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***ESTCP Sponsored  
TCH Demonstration:  
Former Naval Air Warfare Center (NAWC)  
West Trenton, NJ***

**Project Information**

The laboratory treatability studies are underway and the field demonstration operation is complete for the four-year ESTCP funded project to demonstrate chlorinated volatile organic chemicals (CVOC) DNAPL removal from fractured rock (silt and mudstone) using Thermal Conductive Heating (TCH). The demonstration site is located at the former Naval Air Warfare Center (NAWC) in West Trenton, New Jersey and the treatability studies are being performed at Queen's University in Canada.



The TCH field demonstration was conducted at a TCE impacted fractured rock site (USGS Chlorinated Solvents in Fractured Sedimentary Rock Research Site the NAWC in West Trenton, NJ). The NAWC site has an excess of 100 wells (at least 70 bedrock wells and 30 shallow wells), and is currently hosting other technology demonstrations.

**Project Goals**

The goals of the project are to: 1) determine the effectiveness of TCH in fractured bedrock; 2) provide guidelines for the appropriate application of TCH to fractured rock settings; and 3) establish realistic expectations.

**Pilot System Design, Installation, and Operation**

The TCH system design included the following features:

- Area and volume of pilot test approximately 400 ft<sup>2</sup> and 740 cy, respectively;
- 15 vertical TCH heaters, 54 ft long;
- Heater spacing between 6 and 8 ft allowing for relatively rapid heating and a short duration of the demonstration;
- Insulating vapor cover;
- Off gas vapor treatment system comprised of a heat exchanger, cooling tower, positive displacement blower, and granular activated carbon; and,
- TCH system operational period of 105 days.
- Heated the site to 100°C from 5 to 35 ft below grade.
- Groundwater extraction rate 3-5 times the expected rate.
- Removed ~530 lbs of VOCs (est.)
- Reduced rock concentrations (69-84% reduction).

**Project Results:** Pending.

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