Steam Enhanced Extraction Groundwater Cleanup

Former Williams Air Force Base Site ST012

Air Force Uses Innovative Technology to Clean Groundwater at the Former Base

The former Williams Air Force Base Liquid Fuel Storage Area is now the hub of activity to remove fuels approximately 160 to 245 feet below the surface. Located at S. Sossaman Road and Ulysses Ave. (Figure 1), the fuel storage area provided bulk fuel storage and distribution for the former base from 1941 to 1991. Leaks and spills resulted in petroleum contaminants seeping into the soil and groundwater. Although groundwater at the site is not used for drinking or irrigation, the Air Force is taking action to ensure long-term protection of human health and the environment.

Figure 1.

Steam Enhanced Extraction

The groundwater cleanup for this site relies on an innovative technology called Steam Enhanced Extraction (SEE). The process involves injecting steam into the saturated soil to heat and release the trapped fuel. The residual fuel, contaminated groundwater, and vapors are then extracted from multi-phase wells for treatment at the surface.

After treatment to achieve regulatory discharge requirements, treated water is discharged to the sewer and treated vapors are discharged to the atmosphere. Once the removal process is complete, any liquid fuel recovered from the water is separated and either reused to power the remediation system or recycled. Ongoing monitoring of the system will ensure it is controlling and removing the contaminants.

Enhanced Bioremediation

After SEE has achieved its goals, the cleanup will transition to a process called Enhanced Bioremediation. Enhanced Bioremediation is the process of modifying existing conditions to promote biological activity among bacteria that feed off of residual contamination present at the site.

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Road Closures

During construction and operation of the SEE system, some road closures will be necessary (Figure 2). Access will be restricted in these areas:

- Upton Avenue, East of Avoca Street (not an active road)
- Avoca Street (West)
- Ulysses Avenue
- Phoenix Mesa Gateway Airport Cell Phone Parking Lot open to taxis only
- First 30 minutes of terminal parking are free while cell phone lot is closed

Project Schedule

Today-Aug 2014 Steam Enhanced Extraction system construction

May 2014-Dec 2015 Road closures

Aug 2014-Aug 2015 Cell Phone Lot open to taxis only and closed to the public

Sept 2014-Nov 2015 Steam Enhanced Extraction operational

For More Information

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Figure 2.

History

Since its construction in 1941, the 4,043-acre Williams Air Force Base served as a flight training school. The base closed in 1993 under Base Realignment and Closure (BRAC). While the community has been redeveloping the Williams property since the 1990s, the Air Force has continued to clean up the soil and groundwater from past military operations.

In 1989, the U.S. Environmental Protection Agency (EPA) listed Williams on its National Priorities List. Initially, the Air Force found 82 sites needing some form of environmental cleanup. Today, 67 of those sites are closed, requiring no further cleanup work.

The last remaining sites requiring cleanup include the current project at the former fuel storage area, also referred to as Site ST012. Like all other environmental remediation at Williams, this remedy was jointly selected by the Air Force, EPA, Arizona Department of Environmental Quality, and the Arizona Department of Water Resources.

Property transfer at Williams is also nearly complete. Some 3,900 acres have been deeded from the military, with 144 acres left to go. Williams is now home to the Phoenix-Mesa Gateway Airport, Arizona State University Polytechnic Campus, Gilbert Chandler Community College, and numerous other businesses.