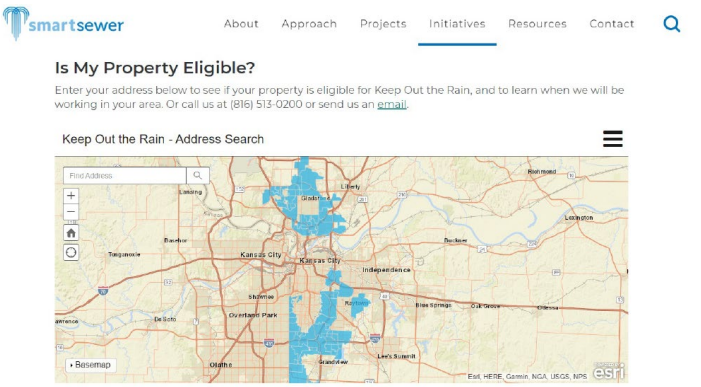
Client
City of Kansas City, Missouri

Location
Kansas City, Missouri

99%
CUSTOMER SATISFACTION

77K
CUSTOMERS AFFECTED

Keep Out the Rain personnel conduct an exterior property inspection to detect improper sewer connections.



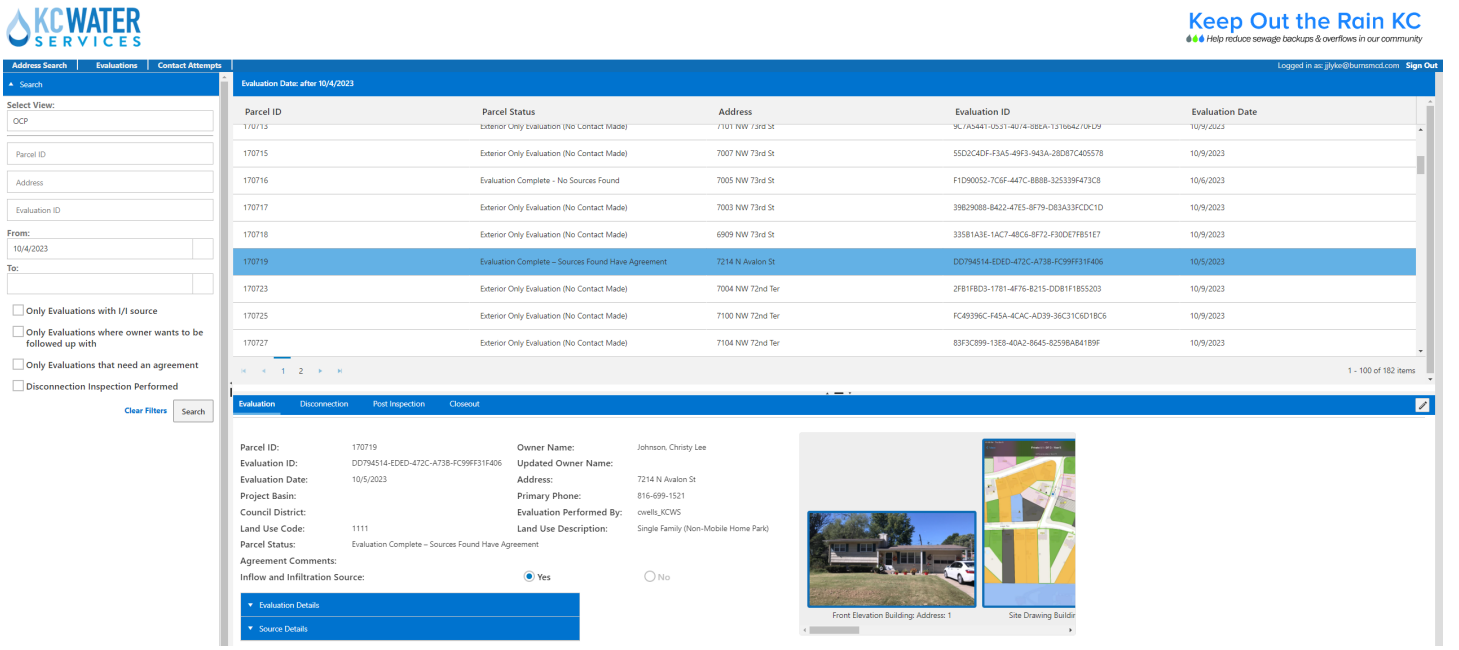
Keep Out the Rain is one piece of Kansas City's largest infrastructure investment, the Smart Sewer program: KC Water's multi-decade effort to reduce the volume of sewer overflows and improve water quality in the region for generations to come.

Solution

In an effort to leverage each dollar invested, Kansas City asked homeowners to voluntarily participate in the Keep Out the Rain program. It aims to reduce the overflows by fixing plumbing that is improperly connected to the city's sanitary sewer mains, which is suspected of accounting for more than half the rainwater entering the system. In these target areas, the program will help ratepayers save millions of dollars in future capital improvements.

Through the Keep Out the Rain program, the project team addresses improper connections on private properties, to prevent water from entering sanitary sewers — mitigating conveyance to a treatment facility and saving on treatment costs. The project team comprises multiple companies with unique skills collaborating to support the city. The city covers cost-effective disconnections and repairs to rectify these connections for homeowners. First, the city will conduct an evaluation of the property and identify any improperly installed stormwater connections. If repairs are deemed cost effective, the city dispatches qualified plumbers to conduct the requisite work. This initiative not only preserves the environment but also contributes to significant cost savings in water treatment.

To engage residents in Keep Out the Rain and to help field crews collect data, the project team is using a configuration of the ArcGIS platform. ArcGIS allows project team members to share large amounts of information with one another, as well as to coordinate



Project team dashboard for on-demand reporting and review of property evaluations.

A sump pump is connected to an inlet that discharges water into the yard, facilitating proper drainage.

and track project teams. Most importantly, ArcGIS helps Kansas City analyze the results of the program and report project success.

Existing GIS data is also being used to pinpoint areas where improperly installed plumbing connections on private property are suspected of contributing to the rainwater in the city's sanitary sewer mains. The city identified 77,000 properties where simple, cost-effective plumbing corrections could make a significant contribution toward reducing the city's overflow control issues.

The ArcGIS platform is also helping project teams communicate with residents and property owners by geographically selecting addresses to develop targeted mailings designed to notify stakeholders about the program and promote participation. The system was implemented to collect and display data in real time, which allows for on-demand reporting of project results.

Results

During the first five years of the program, Keep Out the Rain has evaluated more than 53,000 properties, confirmed nearly 6,300 cost-effective inflow and infiltration sources, completed more than 3,700 cost-effective repairs, identified and removed more than 42 million gallons during a typical five-year rainfall event from the system, and processed an average of 22,000 daily requests through the ArcGIS platform.

Having access to a variety of information in real time allows the Keep Out the Rain project team to stay ahead of the curve and continually improve upon its approaches and strategies to accomplish project goals.

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