

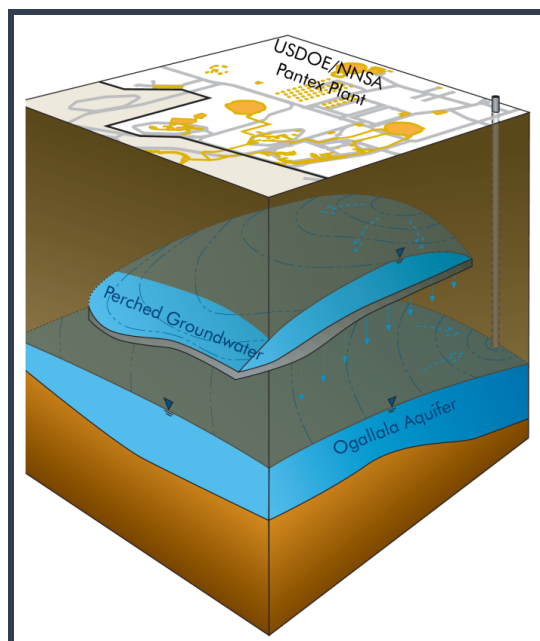
PANTEX ENVIRONMENTAL RESTORATION



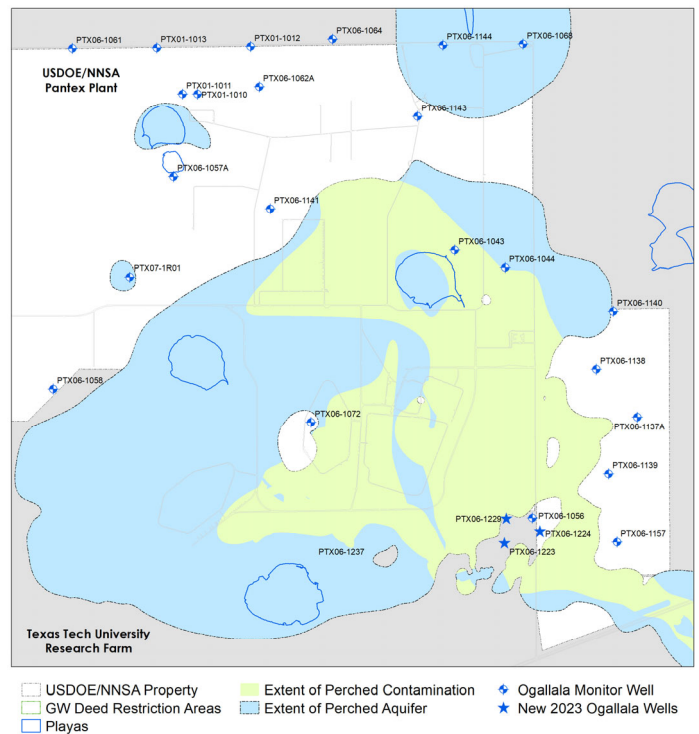
High Explosives Detection Monitoring in the Ogallala Aquifer

The Pantex Groundwater Resource Conservation and Recovery Act Facility Investigation Report identified impacts to perched groundwater that require corrective action. The Pantex Site Wide Human Health Risk Assessment found that perched groundwater underneath the Pantex Plant contains high explosives and other constituents that could migrate over time to the Ogallala Aquifer, the main drinking water source for the area. The area of primary concern is in the southeast corner of the main Plant and offsite, adjacent to this area. The fine-grained zone prevents vertical migration in most areas, but becomes thinner and more permeable in the southeast where migration to the Ogallala Aquifer is possible.

Pantex monitors 30 Ogallala Aquifer wells, including one well located on neighboring property (PTX06-1064) and three newly installed wells, to evaluate the continued protectiveness of remedial actions for the drinking water aquifer.



Groundwater Beneath Pantex



Ogallala Monitoring Well Network

The Ogallala well network monitors for breakthrough of legacy constituents to the Ogallala Aquifer from the overlying perched aquifer. One Ogallala monitoring well (PTX06-1056) continues to demonstrate detections of legacy 4-amino-2,6-dinitrotoluene (DNT4A), a break-down product of TNT, first detected in April 2014. In June of 2020, another Ogallala monitoring well (PTX06-1076) began

High Explosives Detection Monitoring in the Ogallala

to show detections of DNT4A. After a review of the installation logs for PTX06-1076, Pantex noted that the well might not have been sealed properly at the fine grain zone and plans to plug and abandon this well. It will be replaced with a new well downgradient of the present location in 2024. Further detections of DNT4A and other high explosive compounds, including RDX, prompted Pantex to begin planning expansion of the Ogallala well network to help evaluate potential sources and extent of the contamination.

Recent Ogallala Detections at PTX06-1056			
Analyte	Sample Date	Measured Value (µg/L)	GWPS (µg/L)
DNT4A	4/22/2024	2.15	1.2
RDX	4/22/2024	0.493	2

Recent Ogallala Detections at PTX06-1076			
Analyte	Sample Date	Measured Value (µg/L)	GWPS (µg/L)
DNT4A	4/22/2024	0.158	1.2

Three new Ogallala monitoring wells (PTX06-1223, PTX06-1224, and PTX06-1229) were installed in 2023 (blue stars on map). The new wells were installed in areas identified in earlier plume modeling for being at risk of vertical contaminant migration from the perched to the Ogallala Aquifer. Initial results from PTX06-1223 indicate DNT4A and RDX at similar concentrations to recent samples from PTX06-1056, though all concentrations were below the ground-water protection standards (GWPS).

Recent Ogallala Detections at PTX06-1223			
Analyte	Sample Date	Measured Value (µg/L)	GWPS (µg/L)
DNT4A	4/23/2024	0.918	1.2
RDX	4/23/2024	1.19	2
TNX	4/23/2024	0.243	2

Results from PTX06-1224 indicated no detections of contaminants of concern. However, initial sampling results received in late December 2023 for PTX06-1229 indicated the presence of three high explosives constituents in the Ogallala Aquifer at concentrations

above GWPS. This well was resampled in January to confirm those detections, with all detections confirmed.

Recent Ogallala Detections at PTX06-1229			
Analyte	Sample Date	Measured Value (µg/L)	GWPS (µg/L)
DNT4A	12/6/2023	5.98	1.2
RDX	12/6/2023	307	2
TNX	12/6/2023	20	2
Resampling Event at PTX06-1229			
DNT4A	1/8/2024	4.64	1.2
RDX	1/8/2024	318	2
TNX	1/8/2024	21.1	2

Sampling was increased from semi-annual to monthly sampling for a three-month duration starting in April 2024. The monthly sampling results are summarized below.

Summary of Monthly Ogallala Detections at PTX06-1229			
Month Sampled	Analyte	Measured Value (µg/L)	GWPS (µg/L)
April 2024	DNT2A	0.484	1.2
	DNT4A	5.5	1.2
	HMX	8.92	360
	RDX	313	2
	TNX	18.6	2
	DCA12	1.29	5
May 2024	DNT2A	0.537	1.2
	DNT4A	5.19	1.2
	HMX	10.8	360
	MNX	0.152	2
	RDX	312	2
	TNX	15.5	2
June 2024	DNT2A	0.533	1.2
	DNT4A	5.57	1.2
	HMX	9.08	360
	RDX	293	2
	TNX	16.1	2

During the second quarter, Pantex also collected samples at two depths of the deeper sampling interval in PTX06-1229. Results confirmed the

High Explosives Detection Monitoring in the Ogallala

presence of the HEs above the GWPS at similar concentrations to the samples in the upper sampling interval. At this time, Pantex is investigating whether the detections at PTX06-1229 are a result of cross-contamination from a nearby perched well. The installation of a perched well (PTX06-1103, red well symbol on the map below), located upgradient of PTX06-1229, may have created a previous preferential pathway for the migration of high explosive contaminants from the perched groundwater into the Ogallala Aquifer. This well was plugged in October 2010 after indications that it was acting as a preferential pathway to the Ogallala Aquifer.

Pantex requested special funding to implement measures to begin evaluating extent of the detections by installing three additional Ogallala monitor wells in 2024 (orange stars on map). Fate and transport modeling is being utilized in 2024 to plan future drilling locations and to evaluate potential sources for the detections at PTX06-1229. Further installations will be evaluated after gaining information from the new 2024 wells and fate and transport modeling. Pantex is

working closely with the Texas Commission on Environmental Quality and the Environmental Protection Agency, following protocols established in the Pantex Plant Ogallala Aquifer and Perched Groundwater Contingency Plan. Further actions will be determined based on sampling results and in accordance with these protocols.

Wells with detections are located south of the Plant property boundary on Texas Tech property and northwest of the John C. Drummond Center. There is no imminent threat to existing drinking, irrigation, or livestock water wells in the Ogallala Aquifer from these detections based on samples collected in 2023 and 2024 from wells located upgradient of onsite and offsite water supplies (see wells in yellow boxes). Pantex obtains water for plant processes, personnel use, and consumption from Ogallala production wells located in the northeast corner of the Plant property. Pantex has tested the Ogallala monitoring wells in that region and have observed no detections of high explosives. These results indicate there is no danger to Pantex or neighboring water supplies.

