



Technical Assistance Services for Communities

700 South 1600 East PCE Plume Site

Review of November 2021 Remedial Investigation Report

The Technical Assistance Services for Communities (TASC) program is providing this review of the November 2021 Remedial Investigation Report for the 700 South 1600 East PCE Plume Community Advisory Group (CAG). This review focuses on the following sections of the Remedial Investigation Report:

1. Site Location and Background
2. Study Area Investigation
3. Physical Characteristics of the Study Area
4. Nature and Extent of Contamination
5. Contaminant Fate and Transport
6. Risk Assessment
7. Summary and Conclusions

Each of these sections is summarized below. TASC comments are after the summary.

This fact sheet is funded by the U.S. Environmental Protection Agency's (EPA's) TASC program. Its contents do not necessarily reflect the policies, actions or positions of EPA.

1. Site Location and Background

The dry-cleaning solvent PCE (tetrachloroethene) was released from the Veterans Affairs (VA) Medical Center in the late 1970s and early 1980s, causing groundwater contamination at the VA Medical Center and neighborhoods to the west. Groundwater is contaminated with PCE and other volatile organic compounds (VOCs) that form when PCE degrades. VOCs are carbon-based chemicals that tend to evaporate.

The site's groundwater contamination was first discovered in 1990 in an irrigation well. PCE was also detected in a public drinking water well near the site. Even though the concentration was less than EPA's drinking water limit, Salt Lake City shut down the well in 2004.

In 2010, Salt Lake City was investigating an oil pipeline break nearby and detected PCE in seeps and springs west of the VA Medical Center. Because of the potential human health threat, EPA placed the site on the Superfund program's National Priorities List in 2013.

2. Study Area Investigation

In 2015, the VA began the site's remedial investigation to define the nature and extent of contamination. These are the main questions that the remedial investigation focused on:

- Where is the groundwater contamination (depth and lateral extent)?
- How much contamination is there?
- How does the site's groundwater flow affect the movement of contaminants?
- How are natural processes changing the contaminant concentrations?
- Is contamination above the water table (e.g., soil contamination) acting as a source of groundwater contaminants?
- Is there a risk from vapor intrusion?
- Does groundwater contamination pose a risk to human health?
- Does surface water, sediment or soil contamination pose a risk to human or ecological health?

To answer these questions, samples were collected from soil, groundwater, surface water, sediment, soil gas and indoor air.

3. Physical Characteristics of the Study Area

The ground surface slopes to the southwest and becomes steeper near the East Bench geological fault (red line on left in Figure 1 on page 3). Groundwater at the site flows generally westward. The East Bench Fault is not fully permeable, so when groundwater reaches the fault it rises to the surface and discharges as springs and seeps just east of the fault. This area of the site is called East Side Springs.

4. Nature and Extent of Contamination

This section of the Remedial Investigation Report describes where there is contamination in groundwater, soil vapor, indoor air, surface water, sediment and soil.

Figure 1 shows the PCE groundwater plume. The yellow line shows the area where PCE is above its drinking water standard (5 micrograms per liter). The orange lines show where PCE is above 50 micrograms per liter. Groundwater flow has carried the contamination westward from the VA Medical Center. PCE is the main contaminant of concern; only a few samples had other site-related contaminants at levels of concern.

PCE was detected in soil vapor in the East Side Springs area at levels above EPA’s residential screening level. When there are contaminants in soil vapor, there is the potential for the contaminants to get into buildings. This is called vapor intrusion. Vapor intrusion is a concern at this site because there is VOC-contaminated groundwater directly

under houses at very shallow depths. From 2015 to 2021, the VA sampled indoor air in 69 houses, schools and other buildings in the East Side Springs area to determine where vapor intrusion is happening and whether any immediate actions were needed to protect people. About 18 of these buildings had PCE or another site-related contaminant at levels above EPA’s residential screening level. Five houses had PCE at levels above EPA’s removal action level, so the VA took immediate actions including installing a vapor mitigation system in one house, sealing basement floor cracks in two houses, and adding water to a floor drain trap in one house. At one of the five houses, additional sampling showed that air in the basement did not exceed the screening level, so immediate action was not needed.

Figure 2 (page 4) shows where PCE was detected in indoor air in the East Side Springs area. The yellow and orange triangles and hexagons on the map mark the locations of buildings where PCE has been found in indoor air at levels above EPA’s residential screening level (yellow shapes) or removal action level (orange triangle). These buildings are generally near the intersection of 900 South and 1200 East.

Risk-based screening level: A health-based concentration developed for a chemical using conservative exposure assumptions. Sampling results are compared against the cancer-based or noncancer-based value, whichever is lower.

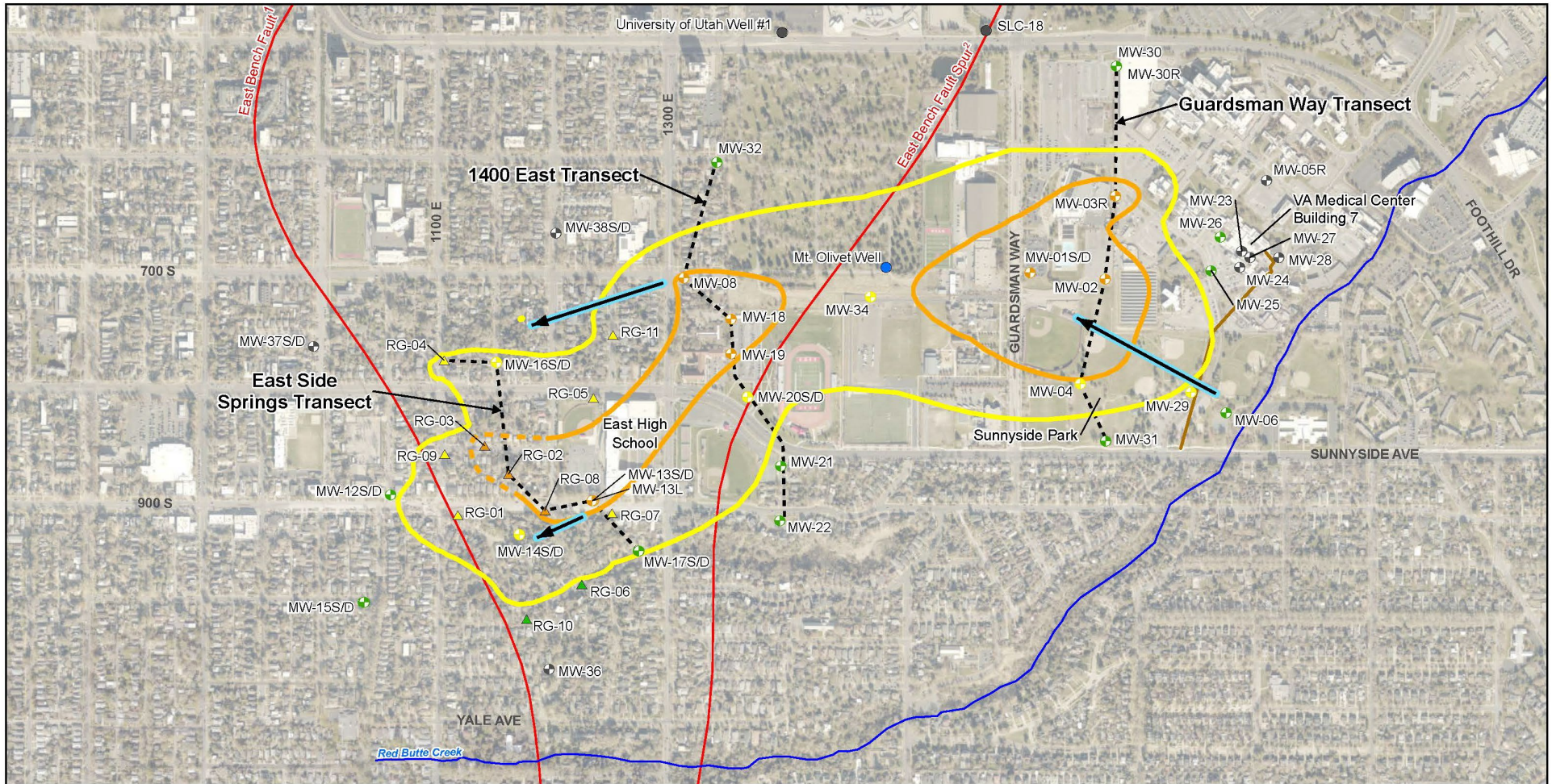
Purpose: To assess the need for further investigation.

Removal action level: A chemical-specific, health-based concentration similar to the screening level but based on a less stringent cancer risk level.

Purpose: To assess the need for conducting an early cleanup action (e.g., vapor intrusion mitigation).

Soil gas or soil vapor: the air between soil particles underground

Vapor intrusion: when vapors from contaminated soil or groundwater get into buildings



<p>Legend</p> <ul style="list-style-type: none"> Monitoring Well Production/Irrigation Well Residential Groundwater Well Red Butte Creek Monitoring Well Transect Line Sewer Line Fault Line Groundwater Flow Direction 	<p>PCE Concentration</p> <ul style="list-style-type: none"> Non-detect < 5 µg/L 5 - 50 µg/L > 50 µg/L <p>PCE Isoconcentration Contours</p> <ul style="list-style-type: none"> 5 µg/L 50 µg/L Dashed Line - Inferred Extent 	<p>Notes:</p> <ol style="list-style-type: none"> Plume contours were developed using Leapfrog 3-dimensional visualization software to interpolate the most recent data from each sampling location. The contours represent a top-down view of the 3-dimensional extent of the plume as interpreted in the Leapfrog software. The color coded PCE concentration at each location is based on the most recent result. <p>OU = operable unit PCE = tetrachloroethene µg/L = micrograms per liter</p> <p>¹ Davis, F.D. 1983. Geologic Map of the Central Wasatch Front, Utah. Utah Geological and Mineral Survey, Map 54-A - Wasatch Front Series, May.</p> <p>² Personius, S.F. and Scott, W.E. 2009. Surficial Geologic Map of the Salt Lake City Segment and Parts of Adjacent Segments of the Wasatch Fault Zone, Davis, Salt Lake, and Utah Counties, Utah</p>		<p align="right">Figure 5-4A Tetrachloroethene in Groundwater Monitoring Wells</p> <p align="right">CDM Smith</p> <p align="right">OU1 Remedial Investigation Report 700 South 1600 East PCE Plume Salt Lake City, Utah</p>
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File Path: J:\238824_VA_Medical_Salt_Lake\MXD\Sampling_2021\RI_2021\Fig5-4A_PCE_in_Groundwater-MW.mxd WAGNERA 9/24/2021 9:19:59 AM

Figure 1. Site Map Showing PCE in Groundwater¹

¹ Source: Remedial Investigation Report

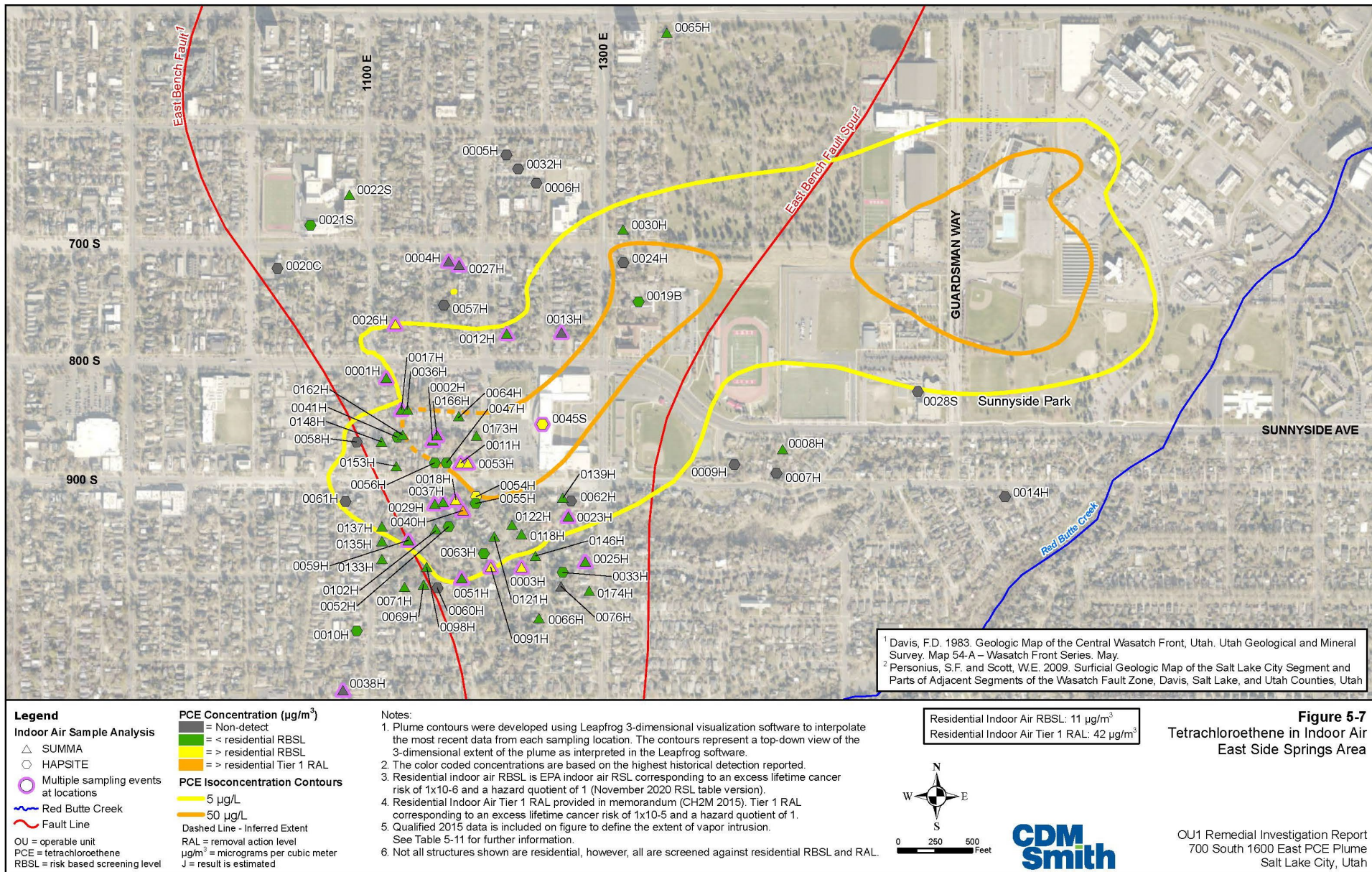


Figure 2. Site Map Marking Buildings Where PCE Was Found in Indoor Air²

² Source: Remedial Investigation Report

PCE was detected in the soil vapor at the VA Medical Center at levels well above EPA's industrial screening level. PCE was also found in soil vapor near the sewer line in Sunnyside Park. The VA sampled the indoor air in the buildings near the areas with soil vapor contamination. Very high levels of PCE and trichloroethene (TCE) were detected in the indoor air of some buildings at the VA Medical Center; however, this was probably due to indoor sources (industrial cleaning products). After these indoor sources were removed, the indoor air was re-sampled and found to be below EPA's industrial screening levels.

Surface water and sediment sampling found PCE in seeps and springs in the East Side Springs area. This was expected because contaminated groundwater feeds these seeps and springs. Red Butte Creek did not have any site-related contamination, except for one sample that was well below the drinking water standard.

Soil sampling found very low levels of contamination, with no concentrations exceeding EPA's screening level for residential soil.

5. Contaminant Fate and Transport

This section of the Remedial Investigation Report describes how the site's contaminants move and change in the environment. Water containing the dry-cleaning solvent PCE was dumped down the drain at the VA Medical Center, a common disposal method at the time. Some of the PCE got into the ground at the Medical Center, and some of the PCE flowed down the sewer line and leaked out through a break in the sewer pipe in Sunnyside Park.

After the PCE was released into the soil, most of the PCE travelled down through the soil by gravity until it reached the groundwater. The PCE then moved westward with the groundwater flow. The VA created a computer model to help understand how the contamination will move under various conditions (for example, if the nearby public drinking water well is turned back on). The model suggests that PCE may be migrating west of the East Bench Fault; however, sampling results indicate that if PCE is migrating west of the fault, it

is likely present at very low concentrations and mostly in deeper groundwater.

The main contaminants at the site are highly volatile, which means they tend to evaporate. Therefore, these contaminants evaporate from the groundwater into the soil vapor. From the soil vapor, they can enter buildings (this is called vapor intrusion). Vapor intrusion is a concern in the East Side Springs area because VOC-contaminated groundwater is very close to the surface in that area. In some houses, groundwater seeps directly into basements; this seepage could bring contaminants into the indoor air.

Under certain conditions, PCE degrades into TCE and then dichloroethene (DCE) and then vinyl chloride. However, the remedial investigation found that not much degradation is occurring at this site.

6. Risk Assessment

The remedial investigation conducted risk assessments to estimate how much risk the site's contamination poses to people and the environment. The risk assessments evaluate current risks and potential future risks. The risk estimates are based on conditions before the VA took immediate actions to protect people.

The human health risk assessment found that, without cleanup, indoor air in the East Side Springs area could pose an unacceptable risk due to vapor intrusion. Contaminated groundwater is not currently used (except for irrigation), but if it were used for drinking or bathing in the future it could pose an unacceptable risk. Pathways that do not pose an unacceptable risk to human health include:

- Soil, sediment, surface water, outdoor air
- Indoor air in schools, daycares and at the VA Medical Center
- Gardening and eating produce watered with seep/spring water

Not all homes in the East Side Springs area have had indoor air sampling. Homes with the following characteristics have a higher potential for vapor intrusion:

- Near intersection of 900 South and 1200 East
- Moist basement due to shallow groundwater
- Seeps or springs in yard
- Standing water in open sump
- Cracks in basement floor or foundation
- Bare earth crawl space
- Unsealed utility lines entering basement

The screening-level ecological risk assessment found that the site does not pose a significant risk to plants, wildlife or domestic pets.

7. Summary and Conclusions

The Remedial Investigation Report concluded that cleanup is needed at the site to achieve these objectives:

- Make sure people are not exposed to harmful levels of site-related contaminants if groundwater is used in the future for drinking or bathing.
- Remove site-related contaminants from the groundwater so that it meets drinking water standards at the nearby public drinking water well when it is pumping at its maximum rate.
- Make sure people are not exposed to harmful levels of site-related contaminants in indoor air in the East Side Springs area.

After the Remedial Investigation Report is finalized, the next step will be a feasibility study to evaluate cleanup options.

TASC Comments

TASC comments are for the CAG and community to support understanding of the site and improve communication with EPA and UDEQ. TASC does not provide comments about the site directly to EPA or UDEQ. It is best for people who live and work near the site to share their concerns directly.

- PCE in Indoor Air: Indoor air sampling found five homes with PCE concentrations above EPA's removal action level (Section 5.5.2.2). However, the color-coding on Figure 5-7 seems to show that only one of these homes was above the removal action

level (colored orange), with the other four homes colored green (which means PCE was never detected above its screening level). Community members may want to ask whether the color-coding on Figure 5-7 needs to be corrected.

- Future Use of Groundwater: The human health risk assessment estimated what the risk would be if deep groundwater were to be used in the future. TASC notes that shallow groundwater contains higher concentrations of contaminants than deep groundwater. Community members may want to ask why the risk assessment was based on deep groundwater, which has lower levels of contamination than shallow groundwater.
- Dioxane: The Remedial Investigation Report says that 1,4-dioxane should not be considered a contaminant of concern at the site because it is detected only sporadically and is not correlated with the highest PCE concentrations. However, TASC notes that 1,4-dioxane is highly mobile in groundwater. Also, the two locations where 1,4-dioxane was above its screening level are within or very close to the high-concentration PCE plume. Community members may want to ask EPA whether it would be prudent to continue monitoring 1,4-dioxane in groundwater.

FOR MORE INFORMATION, PLEASE CONTACT:

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