**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**
**REGION IX**
**75 Hawthorne Street**
**San Francisco, CA 94105**

**ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY**
**1110 West Washington Street**
**Phoenix, Arizona 85007**

Mr. Philip H. Mook, Jr.
Western Execution Branch Chief
Air Force Civil Engineer Center
United States Department of the Air Force

SUBJECT: Williams AFB Site ST12 Path Forward; Follow up to August 24, 2016 Base Closure Team Meeting (BCT)

Dear Mr. Mook:

The US Environmental Protection Agency (EPA) and Arizona Department of Environmental Quality (ADEQ) ("the Agencies") are following up on our action item to respond to the Air Force's (AF's) presentation on the path forward for ST12 provided at the August 24 2016 BCT meeting. In general, we are very pleased that AF has taken the Agencies' concerns seriously and is making a concerted effort to address them. We also appreciate the AF's willingness to collect the information needed for determining the most appropriate course of action and reaching a mutually agreeable path forward to resolve the informal dispute.

We welcome AF's proposal to complete characterization and LNAPL reconnaissance following the shutdown of the Steam Enhanced Extraction (SEE) system and to establish baseline conditions for determining the most appropriate next steps, as well as to construct an interim containment system for hydraulic control to prevent offsite migration of thermally mobilized contaminants. As both of these actions represent a shift in direction from previously submitted workplans with different purpose and objectives, new workplans for both hydraulic containment and LNAPL reconnaissance are warranted. The Agencies still consider the prior workplans for Enhanced Bioremediation (EBR) subject to the stop work order. Therefore we request AF to prepare new workplans for these proposed actions as primary documents under the Federal Facilities Agreement (FFA), for regulatory agency review and approval.

Our most immediate concern is to prevent the loss of containment and expansion of the LNAPL and dissolved phase plume as the water table returns to equilibrium and the natural eastward gradient reestablishes in the highly transmissive Cobble Zone. Thus, we wish to see the interim containment system expedited with highest priority. Please prepare a workplan/ technical memorandum for agency review and approval, including but not limited to, the following elements:

- which wells will be used;
- well construction details;
- intended extraction rates;
- hydraulic capture model;
- pumps to be used and contingency for backup replacement pumps;
- consideration of accumulated NAPL recovery in pumped wells;
- treatment system design and configuration;
- field logistics/ personnel; and
- health and safety concerns with heated fluids

The Work Plan for LNAPL and Dissolved Plume Characterization should both summarize the existing data and provide rationale for additional borings. In particular, the Agencies request the Work Plan include:

1) All of the data relevant to LNAPL characterization presented on a single figure.

2) Borings to characterize the areas of the LSZ and LPZ that received less steam and may still contain LNAPL, and areas beyond perimeter steam injection wells where NAPL migration may have occurred. Note that current data may be incomplete to assess these locations and should not be chosen until all eductor pumps are removed and all existing extraction wells are sampled/monitored.

3) Contingency for step out borings in the event that LNAPL extent is not fully defined.

4) Characterize stratigraphy, and contaminant indicators (PID and dye tests) in boring logs from surface to depth of the bore hole.

5) Workplan should include developing a revised estimate of LNAPL mass remaining, both within and outside of the SEE treatment zones, and full extent of the dissolved phase plume, to inform future remedial decisions. The revised LNAPL mass estimate should be compared to previous estimates and with regard to the mass of LNAPL recovered during SEE. Consider elevated dissolved benzene concentrations (e.g., >5,000 ppb) as an indicator of local LNAPL.

6) Casings for new wells with LNAPL areas should be stainless steel and high temperature grout should be used as a contingency so that they will not have to be abandoned and re drilled in the event of possible future application of SEE.

7) A plan for communication of data, and obtaining consensus on step-out locations. Please upload field notes and boring logs to SharePoint site as they become available.

8) Additional well locations in areas indicated on the attached figure.

9) A plan for sentinel wells to monitor the dissolved phase plume.

We are pleased with the AF's continued commitment to the FFA process, the remedial action objectives outlined in the 2013 OU2 ROD Amendment, and the recent progress made to reach a consensus on path forward to achieve those goals. We look forward to continuing to work with you to address these issues.

Sincerely,

Angeles Herrera
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Superfund Division
United States Environmental Protection Agency

Tina LePage
Waste Programs Division
Remedial Projects Section Manager
Arizona Department of Environmental Quality

cc: Cathy Jerrard, AFCEC/CIBW
Terie Glaspey, AFCEC/CIBW