SEQ CHAPTER \h \r 1]UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
NATIONAL RISK MANAGEMENT RESEARCH LABORATORY
GROUND WATER AND ECOSYSTEMS RESTORATION DIVISION
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OFFICE OF
RESEARCH AND DEVELOPMENT

MEMORANDUM

SUBJECT: Former Williams Air Force Base ST012 Remedial Action Field Variance Memorandum #4 – Additional Site Characterization (17-R09-001)

FROM: Eva L. Davis, Ph.D., Hydrologist
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TO: Carolyn d'Almeida, RPM
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I have reviewed the subject Field Variance Memorandums for the former Williams Air Force Base. The Field Variance proposes additional drilling and well installation to expand the characterization of the extent of light-nonaqueous phase liquid (LNAPL) and dissolved phase contamination at the ST012 site – but not necessarily fully delineate the contamination. The Field Variance does not define the criteria will be used to determine when stepping out with additional borings and wells is necessary. Thus, it is not clear that the Air Force has provided EPA with a site characterization plan that fulfills the request for complete delineation of the LNAPL and dissolved phase contamination distribution at ST012.

The drilling plan in the Field Variance proposes the borings and wells that the Air Force discussed with EPA and Arizona Department of Environmental Quality during the August 24, 2016 BCT meeting. After compiling all of the available data from the soil borings that have been completed and the results from LNAPL Monitoring and Removal that are contained in the Health, Safety, Environmental and Remediation Weekly Reports provided by Amec Foster Wheeler, I have some requests to change the location of some of the planned borings, and for additional wells where soil borings (but not wells) are proposed. In addition, I am requesting additional borings/wells in data gap areas that have not been previously discussed. These additional data gaps became obvious as I reviewed the data for myself. These are discussed in my specific comments below.

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General Comments

1. Attachment 4, Locations and Drilling Plan table, states, "Step out in future if LNAPL indications or high PID readings", and "Potentially step out in future if > MCLs". It can be assumed that LNAPL indications refers to positive dye test results on soil samples from the soil borings. However, it is not clear what constitutes a 'high' PID reading that would necessitate stepping out to complete the LNAPL and dissolved phase characterization, or why concentrations greater than MCLs would only 'potentially' lead to stepping out. This issue should be discussed by all the stakeholders as the data from these borings becomes available.

2. Footnote f of Attachment 4, Locations and Drilling Plan table states that PID results > 250 ppmv will be tested using the dye test kits. It is not clear what the threshold PID reading of >250 ppmv is based on. If lower PID readings have not been tested, then it is not clear that lower PID readings cannot be associated with LNAPL presence.

3. Footnote g of Attachment 4, Locations and Drilling Plan table states, that PID results > 15 ppmv may not bound dissolved phase contamination. It is not clear why > 15 ppmv is used as the threshold for dissolved phase concentrations. Observation of the drilling logs from UWBZ36 and LSZ44 show that PID reading of 1 ppmv or less were recorded in zones with benzene concentrations above the MCL. At LSZ44, the PID readings were all below 15 ppmv, and the dissolved benzene concentration was found to be 320 μg/l. At UWBZ36, the PID readings were all approximately 1 ppmv, and the benzene concentration was 15 μg/l.

Specific Comments

4. The second paragraph of Section 3.0 lists ranges of depths to which UWBZ or LSZ wells could be drilled. UWBZ and LSZ borings and wells should all be drilled to the total depth of that zone, which is 195 feet for the UWBZ and 245 feet for the LSZ. If contamination is encountered in the bottom of the boring, the boring must be continued until the total depth of the contamination has been determined.

5. Table 1 and the Locations and Drilling Plan table (Attachment 4) state that proposed soil boring ST012-SB16 is to only extend through the UWBZ. This boring should extend through the LSZ if no LNAPL indications are encountered at LSZ53. This would provide a better understanding of the extent of LNAPL in the LSZ in this area.

6. The location for ST012-SB17 should be moved to the north and west of where it is shown in Figure 1. Its current location is close to the CZ24/UWBZ38/LSZ55 cluster, and leaves a large data gap to the north. If indications of contamination are encountered in this boring, it should be completed as monitoring well(s).

7. Table 1 and the Locations and Drilling Plan table (Attachment 4) show the purpose soil boring ST012-SB18 as determining the LNAPL extent in the UWBZ and LSZ. Due to the high dissolved phase concentrations in upgradient CZ21 and UWBZ30, and the lack of a LSZ well in this area, this boring should be completed as a monitoring well in each of the three zones.

8. Soil boring SB-19 should be made into a LSZ well to characterize the dissolved phase plume in this area to the west of LSZ50, as LSZ50 has a benzene concentration of 1300 µg/l.

9. Well CZ23 should be moved to the south to be closer to the known contaminated cobble zone. With the data in hand from the Weekly reports, showing that there is LNAPL sheen in the cobble zone wells closet to this proposed well, it can be determined now that this well will be needed to characterize the dissolved phase contamination in the cobble zone.

10. An additional well is needed to the south of LSZ46. The boring log for this well shows that there was a positive dye test in the LSZ, and the dissolved phase benzene concentration was 3900 µg/l. The Weekly Reports from Amec show that this well now contains LNAPL. It is likely that the LNAPL extends further to the south.

11. Additional borings/wells are needed to the north and east of UWBZ21, which has accumulated a significant quantity (more than 40 gallons) of LNAPL, to determine the extent of LNAPL in this area.

12. A cobble zone monitoring well is needed at the UWBZ40/LSZ59 location. The boring log for well cluster UWBZ28/LSZ51 has PID readings in the range of 20 to 42 ppmv in the cobble zone, indicating the likely presence of dissolved phase contamination in the cobble zone in this area.

If you would like to discuss any of these comments, I can be reached at (580) 436-8548, or [HYPERLINK "mailto:davis.eva@epa.gov"].

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