

Hoovering the Hoover District, North Canton, Ohio

by Lenny Siegel

May, 2017

It is rare that a company dominates an industry to the degree that its name becomes synonymous with the industry. But in watching British period dramas on TV, I have heard people using the term “Hoovering” to describe the use of a vacuum cleaner. The Hoover Company manufactured those famous vacuum cleaners in North Canton, Ohio, for decades, leaving behind a wealth of subsurface contamination, including tetrachloroethylene (PCE) and tri-chloroethylene (TCE). Now the current owner, under supervision from U.S. EPA’s RCRA (Resource Conservation and Recovery Act) program, is beginning a series of cleanup measures that include what is essentially the vacuum cleaning of toxic vapors from the subsurface.¹



Western Factory Area from Main Street

Background

The Hoover property currently consists of 69.5 acres in downtown North Canton, containing 30 buildings with about one million square feet of offices, warehouses, and manufacturing space. Established as a company in 1908, the factory is surrounded by homes, athletic fields, civic buildings, and a church. Its historic brick chimney was recently restored. Hoover, purchased by Maytag in 1989, terminated production there in 2007, selling the property to Maple Street Commerce (MSC) the following year. While many of the former factory

¹ Ohio EPA has also been involved at the site, but U.S. EPA is overseeing the vapor intrusion investigation.

buildings today house businesses, Maple Street has ambitious plans for mixed-use—that is, residential above commercial uses—redevelopment within former manufacturing buildings.

Timeline

1908—Hoover Company is founded in North Canton, Ohio as Electric Suction Sweeper Company.

1980—Hoover's Drum Storage Unit is subject to regulation under the Resource Conservation and Recovery Act (RCRA).

1985—Hoover is acquired by Chicago Pacific Company.

1988—First environmental investigation begins at the facility.

1989—Chicago Pacific Company is acquired by Maytag.

1999—Hoover enters into a RCRA Voluntary Corrective Action Agreement with U.S. EPA.

2001—Plume map shows volatile organic compounds have migrated west of the facility.

2003—Hoover submits a Final Corrective Measures Study, prepared by CH2MHill, to U.S. EPA.

2004—EPA puts out a Statement of Basis for public comment but does not finalize it.

2006—Maytag is acquired by Whirlpool.

2007—North Canton facility ceases production.

2007—Whirlpool sells Hoover Floor Care Business to Techtronic Industries.

2008—Techtronic sells Hoover's North Canton facility to Maple Street Commerce.

September, 2011. U.S. EPA's Integrated Risk Information System publishes final toxicity factors for trichloroethylene (TCE).

February, 2012. U.S. EPA's Integrated Risk Information System publishes final toxicity factors for tetrachloroethylene (PCE).

April, 2014. Hull & Associates submits a sampling plan to EPA on behalf of Maple Street Commerce.

January, 2015. Vapor sampling begins.

June, 2015. EPA's Office of Solid Waste and Emergency Response issues "Technical Guide for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Vapor Sources to Indoor Air."

April, May, and September, 2016. Indoor air samples taken at the Community Church site show elevated levels of TCE and PCE.

July, 2015. Lenny Siegel first visits North Canton.

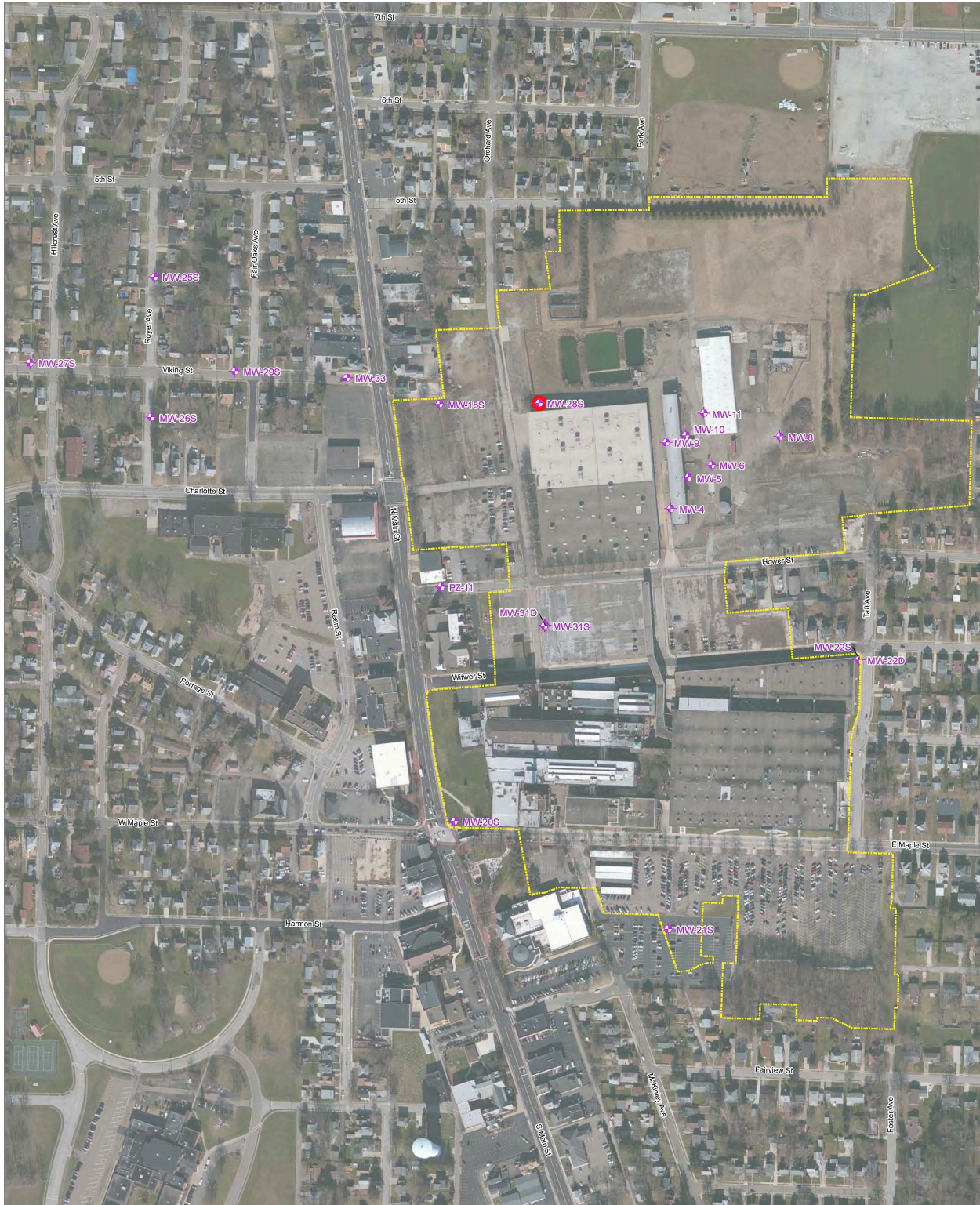
February, 2016. EPA publishes fact sheet, "Pollution Investigation Looks Into Vapor Intrusion."

May, 2016. U.S. EPA and Maple Street Commerce enter into a voluntary Administrative Order on Consent for the former Hoover facility.

September, 2016. Hull & Associates prepares "Current Conditions Report" for Maple Street Commerce.

March, 2017. Lenny Siegel returns to North Canton.

Thus far, that redevelopment is driving most of the environmental work on the property. Maple Street's consultant is developing plans for vapor mitigation in the structures slated for reuse. In addition, under EPA's direction Maple Street is conducting off-site sampling, and EPA expects that the property owner will conduct a site-wide RCRA Facility Investigation.



Hoover site boundary in yellow; monitoring wells in purple

In a February 2016 fact sheet, EPA explained, “In the years since MSC purchased the property, U.S. EPA has revised certain environmental action standards. The current investigation is checking for a pollution problem called ‘vapor intrusion.’” In May 2016 EPA issued an

Administrative Order on Consent to provide a legal framework for the continuing environmental response. Though the order requires it to conduct “public outreach and involvement activities,” thus far Maple Street has not drafted a Public Involvement Plan.

There is growing public interest in the site, but the public has not been fully informed. When I visited North Canton for the second time in late March 2017, activists asked me whether contamination was problem at two childcare centers adjacent to the Hoover site. They were unaware that TCE above U.S. EPA’s TCE screening level had been found in a church that hosts one of those centers. Maple Street has installed a mitigation system at the church, and it is “adjusting vacuum pressures” with the goal to achieving EPA’s indoor air concentration goal.

Progress at the site is painfully slow. EPA Region 5 appears to be systematically following the agency’s June 2015 Vapor Intrusion Guide, but it has limited resources. Furthermore, since the Hoover Company has vanished from the scene, Maple Street is a volunteer, not the original polluter. It may be years before the risk to nearby residents is fully known, and even longer before a complete investigation of the property is completed. There is an opportunity for the city of North Canton to ensure that the occupants of all buildings—old, remodeled, and new—on the property are protected against indoor air contamination, but thus far the city has deferred all oversight to U.S. EPA.

In 1999, when Hoover was still manufacturing on site, the company entered into a Voluntary Corrective Action Agreement with EPA. It conducted sampling, removed soil, and operated soil vapor and dual phase extraction systems for a limited period. In 2004 EPA proposed institutional controls as the cleanup remedy, but it never issued a decision document. It also concluded that vapors inside homes above a plume of volatile organic compounds migrating to the west of the plant fell within the acceptable range. Though some additional sampling continued, cleanup ground to a halt.

Meanwhile, U.S. EPA nationally was taking actions that set the stage for the restarting of environmental work in the Hoover District. In September 2011 and February 2012 U.S. EPA’s Integrated Risk Information System issued detailed toxicity assessments for TCE and PCE respectively. EPA researchers also put together a real world database of attenuation factors² and constructed the Vapor Intrusion Screening Level calculator, superseding the Johnson-Ettinger Model for correlating soil vapors with overlying indoor air contamination. Then, in June 2015 EPA issued its long-awaited *OSWER Technical Guide for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Vapor Sources to Indoor Air*.

As early as 2014, Maple Street’s consultant began preparing plans for additional sampling, but when I first visited North Canton in July 2015, little progress was evident. However, EPA was working on the legal document that provides the framework for continuing investigation, mitigation, and remediation on and adjacent to the Hoover District. In May 2016, EPA issued the Administrative Order on Consent, requiring the respondent, Maple Street Commerce LLC, to prepare a series of deliverables including a current conditions report, work plans for interim and final corrective measures, and a RCRA Facilities Investigation (RFI).

² For an explanation of attenuation factors, go to <http://www.cpeo.org/pubs/SGVI/Attenuation.pdf>



Western Factory Area

The Administrative Order on Consent states, “EPA will provide the public with an opportunity to review and comment on its proposed final corrective measures...” Meanwhile, Maple Street is supposed to file quarterly and other reports, and “it must establish a publicly accessible repository for information regarding site activities and conduct public outreach and involvement activities.” Hard copies of documents have been placed in the North Canton public library, and EPA issued a two-page fact sheet in February 2016. However, the community members with whom I’ve met know little about what is going on. My role has been to review the available documents, ask questions of EPA, and do my best to explain to community activists what the investigation has found thus far, what is being done to limit exposures to the contaminants, and what else needs to be done.

Mitigating the Western Factory Area

Maple Street’s first major proposal was the *Interim Measures Workplan to Implement Sub-Slab Depressurization* at the Western Factory Area, consisting of several large buildings. The company plans to redevelop existing buildings into a “combination of commercial and residential land use, specifically with the first floor consisting of commercial establishments and upper floors consisting of residences.”

Sub-slab depressurization protects the occupants of overlying buildings by depressurizing—vacuuming—the subsurface. When operating properly, any vapor movement between the subsurface and the buildings is therefore downward. Maple Street’s consultant, Hull & Associates, conducted sub-slab depressurization pilot tests only in those areas slated for initial occupancy. The draft workplan optimistically identified occupancy for “early 2017.” Vapor sampling and indoor air sampling showed numerous exceedances—above EPA standards—for TCE, PCE, and naphthalene. At one location, the June 2016 PCE soil vapor level was extremely high: more than 1.4 million micrograms per cubic meter ($\mu\text{g}/\text{m}^3$).

The highest reported TCE indoor air sample ($64.2 \mu\text{g}/\text{m}^3$) in the Western Factory Area, taken in June, 2015 significantly exceeded the health-based standard for not only residential, but commercial use. The reports say the samples that exceeded exposure standards were taken in basements and utility areas. It's not unusual for below-grade samples to be higher than those in upper stories, but it is also not reassuring. Underground infrastructure frequently serves as a preferential pathway for the spread of vapor contamination, so the presence of unacceptable levels of TCE there should still be addressed.

Fortunately, they are. I don't have the expertise to evaluate the Workplan in detail, but the proposal appears to be a good start, particular because EPA carefully reviewed it. EPA's July-August 2016 Technical Review raised number of important issues, including the need for contingency plans should post-mitigation indoor-air samples exceed the screening levels.

Other On-Sites Areas

To my knowledge, Maple Street has not yet proposed mitigation for other on-site buildings, and it has not proposed the remediation of source areas and other hotspots. Some of the other areas are highly contaminated. For example, a September 2016 soil vapor sample from Building 30 showed PCE at over 4 million $\mu\text{g}/\text{m}^3$ and TCE at 130,000 $\mu\text{g}/\text{m}^3$.

While the PCE levels at the Hoover site are generally greater than the TCE levels, the TCE contamination might end up being more of a health concern, because both Ohio and U.S. EPA have less protective exposure standards for PCE than TCE. Furthermore, like most regulatory agencies they believe that a woman exposed to TCE at a low level ($2 \mu\text{g}/\text{m}^3$) in the first trimester of pregnancy, for a period as short as one day, has an unacceptable increased risk of bearing a child with a cardiac birth defect. Thus, both sampling and mitigation must be designed to limit peak exposures, not just long-term average exposure.

The Building 30 vapor test spots are near a monitoring well where PCE and TCE levels in shallow groundwater have reached 9880 and 956 parts per billion, respectively. Though those concentrations are unacceptably high, they don't seem high enough to explain the super-high soil vapor concentrations. That suggests that major releases of at least PCE took part at this location. Indeed, historical documents suggest that the building contained a spent solvent area as well as storage tanks. Over the decades Hoover appears to have released toxic substances at many spots on the Hoover Site, and Hoover's initial cleanup appears to have merely scratched the surface.

Unfortunately, Maple Street appears not to have begun any work aimed at actual cleanup of source areas. Indeed, I have found no conceptual site model that explains the fate and transport of toxic chemicals at this site. EPA has made it clear that it expects that the developer will conduct a full-scale Remedial Facility Investigation followed by cleanup, but thus far there is no evidence of it. Maple Street is undertaking mitigation at its priority redevelopment site, but there is much more to be done.



Neighborhood west of the Hoover District
The chimney in the middle is the historic Hoover chimney
Off-Site Contamination

Some people living near the Hoover site are aware that something is going on. One neighbor notices crews collecting samples from a monitoring well in the street he lives on, to the west of the site. Another showed me indoor air sampling from his house, on the eastern edge of the Hoover district. But to my knowledge the community has never been informed about the extent of the off-site investigation, to say nothing about areas that have not yet been sampled.

There are four groundwater monitoring wells west of North Main Street and north of Charlotte Street. In November 2001 Hoover's consultants produced a map showing that vinyl chloride and DCE (cis-1,2,dichloroethylene) groundwater plumes had migrated into that neighborhood. After my March 2017 visit, I asked EPA if any groundwater sampling had been done in the neighborhood directly across Main Street to the west of the Western Factory Area. I was told that there are two new monitoring wells there, west of the buildings, but both are on Hoover property, east of Main Street. One shows elevated levels of PCE, TCE, and DCE.

Based on the meager data currently publicly available in the areas to the west, south, and east of the Hoover site, it's an open question whether there is an unacceptable risk to the people who live there. As the plume migrates, it appears to break down. That's why DCE levels are high. DCE is not used by industry, but it is a breakdown product of TCE. TCE was used widely by manufacturers, but it is also a breakdown product of PCE.

It is clear, however, that there needs to be more monitoring wells in adjacent neighborhoods, more sampling, more analysis, and above all more public information about the nature and extent of off-site contamination. I can only surmise that Maple Street has not devoted

sufficient resources to the off-site investigation because it is not redeveloping any properties off site.

There is one off-site location where EPA and Maple Street's consultants have confirmed a problem, and I am amazed that no one that I talked to knew about it. The Community Christian Church sits on the east side of North Main Street, jutting into the Hoover property. The church hosts a daycare center. Sampling has shown elevated levels of TCE and PCE in the groundwater, soil gas, and indoor air. Mostly notably, in September 2016 an indoor air sample showed TCE at a concentration of $45.1 \mu\text{g}/\text{m}^3$. Even if that sample was taken in an unoccupied area, it is cause for serious concern.



Church with confirmed contamination from Hoover site

EPA told me:

We did determine that the Church contained vapors with concentrations above the screening levels. In response, Maple Street Commerce installed a cover and ventilation system on a below ground sump, and a sub-slab depressurization system at the Church. Confirmation sampling performed after the system went on-line identified trichloroethene at $3.0 \mu\text{g}/\text{m}^3$. Maple is currently conducting pressure readings to try to adjust vacuum pressures and reduce the concentrations to below residential criteria of $2.1 \text{ g}/\text{m}^3$. We have been in touch with the church on several occasions, as has Maple Street Commerce.

I am pleased that action is being taken, and that EPA is paying attention to the results, but it appears again that the community is in the dark. Do the people whose kids attend day care at the church know about the contamination? Has anyone told women who were pregnant while working at the church that their children have an increased risk of cardiac malformation?

In August 2016 EPA directed Maple Street to prepare a Public Involvement Plan. It stated, “Information summarizing the interim measures to potential tenants should be prepared as part of community involvement and public participation.” Hopefully, at this site, like others, the plan would provide a framework for informing the Hoover district neighbors, so people could decide for themselves whether they and their families are being protected.

Despite its role in approving any redevelopment or reuse of the Hoover site, the city of North Canton has been strangely silent, deferring all environmental oversight to U.S. EPA. However, as a local elected official in a community where many contaminated properties are undergoing redevelopment, I believe that the city of North Canton has an obligation to step up. It should use its leverage—approval of redevelopment—to ensure that the air in the affected buildings is safe to breathe, that the sources of contamination are removed and/or treated, and that the public is made fully aware of the contamination, potential exposures to it, and plans to address it.