UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 9
75 Hawthorne Street
San Francisco, CA 94105-3901

Catherine Jerrard
Program Manager/BEC
AFCEC/CIBW
706 Hangar Road
Rome, New York 13441

RE: Reply to Responses to Comments on Former Williams Air Force Base ST012 Remedial Action Field Variance Memorandums #4 – Additional Site Characterization, September 29, 2016 and #5 – Hydraulic Containment

Dear Ms. Jerrard:

Thank you for the responses to agency comments on the two field variance memorandums for hydraulic containment and additional characterization at the ST12 Fuels Spill Site at Williams. EPA appreciates the Air Forces "AF's" efforts to expeditiously characterize the site while providing hydraulic containment for contamination remaining after implementation of the Steam Enhanced Extraction System.

As you are aware, the regulatory agencies have invoked informal dispute, not over the elements of the remedy selected in the 2013 Amendment to the Record of Decision (RODA), but over the timing, mass remaining, and criteria for transition between remedies as the most critical determining factor that will define ultimate success or failure of the remedy. As informal dispute has been invoked, discussions specifically pertaining to the Enhanced Bioremediation (EBR) work should be directed to the management team for resolution. At this time, the capability of EBR to meet the RAOs under existing site conditions has been called into question. Following completion of site characterization, and updated estimate of remaining LNAPL and BTEX mass will be necessary, along with an updated modeling report including assumptions used and revised estimate for the timeframe for EBR to achieve RAOs. The report must be provided in a format that can be peer reviewed and independently verified, in order to inform the management team's deliberations to determine the most appropriate next steps.

Commented [DE1]: Remember Dan's warning about not getting wrapped around the axels about modeling – they can try to make the modeling look like anything they want it to. This could lead to a long argument that no one will win. No matter what they claim their model says, the EBR they are proposing has no chance of working while there are thousands of gallons of LNAPL remaining in the subsurface.

The following are our remaining comments on the two Field Variance Memorandums (FVMs)

Comments on Hydraulic Containment FVM#5:

General Comments

1) EPA acknowledges AF's response that contaminant migration has not yet been demonstrated. It will be critical to have monitoring wells in the correct locations to get an accurate picture of what is happening. As of the last BCT call, perimeter wells had not been checked for LNAPL migration. Pre SEE boring logs may not reflect current conditions after SEE. Phase I wells were drilled immediately after the extraction system was shut down and water levels had not

Commented [DE2]: Not sure which perimeter wells you are referring to here. They have been sampling most of the downgradient perimeter wells, W-37 and W-11 continue to have LNAPL, but it is not found in other perimeter wells

rebounded to where they are now. The hydraulic conditions have changed at the site, therefore, continual monitoring is necessary to assess contaminant behavior in the subsurface.

2) Regardless of the original intent of the design, the containment system needs to be functional for the purpose of hydraulic containment which may be for an extended period until the management team has determined how to proceed.

3) A hydraulic capture model is a necessary component of any hydraulic containment system and should be developed for this effort. The model should determine ~~pumping rate and~~ drawdown and estimate pumping rate required at various locations to ~~maintain~~ achieve containment.

4) Response to General Comment 3: The response partially addresses the comment. While the response states that the bearings and seal rings and the submersible pump motor will be rated to 175 degrees Fahrenheit (°F), it is unclear whether groundwater temperatures are expected to exceed this rating. Although the response indicates that "some perimeter wells will pull groundwater into the site from outside the former SEE [steam enhanced extraction] TTZs [Thermal Treatment Zones] and lower the well temperatures," this may not be applicable for wells in the core of the former SEE TTZs. Also, it is unclear whether monitoring will occur to ensure temperatures remain below 175°F. Please revise the response to clarify where temperatures are expected to exceed 175°F and describe how temperatures will be monitored to ensure they remain below 175°F.

5) The level controlled pumps (response to General Comment #4) are likely preferable to extraction rate controlled pumps. Please explain how the draw down ~~pumping~~ levels required to achieve containment will be determined.

6) Response to General Comment #6. According to TerraTherm's final weekly reports, approximately 150 gpm was the extraction rate last used for hydraulic containment, after the SEE system was shut down. Please provide the technical basis for the proposed pumping rate of 75 gpm in the final FVM.

7) Response to General Comment #7. The response to interim operations prior to installing a heat exchanger is unclear; please clarify how the temperatures will be cooled using "City water". Has this been discussed with the City? Is this considered a sustainable use of City water, to be used as cooling water that is then sent to the sewer system? Is the City going to be responsible for bringing down temperatures, or will there be mixing tanks used on site for this purpose? Please revise the response to explain how discharge temperatures will be monitored to ensure temperatures remain below 150°F and clarify if there will be a cooling system to ensure that discharge water is below 150°F. Please also revise the response to clarify how modifying pumping rates to maintain temperatures will impact the extraction system's ability to contain the contamination. Please incorporate this contingency into the design drawings.

Specific Comments

8) Response to Specific Comment #5. Will the chemicals to be used be specified in the final VFM?

Comments on Additional Characterization FVM #4

General Comments

1) The monitoring system must be robust enough to detect contaminant migration. Large spacings between monitoring well locations will continue to provide data gaps and may allow migration of dissolved phase plume without detection.

2) Response to General Comment 2. How often during previous drilling attempts were dye tests performed on PID readings below 250 ppm?. What data from the previous drilling is there to verify this relationship between PID readings and positive dye tests?

3) Response to General Comment 3. Wells should be installed not only as sentry wells but also as monitoring wells within known areas of contamination that should be monitoredwatched for increasing concentrations as indicator of migration.

Specific Comments

4) Response to Specific Comment #3: Based upon our review notes LSZ 51 did have indication of LNAPL, including a positive dye test, and the highest benzene concentration measured in any of the wells thus far. The current status of LNAPL in well LSZ 51 is unknown, as the Weekly Reports do not provide any measurement data for this well. But this location is too far away from SB16 to be pertinent to this comment. There is a concern that wide spacing between wells and boring will lend considerable uncertainty to the extent of contamination.

5) Response to Specific Comment #4: A data gap still remains to the north and west of SB17 in the LSZ and downgradient of LSZ-29, which also contained LNAPL.

~~5)~~6) Response to Specific Comment #5. ADEQ believes that boring SB18 should be a well, at least in the LSZ, which has a more eastward groundwater flow direction than the CZ/UWBZ. A well here will fill a data gap of nearly 400-ft. between well LSZ 45 and the proposed well LSZ 55, and ensure monitoring of potential LNAPL migration across Sossaman Rd.

~~6)~~7) Response to Specific Comment #6 requesting an LSZ well at SB 19. LSZ 50 has LNAPL and high dissolved concentrations; the western edge of contamination is not yet defined. We understand that if LNAPL is found in SB19, additional step-out will be warranted, but we also need to bound dissolved phase concentrations The lack of a well here will likely lead to greater uncertainty in contaminant distribution.

~~7)~~8) Response to Specific Comment #7 regarding placement of CZ 23; concern is the spacing between wells. What will be the screened interval for this well?

~~8)~~9) Response to Specific Comment #8 requesting step-out to south of LSZ 46 – the comment remains; the extent of LNAPL to the south in this area will not be defined without stepping out from this location.

~~9)~~10) Response to Specific Comment #9 requesting step-out to the north and east of

Formatted: Font: (Default) Times New Roman

Formatted: Indent: Left: 0.5", No bullets or

UWBZ21. SB17 may be too far away, leaving uncertainty in the distribution of LNAPL and contamination. Response discusses pre-SEE boring results that may not reflect current site conditions.

~~10)~~11) Response to Specific Comment 11 requesting a cobble zone monitoring well is at the UWBZ40/LSZ59 location; this comment remains; a CZ well is needed to the north of UWBZ28/LSZ51. Converting boring SB16 to a CZ well may accomplish this and also provide additional information regarding impacts to the CZ north of existing wells CZ07 and CZ08.

~~11)~~12) Response to Specific Comment 12 requesting an additional Cobble Zone (CZ) location to the north of CZ-18; this comment remains.

Once again, EPA appreciates AF's efforts to resolve these remaining issues and expedite this important work. Please call me at (415) 972-3150 if have any questions about these comments.

Sincerely,

Carolyn d'Almeida
Remedial Project Manager

cc: Wayne Miller, ADEQ