EPA Update

Residential Vapor Intrusion and Groundwater Sampling

Middlefield-Ellis-Whisman (MEW)
Superfund Site Area & Vicinity
Mountain View, CA

November 12, 2013

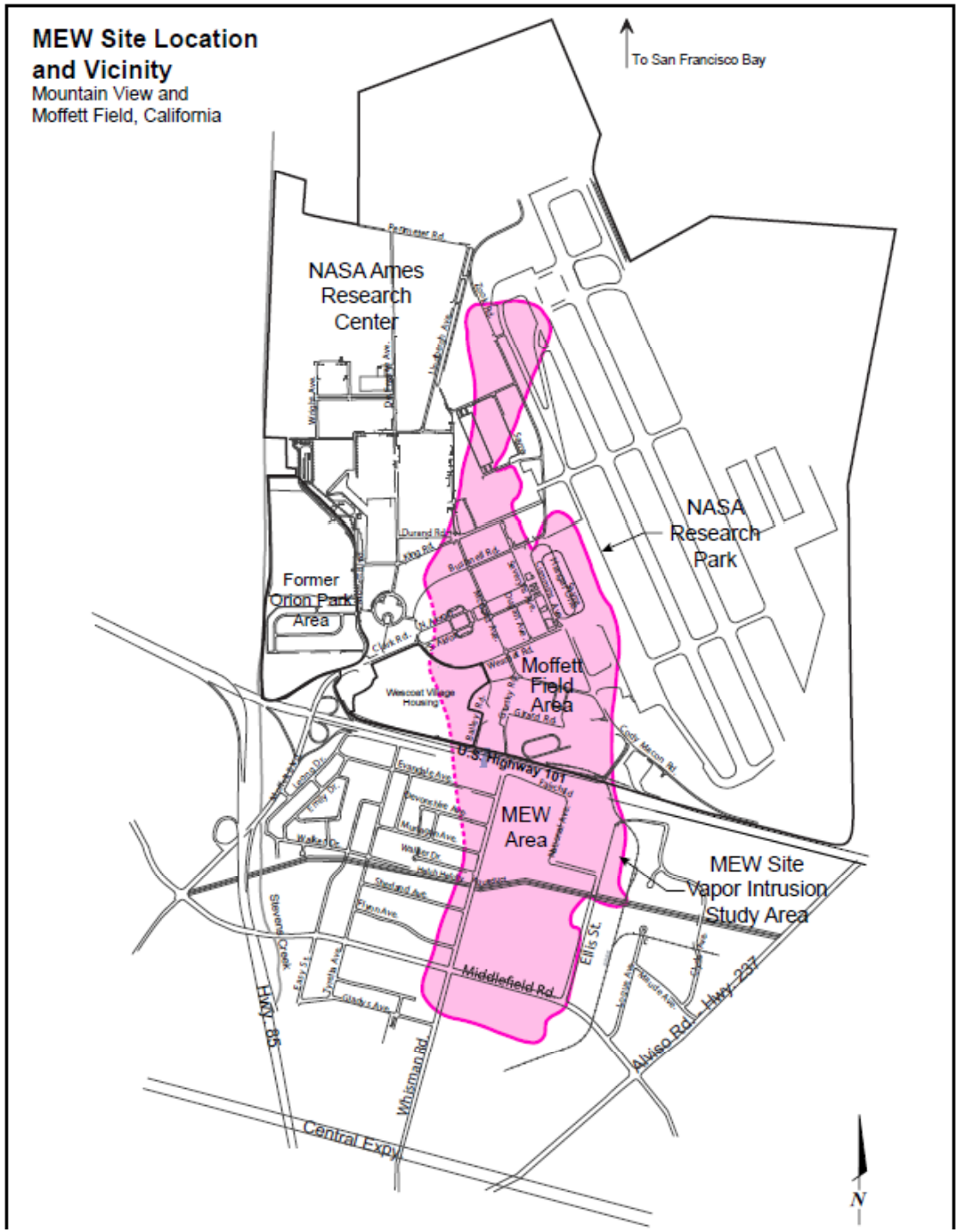
Neighborhood Meeting Agenda

- Introductions (5 minutes)
- Overview (10 min)
- Indoor Air and Groundwater Update (15 min)
- *Questions & Answers*
- Proposed Pilot Test (15 min)
- *Questions & Answers*

- *EPA also available after Meeting to answer questions*

Overview

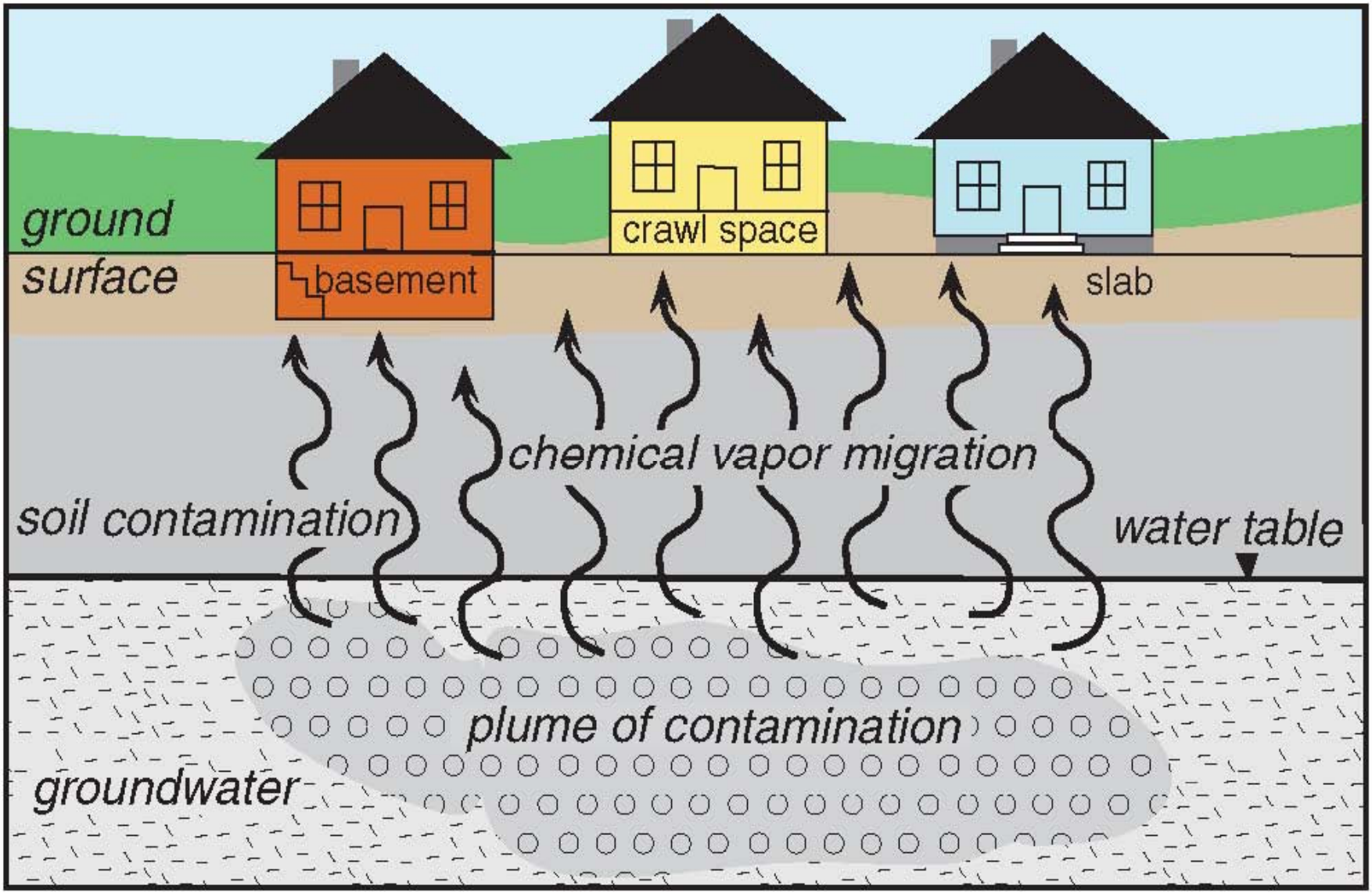
- **MEW Site Vapor Intrusion Study area (as known in 2012)**



What is TCE and why is it a concern?

- TCE or trichloroethene is a solvent used that was widely used in past for degreasing and cleaning.
- Can readily evaporate into air and has potential to migrate from shallow contaminated groundwater upwards into overlying buildings through the vapor intrusion pathway.
- If TCE is in indoor air at high enough levels for a long enough duration, it may pose a potential health concern.

Vapor Intrusion Pathway

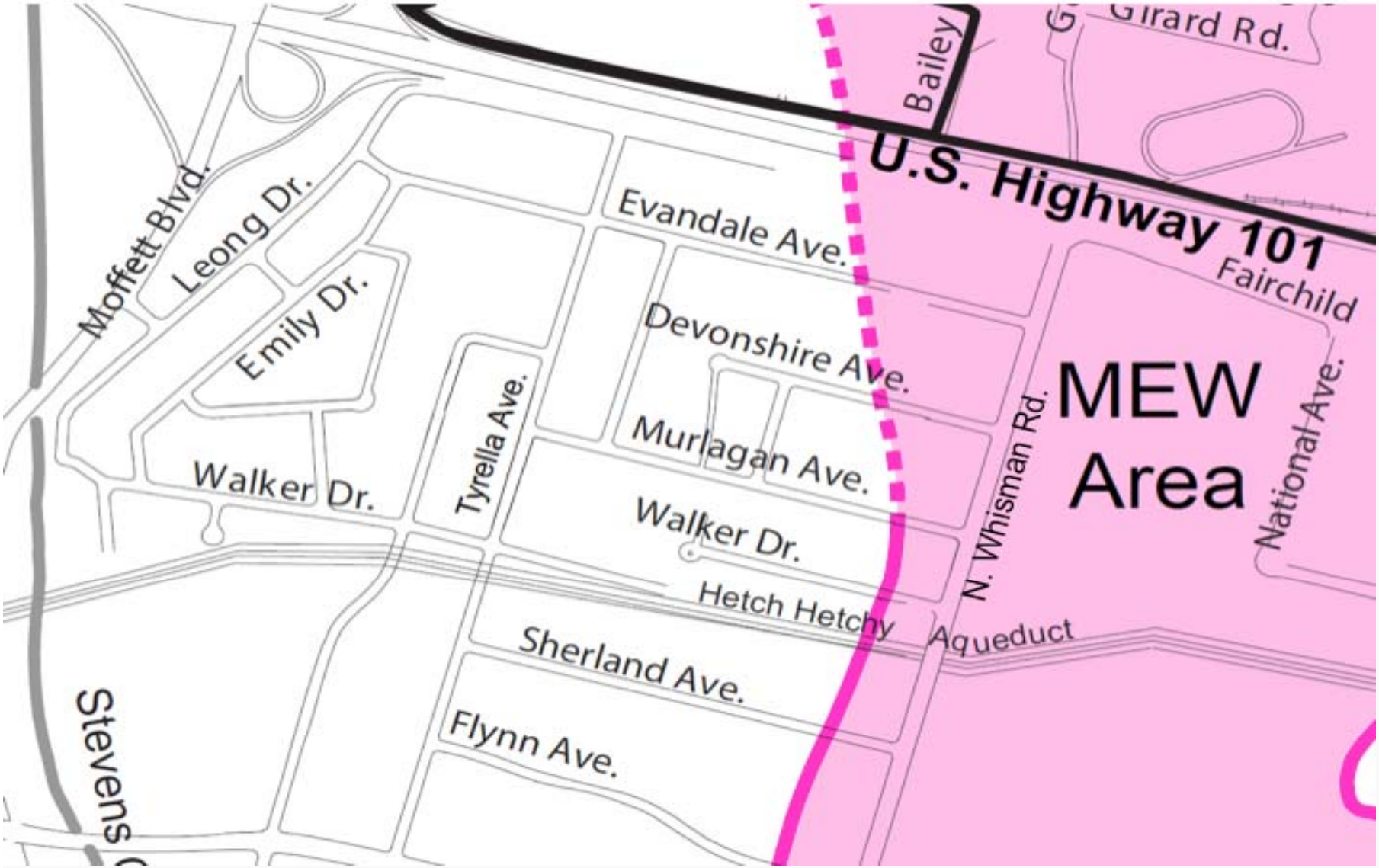


MEW Vapor Intrusion Study Area

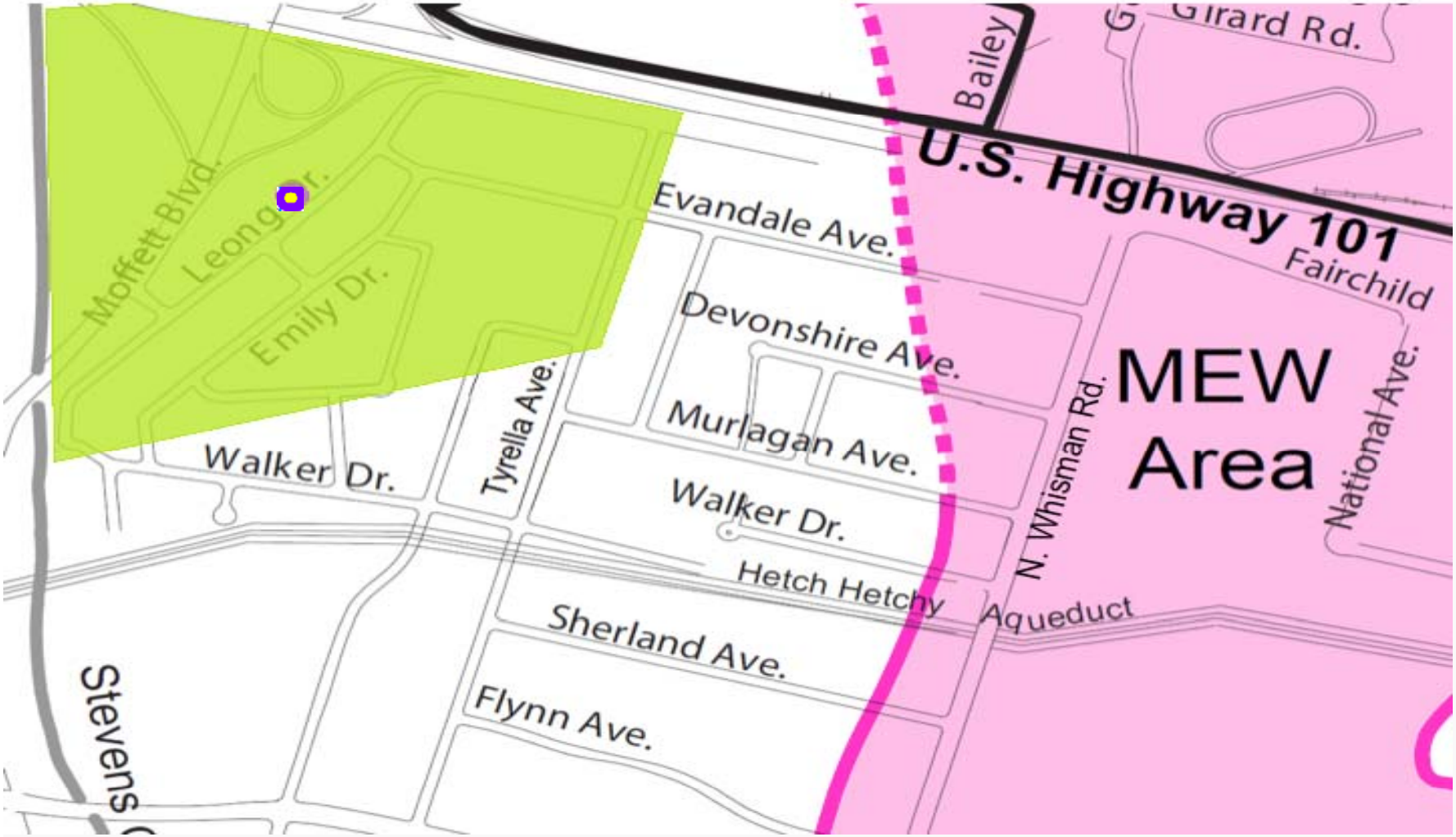
- Generally defined by the area where TCE concentrations in shallow groundwater are greater than 5 micrograms per liter (ug/L), or parts per billion (ppb).

- In 2010, EPA selected a vapor intrusion remedy for the MEW Site, which applies to all existing and future residential and commercial buildings, within the MEW Vapor Intrusion Study Area.

Residential Area of Interest

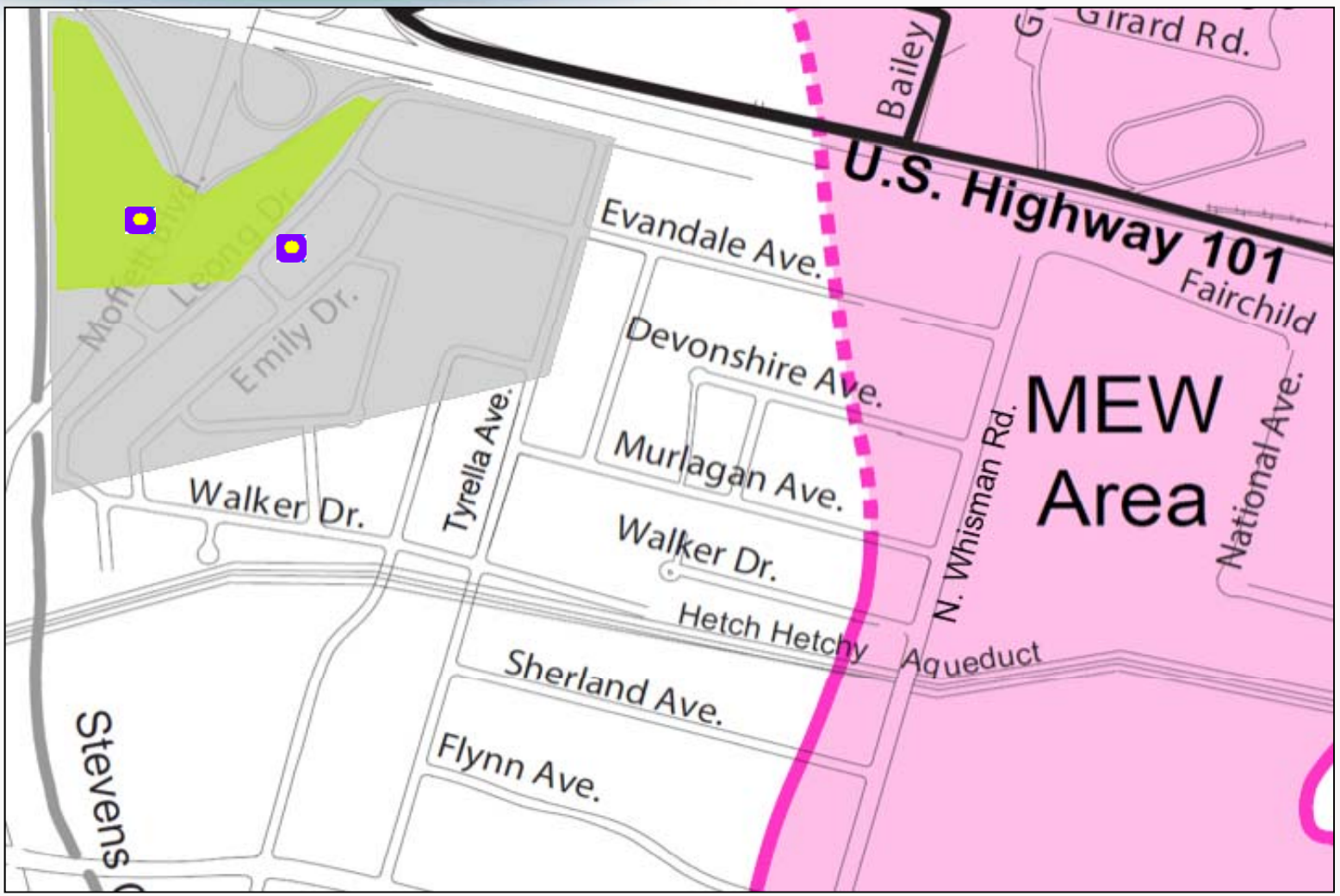


EPA Groundwater Investigation Area 2005 & 2011



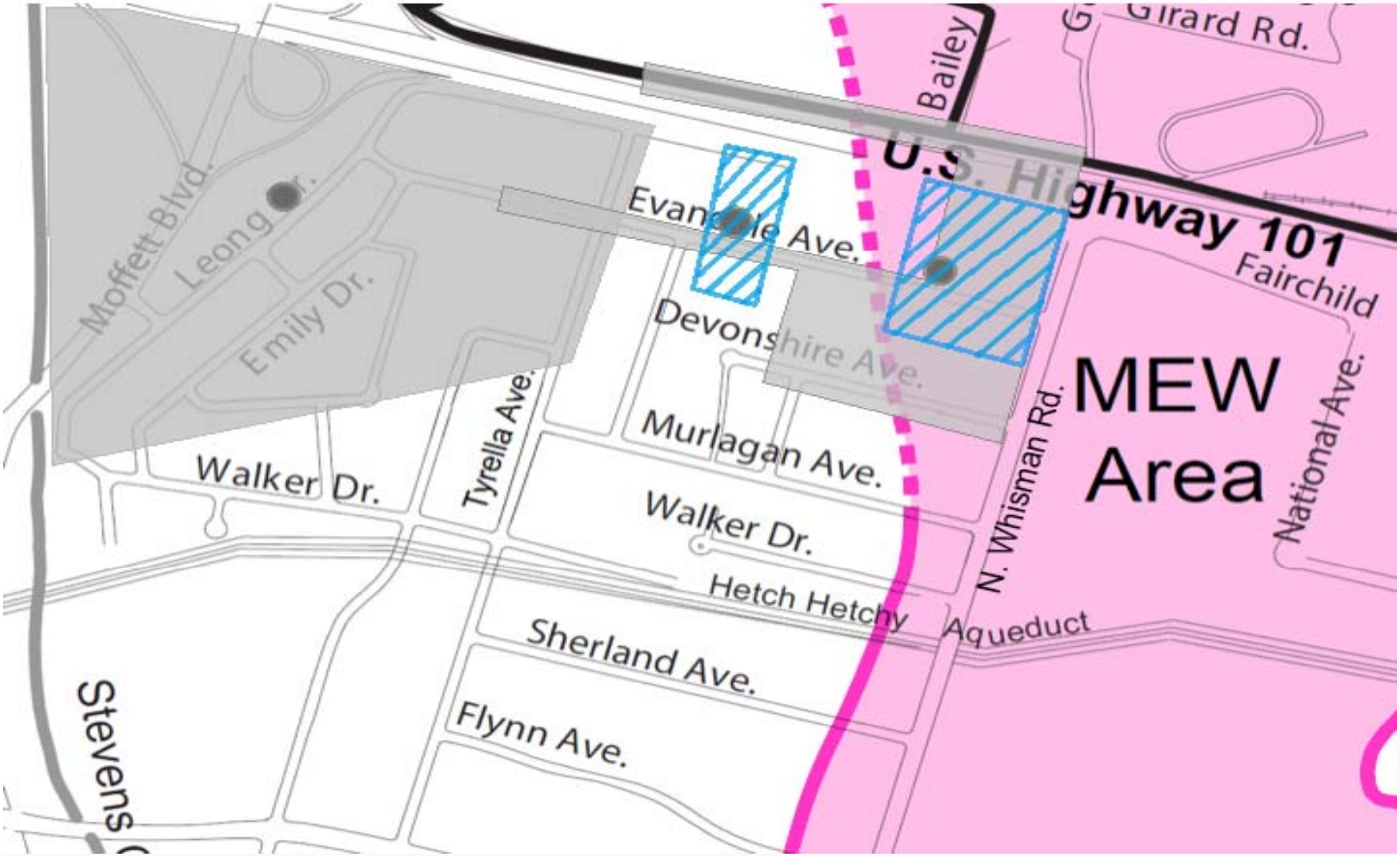
TCE Hot Spot Area

2007-2013 Additional Investigation Areas

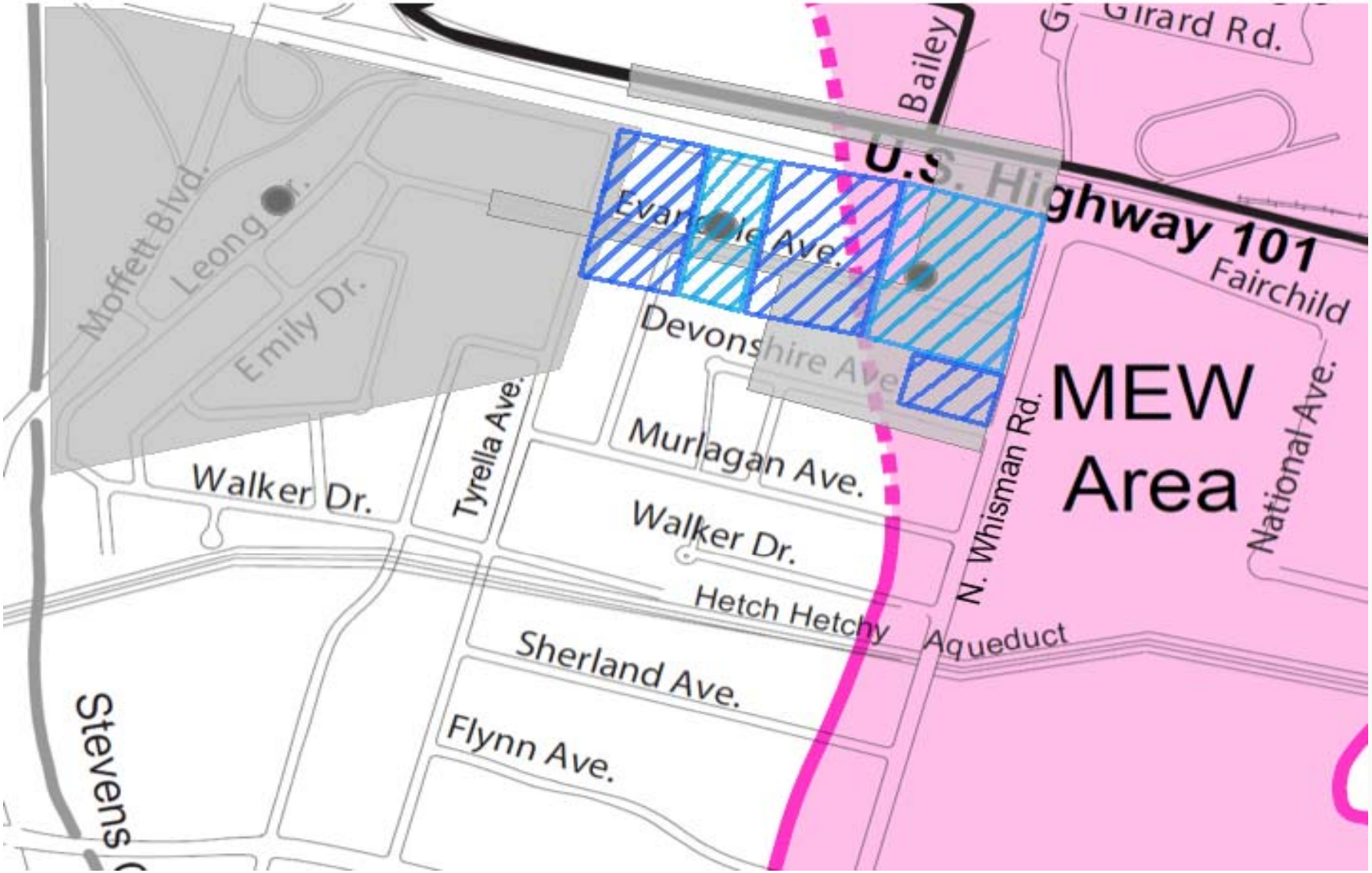


TCE Hot Spot Area

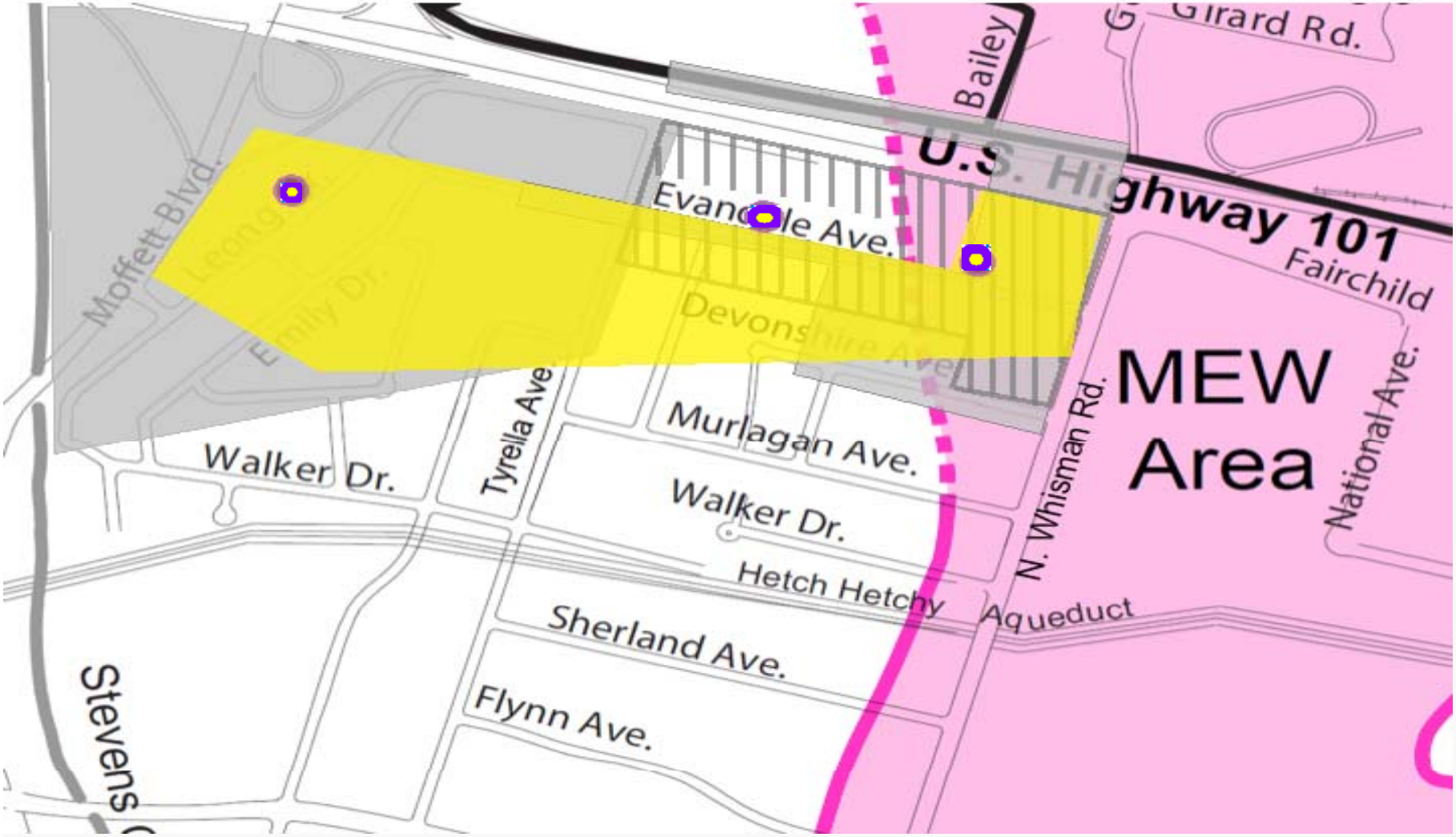
High Priority Indoor Air Sampling Area - Jan 2013



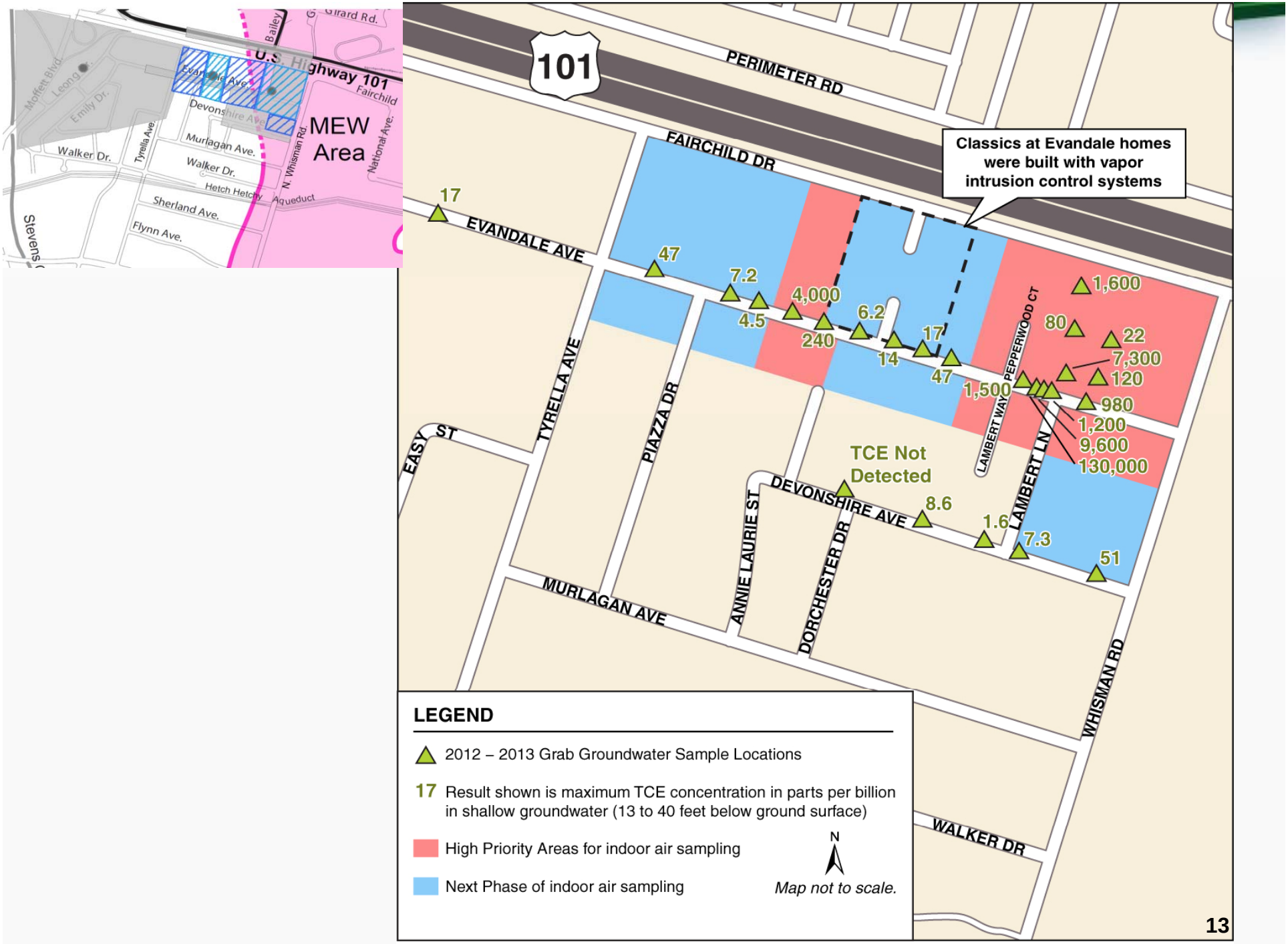
Expanded Residential Indoor Air Sampling Area – March 2013



EPA Potential Source & Groundwater Investigation – Sept 2013



TCE Hot Spot Area



2012 – 2013 Groundwater Results - TCE in Shallow Groundwater

2013 EPA Indoor Air Sampling Results Summary

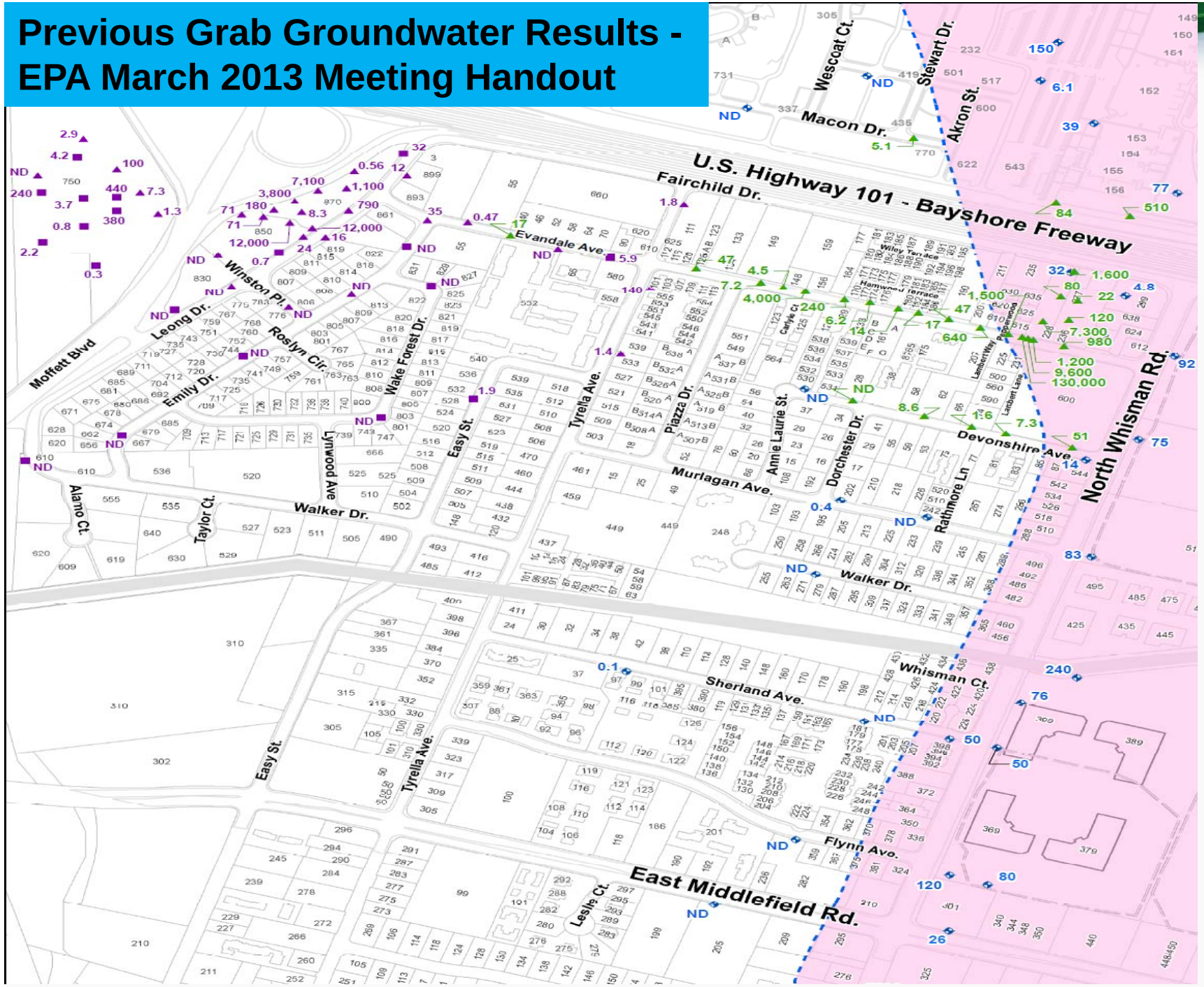
- EPA sampled over 90 residences in expanded residential areas
- No TCE was detected in most residences sampled.
- TCE was detected in some residences, but below indoor air cleanup levels. These homes were re-sampled to confirm TCE below indoor air cleanup levels.
- TCE was found in only two residences exceeding EPA's TCE indoor air cleanup level of 1 microgram per cubic meter.
- Vapor intrusion control systems were installed to mitigate TCE indoor air concentrations to below indoor air cleanup levels.

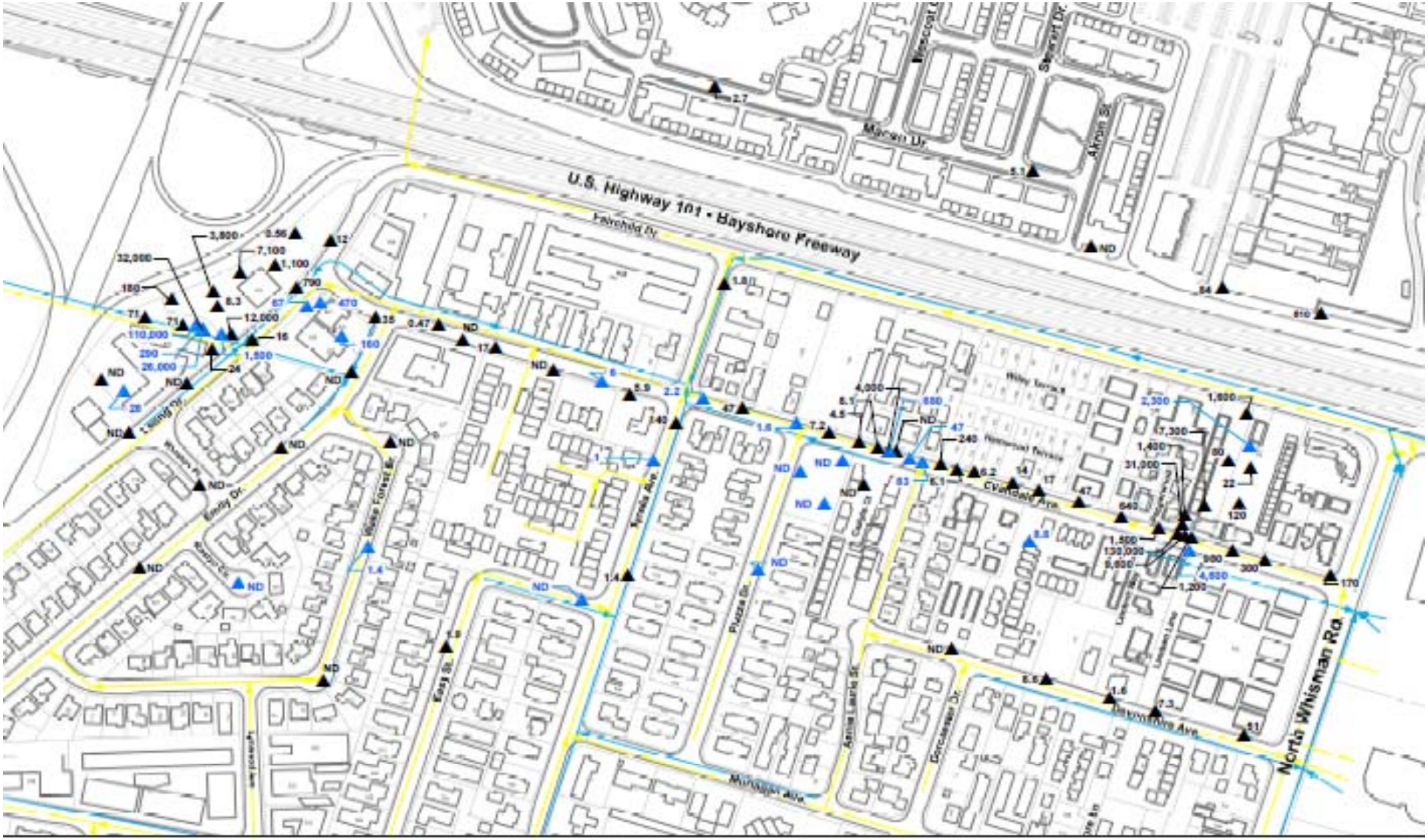
Summary

- Results from all indoor air sampling showed vapor intrusion not a problem in most residences sampled.

- Based on groundwater and air sampling to date, areas outside the high priority areas that overlie lower TCE groundwater concentrations are considered as low vapor intrusion risk.

Previous Grab Groundwater Results - EPA March 2013 Meeting Handout





▲ 2013 EPA grab groundwater location

▲ 2005-2012 grab groundwater location

The result shown is the maximum groundwater TCE concentration in parts per billion (ppb) to 40 feet below ground surface.

ND = Not Detected (below 0.5 ppb TCE)

Sanitary sewer drainage route

Stormwater drainage route

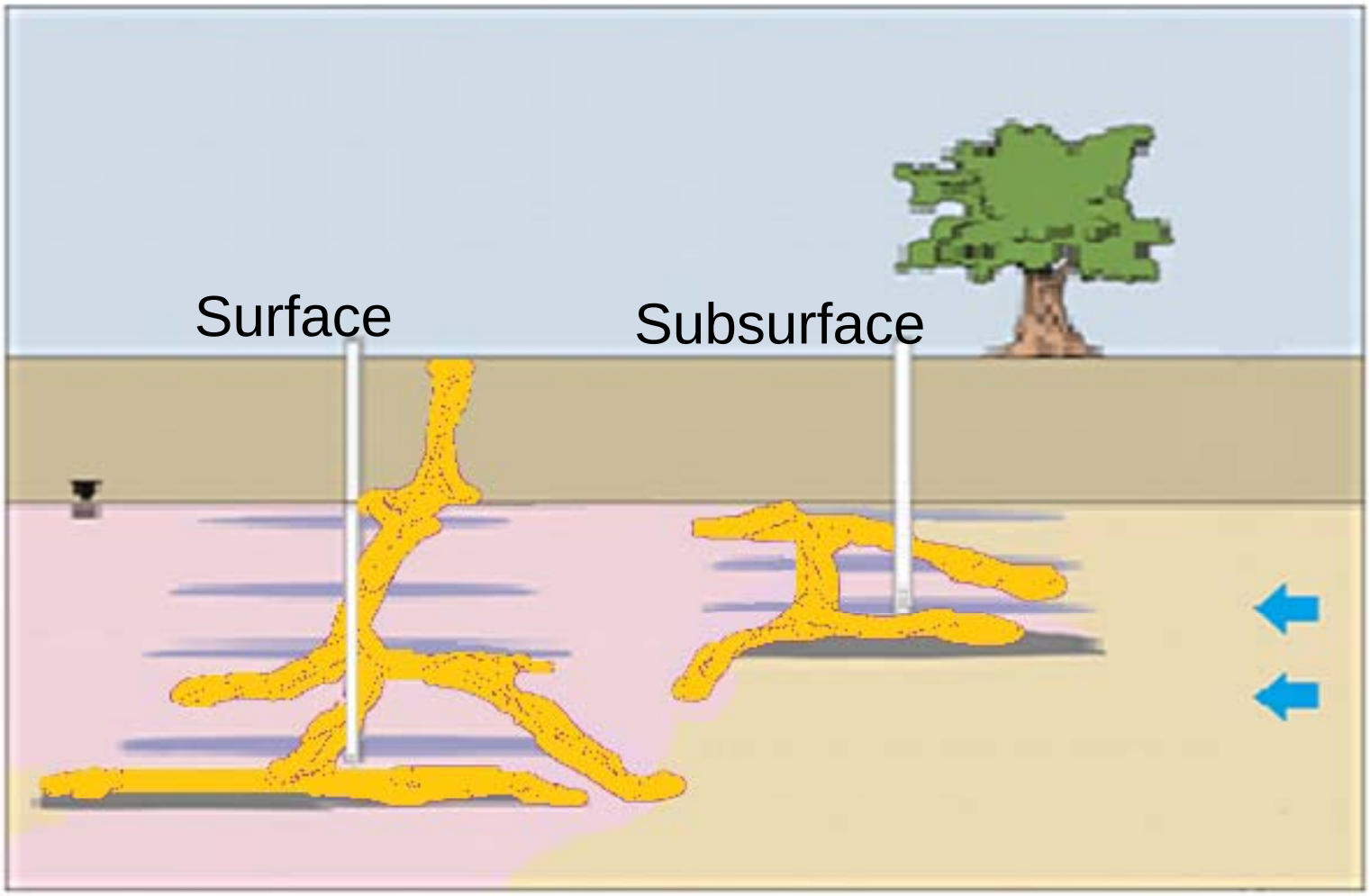
N

0 164 328 Feet

TCE Shallow Groundwater Results
September 2013

In Vicinity of Highway 101 & Moffett Blvd Study Area & MEW Superfund Site, Mountain View, CA

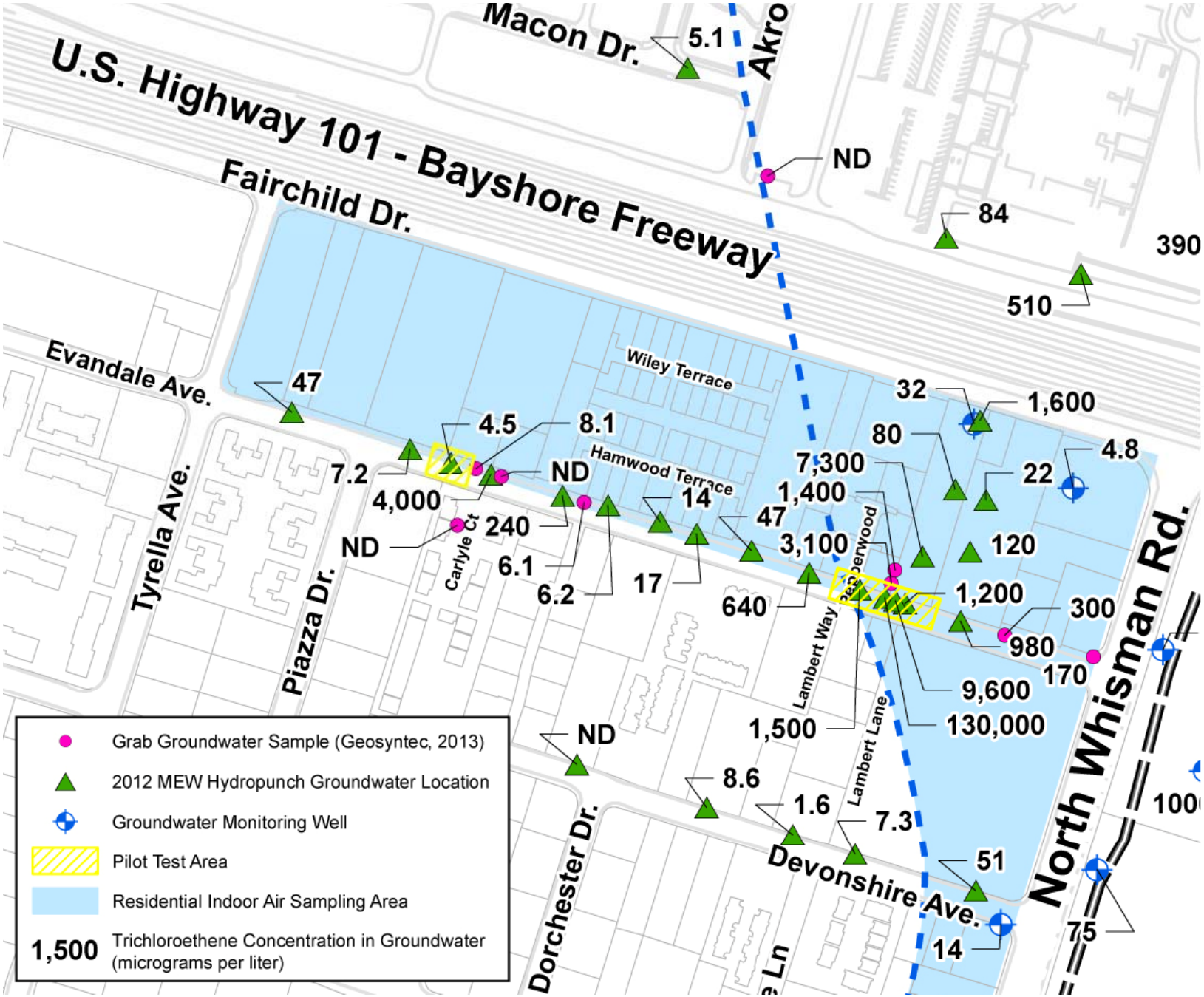
Source Type



Proposed Pilot Test

- Proposed pilot test for in situ chemical oxidation in TCE hot spot areas along Evandale Avenue to reduce groundwater contamination.
- Note: Groundwater in the area is not used for drinking water or other potable uses.

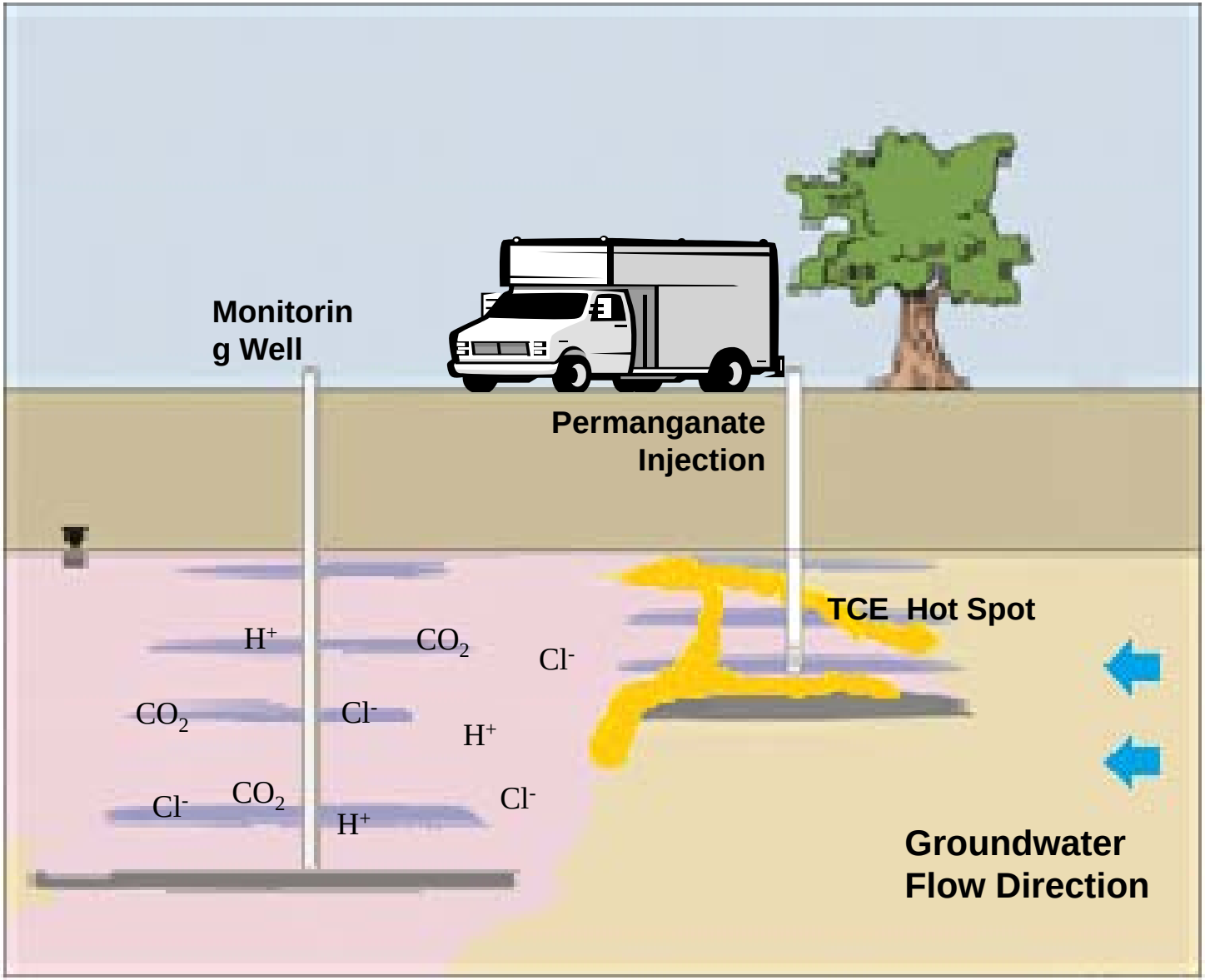
2013 Sampling Results and Proposed Pilot Test Locations



Why use chemical oxidation?

- Can rapidly reduce high concentrations in groundwater faster than pump and treat

Injection Process

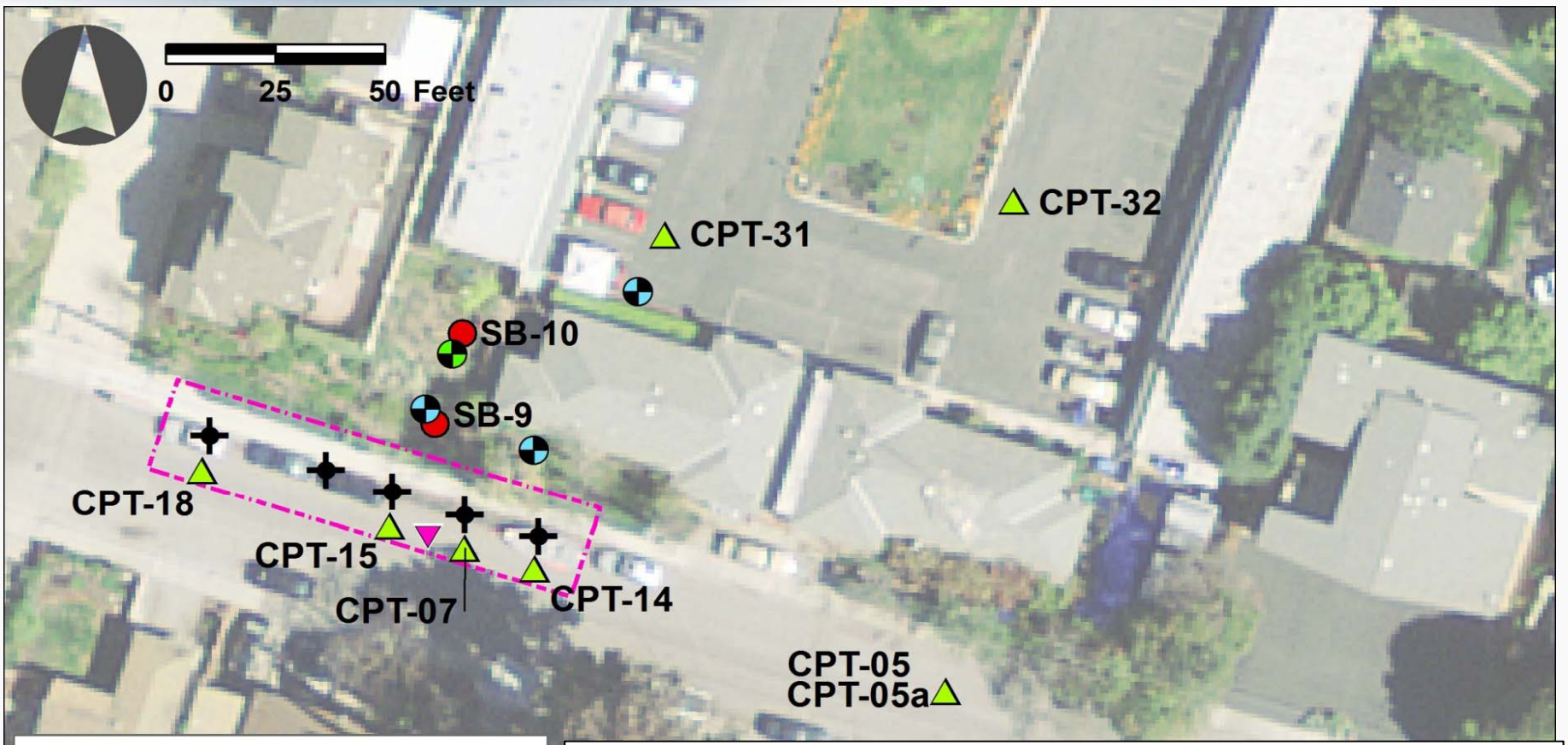


Permanganate Reacts with TCE

Forms harmless Byproducts (Carbon Dioxide, Manganese Oxide, and Salt Solutions)

Pilot Test Equipment

Pilot Test Location – CPT-15



Note:
Locations are approximate.
Aerial Source: USGS, April 2011

Legend
- Design Extent of Injections
- Proposed temporary monitoring well group screened from 15-25 ft bgs, 25 - 35 ft bgs and 65-75 ft bgs
- Proposed temporary monitoring well group screened from 15-25 ft bgs and 25-35 ft bgs
- Proposed injection point (approximate location)
- Proposed temporary piezometer to monitor injection mounding
- CPT Location (Geosyntec, 2013)
- Soil Borings (Geosyntec, 2013)

Potential Neighborhood Impacts

- 2 weeks of drilling, followed by 5 days of injection activity
- One way access on street
- No driveway access impacts
- Work done during City Permit Hours
- Rig removed off-site each day
- Street parking reduced in Pilot Test Area
- No odors or dust anticipated

Schedule

- Permits and approval for project (late 2013)
- Work activity flyer notice to residents along Evandale Avenue
- Drilling and first round of injection and monitoring (early 2014)
- If successful, two additional injections and monitoring (approximately two months apart)
- If effective will be used to address second TCE hot spot area on Evandale Avenue

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EPA Websites –
For More Information
www.epa.gov/region9/mew
www.epa.gov/region9/moffettfield
www.epa.gov/oswer/vaporintrusion