

## Chemical Spill 10 (CS-10) Groundwater Plume

The Air Force Center for Environmental Excellence (AFCEE) is the agency responsible for the Installation Restoration Program (IRP) at the Massachusetts Military Reservation (MMR). The IRP is the program that cleans up soil and groundwater contamination resulting from historic use of MMR.

### Where did this groundwater plume come from?

The primary sources of the CS-10 groundwater plume are spills and releases that occurred during the operation of the former Boeing Michigan Aerospace Research Center Missile Site and Unit Training Equipment Site. Other sources at MMR may have contributed to the CS-10 plume. The main contaminants of concern in the CS-10 plume are perchloroethene (PCE) and trichloroethene (TCE), both of which are volatile organic compounds (VOCs) used in cleaning solvents.

### What is the current status of the source area?

In 1996, 15 drainage structures were removed as part of the basewide Drainage Structure Removal Program. By November 1998, a Record of Decision was signed, which specified cleanup actions using both soil vapor extraction (SVE) and excavation and off-site disposal of contaminated soils. In 2001, over 1,500 tons of contaminated soil were excavated and taken off-site for disposal. The SVE system was started in February 2002, and over 4.5 pounds of VOCs have been removed from the soils through February 2004. Many of the original buildings at CS-10 have been demolished.

### What is the current status of the plume?

**Treatment System:** The groundwater treatment of the CS-10 plume is divided into three segments: [1] In-plume; [2] Sandwich Road Fence; and [3] Leading Edge. The treatment plants use granular activated carbon to remove VOCs from the groundwater. Since February 2004, over 7.6 billion gallons of groundwater from the CS-10 plume have been treated, achieving approximately 39% of its total mass cleanup goal. These two systems (In-plume & Sandwich Road Fence) are expected to operate for the next 25-35 years.

**In-Plume:** This system uses eight extraction wells and two infiltration galleries that are currently operating at 2760 gallons per minute (gpm). The system started on June 24, 1999; modified in April 2000. Through February 2004, over 5.6 billion gallons of groundwater have been treated, removing almost 2,100 pounds of contaminants. The In-Plume system has been modified by adding an additional extraction well.

**Sandwich Road Fence:** This system uses eight extraction wells and six reinjection wells that are currently operating at 874 gpm. The system started on May 18, 1999. Through February 2004, over 2 billion gallons of groundwater have been treated, removing over 850 pounds of contaminants.

**Leading Edge:** An extraction well to capture the northern lobe was installed in January 2000. It currently operates at 175 gpm. A feasibility study containing alternatives for the leading edge lobes was submitted in 2003. A proposed plan that will lead to a final Record of Decision on the CS-10 plume (including the leading edge) is currently scheduled for public comment in late 2004.

**Monitoring Program:** AFCEE, the United States Environmental Protection Agency (EPA), and the Massachusetts Department of Environmental Protection (DEP) continually evaluate the results of the on-going groundwater treatment through a monitoring program known as System Performance and Ecological Impact Monitoring (SPEIM). The latest annual SPEIM report indicates that the CS-10 groundwater treatment plants are operating successfully and capturing the CS-10 plume as designed except for an area around the southern infiltration gallery of the In-Plume system. The In-Plume will be modified in 2004 by adding an additional extraction well.

The maximum contaminant level or MCL (as listed on the plume map) is a standard established by the EPA, under the Safe Drinking Water Act. It represents an acceptable level of a chemical that ensures the safety of a public drinking water supply. The DEP has established safe drinking water standards as well. If there are differences between federal and state levels for a given chemical, the more stringent (lower) value is applied.