Paducah Citizens Advisory Board
"working for the future"
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DRAFT Recommendation 16-XX: SWMUs 211-A and 211-B Characterization and Response, Rev. 2

Revised March 14, 2016

Background

The C-720 Maintenance and Stores building on the PGDP site was where most of the plant's equipment and instrumentation fabrication and repairs were performed. The C-720 Building encompasses nearly 337,000 square feet for the various large machine tools, motor and electronic repair facilities, large parts storage areas, loading docks, and paint spray facilities. A required part of certain equipment repair involved cleaning the used parts, often with trichloroethylene (TCE). Use of TCE was discontinued by 1993 once it was determined to be a carcinogen and was found in dangerous quantities in the aquifer under and surrounding the PGDP plant. Anecdotal stories suggest that small quantities of used TCE were often poured down floor drains or possibly just dumped on the ground when parts were cleaned outside the building. The C-720 Building is a contributing source of groundwater contamination at the plant.

Solid Waste Management Units (SWMU) 211-A and 211-B are areas located immediately northeast and southeast of C-720, respectively. These areas are identified as source locations for TCE. Since the aquifer flow direction is toward the existing pump and treat system, in 2011 DOE recommended a long-term monitoring (LTM) approach. Paducah Citizens Advisory Board (CAB) recommendation 11-06 strongly encouraged DOE to take a more active approach to remediation at these sites, including additional sampling to determine if a dense non-aqueous phase liquid (DNAPL) form was present.

Additional sampling in the Regional Gravel Aquifer (RGA) below the Upper Continental Recharge System (UCRS) from depths of 65 to 100 feet was completed in 2015 for both SWMU 211-A and 211-B. While some TCE concentration readings in 211-A were up to 1200-1400 ppb range (see attachment), reading differences between up gradient and downgradient sites were within the range that suggested there are no current TCE source contributions in that area. The concentration at the 65 foot depth at 211-B, however, was 10,000 ppb, a level just below what would suggest the presence of the DNAPL phase. Accounting for the measurement uncertainty, that reading strongly indicates the presence of DNAPL, and would suggest that something other than a passive monitoring approach be taken. Since there was just a single boring in 211-B, no concentration gradient could be assessed to determine actual source locations. The 211-B measurement point was at the very southeastern edge of C-720, so the TCE concentration beneath the footprint of the building was not determined.

The December 2015 Addendum to the SWMUs 211-A and 211-B Final Characterization Report analyzed the new data and made suggestions for future actions. It suggested that the conceptual site model (CSM) for the 211-A location was valid and recommended LTM for the northeastern portion where the TCE concentrations were lower. It recommended bioremediation and LTM

for the southwestern portion where the 1200-1400 ppb readings were obtained. The CSM for 211-B was considered invalid because of the potential for DNAPL, and other treatment methods would be required for remediation. It was suggested that appropriate parties hold discussions to evaluate the impact of the possible presence of DNAPL and what remediation options might be feasible.

The presence of the large C-720 Building between these two small sites complicates any plan of action for remediation. It is unknown if locations within the footprint of the building could have been significant TCE sources, or how far the DNAPL region may extend underneath or away from the building. If a concentration similar to what was measured at 211-B extends under the building, the overall region to be addressed may be several times larger than currently estimated.

Recommendation

The CAB recommends:

- **That DOE consider additional sampling in the proximity of the single 211-B sampling point. The potential for the presence of DNAPL, especially under the footprint of the large C-720 building, would complicate any remediation effort.**
- **If current budgets do not allow this additional sampling flexibility, the CAB strongly encourages Paducah DOE personnel to pursue all appropriate channels to obtain additional funding for the SWMU 211-B projects.**
- *The CAB recommends LTM, BIO or a combination of the two for SWMU 211-A.*

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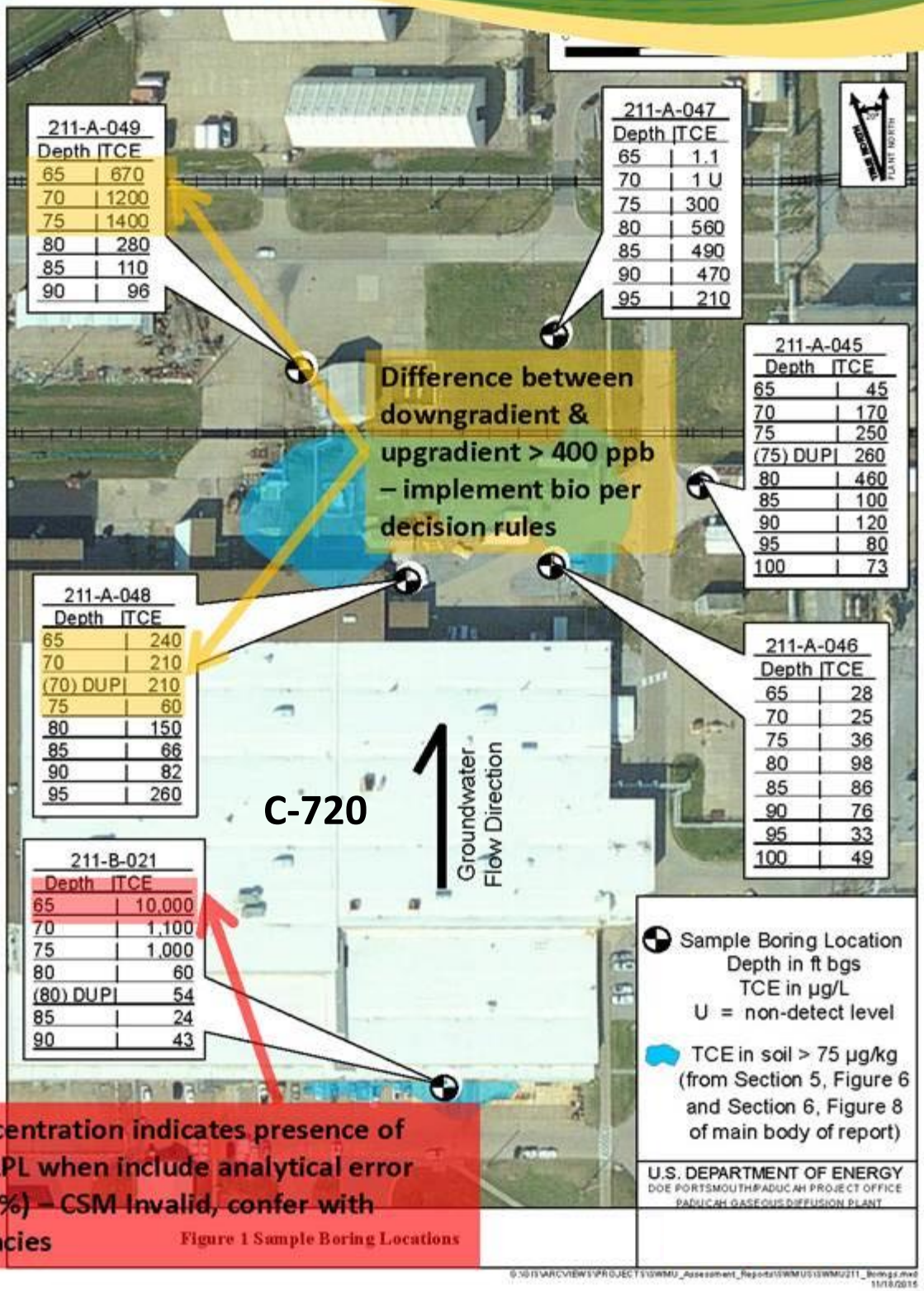
Results from Additional Investigation



Concentration indicates presence of DNAPL when include analytical error (±10%) – CSM Invalid, confer with agencies

Figure 1 Sample Boring Locations