
PD-680 SPILL SITE

ST-10

Joint Base Andrews

February 2013

BACKGROUND

The PD-680 petroleum-based Stoddard solvent spill site (ST-10) is located on the northwest side of the Joint Base Andrews (JBA) airfield and resulted from leaking underground storage tanks (USTs) located near a vehicle wash rack. At least two USTs have leaked PD-680 solvent and waste oil at the site. Other USTs at this site contained glycol, and JP-4 jet fuel. Each of these tanks has been removed from the site, and the glycol UST was replaced in 1997 with a regulatory compliant fiberglass UST. The only remaining UST at Site ST-10 is one 25,000-gallon fiberglass tank containing glycol. A Remedial Investigation/Feasibility Study (RI/FS) with a treatability study has been completed and a Record of Decision (ROD) has been signed. The ROD specifies groundwater monitoring and institutional controls as the remedy.

CHALLENGES

This site has already reached the status of Remedy in Place (RIP). The remaining challenges relate to the significance of arsenic in the groundwater, a rebound of naphthalene in two monitoring wells, and a rebound of benzene in one monitoring well. This area of Maryland is known to have high concentrations of naturally occurring arsenic in the soils. Since no one is exposed to this groundwater, and because dissolved arsenic levels should decline over time, an informal agreement has been made to not address arsenic levels at this time. The Air Force (AF) and the Environmental Protection Agency (EPA) agreed to increase groundwater monitoring to once a year due to the increased levels of naphthalene and benzene. The aforementioned rebounding of naphthalene and benzene as well as the non-decreasing concentrations of arsenic in the groundwater has triggered the need for consideration of additional actions. On-going construction activities are being conducted in accordance with the Land Use Controls (LUCs) for the site.

PERFORMANCE-BASED APPROACH

LUCs are currently being employed to limit any potential human exposure. In-situ groundwater treatment has been conducted by injecting an Oxygen Releasing Compound (ORC) into the groundwater plumes at Site ST-10.

Naturally occurring bacteria populations that are starved for oxygen are then stimulated and consume the benzene and other constituents. While arsenic is a contaminant of concern at this site, the total concentrations are believed to be equivalent to naturally occurring background levels. Arsenic is typically bonded to the soil particles, and is therefore minimally detectable in groundwater. The original hypothesis was that the oxygen consuming microbial populations were stimulated as a result of the PD-680 spill, which, after the consumption of oxygen by the microbes, ultimately resulted in anaerobic (without oxygen) conditions in the groundwater. During anaerobic conditions, arsenic loses its bond to the soil particles, and becomes mobile in the groundwater. Monitoring of arsenic has continued and microbial communities have degraded the petroleum hydrocarbons; However, the arsenic has not reattached itself to the soil particles as expected. Arsenic levels in the groundwater at ST-10 remain above the maximum contaminant level (MCL) at four of the active monitoring wells.



RISK DRIVERS

Contaminants: Benzene, naphthalene, and arsenic

Impacted Media: Groundwater and subsurface soil

Exposure Pathways Completed: Construction worker exposure during excavation work

Drainage: Piscataway Creek

Current Land Use/Surface Cover: Industrial

Reasonably Anticipated Land Use: Industrial

Relative Risk: NR