ADEQ Arizona Department of Environmental Quality

DRAFT FACT SHEET

Aquifer Protection Permit P-100568
Place ID # 447, LTF # 61410
Significant Amendment
Arizona Public Service – Cholla Power Plant

The Arizona Department of Environmental Quality (ADEQ) proposes to issue an Aquifer Protection Permit (APP) for the subject facility that covers the life of the facility, including operational, closure, and post closure periods unless suspended or revoked pursuant to Arizona Administrative Code (A.A.C.) R18-9-A213. This document gives pertinent information concerning the issuance of the permit. The requirements contained in this permit will allow the permittee to comply with the two key requirements of the Aquifer Protection Program: 1) meet Aquifer Water Quality Standards (AWQS) at the Point of Compliance (POC); and 2) demonstrate Best Available Demonstrated Control Technology (BADCT). BADCT's purpose is to employ engineering controls, processes, operating methods or other alternatives, including site-specific characteristics (i.e., the local subsurface geology), to reduce discharge of pollutants to the greatest degree achievable before they reach the aquifer or to prevent pollutants from reaching the aquifer.

I. FACILITY INFORMATION

Name and Location

Permittee's Name:	Arizona Public Service (APS)
Mailing Address:	P.O. Box 188, Station 4451
Facility Name and Location:	APS - Cholla Power Plant 4801 Cholla Lake Road Joseph City, AZ 86032

Regulatory Status

The facility obtained the APP on February 28, 1998, for operations of several surface impoundments (ponds) that are used to handle on-site wastewater disposal. On January 15, 1999, Arizona Public Service (APS) requested an expansion to the facility to allow construction of a 40-acre bottom ash disposal monofill to the immediate north and east of the existing Bottom Ash Pond (BAP).

Modifications to the APP were requested on June 28, 2002, and August 16, 2002. These amendments to the APP reflect both the planned addition of a spray wash station at the Sedimentation Pond and the enlargement of the southwest end of the west drainage ditch (currently referred to as the West Area Retention Pond [WARP]). APS requested a minor amendment to the APP September 22, 2004, to clarify and

correct language in the permit to reflect current practices at the facility. The minor amendment to the APP to reflect these changes was issued on October 26, 2006. A request for a significant amendment to the APP was submitted to ADEQ on April 23, 2007, to increase the discharge to the Fly Ash Pond (FAP) due to a Title V Air Quality Permit evaluation and approval from ADEQ Air Section for upgrades to their air quality control equipment. This amendment was issued May 15, 2008.

Facility Description

The facility is an existing steam electric power generating station which consists of three coal-fired units; Unit 2 was retired in 2015. There are seven surface impoundments located at the facility that are used to handle the disposal of wastewater generated from the operation. The impoundments are the BAP, FAP, Sedimentation Pond, WARP, Stormwater Retention Pond, Cholla Reservoir and the Bottom Ash Monofill (BAM). The waste streams produced include fly ash, bottom ash, scrubber sludge, cooling tower blowdown, process water, boiler cleaning waste, other cleaning waste, dirt, sedimentation pond solids, oil/water separator solids, and flue gas desulfurizations (FGD) wastes. Process Flow Diagrams for each of the permitted facilities are included as an attachment to this Fact Sheet.

There are two other impoundments/monofills at this site that are not subject to individual aquifer protection permitting requirements. The Old Ash Disposal Area was closed in 1978 and pursuant to A.R.S. §§ 49-201(7) and 49-250(B)(11), it is not subject to the APP requirements. The Inert Monofill is not subject to the APP requirements pursuant to A.R.S. § 49-250(B)(20).

The plant will be operated in such a manner that the AWQS at the POCs are not violated and to maintain all disposal ponds in good operational condition. APS shall continue to pursue possibilities and opportunities for reuse of the solid materials and wastewater generated from the plant operation.

The Stormwater Retention Pond is a 7.6-acre sub grade holding pond and receives surface runoff from the coal storage area. The pond has a storage capacity of approximately 32,000,000 gallons.

The Sedimentation Pond is a 1.2-acre sub grade holding pond and receives the wastewater from the secondary wastewater treatment plant, effluent from the oil/water separators, vehicle wash water from the spray wash station, wastewater from the West Area Retention Pond, and plant wash water containing coal dust and coal ash from various drainage sumps and ditches. Maximum water storage capacity of the pond is about 3,500,000 gallons. The Sedimentation Pond water is pumped to the General Water Sump or the Bottom Ash Transfer Sump for continued use as process water at the facility. The Wastewater Treatment Plant has a flow less than 20,000 gallons per day and is covered under a general permit pursuant to A.A.C. R18-9-B301(I). Solids are periodically removed from the Sedimentation Pond and disposed of at the BAP or the FAP.

The BAP receives the wastewater from the Bottom Ash Transfer Sump that contains water and solids from the following sources: bottom ash overflow sumps, bottom ash slurry from Units 1 through 4, Area 1, 2, and 3 Area Drainage Sumps, Units 1, 2, 3, and 4 Bottom Ash Hoppers, General Water Sump Liquids and Solids, Sedimentation Pond effluent, Units 1, 2, 3, and 4 Oil Water Separators, boiler cleaning waste, and water siphoned back from the BAP. In addition, the following are discharged to the BAP: scrubber sludge, BAP stormwater, Units 3 and 4 Cooling Tower Basin Solids, seepage and stormwater from the BAM retention basins, General Water Sump Solids, Sedimentation Pond solids, WARP Solids, FGD wastes, and oil/water separator solids. The water decanted from the BAP is siphoned back to the General Water Sump. The bottom ash water is contained behind a clay-core (a permeability of 10^{-7} cm/sec) dam with rip-rap sides, as approved by the Arizona Department of Water Resources (ADWR). APS constructed systems (e.g. - silt fences, intermediate dikes, etc.) over a period of several years to increase the storage capacity. The pond level shall have a surface area of approximately 110 acres. Four seepage collection systems are constructed and operated to collect and return the seepage back to the BAP. These include seepage collection systems for the West Abutment Seep, the Petroglyph Seep, the P-226 Seep, and the Tanner Wash Seep. APS has made operational changes in which Salt River Materials Group (SRMG) recovers dewatered bottom ash from within the BAP boundaries for beneficial use and that materials larger than ¾ inch are disposed in the BAP along with the remaining fines and slurry

The BAM and associated retention basins will consist of approximately 55 acres, with approximately 43 acres utilized for the BAM or stockpile, and the remaining 12 acres will consist of drainage structures, access roads, or will be left undeveloped as a buffer zone. The BAM shall receive only the dewatered bottom ash materials that are permitted for disposal at the BAP. Approximately 200,000 cubic yards of bottom ash will be placed in the monofill each year. A sump pump system for the retention basins will collect and return any discharge to the BAP.

The WARP is used to collect surface drainage of stormwater, circulating water, plant wash-down water, process water, and incidental discharges of process wastewater such as periodic discharges caused by leaks, repair activities, and other low volume discharges. Water collected in the WARP is pumped to the Sedimentation Pond and returned to the General Water Sump for continued use as process water at the facility.

The FAP has a maximum area of 430 acres and receives discharges from Slurry Disposal, General Water Sump, FAP Seepage Collection System, SEDI Pond Solids, Unit 3 & Unit 4 Cooling Tower(s) Basin Solids, General Water Sump Solids, Unit 1, 2, 3, & Unit 4 Oil Water Separator Solids, WARP Solids, Coal Combustion Product Wastes, Flue Gas Desulfurization Wastes, and FAP Area Stormwater. The FAP has a seepage collection system for the Geronimo and Hunt Seep, which collect and return the seepage back to the FAP. A seepage collection system from the I-40 seep operates to collect seepage and provide for evaporation.

Cholla Reservoir is approximately 300 acres with a storage capacity of approximately 2,200 acre-feet. It receives discharges from Make-up Water (production wells and Joseph City Irrigation), Circulating Water (from Units 1 and 2); Cholla Reservoir Seepage Retention Basin Overflow; Lake Dike Sump, Service Water, Unit 1 & Unit 2 Lake Intake Sumps, Abnormal Operations/Overflows of Cooling Water Equipment, and Stormwater.

APS-Cholla will monitor the surface impoundment wastewater, seepage collection systems, and groundwater in the upper, intermediate, and regional aquifers using the existing monitoring ports and groundwater monitoring wells according to the permit requirements. APS-Cholla will maintain pollution prevention practices in all operational components to minimize adverse impacts to the environment.

APS-Cholla is located just north of the Little Colorado River (LCR) on the Colorado Plateau. The major geological units in the area include the surficial alluvium, the Chinle Formation (sandstone and weakly cemented conglomerate), the Moenkopi Formation (gypsiferous mudstone, siltstone, fine-grained sandstone), and the Coconino Sandstone.

Groundwater in the regional Coconino Sandstone Aquifer exists under confined conditions due to the overlying, relatively impermeable Moenkopi Formation, and the direction of regional groundwater flow is to the northwest. The groundwater in the Coconino south of the Little Colorado River is generally of good quality. However, the salinity increases north of the Little Colorado River, presumably due to the halite beds in the underlying Supai Formation.

Amendment Description

ADEQ has reviewed and approved the following changes under this amendment:

1. Establish alert levels (ALs) and aquifer quality limits (AQLs) for point of compliance (POC) wells DM-4R and M-44D.
2. Revise the permit to reflect changes resulting from EPA's new Coal Combustion Residual (CCR) rule.
3. Make other permit changes and corrections.

Updated existing closure and post-closure cost estimates using the inflation factor.

II. BEST AVAILABLE DEMONSTRATED CONTROL TECHNOLOGY

The BADCT for the discharging surface impoundments is based on the existing construction design, operation and maintenance procedures, pollution prevention practices, and site characteristics. The existing design of the facility and opportunity for water conservation are considered in the BADCT demonstration for this project. The impoundments will be properly maintained with the required freeboard. Seepage collection and interceptor wells will be properly maintained and operated.

The facility shall follow the pollution prevention plan as approved by ADEQ for the chemical handling, storage, and release response; waste disposal, storage, and reuse

for energy recovery; underground storage tank guidelines; oil spill prevention and spill reporting; APS-Cholla contingency plan for emergency response; and emergency action plan for APS-Cholla Dams (Bottom Ash Dam, Fly Ash Dam, and Cholla Reservoir Dam.) BADCT description is provided in Section 2.2 of the permit.

III. COMPLIANCE WITH AQUIFER WATER QUALITY STANDARDS

The four principal aquifers are present underneath the plant site including the alluvium (Little Colorado River [LCR], and Tanner Wash), Moenkopi Fm-Moqui Member, and Coconino Sandstone. The BAP is constructed along the west side of Tanner Wash Alluvium and has affected aquifer characteristics locally by creating a groundwater mound. The FAP is on an unnamed wash and considered separate from the LCR Alluvium. In general, water quality identified in the alluvium has higher total dissolved solids (TDS), chloride, and sulfate concentrations than the pond water in the BAP and FAP. The Moqui Member contains abundant gypsum deposits which could be the reason for elevated TDS and sulfate concentrations in groundwater. No significant changes in the water quality have occurred in the Coconino Aquifer.

A hydrogeologic study was completed to define and characterize the discharge impact areas (DIAs) for impacts from the BAP and FAP. Water from aquifers within the DIAs is used for monitoring purposes only. Production wells are located out and south of the plant site and are completed in the Coconino aquifer. Groundwater quality in the DIA associated with the BAP and FAP is highly influenced by the composition of the geologic units that make up the aquifers. Based on the monitoring data collected from the monitoring wells and the pond water, and the existing operational methods, compliance with the AWQS at the applicable POC will be maintained.

Groundwater in the alluvial aquifer generally flows south toward the Little Colorado River. Groundwater in the Coconino aquifer flows to the northwest. Groundwater monitoring will be conducted in the Alluvial, Moenkopi, and Coconino. Groundwater modeling was performed to determine the impact from the BAP from the proposed raising of the dam. A "risk assessment" computer model, MYGRT, was used to address the impact of fluoride on groundwater beneath the FAP. Fluoride has been detected above the AWQS in the FAP water. The permit includes a contingency plan that addresses fluoride exceedance. Monitor well W-126 has been designated as a POC for the alluvium downgradient of the FAP.

Monitoring and Reporting Requirements

The facility will perform monitoring of the wastewater in all of the surface impoundments, all three aquifers monitored by several wells, and the three pipes that discharge to the ponds from the seepage intercept systems. The facility will perform monitoring of the sedimentation pond solids and oil/water separator solids. The wastewater will be analyzed semiannually for chloride, fluoride, nitrate, nitrite, pH, sulfate, total dissolved solids, calcium, magnesium, sodium, trace metals, and gross

alpha and uranium at the FAP. All groundwater wells will be monitored annually both upgradient and downgradient for primary and secondary drinking water standards.

The facility will monitor the operations in the treatment and storage components of the plant to ensure that there will be no disposal of unauthorized materials. The facility shall monitor the seepage collection system to ensure the systems are properly maintained and operated.

Points of Compliance

The POCs designated for this facility shall be located downgradient of discharging facilities in the uppermost, intermediate, and regional aquifers and are established by the following monitoring location(s):

Well Identification	Latitude	Longitude
CR-1 (LCR Alluvium)	34º 56' 24" N	110º 18' 39" W
W-124 (Wupatki)	34º 55' 42" N	110º 16' 00" W
W-125 (Coconino)	34º 55' 43" N	110º 16' 00" W
W-126 (Alluvium)	34º 55' 41" N	110º 16' 00" W
W-304 (T.W. Alluvium)	34º 56' 55" N	110º 17' 22" W
W-310 (Wupatki)	34º 57' 03" N	110º 17' 17" W
W-312 (Wupatki)	34º 57' 13" N	110º 17' 01" W
W-313 (Coconino)	34º 57' 13" N	110º 17' 01" W
DM-4R (LCR Alluvium)	34º 55' 43" N	110º 17' 23" W
M-60 (northwest of the BAM; Coconino, location only)	34° 57' 47.78" N	110° 17' 09.55" W
MW-1 (Wupatki, location only)	34º 57' 45.823" N	110º 17' 04.901" W
MW-2 (Coconino, location only)	34º 57' 45.554" N	110º 17' 04.198" W
M-44D (Coconino)	34º 56' 29.90" N	110º 16' 04.35" W

The monitoring requirements for each POC are listed in Section 4.2, Table 3 (A) through 3 (C) of the APP.

IV. STORM WATER and SURFACE WATER CONSIDERATIONS

The Little Colorado River (LCR) is located immediately south of the main part of the facility and flows in a northwesterly direction. Levees are in place to protect Cholla Reservoir. There are no significant surface water concerns around the BAP and FAP that are located north of the Interstate 40. Both of these effluent storage ponds are protected by dams which have been constructed according to plans approved by ADWR. The BAM has a diversion trench to divert stormwater away from it. Surface runoff from the north and east sides of the coal pile and surrounding area is discharged to the Storm Water Retention Pond. Runoff from the south and west sides of the coal pile is collected in the plant drain system and discharged to the Sedimentation Pond.

V. COMPLIANCE SCHEDULE

The Compliance Schedule is provided in Section 3.0 of the permit.

VI. OTHER REQUIREMENTS FOR ISSUING THIS PERMIT

Technical Capability

The Arizona Public Service Company has demonstrated the technical competence necessary to carry out the terms and conditions of the permit in accordance with A.R.S. § 49-243(N) and A.A.C. R18-9-A202(B)..

ADEQ requires that appropriate documents be sealed by an Arizona registered geologist or professional engineer. This requirement is a part of an ongoing demonstration of technical capability. The permittee is expected to maintain technical capability throughout the life of the facility.

Financial Capability

The Arizona Public Service company has demonstrated the financial responsibility necessary to carry out the terms and conditions of the permit in accordance with A.R.S. § 49-243(N) and A.A.C. R18-9-A203. The permittee is expected to maintain financial capability throughout the life of the facility. The estimated closure and post-closure cost for the facility is $29,612,136. The financial assurance mechanism was demonstrated through a financial test for self-assurance and a statement by permittee's chief financial officer in accordance with A.A.C. R18-9-A203(C)(1)(b) and (c).

Zoning Requirements

The Arizona Public Service company has been properly zoned for the permitted use and the permittee has complied with all Navajo County zoning ordinances in accordance with A.R.S. § 49-243(O) and A.A.C. R18-9-A201(B)(3).

VII. ADMINISTRATIVE INFORMATION

Public Notice (A.A.C. R18-9-108(A))

The public notice is the vehicle for informing all interested parties and members of the general public of the contents of a draft permit or other significant action with respect to a permit or application. The basic intent of this requirement is to ensure that all interested parties have an opportunity to comment on significant actions of the permitting agency with respect to a permit application or permit. This permit will be public noticed in a local newspaper after a pre-notice review by the applicant and other affected agencies.

Public Comment Period (A.A.C. R18-9-109(A))

The aquifer protection program rules require that permits be public noticed in a newspaper of general circulation within the area affected by the facility or activity and provide a minimum of 30 calendar days for interested parties to respond in writing to ADEQ. After the closing of the public comment period, ADEQ is required

to respond to all significant comments at the time a final permit decision is reached or at the same time a final permit is actually issued.

Public Hearing (A.A.C R18-9-109(B))

A public hearing may be requested in writing by any interested party. The request should state the nature of the issues proposed to be raised during the hearing. A public hearing will be held if the Director determines there is a significant amount of interest expressed during the 30-day public comment period, or if significant new issues arise that were not considered during the permitting process.

VIII. ADDITIONAL INFORMATION

Additional information relating to this proposed permit may be obtained from:

Arizona Department of Environmental Quality
Water Quality Division – Water Permits Section
Attn: Vimal Chauhan
1110 W. Washington St., Mail Code: 5415B-3
Phoenix, Arizona 85007
Phone: (602) 771-4362