

# JEFFERSON BARRACKS TUNNEL



MSD Project Clear is the Metropolitan St. Louis Sewer District's (MSD)

initiative to improve water quality and alleviate many wastewater concerns throughout St. Louis City and County. MSD Project Clear is a long-term effort by MSD, undertaken as part of an agreement with the U.S. Environmental Protection Agency and the Missouri Coalition for the Environment. Project Clear aims to improve water quality for everyone, solve problems for some customers created by the very nature and design of St. Louis' wastewater system, and provide clear, up-to-date information to the public.

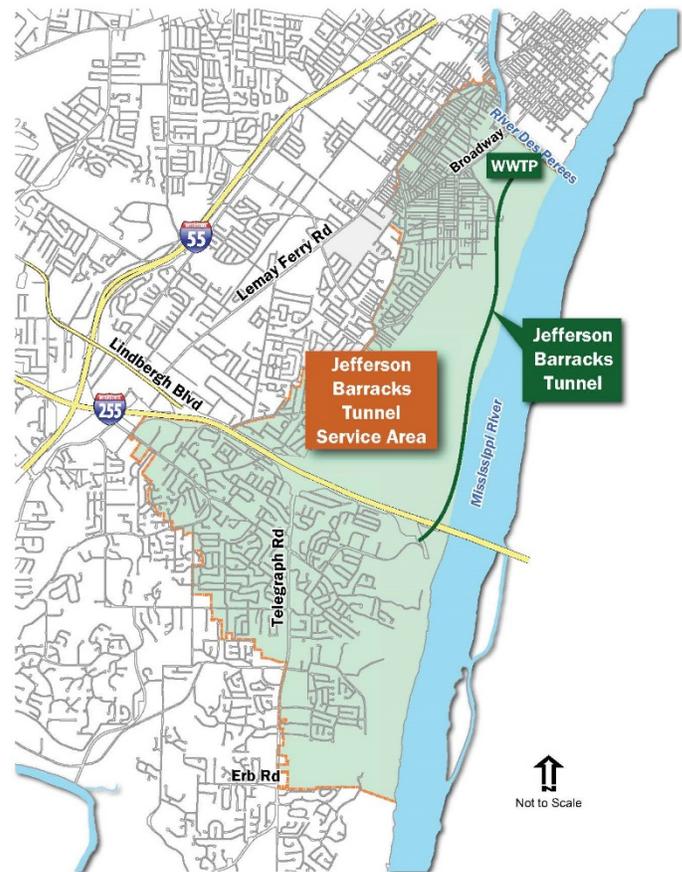
MSD Project Clear will invest billions of dollars over a generation in planning, designing, and building community rainscaping, system improvements, and an ambitious program of maintenance and repair. At times of heavy wet weather, the sewer system of St. Louis City and much of St. Louis County can be overwhelmed, causing overflows into area rivers and streams. Like many cities throughout the United States, this program is designed to reduce the occurrence of sewer overflows that result from older wastewater collection and treatment systems during heavy storms. MSD Project Clear has divided this multi-year, multi-billion-dollar investment into numerous projects that will be designed and constructed over the next several decades. The Jefferson Barracks Tunnel project, for example, will address sewer overflows in the Lemay/South County area.

## Jefferson Barracks Tunnel Project

The Jefferson Barracks Tunnel project extends from just south of I-255 at Koch Road to the Lemay Wastewater Treatment Plant (WWTP) located at the confluence of the River des Peres and the Mississippi River. The Jefferson Barracks Tunnel service area currently conveys and collects wastewater through a series of pump stations, force mains, sanitary sewers, and combined sewers. Treatment is provided at the Lemay WWTP. The existing system cannot handle current volumes and can be overloaded during wet weather, contributing to sewer overflows.

To alleviate these issues, a new deep tunnel will be built along with a new pump station and combined sewers. The deep tunnel will replace the existing truck sewer and allow for elimination of two intermediate pump stations.

The Jefferson Barracks Tunnel project consists of a 17,800-foot long tunnel, lined with a 7-foot diameter fiberglass pressure pipe and containing instrumentation conduits; an 88-foot diameter launch shaft, and a 28-foot diameter recovery shaft. Seven new intake structures will be constructed along the alignment to convey sewage to the tunnel and site work including construction of a major controlled fill. The new pump station and sewer work will be a separate contract following the tunnel construction.



## Jefferson Barracks Tunnel Construction Activities

MSD awarded the \$63.3 million construction contract for the Jefferson Barracks Tunnel to SAK Construction in early 2017. Construction began in March 2017 and will continue until Spring 2020. Some construction activities will have direct impacts for those living, working, and visiting the community in the area of the project. As of January 2017, the overall project is about 10 percent complete.

### DIGGING THE TUNNEL

The tunnel will range from about 120 to 220 feet below the ground surface and parallel the Mississippi river from the Lemay WWTP to Koch Road, just south of Interstate 255. Tunnel excavation will proceed from the main construction shaft to the upstream termination shaft at Koch Road.

The main construction shaft is located on the former Defense Mapping site (near S. Broadway and River City Casino Boulevard.) and MSD's Lemay WWTP site and will later serve as the location of the new pump station. Karst conditions are present at the shaft which contributes to a variable depth of bedrock being present. Pre-excavation grouting will be performed to limit the potential for large groundwater flows into the shaft due to the karst conditions.

A secant pile wall will be constructed and extended into bedrock for support of the overburden materials. Then the overburden soils will be excavated to bedrock using a tracked excavator and hi-lift. Drill and blast methods will be used to break the bedrock into pieces small enough to be removed by a tracked excavator, buckets, and crane. Once complete, the shaft will be about 88 feet in diameter and 166 feet deep. A starter tunnel will be excavated by drill and blast methods following completion of the shaft excavation and the tunnel boring machine (TBM) mobilized to excavate the 11-foot diameter tunnel.



## INTAKE STRUCTURE SITES

Seven intake structures will be constructed along the alignment to convey sewage to the tunnel. These include the following:

- Huntsman Intake – MSD Lemay WWTP
- Notre Dame Intake – Notre Dame High School
- County Park Intake – Jefferson Barracks Park
- Grant Road Intake – Jefferson Barracks Park
- Smith Road Intake – Jefferson Barracks Military Post
- Kearney Street Intake - Jefferson Barracks Military Post
- Koch Road Intake – South of I-255

The excavation for the Koch Road intake will also serve as the termination shaft for the tunnel. This shaft will have a finished diameter of 18 feet and be about 135 feet deep.

## CURRENT CONSTRUCTION STATUS

Pre-excavation grouting for the main construction shaft was completed in October 2017. This involved drilling grout holes to just above the tunnel grade and injecting grout into joints, bedding planes, and karstic voids in the bedrock.



Installation of the secant pile wall began in December 2017 and includes 78 secant piles extended into the top of bedrock. This work was about 15% complete as of January 1, 2018.



## WHAT TO EXPECT NEXT

A cast-in-place concrete wall will be constructed atop the secant pile wall once the secant piles are completed followed by excavation of the shaft. Secant pile wall completion is anticipated in February 2018 with shaft excavation completed in summer 2018. Excavated materials from the shaft will remain on the former Defense Mapping site and be placed to raise the grade of the site. The public is not expected to be impacted from work on the shaft as material excavated from the shaft will remain on site. While noise from blasting may be heard some distance from the site, blasting is also not expected to affect the public due to the distance of the shaft from public roads.

Work at the intake sites will begin winter 2018 and include drilling smaller diameter drop shafts at six of the sites. Materials excavated from these sites will be trucked to the former Defense Mapping site and used as fill to raise the site grade.

Site work to provide a level worksite is required prior to shaft excavation at the Koch Road Intake site. The site work includes construction of a 208-foot long soldier pile retaining wall, varying up to about 20 feet in height. Shaft excavation will begin once site work is completed and will involve excavation of the soil overburden using a tracked excavator followed by drill and blast methods to break up the bedrock for excavation. Temporary closures of Koch Road (between Kinswood Lane and Robert Koch Hospital Road) and Robert Koch Hospital Road (between Oakville Elks Lane and Koch Road) will be required during a blast and are expected to last between 5 and 10 minutes for each blast.

## WHO TO CONTACT

Questions or concerns about construction should be directed to Pat Kinsella at (314) 750-2001 during normal business hours between 7:00 AM and 3:30 PM. If there is an emergency please call 911!