FORMER BRANDYWINE DRMO YARD

SS-01

Joint Base Andrews April 2022

BACKGROUND

The former Brandywine Defense Reutilization and Marketing Office (DRMO) Yard (SS-01) is an inactive facility administratively controlled by Joint Base Andrews (JBA). The 8-acre site is approximately eight miles south-southeast of JBA in the town of Brandywine, MD. While in operation from 1943-1987, the Brandywine DRMO yard was used for temporary storage of scrap materials and hazardous waste generated from various Department of Defense facilities in the region.

The primary groundwater contaminant at the Brandywine DRMO site is trichloroethylene (TCE), a solvent. A TCE groundwater plume has spread beyond the DRMO property into a residential neighborhood and commercial property. The primary soil contaminant is polychlorinated biphenyls (PCBs), and to a lesser extent metals and pesticides.

During the process of evaluating the extent of contamination, it was discovered that nearby residents were using shallow groundwater wells as their drinking water source. In 1991, the Air Force (AF) converted some homes to public water. In 1994, a remedial action was completed to remove the PCB-impacted surface soils within the DRMO Yard, and in 1996 a groundwater extraction and treatment system (GWETS) was installed on the Brandywine DRMO property. The Environmental Protection Agency (EPA) placed this site on the National Priorities List in 1999. A Remedial Investigation (RI) was completed in June 2005. A Feasibility Study (FS) was then completed, and a Proposed Plan (PP) was issued in June 2006, in which the preferred remedy identified was in-situ bioaugmentation with groundwater gradient control. The Interim Record of Decision (IROD) was completed in September 2006 confirming the selected remedy and establishing land use controls (LUCs). Between 2007 and 2008, the AF acquired 3.6 acres of private property to strategically address the leading edge of the groundwater contaminant plume, as it was determined the plume was larger than originally characterized.

In 2008, the Remedial Design (RD) was completed, a groundwater pump-and-treat system was installed, and system operation began. At that time operation of the 1996 GWETS ceased. The new GWETS was strategically positioned to prevent plume migration.

In 2009, JBA signed a Federal Facilities Agreement with the EPA which outlined the scope of efforts for remedial actions at SS-01. In 2012, a performance-based contract (PBC) for remedial action was awarded to address the remaining contamination. On-site substrate injections occurred in 2008, 2010, 2012 and 2014 in an effort to treat the groundwater contamination by using direct-push injections to condition the aquifer to allow for continued microbial bioremediation. The success of the bioremediation has resulted in a 78% reduction in the groundwater contaminant plume; and to date, operation of the GWETS has treated over 11,200,000 million gallons of water resulting in the removal of over 85 pounds of VOCs from site groundwater. JBA has also completed 3 PCB removal actions, removing over 18,000 cubic yards of contaminated soil.

The IROD estimated the time to achieve cleanup for the non-source areas to be 7 years. The 14th post-injection sampling event, performed in March 2015, was the final post-injection sampling event required under the IROD; and exhibited that the interim remedy decreased the TCE plume area by 93 percent. The revised FS and PP for the final remedy were completed in 2016. The Remedial Action Work Plan (RAWP) and RD were approved in 2017. The final remedy was selected in a ROD signed by the AF and the EPA in March 2018. This ROD selected electrical resistance heating (ERH) to treat the remaining groundwater contamination source area, the ROD confirmed no further action was needed for site soils. Operation of the ERH system began in April 2019 and was completed in September 2019.

The groundwater will continue to be monitored to ensure contaminant concentrations continue to decline. LUCs are in place to limit land use and prevent use of the groundwater underlying the site until cleanup criteria numbers are achieved.

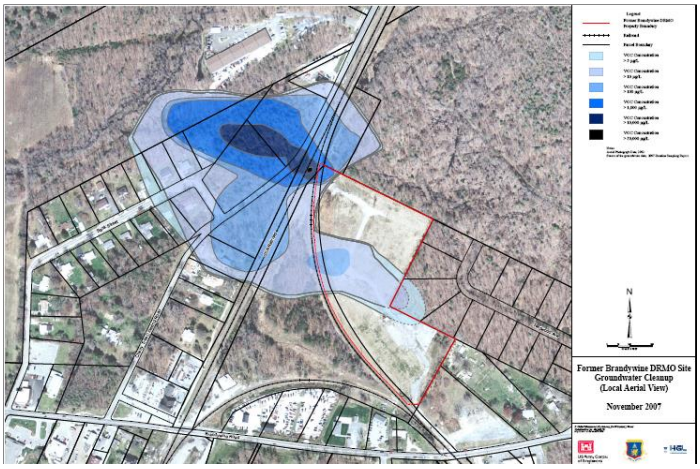

Figure 1. Brandywine TCE Plume

CHALLENGES

Remediation of this source zone presents a significant technical obstacle given the plume extends under multiple private land parcels, including an active CSX railroad line. Long-term access to private land parcels is required, so community involvement is critical, as well as securing the appropriate right of entry permits. Of additional concern, is the necessary design and replacement of various sections of the water and sewer line, within the remediation area, that could be affected by the chosen remedy prior to RIP implementation.

Regulatory agencies have a high level of concern with groundwater contamination under multiple private land parcels. The management of LUCs across the 90-acre area is a challenge, given the majority of the area is on non-government-owned property and relies upon Prince George's County monitoring, inspection, and enforcement.

POST PBC REMEDIAL ACTION ACTIVITIES

In 2020 an Optimized Remediation Contract (ORC) was awarded and the Contractor is continuing the post-ROD RA-O activities at the site, including groundwater monitoring, the most recent such event having been completed in September 2020. The ORC Contractor is working with the Air Force and regulators to sample monitoring wells and document declining contaminant concentrations following successful remedial actions at the site. As contaminant concentrations decline and are documented to be stable below regulatory standards, wells and other infrastructure used for the work will be removed. Groundwater will continue to be monitored semi-annually in accordance with the ROD.

RISK DRIVERS

Contaminants: TCE, DCE, PCE, and vinyl chloride in concentrations above regulatory standards. naphthalene, 2-Methlynaphthalene, 1,4-DCB, and metals (iron and manganese) also extend onto neighboring properties.

Impacted Media: Groundwater and soil

Exposure Pathways Completed: Groundwater to domestic wells

Current Land Use/Surface Cover: Residential & Industrial

Reasonably Anticipated Land Use: Residential & Industrial

Relative Risk: High