

## Shallow Groundwater Fact Sheet

October 1998

A fact sheet providing information about shallow groundwater initiatives

The purpose of this fact sheet is to define and describe the shallow groundwater aquifer and answer questions about processes performed at Kelly AFB as part of the Installation Restoration Program. The shallow groundwater aquifer in and around Kelly AFB is not a drinking water supply.

### History

In 1982, at Kelly AFB, an aggressive environmental cleanup program was started known as the Installation Restoration Program (IRP).

Under the IRP, the base was investigated in an attempt to determine the sources and types of contaminants that were at Kelly. Once these contaminants were identified, Kelly began tracking the movement of these chemicals in the environment.

Tracking the movement of these chemicals involves continually testing the shallow groundwater on and around the base. It is through the slow movement of shallow groundwater that contaminants spread. By tracking a contaminant's movement and concentration, we can determine how to properly clean the affected areas. Since the inception of the IRP, monitoring wells have been installed and soil samples (borings) have been gathered. The goal was to find the extent to which the contamination has impacted the area in and around Kelly AFB.

### What we are testing

Again, the water we are testing is **not** the water we drink and wash with every day. The samples are taken from a shallow groundwater aquifer. Around Kelly the shallow groundwater is found 15 to 25 feet

underground. Since shallow groundwater is fed directly from rain and runoff, it has no protection from man-made or natural contaminants spilled on the soil.

Very thick layers of soils ranging from clays to limestones effectively separate the shallow aquifer from the Edwards Aquifer.

### What was found

The extensive groundwater monitoring performed as part of the cleanup program at Kelly is important in determining what chemicals have impacted the shallow groundwater and the location and concentrations of those chemicals. In general, chlorinated solvents such as Perchloroethene (PCE) and Trichloroethene (TCE) are widespread throughout the shallow groundwater system at Kelly, and in some areas have migrated off base. Kelly has also found breakdown or daughter products from these solvents in the shallow groundwater. Fuel is prevalent in regions of the base where leaking underground storage tanks were present or fuel spills have occurred. Lastly, metals from various disposal operations have impacted the shallow groundwater, but these contaminants tend not to migrate nearly as far as the solvents do.

### What does this mean?

Most chemicals are inherently hazardous and chlorinated solvents are no exception. However, because of the low concentrations and because people are not exposed to these contaminants, they do not pose a threat to your health. In order for these chemicals to harm you, one must drink, eat or breath them in higher concentrations over long periods of time. At the concentration levels found at the test sites, just getting the groundwater on your skin will not harm you. Because the contaminated water is 15 to 25 feet

underground there is not an easy way for you to be exposed to the chemicals. Most homeowners get their water currently from the Edwards Aquifer through the Bexar Metropolitan Water District or the San Antonio Water System.

## What will the Air Force do?

First and foremost — the Air Force will clean up any problems it created, according to processes laid out by both state and federal law. We will continue to investigate and develop appropriate cleanup alternatives.

What we learn in our ongoing investigations will help us make a final cleanup plan. That plan will be approved by both the Texas Natural Resource Conservation Commission (TNRCC) and the Environmental Protection Agency (EPA) and presented to the community before it is started. Our investigation may also help pinpoint other sources of contamination not associated with the base that might otherwise go unnoticed.

### For More Information

Additional information is available by calling

**Dick Walters,  
Kelly Public Affairs Office  
(210) 925-1815**

or write

**Kelly AFB Environmental Management  
307 Tinker Dr., Bldg. 306  
Kelly AFB, Texas 78241-5917**

Information Repositories containing more than 300 environmental documents that track a site from the time it was identified as a site to the completion of cleanup. These items can be found at the:

**San Antonio Central Library  
Government Documents Section (2nd floor)  
600 Soledad Plaza**

**San Antonio, Texas 78205  
and**

**Kelly AFB Library, Bldg. 1650  
Environmental Section  
250 Goodrich, Ste. 6  
Kelly AFB, Texas 78241**

### 1 Part Per Million

- One Penny In \$10,000
- 1 Inch In 16 Miles
- 1 Minute In 2 Years
- 1 Pancake in a stack four miles high
- 1 Needle in 50,000 Haystacks

### 1 Part Per Billion

- 1 Inch on a 24 hour journey at the speed of light
- 1 Inch In 16,000 Miles
- 1 Second In 32 Years
- One Penny In 10,000,000

## Definitions

**Aquifer:** An underground geologic formation that contains water. The shallow aquifer (sometimes called the surficial aquifer) is the aquifer closest to the surface. The Edwards Aquifer is a deep aquifer separated from the shallow aquifer by several hundred feet of rock and clay. Aquifer is the source of San Antonio's municipal drinking water.

**Contaminants:** Man-made chemicals found in water are called contaminants. The amount of a contaminant in water is called the concentration. Concentration is often measured in parts per billion or micrograms per liter (ug/l).

**Groundwater:** An underground accumulation of water.

**Industrial Waste Collection System:** Underground pipes that connected shops at Kelly AFB with the wastewater treatment plant. Over many years of use, these pipes leaked, contaminating groundwater with chemicals.

**MCL:** Maximum Contaminant Level. This is the highest allowable amount of a chemical in the drinking water. According to federal and state law, public drinking water may not contain more than the MCL of a particular contaminant.

**Perchloroethene (PCE):** Also called tetrachloroethene, this substance is a common industrial solvent used by the Air Force to remove grease from aircraft parts.

**Sampling:** Collection of a small amount of groundwater from a monitoring well.

**Trichlorethene (TCE):** A common industrial solvent used by the Air Force to remove grease from aircraft parts. TCE is considered a hazardous substance.