



NAVAL WEAPONS INDUSTRIAL RESERVE PLANT, BEDFORD

NAVY ENVIRONMENTAL RESTORATION (ERN) PROGRAM

MAY 2019

FIVE-YEAR REVIEWS



80-YEAR TARGET DATE FOR TCE GROUNDWATER DECONTAMINATION USING VEGETABLE OIL BIOREMEDIATION

Maritza Montegross explained that the Navy's conventional "pump and treat" decontamination operation, when paired with bioremediation, yields an estimated cleanup target date of 2090 for the TCE-tainted groundwater surrounding Hartwell Hill. By then, the groundwater in aquifer layers near the Hill should meet drinking water standards.

Bedford Public Health Board member Ann Kiessling queried Montegross, "Why did you not consider something that's going to take 80 years a failed strategy?" Montegross responded, "Because it's not a failed strategy."

Montegross continued, "Excavation's probably the easiest thing. You go in and remove the whole hotspot. Even removing the hotspot didn't change the 80-plus years. Yet, the huge difference was, the excavation costs significantly more than us doing a bioremediation. So, we're still out there for the same number of years, but one is much cheaper."

BOH Director Porter referred to Air Force environmental restoration operations for Hanscom Field, noting, "The cleanup is happening at a much faster rate than is projected here. I'm wondering why and how?" Montegross explained there are differences in geology and the Navy environmental restoration of the NWIRP land and groundwater began at a later date than the Air Force cleanup. Don Corey, Bedford's veteran 30 year Restoration Advisory Board member, concurred, recalling, "Back in the '90s, the Air Force already had control on almost every one of their Sites," adding, "So, you got started significantly later than the Air Force."

When Kiessling asked for details of the bioremediation, Navy contractor John Fitzgerald, of KOMAN Government Solutions, described the setup, saying, "We have an injection array of wells on top of the Hill near the source area. What we've done over the last couple of years is inject emulsified vegetable oil, which helps the bacteria grow." He added the vegetable oil is a food source which helps the bacteria dechlorinate the solvents, turning trichloroethylene into dichloroethylene, and eventually just water and ethylene. Fitzgerald explained that the vegetable oil injections accelerate the bacterial dechlorination, and that the process so far seems to be working well, producing an order of magnitude reduction in TCE levels since it was begun.

Rob McCarthy, of Resolution Consultants, commented that because of the complex site geology, wide extent and depth of the TCE contaminated groundwater plume, and the Navy goal of achieving drinking water standards, “It’s just going to take a very long time.” He also noted that bedrock in the area is about 90 to 100 feet below the surface. (Montegross had earlier explained that TCE has been detected in the shallow and intermediate aquifers down to bedrock depth.)

RAB Co-Chair Corey commented, “I could see this working in the shallow and intermediate aquifer. But down in the bedrock aquifer, where you’ve got tiny little seams in the rock?” He added, “I guess I’d be extremely pleased if [the area] around the bedrock aquifer were ever cleaned up.”

Montegross replied that a new remediation method might be added in the future to address the deeper contamination issue, mentioning that the Navy environmental restoration team meets twice a month to monitor the progress of the Bedford NWIRP site cleanup operations.

Bedford’s Navy Restoration Advisory Board (RAB) meeting took place May 8, 2019 to hear the second Five-Year Review of the Navy’s environmental cleanup of contaminated groundwater beneath the land of the former Naval Weapons Industrial Reserve Plant (NWIRP). Maritza Montegross has been the Navy Facilities Engineering Command Remedial Project Manager for the Bedford NWIRP since 2006.

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