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FOR IMMEDIATE RELEASE

Savannah River Site Fights Contamination with Massive Underground Wall

AIKEN, S.C., March 3, 2020 – Savannah River Nuclear Solutions (SRNS) recently finished constructing a large underground, water-permeable wall made of recycled iron filings that neutralize Cold War-era chemical solvents found in the aquifer beneath the Savannah River Site.

The wall is as long as three basketball courts and, on average, about four inches thick, extending 135 feet below the earth's surface at its deepest point.

Subcontractors to SRNS mixed large amounts of a food-grade, starch-like material with 1.5 million pounds of iron filings, which are ground-up iron parts from reclaimed automobile engines. The workers then injected the material into 22 wells above the aquifer.

“Incredibly, the weight of this reactive permeable wall is equal to approximately 500 Toyota Prius vehicles and acts much like a giant water filter to remove degreasing solvents like those used at dry-cleaning stores,” said Mark Amidon, a Geologist with Savannah River National Laboratory. “The iron causes the physical structure of the solvents to break down into a harmless material. The solvents are completely destroyed.”

The environmental cleanup system is designed to work for decades with routine monitoring and has proven effective elsewhere in the U.S.



Injecting material containing iron filings into wells at the Savannah River Site is a multi-step process. A well is flushed with water, shown here, before workers add the iron filings to it. The workers injected the iron filings into 22 wells to create a long and continuous iron wall that acts as a giant metal filter of contaminated groundwater.

“Precision placement at greater depths enabled us to intercept the contaminated groundwater in a narrow zone as it travels along an old, subsurface stream bed channel,” said Seth Miller, an SRNS Project Manager. “It’s quite an accomplishment.”

Philip Prater, Senior Physical Scientist with the DOE-Savannah River Operations Office, noted workers safely completed the iron injections ahead of schedule.

“SRNS personnel were able to recognize early on and take advantage of cooler air temperatures. The cooler weather greatly improved the volume of iron injected each day,” Prater said. “Further, they ensured excess iron was distributed where groundwater contaminant levels were the highest, which provided improved remedial effectiveness.”



Workers mixed more than a million pounds of iron filings with a food-grade, starch-like material, shown here.

In the Cold War era, solvents were used to decontaminate items or prepare equipment for repair. Over time, the solvents seeped into the subsurface, contaminating the aquifer.

Savannah River Nuclear Solutions, a Fluor-led company with Newport News Nuclear and Honeywell, is responsible for the management and operations of the Department of Energy’s Savannah River Site, including the Savannah River National Laboratory, located near Aiken, South Carolina.

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