AAFES SERVICE STATION

ST-17

Joint Base Andrews January 2018

BACKGROUND

The Army and Air Force Exchange Service (AAFES) Service Station (ST-17) is an active gasoline station located at Joint Base Andrews (JBA) near the southeast corner of Brookley Avenue and F Street. The AAFES Service Station began operation in 1972 and dispensed leaded and unleaded gasoline from three underground storage tanks (USTs) until 1990. Two additional USTs containing waste oil and heating oil were located on the east side of the AAFES Service Station.

The five USTs were removed in 1993. Groundwater monitoring wells were installed, along with a soil vapor extraction (SVE) system because the tanks had reportedly been leaking. The SVE was removed from service in 1995 due to an apparent lack of free-phase petroleum product. However, the product returned to monitor wells outside the radius of influence of the SVE system. In 1998, a vacuum truck was used to remove the product from the wells. In 2001, sand fracturing was used with surfactant injections and vacuum enhanced removals. In 2002-2003, an investigation involving many soil borings defined the zone of petroleum saturated soil still remaining at the site, as well as a dissolved-phase groundwater plume. Weekly well gauging and product bailing continued through 2005. A six acre benzene and Methyl-Tert-Butyl-Ethene (MTBE) groundwater plume was also identified. This site was assigned Case No. 91-0717-PG1 by the Maryland Department of Environment (MDE) Oil Control Program (OCP).

CHALLENGES

All of the significant challenges that this site presented were overcome. These included the clean up of a large and migrating groundwater plume of benzene, toluene, ethylbenzene, and xylenes (BTEX) and MTBE in a residential setting, significant traffic interference, and underground utilities.

PERFORMANCE BASED APPROACH

JBA awarded its very first performance-based restoration (PBR) contract here at ST-17 in 2003, which addressed the contaminants at the site to industrial clean-up levels and achieved site closure through the MDE OCP. The source area containing free-product was excavated. Following the excavation, over 25,000 lbs. of Oxygen Release Compound (ORC) was injected into the groundwater at 420 points in a staggered grid pattern throughout the plume.

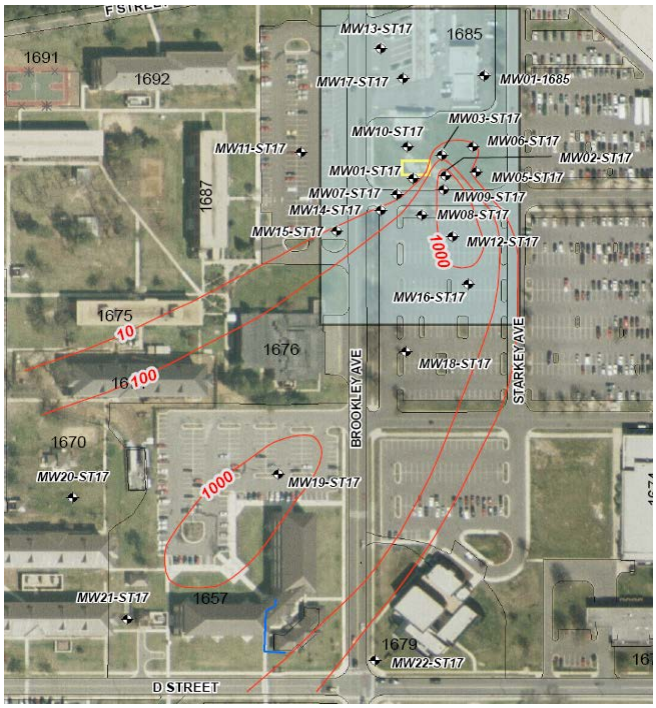

Figure 1: ST-17 Site Map with 2003 BTEX Plume

The ORC increases dissolved oxygen in the groundwater which stimulates the naturally occurring bacteria to consume the petroleum constituents. The program proved to be successful. Estimates indicated that this aggressive environmental restoration approach shortened the time it would take to achieve site closure from 20 years to two years. MDE Oil Control Program closed the site, Case No. 91-0717-PG1, in 2006.

RISK DRIVERS

Contaminants: Petroleum products, BTEX, and MTBE

Impacted Media: Soil and groundwater

Exposure Pathways Completed: Construction workers

Drainage: Meetinghouse Branch

Current Land Use/Surface Cover: Residential and industrial

Reasonably Anticipated Land Use: Residential and industrial

Relative Risk: NR