

## **Action Item Updates/Definitions**

### **6/14/18**

- **Action item # 8 - Confirm internal definitions for High Concentration Areas**

**Response:** High Concentration Areas as defined for groundwater are occurrences of a dissolved contaminant level at 1% of the contaminant solubility in water for NAPL. High Concentration Areas as defined for groundwater for all other contaminants are occurrences of a dissolved contaminant level equal to or greater than a cancer risk of  $1 \times 10^{-3}$  or a hazard risk of 10 for a residential risk scenario.

High Concentration Areas as defined for soil are soils containing NAPL or, for all other contaminant types, soils with a contaminant level equal to or greater than a cancer risk of  $1 \times 10^{-3}$  or a hazard risk of 10, using the industrial worker risk scenario for surface soil and the excavation worker risk scenario for subsurface soil.

- **Action Item #8.1 – FRNP will clarify the source of the Secondary Source definition in Footnote 6 of the Scoping Document**

- **Response:** The secondary source definition in Footnote 6 of the scoping document was taken from the Scoping Document for the Soils Operable Unit Remedial Investigation/Feasibility Study (DOE/LX/07-0027&D1).
  - Reference Pdf pages 35 and 36 of the link below:
  - <http://paducaheic.com/Search.aspx?accession=I-04911-0001>

- **Action item #8.2 – The parties will confirm and share their internal definitions of Secondary Sources.**

- **Response:** Secondary sources are those sources of contamination that were not expected, based upon historical information and /or previous site investigations or characterization efforts. Secondary sources is detectable through the analysis of characterization data where COPCs exist in sufficient quantities to be COCs that could contribute to environmental media above risk based levels, in addition to the indicator chemicals that were expected (e.g. TCE NAPL including degradation products and/or Tc-99). Secondary sources may be found during characterization based on the nature and mechanism of the original release, the medium to which the initial release occurred, and knowledge of the fate and transport behavior of the constituent(s) released. Understanding of the nature and magnitude of the contaminant sources, including confirmation of the presence or absence of secondary sources, will evolve between the initial CSM and later versions of the CSM based on characterization data.

- **Action Item #9 – Define appropriate triggers for Early Action. Address relationship to early data collections and streamlined response actions.**
  - **Response:** Preliminary data collection may be utilized to support development of the RI/FS work plan and to support any necessary early actions, as provided by Section X (Removal Actions) and Section XIV.2.B (Expediting Actions under Remedial Authority) of the FFA (EPA 1998). This early data collection may include, but not limited to, passive soil vapor sampling, soil sampling, and concrete sampling.

Early action(s) should be considered if an action level [i.e., the lesser of the hazard-based value calculated using target hazard index of 3 and the cancer-based value calculated using target excess lifetime cancer risk of 1E-04 based on reasonably anticipated land use when both are calculated (DOE 2018)] is exceeded in any sample. In addition to the risk-based values above, consideration of early action also will evaluate a combination of additional factors including, but not limited to, response to an immediate site threat to human health and the environment, rapidly achieving risk reduction, extent of contamination, accessibility, efficiency, cost effectiveness, building/site specific conditions, forecasted timeline for final remedy decision and implementation, and consistency with and integration into any long-term solution at the facility.

- First paragraph was intended to portray that Preliminary data collection may be utilized to support development of the RI/FS work plan (e.g. provide flexibility if needed). Second paragraph is the definition of triggers for Early Action.
  - When written, this definition was not intended to portray basement sampling but rather the C-400 Complex in general.
- **Action Item #21.1 – Agree to data usability and exclusion rules (Action Item 21) Additional Request – CHFS Formula on data. FRNP to resend information**
    - **Response:** Information sent on 6/5/18
  - **Action Item #24 - Address uncertainty regarding impact of cosolvent transport on identification of contaminants in the aquifer and vadose zone (e.g., PCB migration with TCE). Determine appropriate laboratory direction to identify cosolvents.**
    - **Response:** Regarding cosolvent facilitated transport, the cosolvent effect may apply in situations where there are two types of organic contaminants present in the waste: one type that is hydrophobic and sparingly soluble, [e.g., polyaromatic hydrocarbons (PAHs) and polychlorinated biphenyls (PCBs)], and another type that may function as a cosolvent for the sparingly soluble contaminant, or moderately to highly soluble in water (Huling 1989). In order for a substance to behave as a cosolvent it must be miscible with water, even to a small degree. The

cosolvent effect is such that the solubility of the hydrophobic compounds increases due to co-mixing with the organic cosolvent, particularly if the latter is fully miscible with water (e.g., ethanol or methanol) (Suresh et al. 1990; Li and Andren 1994). Nonspecific hydrophobic partitioning to solid phase materials also is understood to decline in the presence of an organic cosolvent. Appropriate laboratory action is still being evaluated.

▪ References:

- Huling, S. G. 1989. "Facilitated Transport," Superfund Groundwater Issue, U.S. Environmental Protection Agency, ORD-OSWER, EPA/540/4-89-003.
- Li, A. and A. W. Andren 1994. "Solubility of Polychlorinated Biphenyls in Water/Alcohol Mixtures, 1. Experimental Data," ES&T 28:47-52.
- Suresh, P., C. Rao, L.S. Lee, and R. Pinal 1990. "Cosolvency and sorption of hydrophobic organic chemicals," ES&T 24:647-654.

• **Action Item 25.2 - Determine if Vapor Intrusion beyond the C-400 Building Structure was evaluated during WAG 6.**

- **Response:** Vapor intrusion was not evaluated during WAG 6.

• **Action Item 31 - Provide documentation of sampling associated with C-408 weigh station/scale that indicated no releases. Address NEPA CX in 2015.**

- **Response:** The C-408 scale/weigh station is outside of the scope of the Complex OU and will not be discussed in the context of RI/FS scoping. However and for informational purposes only, the following information was added to scoping library on 6/6/18:

- C-408 Scale House Review from WAG 6
- Site Investigation Report for Southwest Plume

• **Action Item #37 - Evaluate the sufficiency of Sector 2, SWMU 480 basement sampling efforts to address the needs of TSCA PCB characterization.**

- **Response:** C-402 Lime House (SWMU 480) is not identified in the TSCA Compliance Agreement. Sampling efforts associated with the C-402 Lime House (SWMU 480) basement were conducted under the CERCLA process and included in the approved Removal Action Report (RAR) for C-402. The RAR states, "Analytical data confirmed that no ACM or PCBs were generated during this project." The RAR is included on the scoping library for reference. In addition, sampling points are included in Sector 2 to determine the nature and extent of the underlying soils.

- **Action Item # 40 - Share investigation objective related to the cluster of surface samples in Sectors 5 and 7.**
  - **Response:** Information added to scoping website
  
- **Action Item # 41 - Develop comprehensive soil sampling approach**
  - **Response:** Compilation of sampling locations, rationale, and approach discussed on 6/11/18 meeting. Sampling locations added to scoping website
  
- **Action Item 41(b) - Develop approach for determining the site specific kd values for soils in the C-400 Complex OU.**
  - **Response:** This could be approached from two angles: bench testing of site media and modeling of site field data. Bench testing would be similar to generating activated carbon isotherms and would involve batch bottles. The bottles would be on a slow rotation for contact between the liquid and solids and to prevent settling of the solids. Typically these types of tests would be run for a minimum of 16-24 hours, but a longer contact time (e.g., a week or more) may be desired to mimic groundwater residence times. The test could be done using (i) either a known/standard COC solution injected into varying amounts of soil; or (ii) using a fixed quantity of soil and varying the COC concentration. Typically 5-7 COC concentrations or soil amounts would be tested. An isotherm curve would be generated from the data. Duplicates are recommended at a minimum; additional replicates may be performed. Columns could be run following the batch bottle testing for predictive measurement and to test the isotherms. A known concentration/standard solution would be injected into the column and the effluent would be tested for breakthrough. A modeling approach would consist of evaluating available data (e.g., particle/grain size, aqueous concentrations, soil concentrations, and vapor concentrations) and using a model such as Hydrus 1-D or STOMP to back out an average Kd. Additional details on either approach would be provided in the Work Plan.