

A Successful HSCA Funded Cleanup: Rose Valley TCE

Gamble Township, Lycoming County, PA

The Rose Valley TCE Site (Site) in Gamble Township, Lycoming County was discovered in October 2017, when a resident alerted the Department of Environmental Protection (DEP) that during a natural gas company's routine baseline sampling prior to beginning activity on a gas well pad, a compound called trichloroethylene (TCE) was detected in a sample collected from their home well. TCE is a chemical used as a degreaser and parts cleaner, a protective coating to finish prints, and by dry cleaning operations to remove stains, among other uses. The primary concern about TCE exposure is the health of any residents living in a home with elevated concentrations in the water who drink that water and/or utilize it for bathing and cooking over an extended period of time. TCE is a known carcinogen, and in repeated or prolonged exposure has been associated with effects in the liver, kidneys, immune system, and central nervous system. Short-term and long-term exposures to TCE can cause irritation to the respiratory system, skin, and central nervous system. The residence is located near the northeast shore of Rose Valley Lake. TCE was detected in the water sample from this well at a concentration greater than the Act 2 Statewide health standard (SHS) in drinking water of 5 parts per billion (ppb, or micrograms per liter, ug/L). Retesting of the well verified that TCE was present at a similar concentration, again greater than the SHS. DEP followed up by collecting samples from the wells of the complainant and a nearby property, and had them analyzed at DEP's Bureau of Laboratories. The results were consistent with the previous sampling and confirmed the presence of TCE in the water supplies at both properties, one of which was above the SHS, the other below the SHS but approaching that limit. A total of six impacted homes have been identified and have had whole house point-of-entry treatment systems installed to remove TCE from the drinking water.

Rose Valley TCE Site

After initially identifying two impacted homes, in an effort to determine whether any other homes were impacted, DEP conducted sampling at 24 additional homes between November 2017 and January 2018. Of the 26 total homes sampled, six were found to contain TCE in their water supply at levels above 1 ppb. To date, 55 homes and 1 USGS observation well have been sampled, five samples have been collected in Rose Valley Lake with the assistance of the Pennsylvania Fish and Boat Commission, and surface water and spring samples leading into the northern portion of the lake were collected in May 2018. No TCE detections were observed in the lake samples. One spring was determined to be impacted above the SHS, and TCE was detected in one surface water sample in an unnamed stream that flows from the spring to the lake on a parcel owned by the Pennsylvania Fish and Boat Commission. The surface water and spring were again sampled in July 2018. The analytical results showed TCE detections in two of the seven surface water samples and the spring again showed a concentration of TCE above the SHS. Homes on the perimeter of the known impacted area, where available, were re-sampled in March of 2019 to ensure that the TCE has not spread into the drinking water. None of the sampled perimeter homes showed TCE detections. Indoor air was evaluated at two homes in May and June of 2018. The initial samples in May showed a TCE concentration at one home that exceeded the vapor intrusion (VI) screening value. This home was resampled after the installation of a vapor

Project at a Glance

Name:

Rose Valley TCE Site

Location:

Gamble Township, Lycoming County PA

Project Size:

Approximately 145 acres

Principal Use:

Residential Area

Total Project cost:

\$409,378

Consultant:

Michael Baker International, Ramboll Group

Project Period:

4 years

Partners:

Pennsylvania Fish and Boat Commission



mitigation system and the results indicated that TCE vapors were no longer detected in the air. The home was resampled for indoor air quality again in 2021 and the results confirmed that the TCE level were below the VI screening value.

The six residents with TCE concentrations greater than 1 ppb were provided with bottled water until whole house point-of-entry water treatment systems were installed in May 2018. The drinking water at all of the homes with installed treatment systems has been regularly sampled to ensure the effectiveness of the systems in removing the TCE. The most recent samples were collected in December 2019, and confirmed that TCE was not present in the drinking water of any of the impacted homes after treatment. Homes with pre-treatment TCE concentrations above 25 ppb have been sampled quarterly, at a minimum, while homes with concentrations below 25 ppb are sampled biannually. Water samples were obtained from an unused drinking water well that is located adjacent to impacted properties on Kibbe Lane. The samples were obtained on October 1, and November 17, 2020. The analytical results indicated that TCE was present at concentrations above the SHS. Currently, no houses reside on the impacted property, and there is no indication that it will be used for residential purposes in the future. The property owner was notified by letter of the results and that the drinking water should not be used for consumptive purposes.

An initial public meeting was held at the Gamble Township Building on March 26, 2018 and a follow-up meeting was held on May 14, 2019. The initial findings and objectives of the investigation were presented to the public in the initial meeting and an update of the results of the investigation was provided in the follow-up meeting.

Five groundwater monitoring wells were installed by a DEP contractor in the area of known groundwater contamination in October and November of 2018. The wells were first sampled by the contractor in late November of 2018. The analytical results indicated detections of TCE in three of the five wells. One well showed a TCE concentration of 174 ppb which is nearly 35 times higher than the SHS of 5 ppb. These wells

were regularly sampled in 2019 to confirm the results and to fully characterize the groundwater plume. The results remained consistent throughout quarterly sampling events. The most recent sampling event was conducted on March 31, 2021. The results of the sampling remained consistent with previous results. An effort to identify the source of the TCE contamination was made but proved to be challenging due to the large subject area, no history of industry in the area, and no known residential user of TCE. Direct-push soil borings were advanced by a DEP contractor in strategic locations surrounding the area known to be impacted by TCE. The borings were advanced in October 2018 in known dump areas and former septic system locations. The soil sample results from the borings did not show any detections of TCE. Piezometers were installed in the borings to enable sampling of the shallow groundwater. Detections of TCE were observed in all of the piezometers that were installed in the yard of the home that has historically shown the highest TCE concentrations in the drinking water well. The results indicated that the source of the contamination may be isolated to the soil of this yard. The DEP contractor utilized historical aerial photography to identify an area of interest in this yard. Passive soil gas survey samplers were installed in the area of interest and other strategic locations on the properties showing the highest TCE groundwater concentrations. The samplers were installed on March 19, 2020 and retrieved on April 7, 2020. The final report was submitted to DEP on May 6, 2020 and the analytical results indicated that no TCE detections were reported at any of the sampling points.

After a final round of sampling which confirmed the TCE results in each monitoring well, three of the five monitoring wells were abandoned between August 31, 2021 and September 2, 2021. Two of the wells, both of which contained TCE concentrations below the SHS, were allowed to remain by request of each property owner. The Gamble Township Supervisors were updated on the status of the project by letter on December 20, 2020 and October 21, 2021. A Final End-of-Project Report was submitted to DEP by its contractor on February 9, 2022. DEP issued the Project Closeout Letter on March 22, 2022.

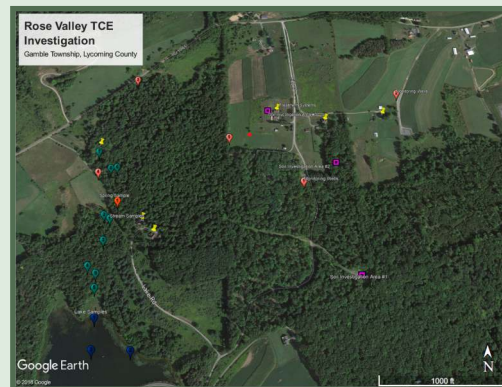
Project Photos

Highlights:

- Point-of-entry treatment systems installed at six homes to remove TCE contamination from the drinking water.



Impacted homes were supplied with whole house point-of-entry treatment systems with a primary and secondary carbon treatment vessel.



Site Investigation map



Monitoring wells were sampled with no-purge, passive, disposable plastic sleeve samplers to reduce costs.



Installation of one of five groundwater monitoring wells.

Project Photos



Direct push borings were advanced for soil characterization and piezometer installation in strategic locations.



Soil from borings was screened with a photoionization detector for volatile organic compounds prior to sampling.

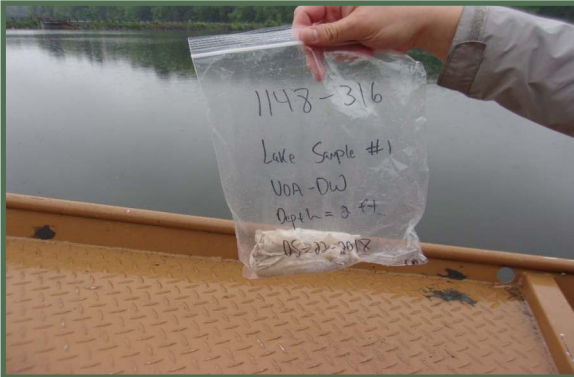


Groundwater spring was impacted with TCE at levels above the Act 2 Statewide health standard.



Air sampling was conducted at the impacted home to ensure that the vapor mitigation system was effective in removing TCE from the ambient air.

Project Photos



Rose Valley Lake was sampled by boat with the assistance of the Pennsylvania Fish and Boat Commission.



A passive soil gas sampler, prior to being placed in the ground in the area of highest contamination.



The passive soil gas samplers were covered in aluminum foil, marked with a flag, and then retrieved for analysis after 19 days. No TCE was detected at any of the sampling locations.

The Hazardous Sites Cleanup Fund (HSCF), a special fund established under the Hazardous Sites Cleanup Act (HSCA) (35 P.S. §6020.101 [et seq.](#)), provides the funding for the Department of Environmental Protection (DEP) to carry out a number of activities to address releases and threatened releases of hazardous substances to the environment.

