

# Pantex INFO

## Groundwater Activities

**P**antex was originally built during the early days of World War II for the United States Army to produce conventional munitions, bombs, and artillery projectiles. Since 1951, the Plant has been used for nuclear weapons assembly operations.

Historical waste management practices at the Plant resulted in impacts to on-site soil and perched groundwater. These historical practices include disposal of spent solvents to unlined pits and sumps, and disposal of high explosive (HE) wastewater and industrial wastes to unlined ditches and playas. As a result, HE, solvents, and metals were found in the soil in the main operational areas and the Burning Ground at the Plant, and in the perched groundwater beneath Pantex. With the exception of high explosives, the contamination found in the perched groundwater at Pantex is similar to those contaminants found at other non-nuclear industrial facilities.

### Understanding Perched and Ogallala Groundwater

At Pantex, the DOE/NNSA owns approximately 11,700 acres that sit above two water-bearing layers. The perched groundwater is the first of two water-bearing units below the Pantex Plant. The surface of the perched groundwater is approximately 200 to 300 feet below ground surface, and ranges from 0 to 70 feet thick. The Fine-Grained Zone (FGZ), a low permeability zone which consists of silts and clays, separates the perched groundwater from the Ogallala. The perched groundwater is not used for drinking or irrigation purposes. One exception is an off-site well north of the Plant boundary, which is located within the boundaries of the City of Amarillo well field, and is occasionally used for domestic purposes.

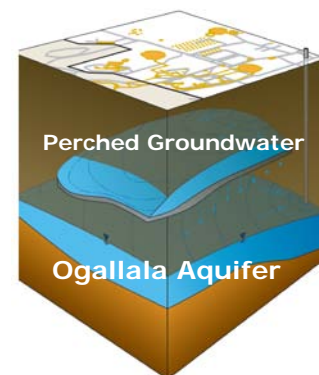
The second water-bearing zone below the FGZ is the regional Ogallala Aquifer. The Ogallala Aquifer is a primary drinking and irrigation water source for most of

the High Plains. The groundwater surface is approximately 400-feet below ground surface, is approximately 1 to 100 feet thick in the southern regions of the Plant, and is approximately 250 to 400 feet thick in the northern regions. The primary flow direction of the Ogallala Aquifer in the vicinity of the Pantex Plant is north to northeast, due to the influence from the City of Amarillo's well field.

### Perched Groundwater Contamination

In the perched groundwater, primarily beneath the southeastern area of the Plant, six volatile organic compounds, 11 high-explosive compounds, and five inorganic constituents were confirmed to be attributable to historic Pantex operations.

Many studies, along with regular sampling and analysis, have been conducted to determine the nature and extent of the perched groundwater and the contamination found within that body of water.



Conceptual site model of groundwater beneath Pantex.

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**U.S. Department of Energy/National Nuclear Security Administration Pantex Plant**  
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In 2004, Pantex defined the nature and extent of perched groundwater contamination at the Plant and the quality of the underlying Ogallala Aquifer, as documented in the Groundwater Resource Conservation and Recovery Act (RCRA) Facility Investigation Report. The Texas Commission on Environmental Quality (TCEQ) and U.S. Environmental Protection Agency (EPA) approved this report in 2005.

In 2008, the TCEQ and EPA approved the Pantex site-wide Baseline Human Health Risk Assessment. The Risk Assessment concluded that there is no current or imminent threat to human health from drinking water from the Ogallala Aquifer; however potential future risks could occur offsite to the south and east, in the absence of remediation.

### **Solutions**

During 2007 and 2008, Pantex evaluated alternatives for meeting cleanup goals, and presented those alternatives to the public through the Site-Wide Proposed Plan, issued in March 2008, and at a public workshop held on March 31, 2008.

The final Record of Decision for Groundwater, Soil and Associated Media was issued jointly by PXSO and the EPA on September 25, 2008. The TCEQ issued its concurrence with the Record of Decision (ROD). The ROD contains a “Responsiveness Summary,” which is a summary of public comments that were received and how they were addressed.

In consultation with the EPA and TCEQ, PXSO selected the following cleanup strategies for perched groundwater:

- Expand and improve controls for restricting access and use.
- Pump to the surface and treat.
- Establish and maintain *in situ* treatment zones where pump and treat systems are not effective to protect the Ogallala Aquifer.

PXSO, the TCEQ, and EPA will continue to monitor the effectiveness of the selected remedy through groundwater monitoring implemented through a Long-Term Groundwater Monitoring Plan. One component of the monitoring plan will be collection of data to evaluate natural attenuation processes important to achieving restoration of perched groundwater to drinking water standards.

### **Future**

Pantex Environmental Restoration continues to operate under the 2003 Compliance Plan from the TCEQ. The main focus of the 2003 Compliance Plan is the monitoring of “Interim Stabilization Measures (ISMs)” conducted at Pantex.

Pantex submitted an application to the TCEQ to modify the Compliance Plan in July 2009. TCEQ is drafting a modified Compliance Plan that will be proposed to the public for review and comment in the near future. The modified Compliance Plan will establish requirements for implementation, maintenance and operation of the selected remedies under State of Texas Regulations.

Pantex will continue to monitor and report on the effectiveness of the remedy, as well as provide information to the public on the progress of Environmental Restoration at the Plant.