SOUTH MAGNOLIA CSO CONTROL PROJECT

King County Protecting Our Waters Doing our part on rainy days

> February 2015

Two major steps forward on the path to pollution control in Magnolia

King County's contractors for the South Magnolia combined sewer overflow (CSO) Control Project completed two important activities in November. In late November, Stellar J Corporation successfully carried out a continuous concrete pour to install a 12-foot thick concrete base slab for the storage tank. In mid-December, Walsh Construction and Mears Group, Inc completed the final step in Horizontal Directional Drilling, pulling almost 3,000 feet of pipeline through a borehole extending from 32nd Avenue West to an exit pit by 23rd Avenue West.

By the end of the year, the new Magnolia CSO Control Facility will begin working to reduce stormwater and sewage overflows to Puget Sound during large storms. In 2013, King County reported a long term average of 22.7 overflows per year from the Magnolia Outfall (006). The new CSO Control Facility is designed reduce overflows to Elliott Bay to no more than one per year on a long-term average.





The entire Magnolia community benefits from this pollution control project, but only a portion of the community lives with project construction day to day. We all owe a special thank you to project neighbors near the Smith Cove and 32nd Avenue West sites. Residents dependent on 32nd Avenue access participated in King County's largest ever effort to provide temporary accommodations when their road was closed for two days. These project neighbors have lived with construction activities and inconveniences for the benefit of their entire community.



SOUTH MAGNOLIA

Pipeline pullback marks the completion of drilling in Magnolia

In August, drilling subcontractor Mears Group, Inc. began the process to establish a borehole for pipeline installation, working from drill pits built by the general contractor, Walsh Construction, Inc. The contractor worked through challenges presented by the unusual orientation of the pipeline alignment in Magnolia. In a typical configuration, Horizontal Directional Drilling travels underneath a feature and surfaces on the other side. In Magnolia, the drilling alignment travels gradually downhill, exiting the bluff 55 feet lower than the entry pont. Crews from Mears successfully managed the effects of gravity by installing a blowout preventer and valves on the lower side to maintain pressure and keep soils inside the borehole during drilling.

Crews first established the alignment in a pilot bore extending from 32nd Avenue West and the exit shaft in Smith Cove Athletic Field on 23rd Avenue West. They enlarged the borehole in three successive reaming passes, using reaming heads that were 26, 36, and 46 inches. Steel casings were installed in the entrance points to stabilize the borehole for pipe insertion and pullback.



While drilling was underway, subcontractor Underground Solutions heat-welded 40-foot sections of pipeline into five strings, each 600 feet long. In the final stage, pipeline pullback, a large drill located at 23rd Avenue West pulled the pipeline from 32nd Avenue West to the bottom. Pipeline strings on 32nd Avenue West were fused together during pullback.

Crews pulled the pipeline through to the steel casing in one continuous effort, reopening 32nd Avenue West to allow people to return home. They chose an alternate plan to install the final 100 feet of pipeline after finding that gravity had worked to deposit clay and soil in the exit casing. The contractor will install the final portion of the pipeline from the bottom end.



Neighbors view pullback from bridge

King County project team members had the opportunity to talk with more than 100 neighbors on the Howe Street Bridge, which overlooked the pipe pullback on 32nd Avenue. Many had questions about drilling operations, pipe installation and how the project will reduce pollution for their community.

See construction photos on the project Web page! Visit *www.kingcounty.gov* and search "South Magnolia CSO"

CSO CONTROL PROJECT

A mass concrete pour finishes the base of the storage tank

Stellar J Corporation, King County's contractor for the storage tank construction, completed a critical part of the project during November. When project designers faced the need to anchor the storage tank down so it didn't float in the high water table, they chose to include a 12-foot thick concrete slab. The alternative was months of deep pile installation to tie the tank to solid soils 80 feet below.

Stellar J's engineers designed a complex shoring system to hold back soils while they were excavating the area for the storage tank. Over 500,000 pounds of steel reinforcement was added to the base slab form. In December, the contractor finished preparations and carried out a continuous pour of just under 5,000 cubic yards of concrete to finish the base slab. Over 16 hours, 500 concrete trucks arrived to deliver their load through concrete pumps.

The most critical step occurred after concrete was poured. During the curing process, the contractor controlled the temperature in the slab with a cooling pipe system to maintain consistent reaction in the slab and avoid cracking. Crews monitored the slab and covered it with blankets to protect it from rain. Crews applied a "broom finish" to the slab for safe footing when King County Operations staff enters the tank for maintenance.

Now that the base slab is poured, the contractor can continue to form the walls and top of the tank, and to construct the building that will hold electrical and mechanical equipment. Driveway access and landscaping will follow.





Did you know?

The area where the tank is being built was once tidelands before the Navy filled it in the early 1940s. Today, the groundwater level is 8 feet below the surface, and about 20 feet above the top of the base slab.

Photo courtesy of Seattle Municipal Archives





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LOOK INSIDE

Magnolia's new pollution control facility will begin operations this year!



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Magnolia's new pollution control facility will begin operations this year!

King County's Magnolia Combined Sewer Overflow (CSO) Control Project will be completed this year. During wet weather, up to 1.5 million gallons of stormwater and sewage will be diverted through a new 3,000-foot gravity sewer pipeline to an underground storage tank in the Smith Cove area. Once storms have passed, stored flows can be pumped back to the sewer system and travel to West Point Treatment Plant.

For more information

kingcounty.gov/environment/ wtd/Construction/Seattle/ SMagnoliaCSOStorage

Contact Monica Van der Vieren at Monica.vandervieren@kingcounty.gov or 206-477-5502.

