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January 14, 2010

Via Electronic Mail

Mr. Stephen Hoffman
U.S. Environmental Protection Agency
Two Potomac Yard
2733 S. Crystal Drive, 5th Floor, N-237
Arlington, Virginia 22202-2733

Re: Arizona Public Service Company's Response to the Final Report Regarding the Coal Combustion Residual Site Assessment at the Cholla Power Plant.

Dear Mr. Hoffman:

Arizona Public Service Company ("APS") is responding to Matt Hale's letter dated December 14, 2009 to John Denman, requesting that APS inform the Environmental Protection Agency ("EPA") how it intends to address each of the recommendations in the final report of the Coal Combustion Residual Site Assessment for the Cholla Power Plant ("Cholla"). APS's responses to the recommendations in the final report are set forth below. The relevant text of the final report has been reproduced for your ease of reference.

APS'S RESPONSE

12.1 Corrective Measures for the Structures.

12.1.1 Fly Ash Pond.

1. The seepage totalizer at Geronimo Seep should be repaired or replaced so reliable readings of flow rates at this location, and at the Hunt Seep location, can be obtained.

Response:

The totalizer meter used is a common Positive Displacement Turbine type meter that provides reliable readings of flow rates. Through our normal maintenance schedule, the totalizer meter observed during the inspection was recently replaced.

2. *Flow rates at the Geronimo Seep should be monitored closely when the totalizer is fixed. If flows at this location continue to be much higher than has typically been measured at other seepage totalizers around the dams (above about 20 gpm), action should be taken to examine possible causes of seepage and investigate whether this seepage could be compromising dam stability.*

Response:

The flow rates at the Geronimo Seep will continue to be monitored closely. The cause of the higher than typical readings is a result of seepage water building up in the sump during pump and totalizer repairs, and scheduled maintenance Upon restart of the pump system, the totalizer initially reads higher flow volumes than typical, to remove the accumulated seepage. During repair and maintenance down times, scheduled readings for turbidity and flow volumes of the seepage water are continually monitored to ensure data continuity and to prevent masking of any trends. Investigation of the high flow rates recorded to date have been related to the down time of the repair or scheduled maintenance and are not related to dam stability. If flows are found to be higher for any other reason, we will initiate an investigation.

3. *Piezometers F-81 and F-35, which measure water levels in the Shinarump formation at the right abutment, have both had water levels equal to that of the reservoir since the dam was constructed. These results indicate that there is seepage from the reservoir into the Shinarump formation in this area. Analyses should be performed to evaluate potential effects of seepage in this area on dam stability.*

Response:

APS does not believe that there are any threats on dam stability from the current observed seepage and no additional analysis is necessary at this time. Specifically, a review of the design report geology and the right abutment geology, where F35 and F81 are located, indicates that there are no effects on dam stability other than normal required diligence of discovery and monitoring of any seepage. The abutment geology is Moenkopi impermeable sandstone for the depth of the embankment, with thin interbedded siltstone and claystone layers that provide an opportunity for seepage. Piezometers F35 and F81 are screened in the lower 100 ft and 80 ft respectively and intercept some of these layers, which provide a conduit to the reservoir. The abutment is also flanked with an as built upstream clay blanket to prevent a reservoir connection to the abutment.

4. *The cause of readings above the water level in piezometers F-123, F-128 and F-132 should be investigated. The piezometers should be repaired if necessary.*

Response:

The water levels in the three referenced piezometers were investigated at the time of installation, and we concluded that the piezometers are measuring higher pore pressures in the clay core. The water levels in the piezometers have been showing a steady downward trend over time, which is an expected trend for water dissipating from clay. Weekly readings continue to show a decrease in water levels and are now showing they are equal to or slightly below the reservoir water level. The piezometers are working as expected and do not warrant repairs.

5. *A detailed hydrologic analysis of the Fly Ash Pond should be completed taking into account the current surveyed crest height of the dam. If necessary, the maximum storage pool should be revised to take into account the lower crest height.*

Response:

A detailed hydrologic analysis was completed at the initial design of the dam using a freeboard of four feet. Currently, the freeboard is approximately 25 feet and does not warrant another hydrologic analysis at this time. We will continue to monitor the water level in the fly ash reservoir through our weekly scheduled inspections and will conduct an updated hydrologic analysis as the water level approaches the permitted maximum operating elevation using the lowest monument elevation.

6. *The potential increase in dam failure consequences due to the larger storage capacity of the Fly Ash Pond compared to the Bottom Ash Pond should be considered to determine whether a separate dam break analysis and inundation map should be completed for the Fly Ash Pond Dam.*

Response:

APS has previously agreed with the Arizona Department of Water Resources (ADWR), Dam Safety Inspection that such an analysis was not necessary. However, based on the EPA's recommendation, APS will complete the suggested analysis by the end of 2010.

7. *Vegetation that exceeds the FEMA-534-Impact-of-Plants-on-Earthen-Dams definition of woody plants on both dam slopes and on the crest should be removed during routine maintenance.*

Response:

APS uses ADWR guidelines and FEMA-534 to determine the type of vegetation to be removed during scheduled maintenance. An areal analysis of the vegetation on the dam slopes will continue to be evaluated during scheduled inspections in order to tag vegetation that requires removal.

12.1.2 Bottom Ash Pond.

1. *Survey monuments indicate that portions of the Bottom Ash Pond Dam are slightly lower than the design crest elevation of 5123.3. Though the settlement is minor and the current freeboard appears to be sufficient based on our preliminary calculations, the survey points should continue to be monitored to determine if a reduction in the maximum storage pool is required in the future.*

Response:

The referenced monuments that are slightly lower than the current crest elevation are the original monuments of the dam crest (monument #s 1-10) prior to the 3.3 feet lift of the crest. The monuments installed at the time of the crest lift (monument #s 11-19) are indicating an average crest elevation of 5123.0. All monuments will continue to be monitored through scheduled surveying and the data analyzed for settlement and horizontal movement. Based on the current monument elevations, we do not believe a reduction of maximum storage pool is necessary.

2. *The Bottom Ash Pond should be surveyed regularly in order to determine its flood storage capacity. The storage volume should be calculated each time the geometry of the cells are reconfigured, when operations change, or at a minimum every five years. If the storage is found to be insufficient to store the PMF with the required freeboard, then operations should be modified to attain the required storage capacity as quickly as possible. In addition, the flood pool in the main reservoir resulting from failures of one or both intermediate dikes should be computed regularly to determine whether freeboard is adequate. The invert elevation of the 36-inch CMP carrying the siphon pipes (El. 5120.5) should be taken into consideration when determining flood storage capacity and freeboard, as this culvert provides a potential discharge pathway through the dam if the seal provided by the 4-inch concrete plug is compromised. The condition of the concrete plug should be inspected regularly.*

Response:

Each of EPA's recommendations will be implemented. Note that the bottom ash pond was recently surveyed and a topographical map was developed. This map will be used to calculate and compare the storage volumes of the east and west cells to that of the main reservoir, taking into consideration; PMF, wave run-up and permitted maximum operating elevation. Based on the outcome of the volume calculations, operations will make the necessary changes to provide for adequate volume requirements.

The current concrete plug in the 36-inch CMP was increased to approximately 8-inches with the upgrade of the siphon pipes to 12-inches. The siphon pipes, along with the CMPs and concrete plugs, are routinely inspected during scheduled inspections. However, as an added level of assurance, we will grout the remainder of the CMP culvert and continue to use the top of crest elevation in determining flood storage and freeboard.

3. *Vegetation that exceeds the FEMA-534-Impact-of-Plants-on-Earthen-Dams definition of woody plants on both dam slopes and on the crest should be removed during routine maintenance.*

Response:

APS uses ADWR guidelines and FEMA-534 to determine the type of vegetation to be removed during scheduled maintenance. An areal analysis of the vegetation on the dam slopes will continue to be evaluated during scheduled inspections in order to tag vegetation that requires removal.

If you have any questions please feel free to contact me.

Sincerely,

Mark A. Schiavoni

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