



Rehabilitation of Westbay Wells with PCE-Contaminated Tubing Fluid

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EM *Environmental Management*

safety ❖ performance ❖ cleanup ❖ closure

Idaho Cleanup Project

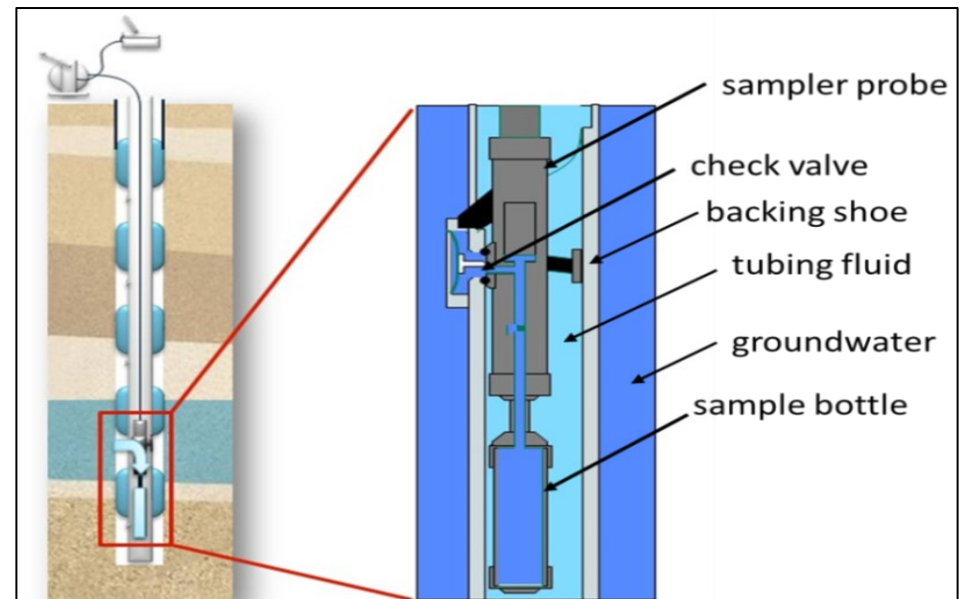
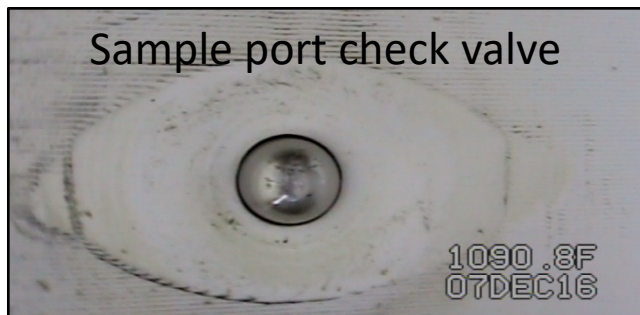
What We'll Cover

- Geometry and sampling of a Westbay well
- Location of impacted Westbay wells
- Discovery of perchloroethylene (PCE) in tubing fluid
- Field investigation on origin of PCE contamination
- Rehabilitation method to remove PCE from tubing fluid
- Present status of PCE concentrations

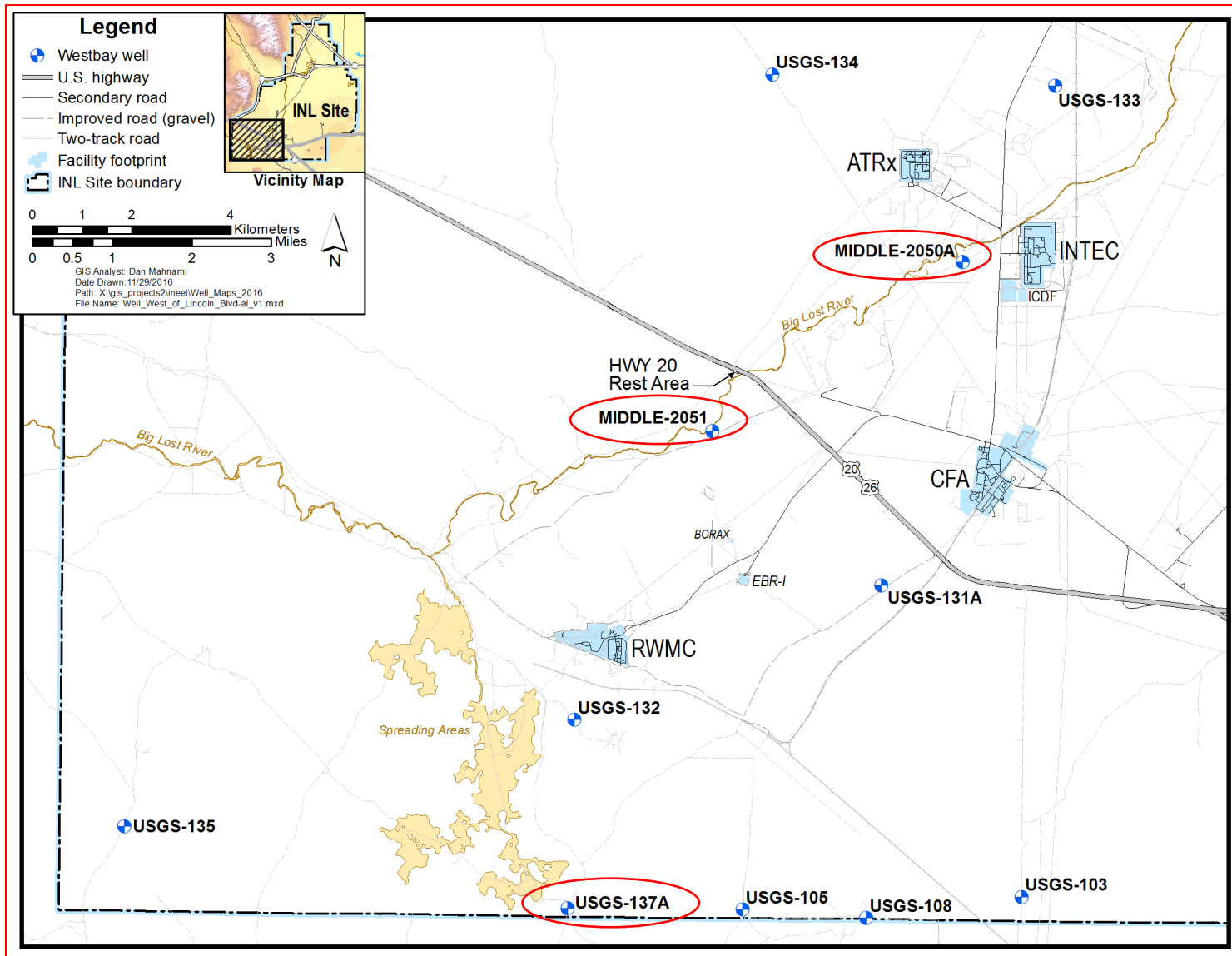


Geometry and Sampling of a Westbay well

- Westbay is a multilevel technology for subsurface monitoring and characterization
- Unique features of the Westbay well sampling technology include:
 - Sampling apparatus and tubing fluid are isolated inside Westbay system
 - Sampler probe (operable from surface) locates and aligns with the sample port
 - Backing shoe is extended and check valve is depressed to allow aquifer hydraulic pressure to push groundwater through check valve into the sample bottle
 - Check valve is then closed and sampler probe and sample bottle are retrieved



Location of Impacted Westbay Wells



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Discovery of PCE in Tubing Fluid

- November 2015 routine sampling event at MIDDLE-2051
 - PCE detected in samples collected from two depths
 - Unexpected result
- Follow up sampling in 2016 of tubing fluid and groundwater →
 - 2016 sample results identified PCE above Maximum Contaminant Level (MCL) in tubing fluid, not aquifer
- Agencies agreed to implement New Site Identification process
- Field investigation plan developed to check all Westbay wells
 - Field investigation conducted 2016-2017



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Field Investigation on Origin of PCE Contamination

- Field Investigation included the following actions:
 - Records review and evaluation
 - Inventory of INL products containing PCE
 - Inspection of Westbay equipment storage areas
 - Downhole video logging of Westbay wells
 - Westbay well tubing fluid and sediment samples (2017)
 - Westbay equipment and quality control samples (2017)

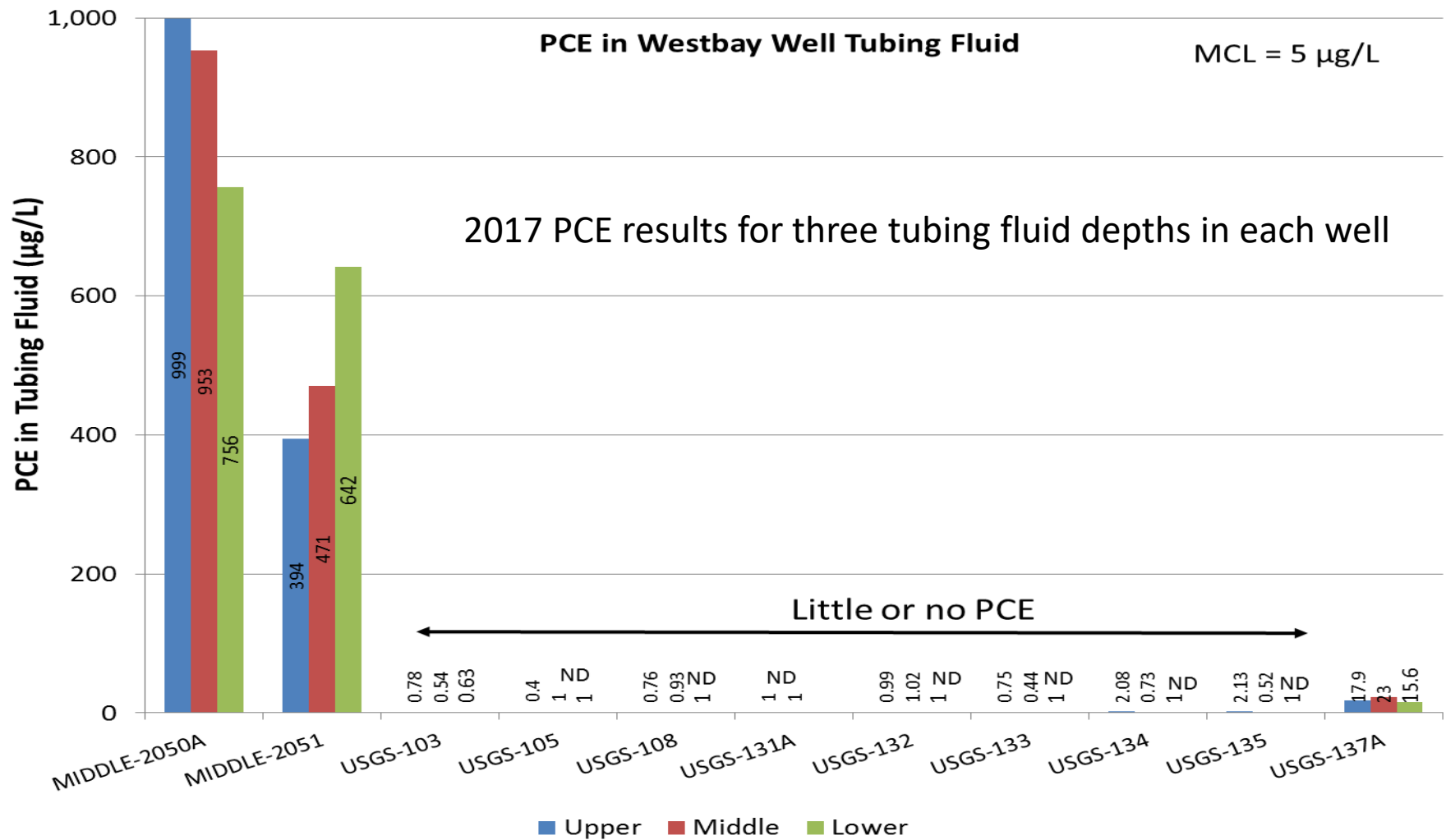
RESULTS:

Source of PCE in tubing fluid of MIDDLE-2050A, MIDDLE-2051, and USGS-137A is uncertain but suspect tanker truck used in construction of well

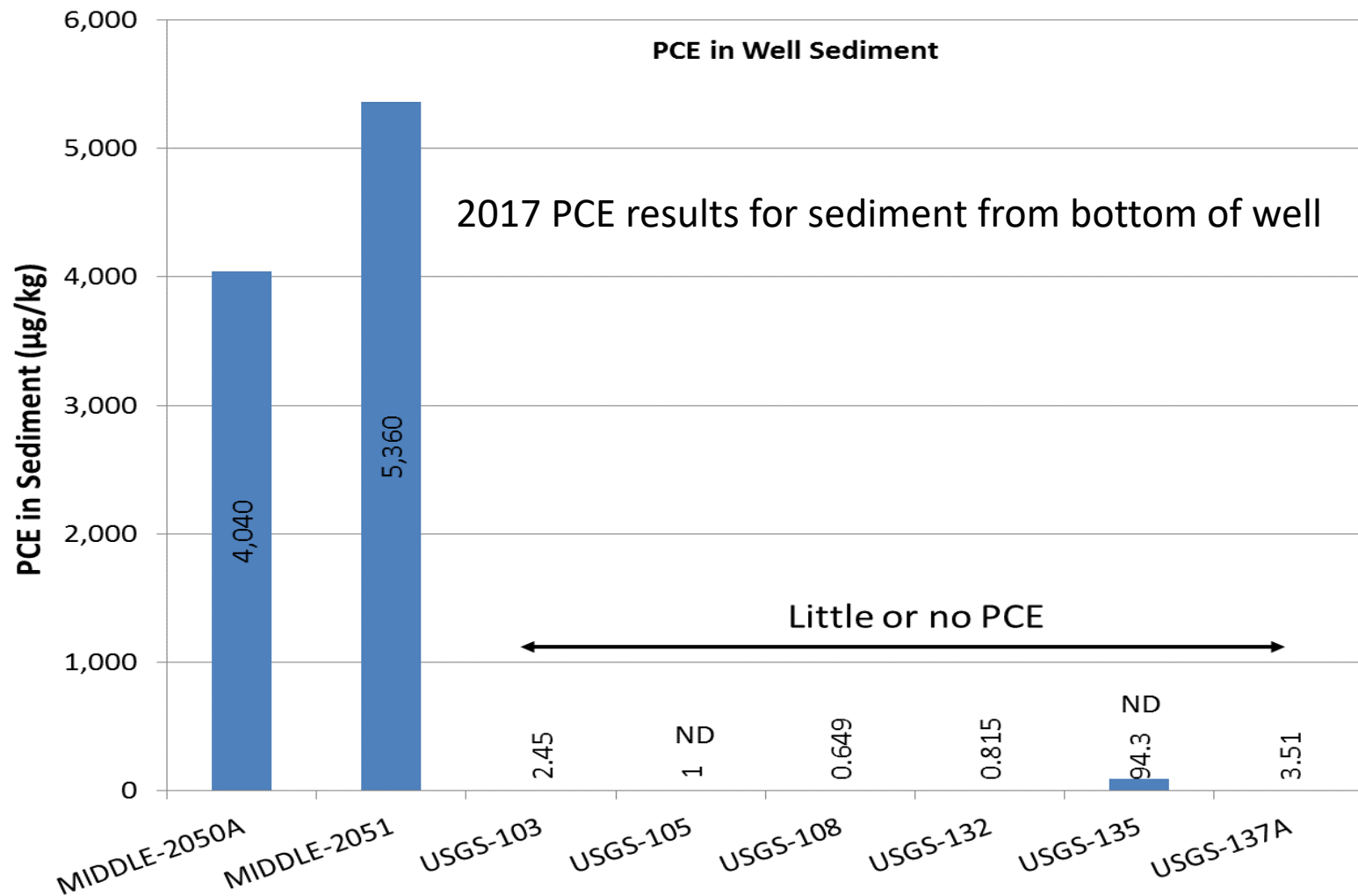
There is no PCE contamination above the MCL in the aquifer



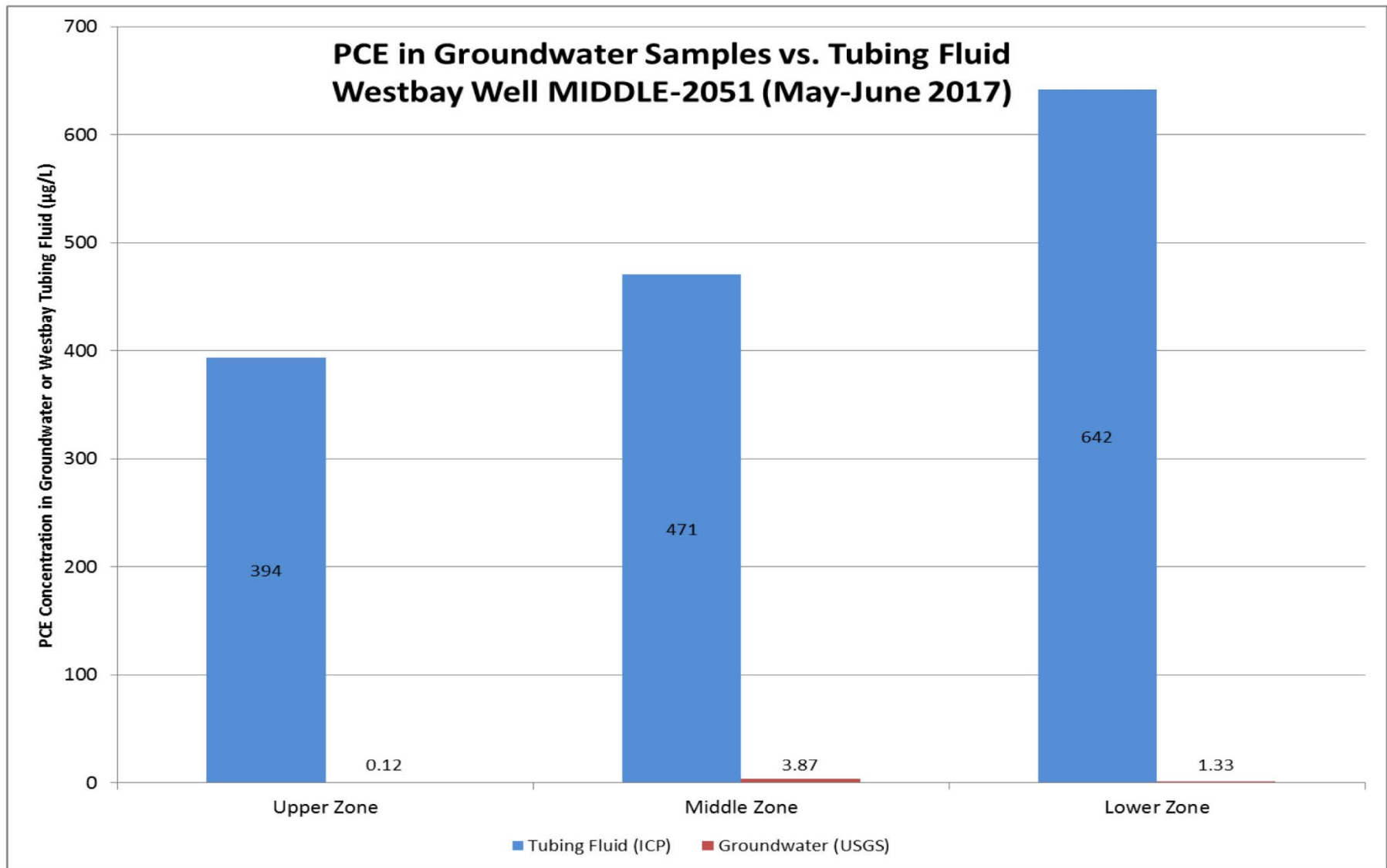
Field Investigation on Origin of PCE Contamination



Field Investigation on Origin of PCE Contamination



Field Investigation on Origin of PCE Contamination

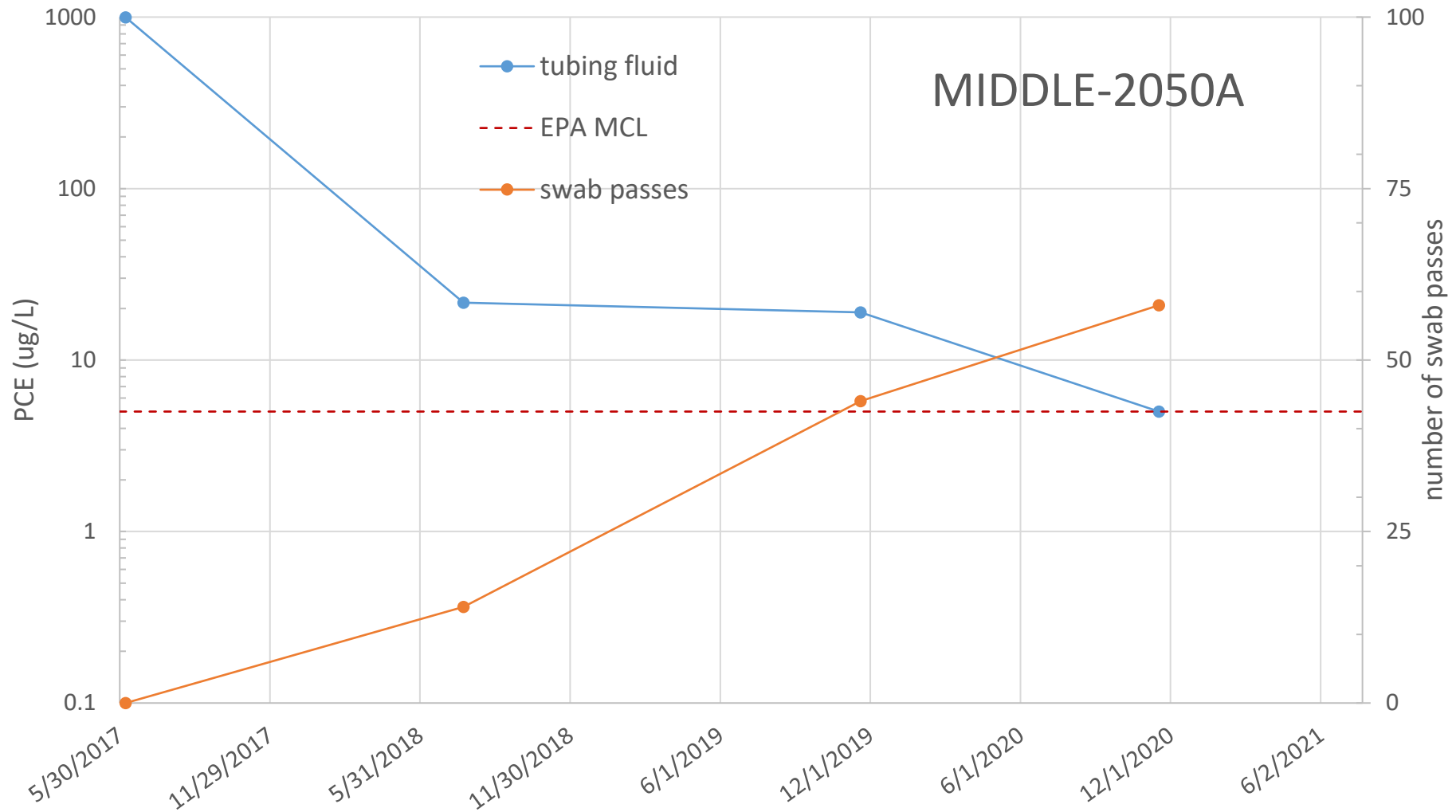


Rehabilitation Method to Remove PCE from Tubing Fluid

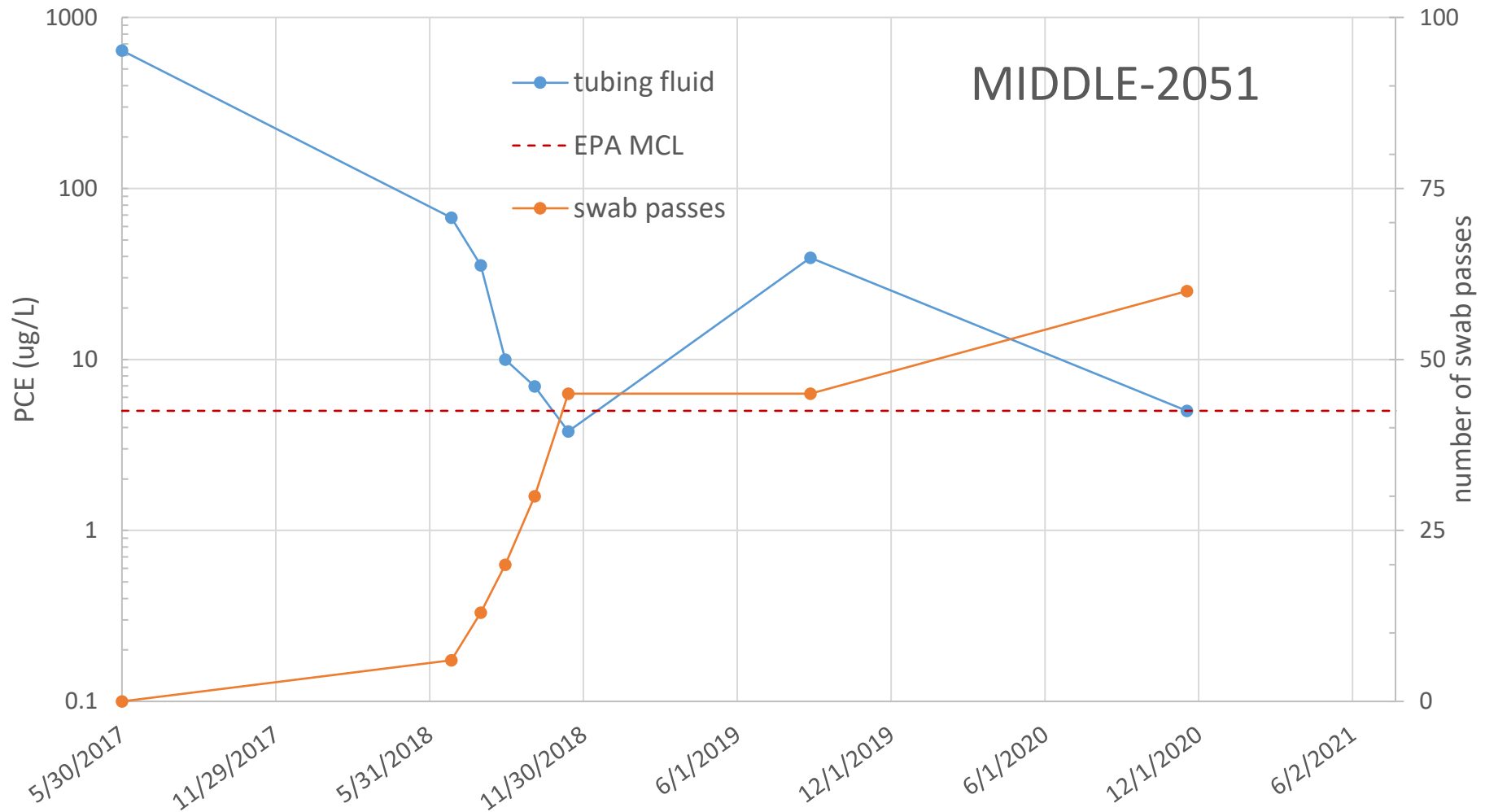
- Filter swab filled with activated charcoal
- EPA preferred material for removing PCE from water
- Little to no risk to workers
- No risk to the integrity of the well
- Easy implementation and flexible scheduling



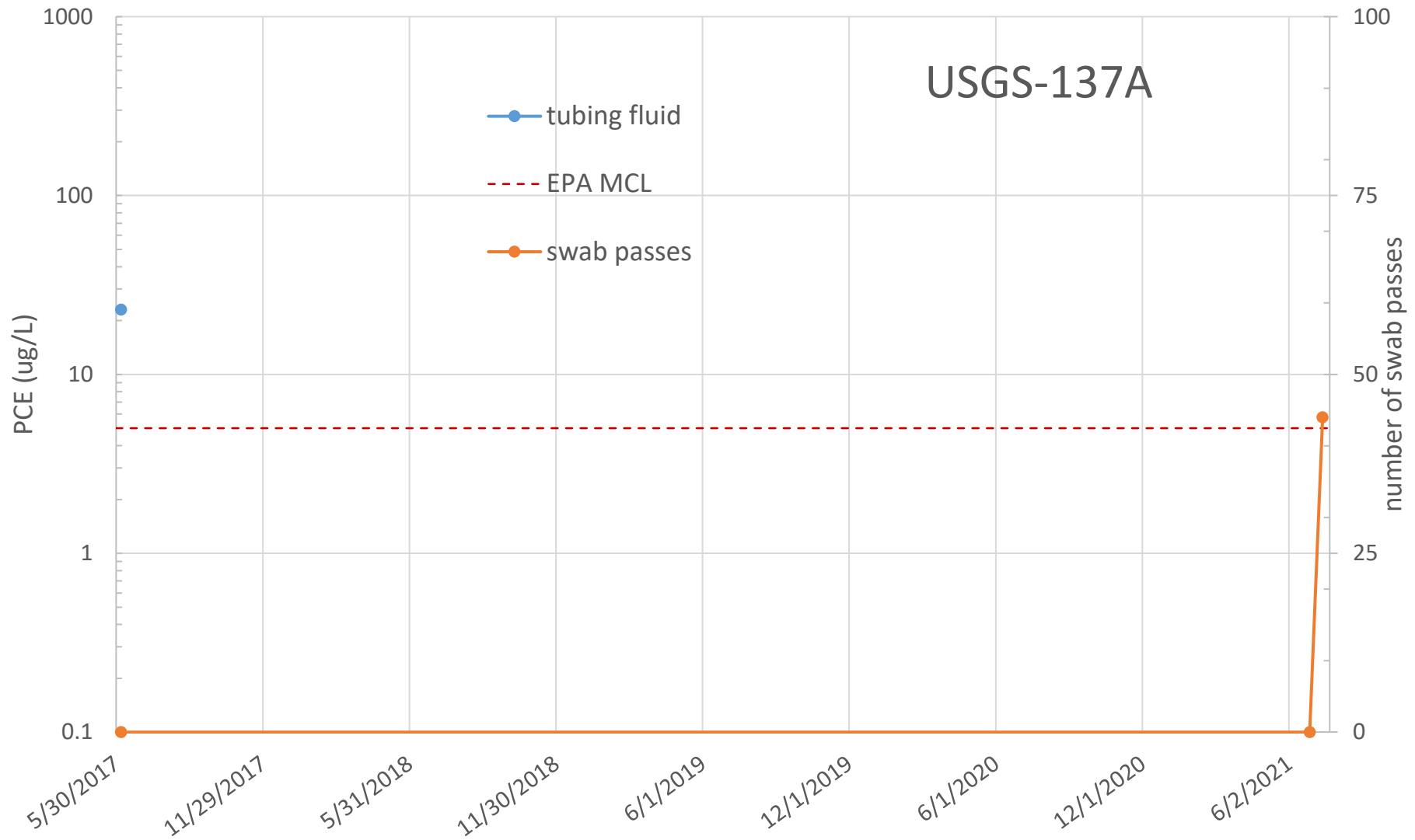
Present Status of PCE Concentrations



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Present Status of PCE Concentrations



Conclusion

- PCE is present in the tubing fluid in MIDDLE-2051 & MIDDLE-2050A (>80x MCL) and USGS-137A (4x MCL)
- The tubing fluid in eight of the WB wells contain little or no PCE (<MCL)
- PCE is not present in groundwater or the aquifer above the MCL
- Contaminated tubing fluid is not a threat to the aquifer or environment
- The New Site Investigation process was employed, but because PCE has not been released to the environment, the affected WB wells will not become new CERCLA Sites
- Affected Westbay wells constitute valuable assets for groundwater monitoring
- Rehabilitation (activated charcoal) of three WB wells is ongoing with the goal of reducing the PCE concentration to less than 5 µg/L (MCL)

