



Protecting Drinking Water from Potential Flood Contamination in Washington, D.C.

Planners at Washington D.C.’s water utility, D.C. Water, decided to take proactive measures against potential flooding of their facility. Located right next to the Potomac, their facility could’ve been at risk in the event of an out-of-the-ordinary natural disaster. Determining that the main risk to the water supply in such a case would be permeation through sub-surface soil, they began installing a metal sheet pile wall deep into the substrate between the riverbank and the facility. However, in some spots they were not able to drive a sheet pile panel into the ground because of underground utility lines or rocky substrate. The planners called in Seawall Repair Network contractor LJS Waterproofing to create sub-surface grout walls in those spots to fill in the gaps.



Repair Materials

The crew “constructed” these sections of the “underground wall by injecting SW-RP1. This repair material permeates the soil, fills small voids in the soil, and cuts off water flow.

SW-RP1 Uncured (Appearance brown liquid)		
Viscosity at 77°F (25°C)	(ASTM D4878-98)	± 215 cP (± 215 mPa.s)
Density	(ASTM D3505-96 [2000])	± 70.92 lbs/ft ³ (± 1.12 kg/dm ³)

SW-RP1 Accelerator, Accelerator for SW-RP1 (Appearance: yellow - orange liquid)		
Viscosity at 77°F (25°C)	(ASTM D4878-98)	± 75 cP (± 75 mPa.s)
Flash point	(ASTM D1310-86)	313°F (156°C)
Density	(ASTM D3505-96 [2000])	± 65.5 lbs/ft ³ (± 1.05 kg/dm ³)

Procedures

LJS Waterproofing professionals used a Geoprobe to drive injection pipes into the ground (up to 33 feet in some locations). They then injected one gallon per foot using upward staging. The next injection point was 18 inches away from the first one. This process was repeated until a grout wall formed, filling the gap between the two adjacent underground sheet piles. For a large-scale job like this, they used a PolyShark single component grout pump manufactured by Alchemy-Spetec.

Results

With solid, impermeable grout walls filling in the gaps, a sub-surface barrier between the riverbank and the drinking water facility was now in place. The planners at D.C. Water were very satisfied with this solution.