



The Metropolitan St. Louis Sewer District

Sewer Overflows In Our Community

March 2009

MSD's Mission

The Metropolitan St. Louis Sewer District (MSD) is responsible for stormwater and wastewater management in all of the City of St. Louis and roughly 80% of St. Louis County. Formed in 1954, MSD is the combination of 79 separate sewer systems that have been incorporated into one entity over the last several decades. The sewer system MSD manages today is one of the largest and most complex systems in the United States. In terms of wastewater sewers alone, MSD manages the 4th largest system in the nation. To give some perspective on what “4th largest” means for our community, consider that MSD’s wastewater system is approximately the same size as the wastewater system in Los Angeles, California. Although the two systems are approximately the same size – as measured in miles of wastewater sewer pipe – system upgrades and operational costs in Los Angeles are shared by over 5 million residents versus approximately 1.4 million in St. Louis.

Overall, MSD maintains approximately 9,650 miles of sewers and operates seven wastewater treatment plants. These treatment plants treat a combined average of 330 million gallons of wastewater per day. Within MSD’s service area are three distinct sewer systems: A *combined sewer system* that handles both wastewater and stormwater within the same sewer pipe; a sanitary sewer system that handles only wastewater within the sewer pipe; and a storm sewer system that handles only rainwater within the sewer pipe. Together, the wastewater only and stormwater only systems are known as a *separate sewer system*. Depending on what part of MSD’s service area you live in, you are either served by a *combined sewer system* or a *separate sewer system*.

Throughout the MSD’s service area, there are hundreds of points where a combination of rainwater and wastewater discharges

into local waterways from the sewer system during moderate to heavy rainstorms. These sewer overflow points act as relief valves when too much rainwater enters the sewer system, and without them, our community could experience thousands of basement backups and/or extensive street flooding. Depending on where sewer overflows are located within MSD's system, they are classified as *constructed separate sewer overflows* --or-- *combined sewer overflows*. Many of these overflows are a legacy of the way our wastewater systems were first built. Though most overflows predate the District's creation in 1954, they are still MSD's responsibility and efforts to address the problem must continue.

From 1992 to 2008, MSD spent approximately \$1.8 billion to eliminate over 300 overflows. Today, the District's work to address sewer overflows and improve water quality continues in the form of a multi-decade, multi-billion dollar capital construction program that was begun in 2003. Different from past capital programs, this current effort is addressing the community's wastewater collection and treatment capabilities on a system wide basis, rather than carrying out improvements one section at a time. This program is a mammoth undertaking that will benefit St. Louisians – and the environment – for generations to come.

History of Sewer Systems in St. Louis

When combined sewers were first built in the St. Louis area in the 1850's, they were considered a major advancement in protecting the public's health and safety. For the first time, wastewater and rainwater could be carried away from major population centers. This in-turn would help protect the community from diseases and flooding, both of which were common in the 19th century. During the early to mid 1900's, the construction of combined sewers was phased out in favor of

separate sewers, so that rainwater and wastewater could be carried in separate sewer pipes.

Early sewer systems drained directly into local rivers and streams. However, by the middle part of the 20th century, the use of wastewater treatment plants became the standard for communities throughout the United States, including St. Louis. Wastewater that years earlier would have been discharged directly into local waterways now goes to treatment plants to be cleaned and returned to the environment. In spite of modern-day wastewater treatment plants being the standard, both combined and separate sewers still present challenges for our community – challenges faced by many cities across the country.

When combined sewers were built, they were built with a finite capacity to handle wastewater and rainwater at the same time. (This is true of separate sewers as well – all sewers have a capacity limit.) As our St. Louis community developed and grew, valuable green areas were paved over to make way for roads and buildings. These green areas that contained trees, bushes, grass, and other natural surroundings, were no longer available to soak up rainwater during storms – in their place was hard concrete or blacktop that cannot absorb rainwater. Thus, the elimination of green space and natural areas has caused combined sewers to handle more and more rainwater and has put additional capacity demands on the system. During rainfalls, so much rainwater can sometimes enter a combined sewer that it becomes *overcharged*. An *overcharged* sewer occurs during moderate to severe storms, when high volumes of rain fall during a short period of time.

To avoid potentially thousands of basement backups and/or severe street flooding when combined sewers overcharge, the system will discharge a combination of rainwater and

wastewater into local waterways. These overflow points in the combined system are known as combined sewer overflows.

The wastewater portion of the separate sewer system was not designed to handle stormwater flows. However, due to a condition known as inflow and infiltration, stormwater can enter portions of the separate sewer system designed to handle wastewater only. This inflow and infiltration of water into the wastewater system can occur through weakened joints that connect sections of sewer pipe and have deteriorated over time. Water can also enter the wastewater system through cracks in the sewer pipe itself that develop with standard usage and age. Additionally, rainwater can enter the wastewater system when downspouts and drains meant to handle stormwater runoff from private property are connected to the wastewater portion of the public sewer system. When too much rainwater enters a wastewater only sewer, the capacity of the system can easily be exceeded and basement backups may occur. To help alleviate these and other capacity issues, overflow points were constructed as part of the separate sewer system. These overflow points in the separate system are known as constructed separate sewer overflows. Constructed separate sewer overflows exist throughout our St. Louis area's separate sewer system and were built to act as relief valves for the wastewater portion of the system during moderate to heavy storms.

If an overflow discharges or not is dependent upon a number of factors, including how much rain falls over a given period of time. The result is that not all overflows discharge every time it rains – in fact, some overflows will go months or years without discharging.

Though both types of overflow points generally have the same function, the distinction between combined sewer overflows and

constructed separate sewer overflows is made for engineering and regulatory purposes.

What MSD Has Been & Will Be Doing

Sewer overflows are perhaps the biggest challenge facing MSD today. From 1992 to 2008, MSD spent over \$1.8 billion to eliminate over 300 overflows. Today, over 410 overflows remain (approximately 210 constructed separate sewer overflows and approximately 200 combined sewer overflows). Remaining overflows are continuing to be addressed through the current capital program, which was begun in 2003 and will last several decades.

MSD is aggressively working to eliminate each and every constructed separate sewer overflow. However, we must be careful that we do not cause additional basement backups when eliminating this type of overflow. Therefore, in addition to the construction projects we have completed and are currently building to eliminate constructed separate sewer overflows, we are thoroughly investigating and planning out the long-term capacity needs of the separate sewer system. It's important that we build the right solution for each and every overflow.

Overflows in the combined system are more complicated – and possibly more costly to address. Due to engineering and cost limitations, not all combined sewer overflows will be eliminated. As such, controlling these overflows is the goal. An example of controlling combined sewer overflows would be to reduce their number and how many times they discharge in a given timeframe. This could be done by building deep tunnels that would store stormwater during moderate to heavy rainfalls. This is just one of many solutions that might be appropriate for control of combined sewer overflows.

Over the past two decades, and in conjunction with the State of Missouri, MSD has been developing what is called a *Long-Term Control Plan*. This plan, which is required by federal and state regulations, serves as a blueprint for how combined sewer overflows will be controlled.

Throughout the United States, hundreds of communities are dealing with the challenges of combined sewer overflows. As part of its Long-Term Control Plan development efforts, MSD has been reviewing what other communities have done to control their combined sewer overflows and what engineering technologies they have used. However, engineering solutions that worked in other communities may not work in St. Louis – ours is a very unique system that may require very unique solutions.

As the current phase of the plan is finished and associated costs are determined, MSD is conducting formal public outreach in the form of its Clean Rivers Healthy Communities program. This outreach focuses on educating the public about the overall Long-Term Control Plan and fostering a communitywide dialogue on how to control combined sewer overflows. More information on MSD's Clean Rivers Healthy Communities program is available at www.cleanriversstl.com.

The Public's Role

It is important that the public be made aware of sewer overflows and their impact on our environment. Regardless of where one lives within MSD's service area, we all share the same environment. And we all have the same concerns and goals for the type of environment that we leave for future generations.

In addition to the current capital program, which will help alleviate or eliminate many overflows in the District's service

area, MSD is working to educate the public on the issue of overflows. Part of this education is the placement of signs in multiple areas that could be impacted by activated overflows. Required by the United States Environmental Protection Agency, the signs clearly state that the structure the placard is attached to is an overflow point and during rainfalls a combination of wastewater and stormwater might be discharged into the surrounding environment. For overflow points where no easily identifiable structure exists, the signage will be posted nearby.

As part of these ongoing efforts to educate and inform the public, MSD will also be introducing several new features to its website at www.stlmsd.com. These features will be a part of larger community outreach efforts designed to engage the public on wastewater and stormwater issues that affect our entire community.

If you have any further questions about sewer overflows in our community or this brochure, please contact MSD's Customer Service Center at [\(314\) 768-6260](tel:3147686260) --or-- visit www.stlmsd.com.



**Metropolitan St. Louis
Sewer District**

2350 Market Street
St. Louis, MO 63103
Phone: 314.768.6200
www.stlmsd.com