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Ref: HDCR2011-163

Ms. Pamela Innis
U.S. Department of the Interior, Office of Environmental Policy and Compliance
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Denver, Colorado 80225

Subject: Design of Groundwater Remedy—An Opportunity to Prevent Further Damages to Cultural Resources near the PG&E Topock Compressor Station.

The Hualapai Tribe would like to offer comments regarding the report "*Groundwater Corrective Measure Implementation/Remedial Design Work Plan (CMI/RD) for SWMU1/AOC1 and AOC10, PG&E Topock Compressor Station, Needles, California*", by CH2M-HILL, May 2011. The preferred method of groundwater remediation has been selected (Alternative E); however, it is clear from the CMI/RD report that a great deal of characterization and modeling must be done in order to design and implement the final corrective measures. We would like to use the opportunity to consider design alternatives that would further protect cultural, historical, and biological features near the remediation site.

At every step of the design process, we encourage serious reductions in the number of wells, soil borings, and trenches. For example, instead of injection wells, can fresh or carbon-amended water be allowed to infiltrate into the natural channel along Bat Cave Wash? Contaminated soil may be simultaneously remediated by surface-water infiltration of carbon-amended water at SWMU-1 and AOC-1. We would like to suggest that new groundwater modeling efforts include the deletion of six injection wells to the west and northwest of the site (Figure 2-1a), and addition of surface-water infiltration sites in Bat Cave Wash. Pipes delivering fresh and carbon-amended water could be painted and camouflaged (to match the natural terrain) and routed along the ground surface. While these actions still represent desecration to the sacred Topock site, the reduction in the number of wells and trenches remains a significant issue for the Hualapai Tribe.

The CMI/RD report proposes additional geoarchaeological investigations throughout the area of potential effect. While we appreciate attention to the importance of cultural features, enough characterization and data collection have been done at the site. Foot and vehicle

traffic near the sacred site must be minimized or eliminated. Topographic surveys could be done using photogrammetry from existing benchmarks, and remote sensing (for example, ground-penetrating radar) could be done only after consensus by the stakeholders.

Other comments regarding the CMI/RD report are as follows:

- Section 1.2.1, page 1-5: To the east of the East Ravine bedrock contamination, the Colorado River sediments and alluvial deposits have not been adequately described to know whether an organic layer exists at the bedrock/sediment interface. Occurrence of such an organic layer can serve as the final defense to prevent Cr-6 from entering the river from the bedrock plume.
- Section 2.1.1, and Section 6.3.2: In order to conduct geochemical and solute transport modeling, the solid phase minerals of the aquifer need to be defined. X-ray diffraction and scanning electron microscopy (SEM) could be done to define the solid-phase mineral suites on aquifer precipitates, and the results correlated to geochemical modeling. Sequential extractions could be done to determine, for example, whether adsorbed arsenic occurs as arsenate or arsenite.
- Section 4.1.2.3: The use of “previously disturbed areas” for placement of wells, trenches, pipelines, and utilities does not necessarily provide for wanton trenching and drilling in these areas. Tribal inspections and monitoring of all intrusive activities must be allowed.
- Section 4.5, page 4-12: A decommissioning plan for wells and construction features is needed early on in the design process. From page 4-12, “a closure plan will be prepared for the agencies’ review and approval following remedial action completion.” This indicates that the decommissioning plan will not be written until 30 years or more into the future. Decommissioning and site closure need to be addressed before remediation begins.

The Hualapai Department of Cultural Resources and the Hualapai Tribe appreciates the efforts by all parties to address our concerns. If you have any questions, please do not hesitate to contact myself, or Dawn Hubbs, Program Manager at (928) 769-2223.

