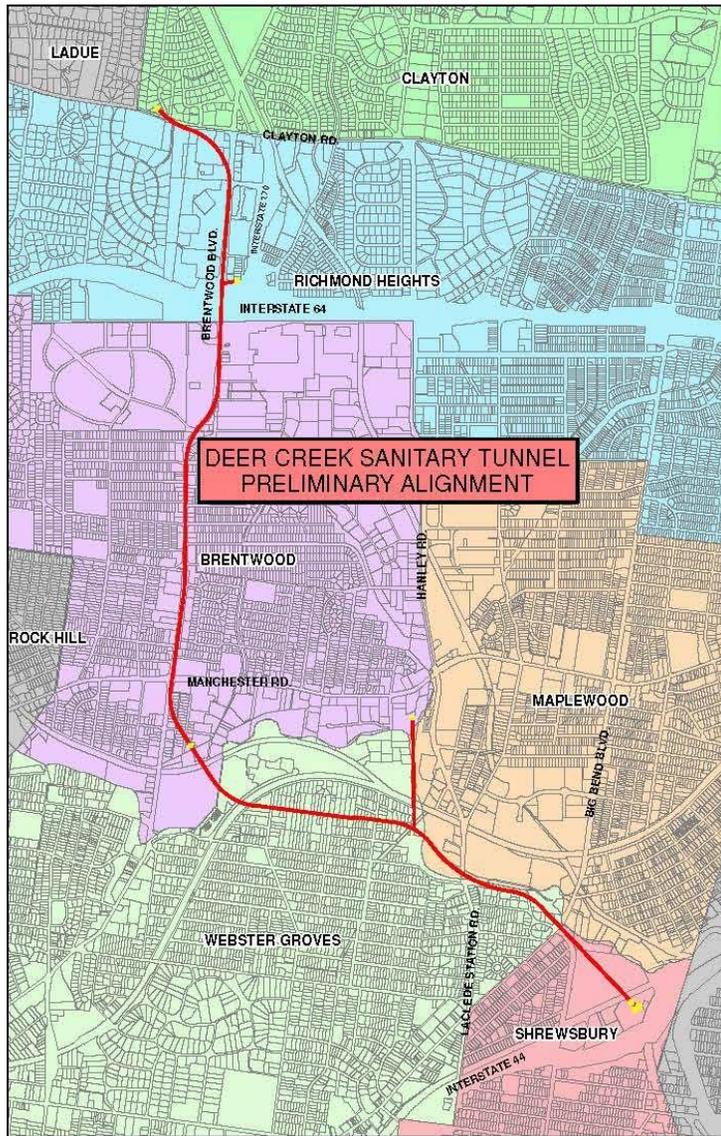


# DEER CREEK SANITARY TUNNEL PROJECT



The Metropolitan St. Louis Sewer District has initiated a large-scale (\$4.7 billion) water quality program whose goal is to alleviate many of the wastewater problems in St. Louis City and County. One of the ways these goals will be achieved is by addressing the requirements of the federal government to eliminate certain sanitary sewer overflows (SSO's) by the year 2023. SSO's are locations which allow peak sanitary sewage flows to spill out of overcharged sanitary sewers into nearby creeks. Before removing these SSO's, additional sanitary sewers and/or storage facilities must be constructed to provide a safe, clean alternative route for the excess flow that the existing sanitary sewers are unable to carry.



After an extensive evaluation of alternatives, including pumping excess flows into large above-ground storage tank farms and/or a network of large open-cut sanitary sewers which would have to be constructed through heavily developed areas and major roadways, it was determined that a deep storage tunnel provided the best solution for the region. It will be the least disruptive and most cost-effective approach to achieve the collection and storage goals of the program.

## Deer Creek Sanitary Tunnel Project

The Metropolitan St. Louis Sewer District (MSD) awarded the \$150 million construction contract for the Deer Creek Sanitary Tunnel in summer 2017. Construction of the tunnel and ancillary facilities will take place until late in 2022. This tunnel will be approximately 3.9 miles long, extending from Clayton Road in the City of Clayton to Interstate 44 in the City of Shrewsbury. The tunnel is being excavated in deep rock between 150-250 feet below ground surface and have an inside diameter of approximately 19 feet. The tunnel alignment is illustrated by the red line in the figure.

The tunnel will collect and temporarily store peak sanitary sewer flows along the Deer Creek Sewer system. This will alleviate the overcharging of the existing sanitary sewer systems in the area that contribute to basement backups and sewer overflows.

## THE DEER CREEK SANITARY TUNNEL FAST FACTS:

- **Length:** approximately 3.9 miles
- **Construction Cost:** \$150 million
- **Anticipated Completion Date:** September 2022
- **Adjacent Municipalities:** Clayton, Richmond Heights, Brentwood, Maplewood, Webster Groves and Shrewsbury.
- **Design Engineer:** Parsons
- **Contractor:** SAK Construction
- **Construction Manager:** Black & Veatch

## BENEFITS:

- Provides an outfall for future relief sewers that will alleviate building backups and sewer overflows onto the ground or to creeks
- Controls sewage volume to the waste water treatment plant eliminating an expensive treatment plant expansion.

## Building the Underground Facility

The tunnel will be 175 feet below the ground surface. To reach that depth the construction team has blasted a 42-foot diameter circular shaft. The construction shaft (which will later serve as part of the pump station that drains the tunnel) is located at the downstream end of the tunnel near I-44 and Shrewsbury Ave. Soil has been excavated from the upper 20 feet of the shaft using standard excavation equipment. Once the rock surface was reached, the rock was drilled and blasted to break the rock into small enough pieces to be removed by the backhoes, buckets, and crane. As of June 1, 2019, the project is 42% complete. 7,000 feet of the 20,800 foot long tunnel have been excavated.



The tunnel is being excavated by a Tunnel Boring Machine (TBM) like the one shown in the photo to the right. These machines are designed to bore through the limestone, creating the 21.5 foot diameter opening. The rock material is hauled out and away through the shafts, and then the tunnel is lined with cast-in-place concrete resulting in a circular tunnel with a 19 foot inside diameter.

## Directing Residential and Commercial Wastewater Flow into the Tunnel

This project will construct five structures to collect peak sanitary sewage flows, that may have previously overflowed onto the ground or into creeks, and divert that flow to the tunnel for storage. While most of the tunnel construction takes place underground and is not visible, construction of the diversion structures occurs near the surface and will be visible. The five structures and their locations are:

- Deer Creek – I-44 and Shrewsbury, the same site as the construction shaft in Shrewsbury
- Black Creek – South of Manchester and east of Breckenridge Industrial Ct. in Brentwood. Currently the shaft has been excavated through the soil.
- Pendleton – At Brazeau Avenue and Suburban Tracks in Brentwood. The vent shaft has been excavated.
- Linden – Brentwood Blvd. and Red Bud in Richmond Heights. Installing pipe connecting structure to tunnel
- Haddington – North of Clayton Rd. at Haddington Ct. in Clayton. Excavating the shaft where the TBM will be removed from the tunnel. Building Diversion Structure

Construction activity at these sites will include constructing shafts from the surface to the tunnel, located approximately 175 feet below. The shaft construction will include drilling and blasting to facilitate removing the rock from the shaft excavations. Large concrete structures will also be constructed approximately 30 feet below ground at each of the sites. These structures will connect to existing sewers and divert the excess flow from these sewers and direct it to the drop shaft where it will fall and enter the tunnel.

## BLASTING – WHAT TO EXPECT

Blasting operations began in January 2018 and will continue through the fall of 2019 at the Deer Creek Site. Blasting began in April 2019 at the Linden site and has been completed. Blasting will begin in summer 2019 at the Black Creek and Haddington sites and later in 2019 at the Pendleton site.

- Blasting may occur twice a day during excavation of the shafts, each blast takes about eight seconds
- Prior to blasting or tunneling activities, nearby property owners will be offered an inspection of their property to document the condition before blasting occurs within 300 feet of the property
- Before each blast, a blasting signal will be sounded to alert the community that a blast is about to happen. This will happen on a daily basis until excavation work is located away from the shaft
- The noise and minor vibration from the blasting may be noticeable up to about a half-mile
- No blasting will occur after 10:00 PM or on Sunday



## WHO TO CONTACT

Questions or concerns about construction should be directed to Clay Haynes at (314) 802-7039 during normal business hours. If there is an emergency please call 911!

For more information about the overall

Project Clear program visit:

<http://www.projectclearstl.org/>



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