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Arizona Public Service Company
400 N. 5th Street
Phoenix, Arizona 85004

**Re: SEMIANNUAL REPORT DOCUMENTING PROGRESS IN REMEDY SELECTION
FLY ASH POND AND BOTTOM ASH POND
Cholla Power Plant – Navajo County, Arizona**

In accordance with 40 Code of Federal Regulations (CFR) Section (§) 257.97(a) of the Coal Combustion Residuals (CCR) Rule, this Semiannual Remedy Selection Progress Report (Semiannual Report) has been prepared on behalf of Arizona Public Service Company (APS) to document progress in selection of remedies for CCR units which have been identified as potentially impacting groundwater at the APS Cholla Power Plant, located in Navajo County, Arizona (the Site). The identified applicable site CCR units include the Fly Ash Pond (FAP) and the Bottom Ash Pond (BAP). Semiannual progress reporting to support remedy selection began on July 15, 2019. The most recent update was provided in the *Annual Groundwater Monitoring and Corrective Action Report (GMCAR) for 2021*, dated January 31, 2022. This Semiannual Report serves as the seventh update on remedy selection progress at the site and documents activities completed to date in 2022.

1. Summary of Activities Completed in 2022

Activities completed by APS in the first half of 2022 in support of remedy selection for the FAP and the BAP include the following:

- *Cholla Sampling and Analysis Plan Update.* The Site Sampling and Analysis Plan (SAP), originally developed in 2017, was reissued to reflect changes to the monitoring program since the original SAP was completed. These changes include monitoring system updates for CCR Units (including the FAP and BAP), the transition of units within the monitoring program (including the FAP and BAP into corrective action), and subsequent sampling requirements pursuant to CFR § 257.96(b). Any further sampling requirements, such as those necessary to support remedy implementation or assessment, will be included in a future addendum to this updated SAP.
- *Site-Wide Split Sampling.* During the first 2022 semiannual monitoring event, split sampling was conducted for select sample locations (including at the FAP and BAP) to evaluate the accuracy and precision of analyses executed by the primary laboratory, Eurofins. Eurofins has served as the primary laboratory for water quality analysis since CCR monitoring began at the Site. The results of the split sampling and any recommendations for a possible laboratory transition will be presented in the 2022 GMCAR.
- *Groundwater Monitoring at the FAP and BAP.* Groundwater monitoring, per requirements CFR § 257.95, has continued at both the FAP and BAP at a minimum on a semiannual basis. Site investigations conducted to date suggest elevated concentrations of cobalt at the BAP and arsenic at the FAP may be associated with



variable reduction/oxidation (redox) conditions in the groundwater (discussed in the 2020 and 2021 GMCARs). To assess the redox processes which may be mobilizing the metals from native soil, ongoing semi-annual CCR monitoring events have also included sampling for several redox-sensitive constituents at FAP and BAP downgradient wells. Results of the redox analyses will continue to be evaluated to help inform the final remedy selection for the FAP and BAP.

- *Preparation of BAP Pre-Design Studies Reporting.* Several reports have been completed to summarize and evaluate BAP Pre-Design data collected in the latter half of 2021. These reports will be compiled into a BAP Pre-Design Summary Report which will be included as an appendix to the 2022 GMCAR. The completed reports include;
 - *BAP Well Completion Report* – A report documenting the installation activities of new wells at the BAP, including new downgradient CCR monitoring wells (MW-71A, MW-72M, MW-73A, MW-74M, MW-76A, MW-77A, MW-78A, and MW-79A) and extraction wells (BSX-01, BSX-02, BSX-03, BSX-04, and BSX-05). The report also includes a summary of aquifer testing performed at select new BAP wells to evaluate aquifer properties in the vicinity and viable pumping rates for extraction wells.
 - *BAP Geochemical Evaluation Report* – A report summarizing collection and analyses of solid matrix and aqueous samples collected during installation activities of the above-mentioned new BAP wells. The results of these analyses were used to evaluate the fate and transport of cobalt at the BAP subject to natural attenuation mechanisms.
 - *BAP Bench-Scale Amendment Evaluation Report* – A technical memorandum documenting the results and evaluation of bench-scale amendment testing of potential in-situ treatment remedial technologies for cobalt at the BAP. Tested amendments included oxygen release compound Advance® (ORC), RegenOx® + ORC, sodium carbonate, and sodium hydroxide.
 - *BAP Geophysical Survey Report* – A report summarizing the findings of seismic refractive and electrical resistivity surveys conducted within Tanner Wash upgradient of the BAP.
- *Integration of Extraction Wells into Seepage Collection System Operations at the FAP.* Design of improvements to make the Geronimo Seepage Collection System operate more effectively was completed in early 2022 and a contractor was selected to perform the work in May 2022. Construction to incorporate new extraction wells at the FAP will begin in the second half of 2022. Completed activities associated with incorporating the extraction wells into the system will be documented in the 2022 GMCAR.
- *Operation of Existing FAP and BAP Seepage Collection Systems.* As part of interim response measures at both the FAP and BAP, existing seepage collection systems have continued to operate during the first half of 2022. Annual contaminant mass removal estimates from both seepage collection systems as they stand to date were calculated for 2021 and will continue to be calculated and included in the 2022 GMCAR.
- *Evaluation of FAP Dewatering Strategies.* Design of a mechanically enhanced evaporation strategy to remove free water from the FAP was completed during the first half of 2022. Procurement of evaporators and installation contractors was underway as of the date of this report; installation of the evaporators is scheduled to be complete by August 2022 and operational thereafter.

2. Future Planned Activities

APS plans to perform the following activities in support of remedy selection during the second half of 2022 (and in upcoming years, as noted):

- *Cholla Statistical Data Analysis Work Plan.* The Site Statistical Data Analysis Work Plan (SDAWP) will be updated to include statistical evaluations to support units in corrective action (the FAP and BAP) and unit closure as needed. Statistical analyses will also be conducted for any noted Appendix IV groundwater protection standard (GWPS) exceedances that do not currently fall under constituents of concern (for which the FAP or BAP was originally phased into corrective action).
- *Numerical Groundwater Model Update.* The numerical groundwater model for the FAP and BAP is being updated to assess potential water quality impacts and support selection of a groundwater remedy or remedies for the CCR units. Hydrogeologic and water quality data obtained to date are being used to update and calibrate the Site conceptual, flow, and transient parts of the model. The modeling procedures and results will be documented in a summary report in accordance with industry standards and guidelines in the second half of 2022 and included as an appendix to the 2022 GMCAR.
- *Integration of Extraction Wells into Seepage Collection System Operations at the BAP.* The planning and initial design to incorporate extraction wells installed to date at the BAP into its respective seepage collection system will likely begin in late 2022.
- *Continued Operations of Existing FAP and BAP Seepage Collection Systems.* The seepage systems at both the FAP and BAP will continue to serve as part of interim response measures at both CCR units until remedial activities begin. The updated seepage collection systems at both units will also likely be a part of final selected remedies.
- *BAP In-Situ Remedy Pilot Study.* Based on recommendations put forth in the bench-scale evaluation (Section 1. above), a pilot-scale study of in-situ strategies for cobalt remediation may be conducted at the BAP. The pilot-scale study would implement push-pull testing of groundwater oxidation amendments at select wells. Implementation and assessment of the pilot-scale study would likely be part of initial remedial activities for adaptive remedy options.
- *Public Meeting.* Upon completion of all pre-design studies reporting described above, APS will conduct a public meeting with interested and affected parties at least 30 days prior to selection of remedies for the FAP and the BAP pursuant to 40 CFR §257.96(e). The public meeting is expected to take place during the second half of 2022 and will be documented in the 2022 GMCAR.
- *Remedy Selection Reports for the FAP and the BAP.* After a public meeting occurs to discuss the results of the corrective measures assessment, a remedy selection report will be prepared to document how the selected remedy or remedies will meet the requirements of 40 CFR §257.97(b).
- *Initiation of Remedial Activities.* Upon completion of the FAP and BAP Remedy Selection Reports, within 90 days APS will initiate and begin documentation of remedial activities for each CCR unit pursuant to 40 CFR §257.98(a).

Respectfully submitted,
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