

200-ZP-1 Groundwater Operable Unit



Overview

Since 1994 DOE has operated a pump-and-treat system in the 200-ZP-1 Operable Unit (northern 200-West Area). The system removes carbon tetrachloride from the most concentrated portion of the contaminant plume (>2,000 µg/L). The system was expanded in 2005 to capture a portion of the plume to the north. Another remediation system removes carbon tetrachloride vapor from the vadose zone.

Other groundwater contaminants in this unit include nitrate, iodine-129, technetium-99, hexavalent chromium and tritium.

Limitations

Carbon tetrachloride travels in two phases: dissolved in groundwater and as a gas. This causes it to move unpredictably to various depths in the unsaturated soil and groundwater.

Cleanup to date has focused on the upper part of the unconfined aquifer, but there is evidence of deeper contamination.

Conclusions

The pump-and-treat system removed 10,200 kilograms (11.2 tons) of carbon tetrachloride from groundwater from the upper portion of the unconfined aquifer. The vadose system has removed ~79,200 kilograms (87 tons) of carbon tetrachloride since 1991.

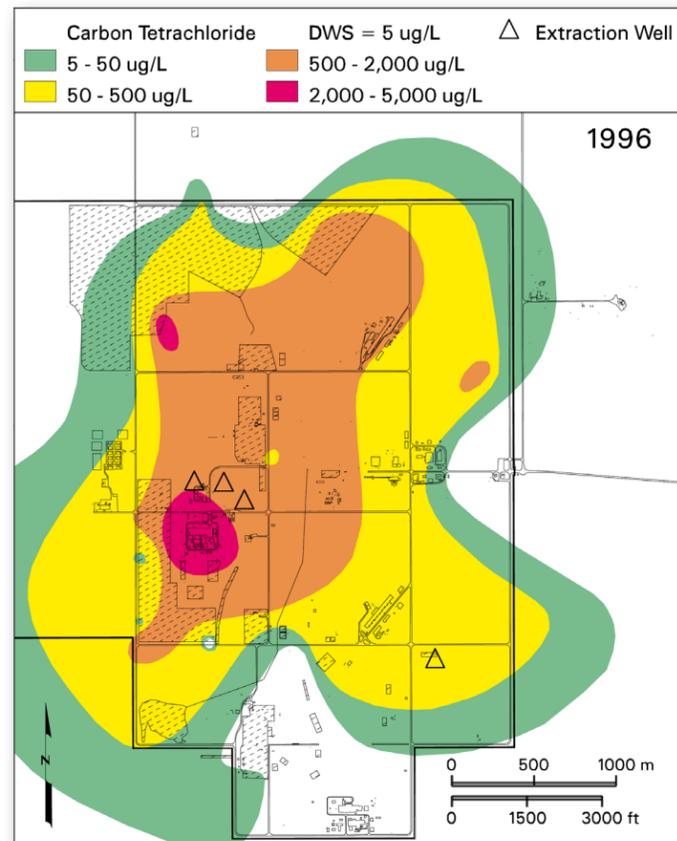
The area of the plume with concentrations above the cleanup goal has shrunk 73% since 1990, before the pump-and-treat started.

DOE plans to expand the pump-and-treat system to remove contamination from the entire thickness of the aquifer.

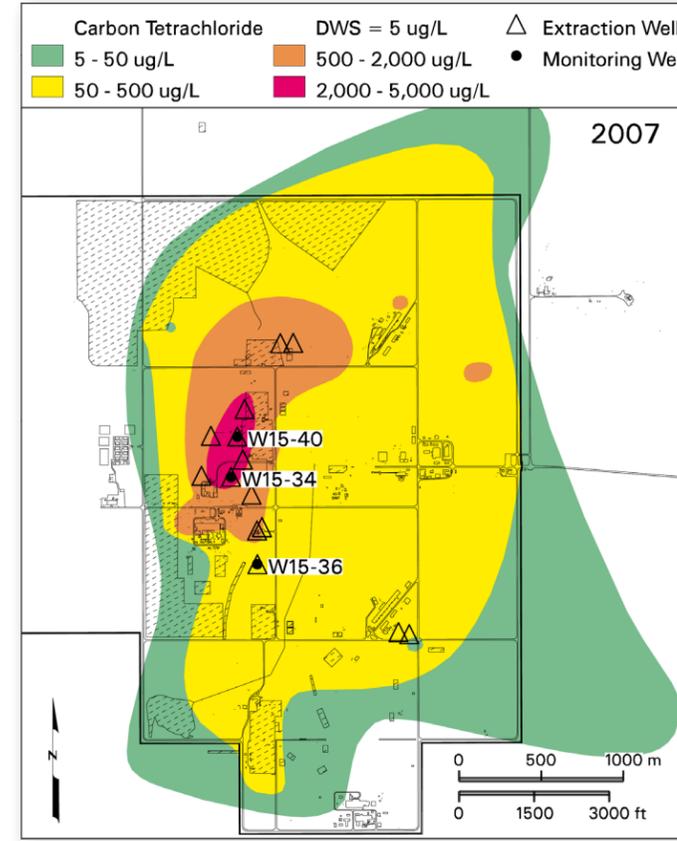
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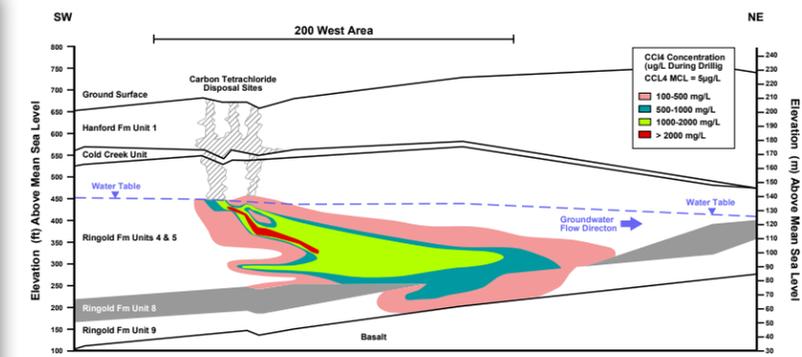
Carbon Tetrachloride 1996



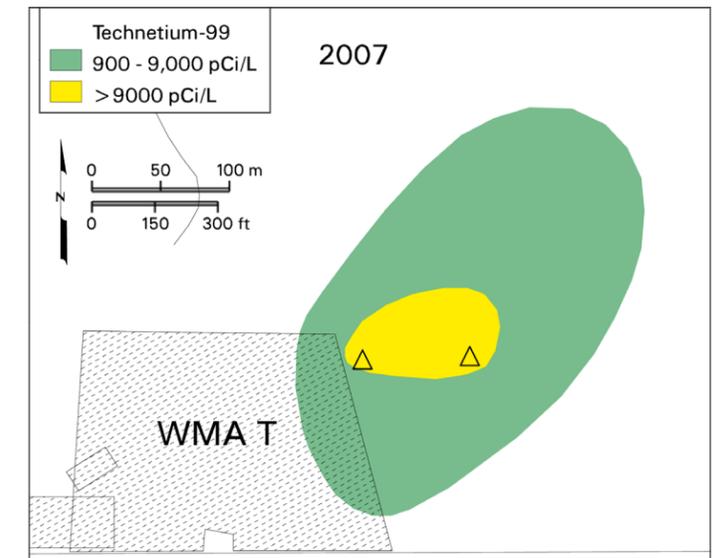
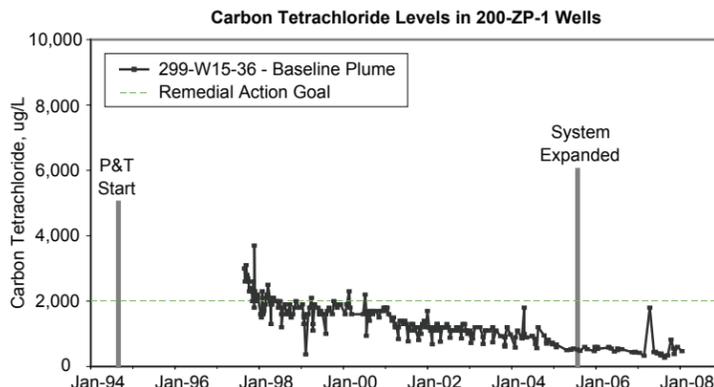
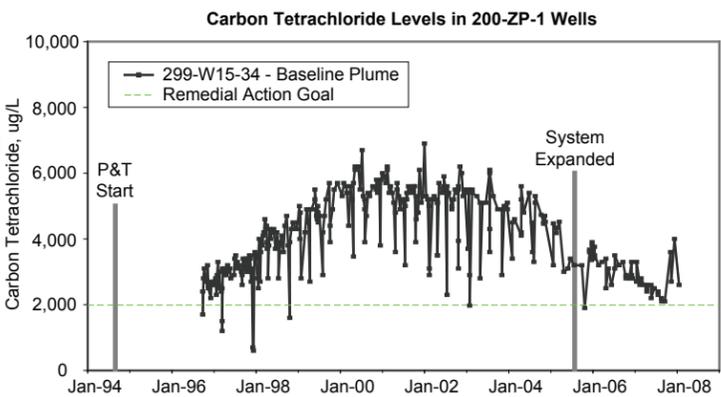
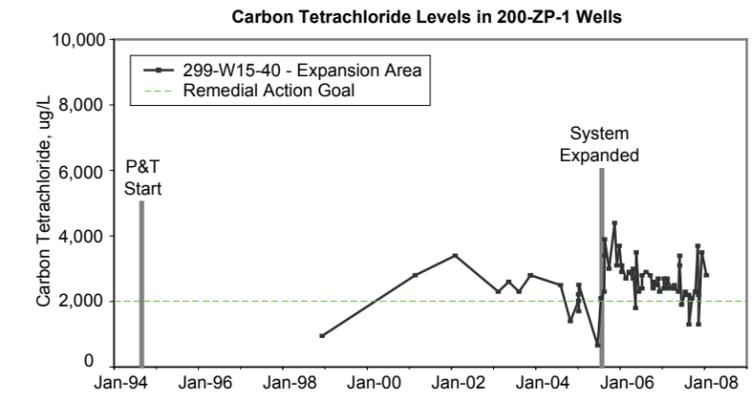
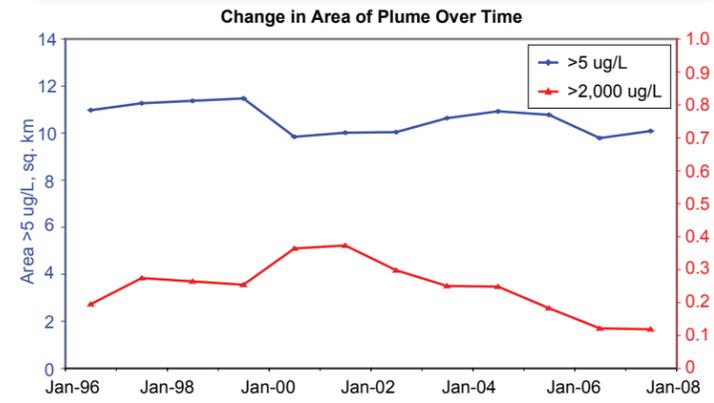
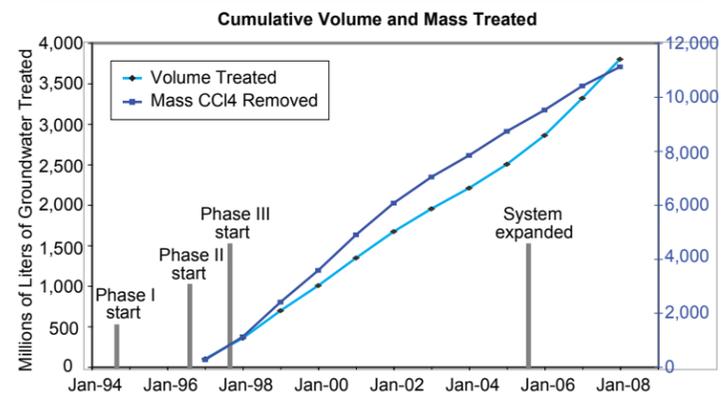
Carbon Tetrachloride 2007



Carbon Tetrachloride Cross-Section



When carbon tetrachloride contamination enters groundwater, some of it sinks to the bottom of the aquifer, which is either a clay layer (Ringold Formation Unit 8) or basalt. DOE is studying the extent of the plume so that future cleanup efforts will be effective.



In September 2007, DOE began to operate a pump-and-treat system for technetium-99 contamination downgradient of T Tank Farm