

Why is the U.S. Geological Survey sampling trees?

The roots of a tree spread out underground generally as far as the tree canopy and extend deep into the soils. The roots uptake groundwater and contaminants (Figure 1) such as the solvent trichloroethene (TCE) that was used at the former Sporlan Valve Plant. As the water moves up the tree, tiny amounts of TCE are carried with it and permeate throughout the woody tissue in the tree trunk. A small core sample from the tree trunk can detect this TCE in amounts measured in parts per trillion.



Figure 2. Equipment used to collect tree samples.

How and when does the USGS choose which trees to sample?

Preference is given to larger trees because they provide information on a larger area below the ground. The best time to sample is during the hottest and driest months because the trees are pulling more water from the subsurface and any contaminants pulled with the water are not diluted from recent rainfall. Figure 3 illustrates the area of interest where about 250 trees will be sampled.

What do you do with the data and where can I find more information?

Tree sampling results will help the EPA better understand areas of probable subsurface TCE contamination and guide selection of locations for other more involved sampling methods such as monitoring well drilling or indoor vapor intrusion samples in nearby buildings. For more information on tree coring visit <https://pubs.er.usgs.gov/publication/fs20173076>

Questions?

Pamela Houston
 Community Involvement Coordinator, U.S. EPA Region 7
 913-551-7699
houston.pamela@epa.gov

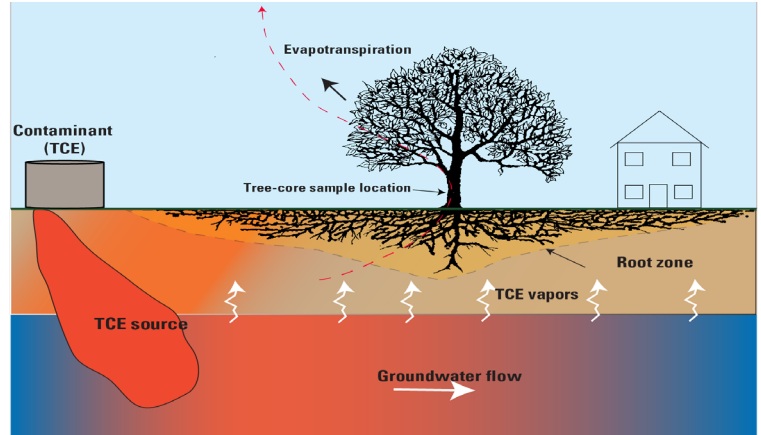


Figure 1. How trees are used to sample subsurface contamination.

What kind of equipment is used?

Tree samples are collected using an incremental borer (a standard forestry tool), a glass vial, and forceps. A small pencil-sized core about 2 inches long is removed from the tree trunk and placed in the vial that is taken to the laboratory for analysis (Figure 2). The sampling takes only a couple minutes and is much less invasive than soil borings or installing monitoring wells.

Will the sampling damage my tree?

The samples the USGS collects are small and little scarring occurs. The core site typically heals within a year or two. Core sampling of trees is routinely done by foresters with no lasting affects.

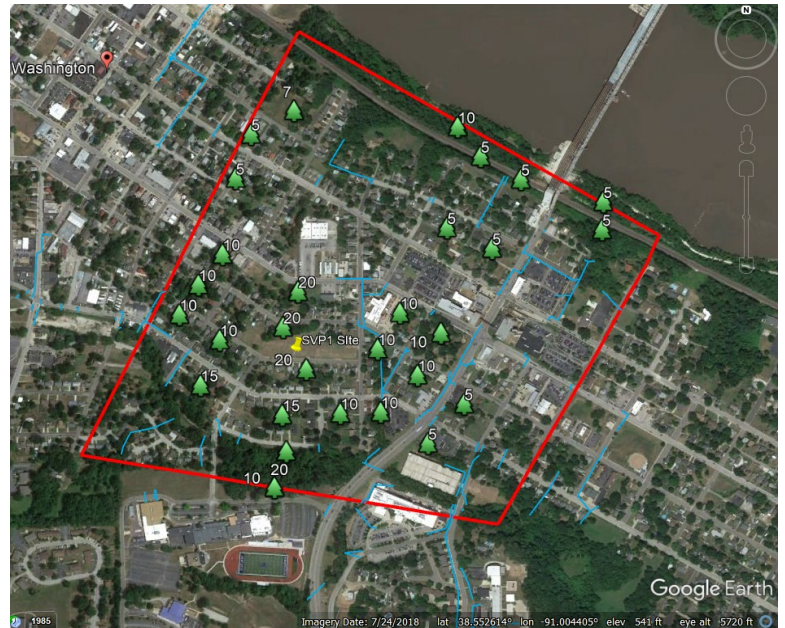


Figure 3. Red outline indicates the area of tree core collection between Brush Creek and the Missouri River and mostly west of Hwy 47.

John Schumacher
 Hydrologist, U.S. Geological Survey (USGS)
 573-308-3678
jschu@usgs.gov