

THE SCIENCE OF SUCCESS

Drafting and math unlocked the doors to Martha Tasker's future. While studying drafting in college, she worked as a part-time intern at Wilson & Company engineer and architect firm, turning engineers' rough sketches into finished drawings.

The job at the company in Salina, Kan., became full time after she graduated. By 1980, Tasker was a member of the Environmental Department, where she did concept and design work for many municipalities' water and sewer projects.

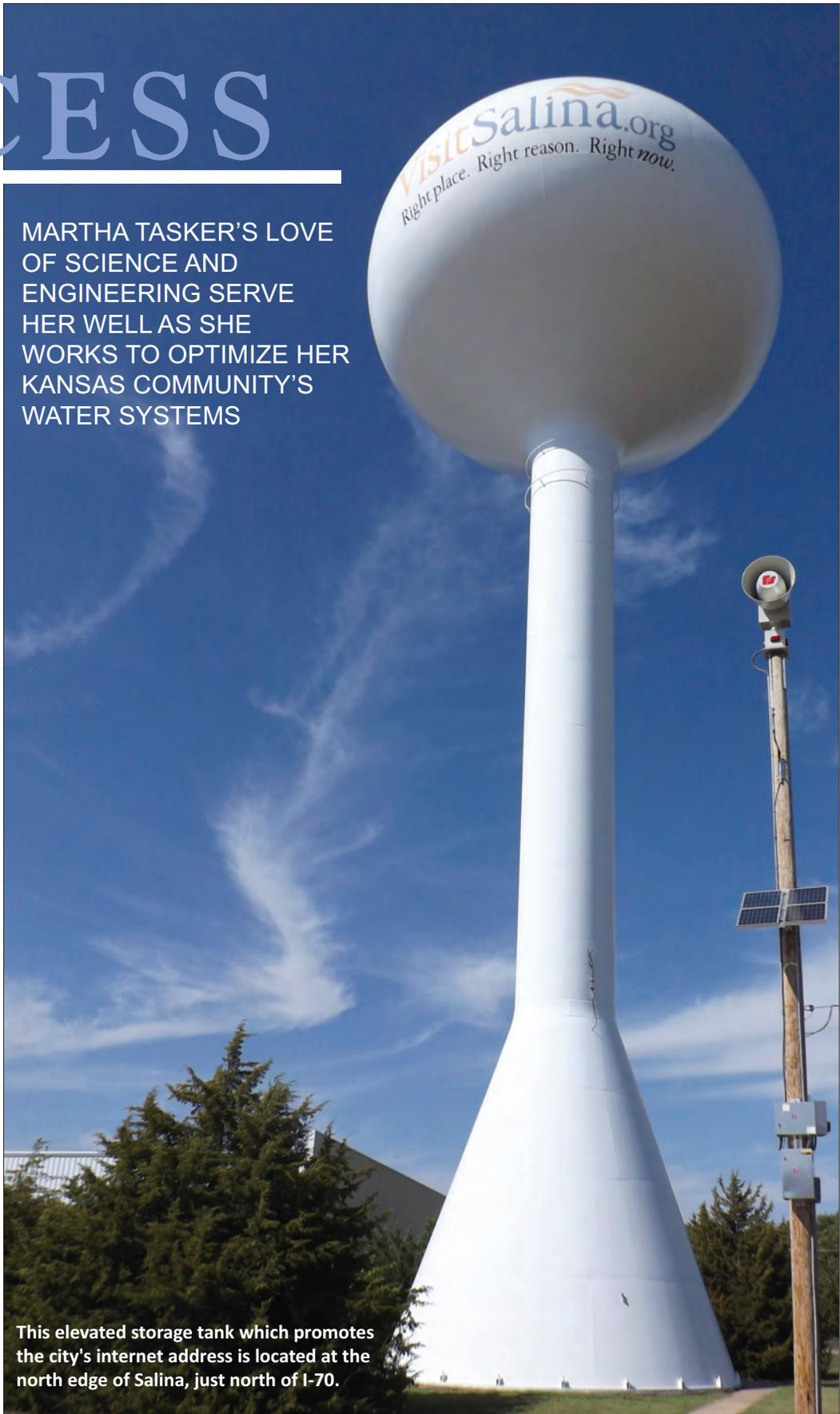
Intrigued by what she saw at water and wastewater treatment plants, Tasker borrowed books on their designs, took classes, talked to operators, and taught herself to see underground piping in order to draft it clearly.

Her career took off, assisted by mentors Robert Crawford at Wilson, and Don Hoff, director of the Salina Utilities Department. Her aptitude earned her a reputation as one of the best unlicensed engineering managers in the state from the Kansas Department of Health and Environment.

When Hoff retired, he championed Tasker as his replacement. City officials agreed and, after 28 years at Wilson, Tasker joined the municipality in November 2003. She manages 57 Utilities Department employees responsible for the water and wastewater treatment plants and the distribution and collections systems.

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MARTHA TASKER'S LOVE OF SCIENCE AND ENGINEERING SERVE HER WELL AS SHE WORKS TO OPTIMIZE HER KANSAS COMMUNITY'S WATER SYSTEMS



This elevated storage tank which promotes the city's internet address is located at the north edge of Salina, just north of I-70.

She oversees an operating budget of more than \$12 million, along with multimillion-dollar capital projects.

In 2016, Tasker was one of five area professionals to receive the Women of Achievement Award from the Young Women Legacy Fund. “I never thought about being a pioneer for women in the utilities engineering field,” she says. “I’m just passionate about my job and doing it to the best of my ability.”

Water for Salina

Salina uses surface and groundwater as source water. Seventeen wells in and around the downtown area (two on standby) deliver 15 MGD. The water is piped to the 20 MGD (design) Salina Water Treatment Plant. In emergencies, three more wells south of the city can provide 2 MGD. Water from these wells, part of the former Schilling Air Force Base water system, is chlorinated on site and pumped to the distribution system.

Three 75 hp Peabody Floway pumps (Weir Specialty Pumps (WEMCO) in a pump station along the Smoky Hill River cutoff channel deliver up to 10 MGD of surface water to the river settling basin. The basin has lightning rapid mix, walking beam flocculators from Ralph B. Carter Company (JDV Equipment Corporation), and Eimco sludge removal (Ovivo USA). Primary treatment at the plant includes two groundwater air stripping towers (Layne Christensen), two solids contact softening basins, two Eimco secondary clarifiers (Ovivo), and 16 gravity sand and anthracite filter cells with surface wash.

Finished water flows to one million-gallon and two million-gallon underground reservoirs. Two 200 hp pumps and five 250 hp pumps (all Pentair - Fairbanks Nijhuis) deliver water to five booster pump stations and eight elevated storage tanks holding a total of 4,075,000 gallons. Water is distributed to more than 20,000 accounts through 330 miles of 2-inch to 30-inch cast iron, ductile, PVC and HDPE pipe.

Easy transition

For Tasker, stepping into Hoff’s shoes wasn’t difficult, since she had worked with many city employees while at Wilson. Nevertheless, there were adjustments.

“One big change was leaving the private sector for the public sector and having 47,000 bosses,” says Tasker. “Another change was the unpredictability of each day. At Wilson, I planned every day, then carried through. Not here. If I arrive



Martha Tasker, Director of Utilities for the city of Salina, stands at one of the filter control panels. The Salina Water Treatment Plant has 16 rapid sand filters.

intending to accomplish something that won’t take long, three or four things happen straight out of the chute that need immediate attention. I’m constantly moving from one question or request to the next.”

In the monochrome world of engineering management, Tasker gave instructions to contractors and was responsible for the final word on everything. Now she had to adapt to solving human problems. Many employees stay with the city 20 to 30 years, and Tasker finds saying no to them difficult. “My goal is to make sound decisions for customers



This overhead view of the 20 MGD water treatment plant treats groundwater from 15 wells and surface water from the Smoky Hill River. Total raw water pumped in 2016 was 2.0 billion gallons, with 1.3 billion gallons (65 percent) from groundwater and 0.7 billion gallons (35 percent) from surface water.



There are a total of four basins at this plant. Two are softening basins and two are secondary settling basins. This photo shows one of the basins in the foreground and the chemical building and the two aeration towers in the background.

and staff,” she says. “By explaining a situation’s pros and cons and the reasoning behind my decision, they usually understand.”

Another management method Tasker finds helpful is to task employees to explain why their requests or suggestions

make sense to everyone, not just within their department, and why they should be adopted. “Once they do the legwork, they discover that coordinating between the different work groups isn’t as easy as it appears,” she says.

Moving ahead

Tasker enjoys helping citizens and wants to be the first person staffers talk to when things go wrong, but she is also her team members’ advocate. Her progression plan has accelerated their advancement.

Until 2016, operators couldn’t progress until someone above them left or was promoted. Tasker’s plan, approved by city officials, allows new hires to advance from operator I to operator II by fulfilling certain requirements. One prerequisite is certification through the state Department of Health and Environment. Another is developing improvement plans for any phase of the Utilities Department.

“The next step up is senior utility operator, a new position created to groom people for supervisor positions,” says Tasker. “People determine how far they wish to advance, and some are aggressive. It’s exciting to see their interest, because they represent future operator replacements.” About 25 percent of employees are engaged in the plan.

Such quick results are the exception. Tasker’s projects usually take five or 10 years to reach fruition, and many focus on ensuring the future availability of water for the community. The wake-up call came in 2006 when the Smoky Hill River ran dry during a drought. Tasker pushed to develop a 50-year raw water supply study, and Phase One launched in 2008.

“Originally, our water rate was the more you used, the less it cost,” says Tasker. “We pumped 5 MGD in winter and 13 to 14 MGD in summer.” The city’s new rate is based on water conservation practices used by semi-arid communities west of Salina. It doubles the cost of water when usage exceeds 120 percent of normal winter volume. The study also revealed that 15 percent of customers caused peak demand by irrigating their yards. The new rates dropped usage to 10 MGD in summer.

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This photo shows three of the basins in the foreground (two not currently in use), the chemical building in the background (left), and the river settling basin in the background right.

Greening the fields

Simultaneously, Tasker addressed the plight of farmers downstream from the Kanopolis Reservoir. Because the state purchases water storage in the lake, legislation limits its availability to municipal and industrial users. The drought brought to light the importance of stored water to downstream users. “Agriculture is our predominant

economic activity, and irrigation accounts for 84 percent of raw water usage,” she says. “The survival of those farmers was at stake.”

Tasker spent five years working with the Kansas Water Office and partnering with farmers in the river basin to remedy the situation. In 2011, legislation created the Lower Smoky Hill Water Supply Access District. It enables more efficient management of water resources for downstream users, while helping the city meet water demands during droughts. “We do a lot of good things pertaining to water, and we’re feeling pretty good about it,” says Tasker.

Improving water quality was another project that made people happy. “When I first arrived, we had numerous complaints about bad-tasting, smelly water,” says Tasker.

“Out of 330 miles of distribution pipes, 275 miles were old cast iron lines.” A study convinced city officials to begin a water main replacement program that included upsizing pipes to improve fire protection.

Another water-quality effort involves removing trichloroethylene, an industrial solvent, contaminating groundwater on the former air base. Tasker is overseeing a

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five-year, \$10 million study of the potable wells. “The project is a little out of my bailiwick, but incredibly interesting,” she says. “I think we’ll finish sometime in 2017, know the corrective action, and begin remediation.”

Building for the future

Tasker moved into Phase Two of the 50-year-plan in 2010. One project addressed how to provide water for the community if a natural disaster disabled the only treatment plant. An engineering study and countless meetings finally produced results.

In April 2017, the city selected a design-build team to improve the South Well Field and build either a 3.5 MGD membrane filtration plant or a lime-softening plant. “Industries would love the membrane treatment, and building the plant could attract new companies to town,” says Tasker. “We’ll also be able to support significant growth.”

By the time the build is completed in 2020, Tasker will be designing an upgrade for the wastewater treatment plant to meet new nutrient removal standards. She designed a major plant upgrade in the late 1980s and a belt filter press upgrade in the early ’90s. Whether designing for water or wastewater treatment, Tasker is in constant touch with end users. “I learned firsthand while at Wilson that bringing

“When I leave, I want to hand over a utility that meets current standards, meets future demands, and needs maintenance instead of repair, . . . That will be my legacy.”

operators into the design process produces a superior product,” she says. “They know every good and bad thing about their plant.”

Pleasant surprise

With numerous projects on her plate, Tasker said nothing to family and friends when notified of her 2016 Women of Achievement Award. It wasn’t until a newspaper article broke the story and strangers extended congratulations that the tumbler clicked into place. “We do just as much as the police or firemen

to protect our community and the environment, except our work isn’t recognized by the media,” she says. “The award shined a spotlight on our industry and maybe helped students see how much science, math and engineering are involved.”

Tasker actively encourages young women to explore careers like hers. She speaks to high school classes and is a regular presenter at the annual Teen Women in Science and Technology workshop developed by the community and the Kansas State University Polytechnic Campus.

Meanwhile, Tasker intends to finish all the projects she has worked years to put in place before retiring. “When I leave, I want to hand over a utility that meets current standards, meets future demands, and needs maintenance instead of repair,” she says. “That will be my legacy.”

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