

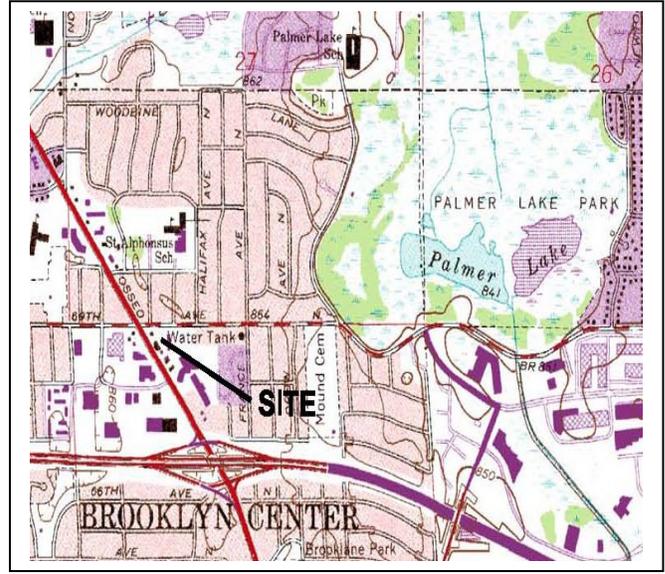


Pilgrim Cleaners Superfund Site

Cleanup/Geographic 27-17 • November 2015

This Minnesota Pollution Control Agency (MPCA) fact sheet provides a general update on the Pilgrim Cleaners Superfund Site (the Site), located at 6846 Brooklyn Boulevard, in the city of Brooklyn Center.

The Site, located north of the Interstate-94/Brooklyn Boulevard interchange, is bounded by Brooklyn Boulevard on the west and 69th Avenue North on the north. Land use in the area is a mixture of commercial and residential properties. The Site location is illustrated in Figure 1 above.



Site history

The Pilgrim Cleaners Site is a former, commercial dry cleaning facility. In 1989, monitoring wells were installed at an adjacent property east of the Site as part of a leaking underground storage tank (LUST) investigation. Tetrachloroethylene, also known as perchloroethylene (PCE), a chemical commonly used in dry cleaning, was detected in groundwater samples collected from these wells. Based on PCE detections at the LUST site, where the investigation was focused on petroleum hydrocarbons, an investigation was initiated at the Pilgrim Cleaners Site. In 1994, during a follow-up investigation at the Site, PCE was detected in soil at low concentrations and in shallow groundwater at high concentrations. In 1998, a subsurface investigation delineated the lateral extent of PCE-impacted groundwater associated with the Site.

The site geology consists of brown, silty, and poorly graded sands underlain by a gray, sandy clay glacial till. The water table is in these sand deposits at depths of 9.5 to 16 feet. Saturated sand deposits occur from the water table down to the top of the glacial till. Groundwater flow in the vicinity of the Site is to the east-northeast within the water table aquifer. PCE has only been found in the water table aquifer.

During the site investigation, PCE was detected in a domestic well several blocks downgradient of the Site. This well was subsequently abandoned and the residence was connected to the municipal water supply.

g-27-17

The Pilgrim Cleaners Site was placed on the Permanent List of Priorities, the State of Minnesota Superfund list, in December 1996.

Early response actions

Limited response actions were completed in 2000 and 2001 in preparation for widening Brooklyn Boulevard (which was scheduled for the early 2000s). On-site buildings were demolished and underground storage tanks were removed during this time. The building slab, foundation walls, and footings were removed and disposed of off-site as nonhazardous demolition debris. PCE, acetone, petroleum hydrocarbons, and several other nonpetroleum volatile organic compounds were detected in soil samples collected beneath the building slab and tank excavations.

The top 1 to 2 feet of surface soils (1,291 tons) were scraped from the western two-thirds of the Site and disposed of at a landfill. After the road-widening project was completed, most of the area where surface soil had been removed was capped by Brooklyn Boulevard and the adjacent sidewalk.

Remedial actions

An air sparging/soil vapor extraction (AS/SVE) system was installed to treat source area soil and groundwater. The system started up on March 8, 2004, and it continued operation through June 2010, when it was turned off. During its period of operation, the AS/SVE system removed an estimated 244 pounds of PCE. At the time the AS/SVE system was turned off, the PCE concentrations in source area monitoring wells and the closest downgradient monitoring well were less than or slightly above the Minnesota Health Risk Limit (HRL) of 5 micrograms per liter ($\mu\text{g/L}$). The AS/SVE system was removed from the Site in May 2011. A groundwater sample was collected from downgradient monitoring well MW-3 in March 2012. The PCE concentration of 99.9 $\mu\text{g/L}$ exceeded the HRL of 5 $\mu\text{g/L}$. PCE concentrations in MW-3 have been declining since 2004. All monitoring wells near the Site have since been abandoned.

Private well sampling and abandonment

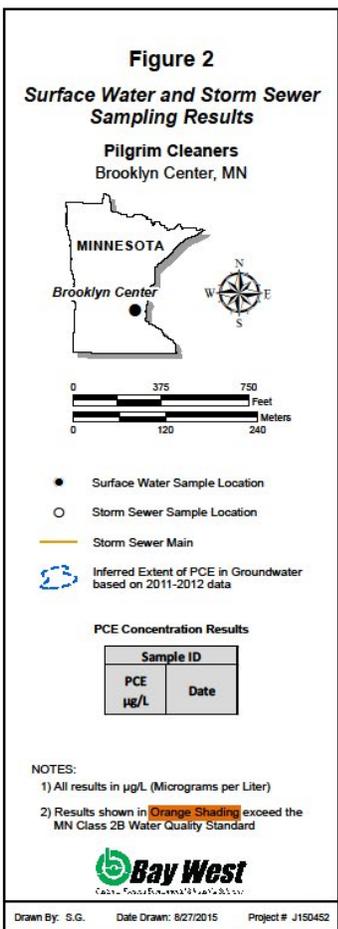
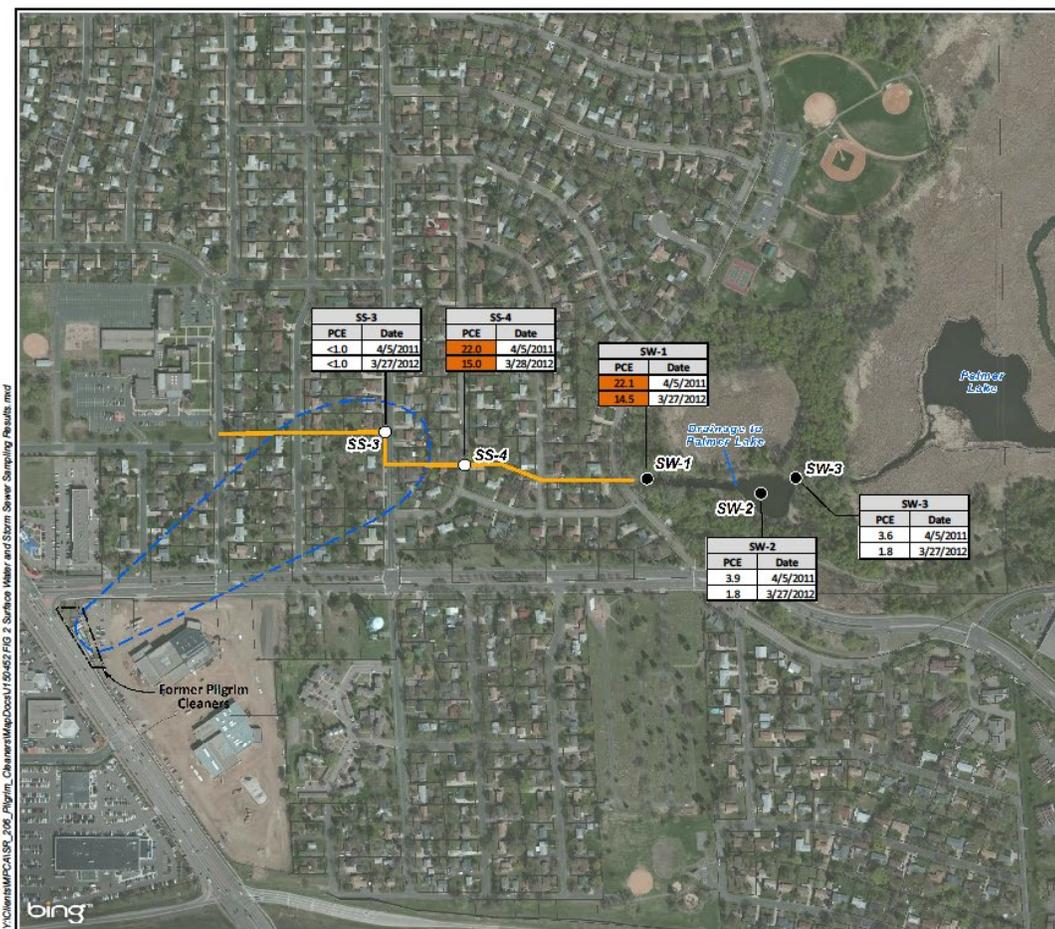
Beginning in 2005 the MPCA sampled 13 private water wells within the plume. PCE was detected in only one of the wells, at a concentration of 7.4 $\mu\text{g/L}$. Ten property owners agreed to allow the MPCA to abandon their private wells. Eleven private wells were subsequently abandoned (one property owner had two wells).

Surface water/drainage sampling

Surface water sampling including storm sewer outfall into a drainage that subsequently flows into Palmer Lake began in 2006 and continued through 2012. The sampling was performed to assess potential impacts from contaminated groundwater in the shallow aquifer migrating away from the Site at the head of the drainage, located about 2,500 feet east-northeast of the Site. PCE was detected at concentrations exceeding the applicable Minnesota surface water quality standard for Class 2B waters (8.9 $\mu\text{g/L}$) with a maximum concentration of 38.7 $\mu\text{g/L}$. PCE concentrations detected in the surface water samples collected within the drainage (SW-2 and SW-3) suggest that dilution of PCE is occurring and that the PCE concentration in water leaving the drainage and entering Palmer Lake is less than the Class 2B surface water standard for PCE (8.9 $\mu\text{g/L}$). The surface water and storm sewer sampling results are shown in Figure 2.

Soil gas sampling

During 2011-2012, the MPCA collected soil gas samples in the city right-of-way in front of 53 residential properties on Indiana, Grimes, France, Halifax, Urban, and Ewing avenues. These properties are located



east-northeast of the Pilgrim Cleaners Site and were selected to define the extent and magnitude of soil gas impacts to residential properties located in the vicinity of the residual groundwater plume. At the time these samples were collected, the Minnesota action level of 10 times the intrusion screening value (ISV) for PCE was 200 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$). The original vapor intrusion area of concern is illustrated by the orange dashed boundary in Figure 3.

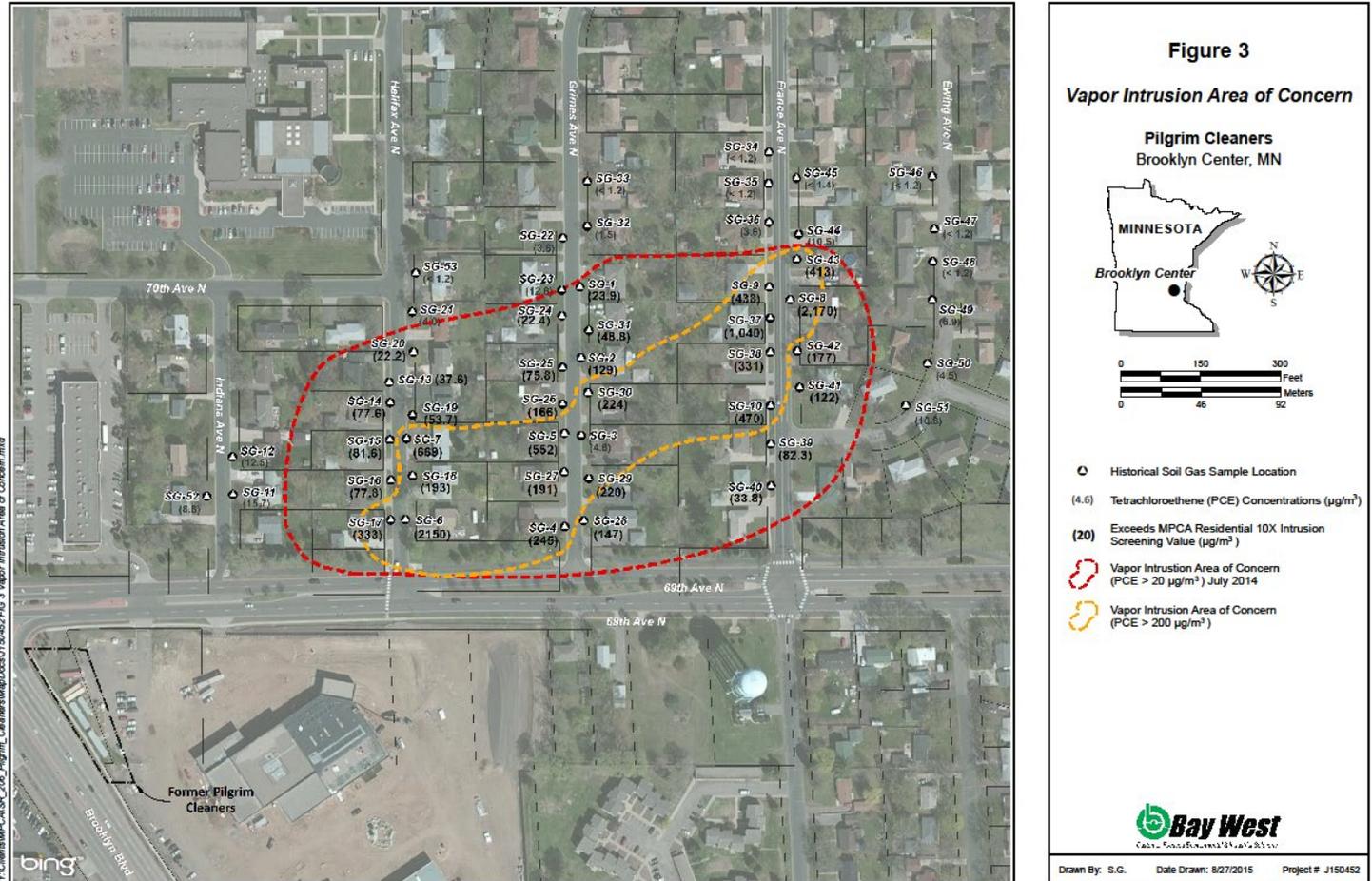
In July 2014, the MPCA issued a new interim vapor intrusion guidance for PCE that lowered the Minnesota action level from 200 $\mu\text{g}/\text{m}^3$ to 20 $\mu\text{g}/\text{m}^3$. The current vapor intrusion area of concern is within the red dashed line in Figure 3. The PCE concentrations exceeded the new Minnesota action level at 32 of the 53 sampling locations. PCE concentrations ranged from 22.2 $\mu\text{g}/\text{m}^3$ to 2,170 $\mu\text{g}/\text{m}^3$. The MPCA’s risk-based guidance for vapor intrusion pathway states that soil gas sampling results greater than the Minnesota action level require additional investigation to better quantify potential risks to nearby residents, including sampling within affected buildings. The soil gas sampling locations and vapor intrusion area of concern are shown in Figure 3.

Sub-slab sampling and sub-slab depressurization system installations

During 2012-2013, the MPCA collected sub-slab vapor samples at seven of the proposed 19 properties suspected of being at risk of vapor intrusion based on the 2011-2012 soil gas sampling results. These 19 properties were originally identified and selected based on the soil gas sampling results that exceeded the Minnesota action level in place at the time of 200 $\mu\text{g}/\text{m}^3$. PCE concentrations exceeded the Minnesota action

level at three properties and vapor mitigation systems were subsequently installed in 2013 to mitigate the risk of breathing PCE vapor. The remaining four properties had PCE concentrations less than $200 \mu\text{g}/\text{m}^3$.

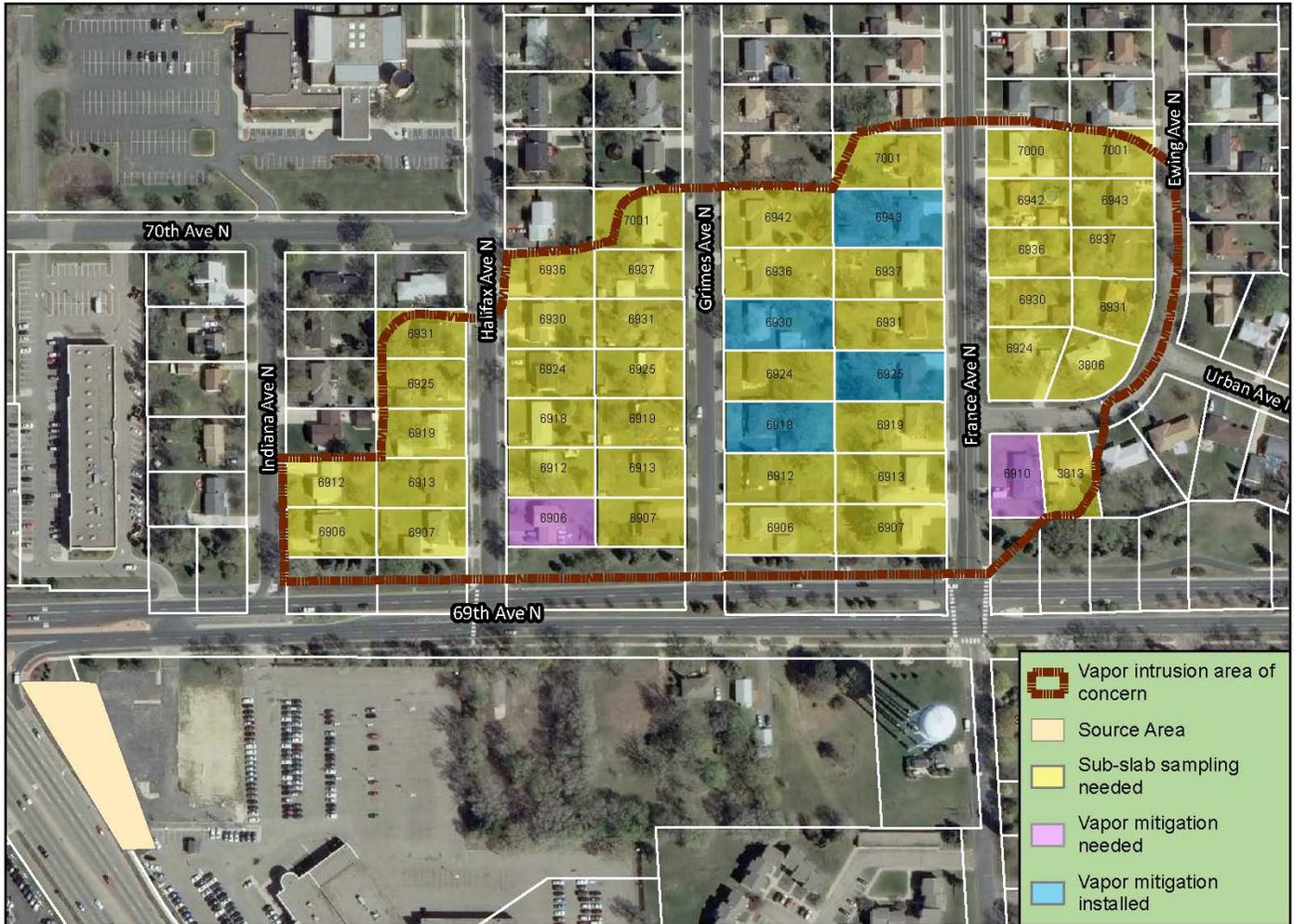
The sub-slab vapor sampling results were re-evaluated after the ISV for PCE was lowered in 2014. Three of the four properties previously sampled had PCE concentrations that exceeded the lowered Minnesota action level of $20 \mu\text{g}/\text{m}^3$. In March 2015, a vapor mitigation system was installed at one of the three at-risk properties. The remaining two properties with sub-slab concentrations of PCE exceeding the Minnesota action level still require vapor mitigation systems.



Path forward

The vapor intrusion study results through May of 2015 are illustrated in Figure 4 on the last page of this fact sheet. The MPCA plans to install vapor mitigation systems at two properties that had been previously identified as having sub-slab vapor exceedances.

Because of the lowered ISV for PCE, the MPCA reevaluated the vapor intrusion data and will conduct a more extensive vapor intrusion assessment in the neighborhood. The planned assessment will include collecting sub-slab vapor samples from approximately 41 residential properties. The sampling data will then be evaluated to determine if additional vapor mitigation is warranted. The MPCA will install vapor mitigation systems in any homes that have sub-slab vapor concentrations above the Minnesota action level at no cost to the homeowner.



Additional Resources

Additional, general information about vapor intrusion is available at <http://www.pca.state.mn.us/index.php/waste/waste-and-cleanup/cleanup/superfund/vapor-intrusion/general-information-about-vapor-intrusion.html>.

For more information about remediation activities at the Pilgrim Cleaners Superfund Site, contact MPCA project manager Steven Schoff (phone 651-757-2701, email steven.schoff@state.mn.us).