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1999 Broadway, Suite 3320
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Re: Four Corners Power Plant Groundwater, Surface Water, and Water Level Data

Dear Mr. Williamson:

As part of the ongoing review of the Four Corners Power Plant ("Four Corners" or the "Plant") and the Navajo Mine pursuant to the National Environmental Policy Act, enclosed please find recent and historic groundwater and surface water quality data related to the Plant, as well as historic water level data. As you may know, Arizona Public Service Company ("APS") has previously provided portions of this data to both the Environmental Protection Agency ("EPA") and to the Navajo Nation ("Nation"). We would welcome the opportunity to discuss with you the data and the plan we are implementing to address groundwater quality at the Plant.

We believe it is important to provide—together with the data itself—an overview of the history of water quality at Four Corners, the discussions that have occurred with EPA and the Nation, the manner in which the Plant's water permit has regulated groundwater, and the remedial programs APS has implemented and continues to implement to address water quality. These remedial measures will help ensure that post-2016 ash disposal operations will not contribute to—have any effect on—groundwater quality or seepage at the Plant site.

EPA, the Nation, and APS have long been aware that groundwater at Four Corners flows towards the Chaco Wash. As depicted in the included timeline titled "Four Corners Power Plant Groundwater Data," APS began evaluating groundwater and the hydrogeology in the area of the Plant as early as 1971. Monitoring wells were installed near and downstream of the ash disposal facilities in 1974. Subsequent to this, in 1987, APS contracted with Dames & Moore to evaluate the impact of the ash ponds and install a more extensive collection of groundwater monitoring wells. These monitoring

wells were sampled on a semi-annual basis by Plant personnel from 1987 through 2009 for boron and other non-metals. Metals were sampled less frequently. Finally, in 2010, APS contracted with URS to evaluate further the impacts from the ash ponds and install and sample additional monitoring wells.

For some time, there have been two primary areas of groundwater seepage; these two areas are referenced as the "north seep" and the "south seepage area." APS has periodically sampled in the area of the ash disposal facilities and the seeps, beginning as early as 1971. Consistent with the disposal of the fly ash combustion byproducts of coal-fired electric generation, the data indicate the presence of boron—a naturally-occurring element found in sedimentary rock, coal, and shale (see included "Boron Fact Sheet")—and other constituents in the groundwater. Other constituents have been detected in the groundwater that in some locations exceed EPA drinking water standards, including selenium, nickel, and uranium. For uranium, the data clearly show that the source is not the ash ponds but rather that it is native to the Lewis Shale upon which the Plant's ash ponds are constructed. For the other metals listed above, there is not a definitive answer regarding the source of these constituents. They are in the ash pond water, but the distribution of locations that show exceedances in the groundwater could indicate that the metals may also be in the native groundwater. It is important to note that there is no mercury detected in the groundwater.

The Lewis Shale is a marine shale, which contains large amounts of salts that were deposited with the clays, which are the main constituent of the shale. As a result, the groundwater in the shale is very saline. The total dissolved solids ("TDS") content of the groundwater currently varies from 5,200 to 58,000 mg/L and has been as high as 120,000 mg/L. (For comparison, the typical TDS of sea water is about 35,000 mg/L.) This high salinity causes significant interference when analyzing for metals using the typical analytical methodologies. In the past (pre-2011 groundwater quality analyses), this interference was difficult to overcome and resulted in high detection levels and a tendency to report metal concentrations higher than the actual concentration. However, beginning with the December 2011 analyses, APS used a new analytical method known as Inductively Coupled Plasma / Mass Spectrometry (ICP/MS) with Collision Cell Technology (CCT). This method has resulted in lower detection levels (up to an order of magnitude lower) and more accurate results.

With respect to surface water, APS collected surface water quality samples in the Chaco River in 2008 and 2009. Samples were collected upstream of the seeps and at two locations downstream of the seeps. The samples taken from the farthest downstream location did not exceed any surface water standard nor did they exceed the Ten-day Health Advisory for boron. This indicates that boron concentrations downstream of the seeps are minimal due to the low flow associated with the seeps. It must be stressed that these samples were not collected as compliance samples but rather were collected to understand the changes in Chaco Wash water quality upstream and downstream of the Plant. Concentrations for some constituents were analyzed for both total and dissolved concentrations. When analyzing for a total concentration of a metal, the sample is not filtered and

includes both dissolved ions and some suspended solids. The methodology for dissolved samples requires that the sample be filtered at the time the sample is collected to remove the suspended solids so that only the dissolved fraction is analyzed. However, because of a lack of equipment and the fact that the samples were not intended for compliance, the samples were not filtered in the field but instead were filtered at the contract laboratory. For some constituents, this may result in reporting higher than actual dissolved concentrations. Also, the laboratory method used for the samples collected from September 2008 through July 2009 used a method with a higher detection level than the method employed for the analysis for samples collected in August 2009.

Since 1977, APS has implemented (and currently is augmenting) a remediation system intended to restrict seepage of groundwater into the Chaco Wash. Specifically, in 1977, APS constructed an open ditch system to collect seepage water from the ash disposal facilities, a system that continues to operate today. This system was constructed in response to requirements set forth in the 1974 and 1977 National Pollution Discharge Elimination System ("NPDES") permits for the Plant. In 1986 and 1991, additional drain systems were constructed. In 1993 and 2011, extraction wells were installed. In addition, construction is in progress to close and cap all of the old unlined ash disposal units by summer of 2014. Finally, in October 2011, the "north intercept trench" began operation at the western boundary of the lease. The trench is excavated down to the bottom of the weathered Lewis Shale, and a drainage pipe is located in the bottom of the trench. The system is designed to capture all groundwater flow in the weathered Lewis Shale. APS has begun construction on a second trench, the "south intercept trench," and operation is anticipated to commence in the fall of 2013. The design and operation of the south intercept trench is the same as the north intercept trench.

Preliminary groundwater level data and water quality data demonstrate that the north intercept trench system is effective. Groundwater levels in three monitoring wells located down-gradient of the trench system show significant water level declines after operation of the trench commenced in October 2011. In addition, the boron concentration in one of the monitoring wells has been reduced. The December 2011 boron concentration for this well was 130 mg/L, which was the highest level for all the wells sampled. The September 2012 analysis showed that the boron level in this well has declined to 65 mg/L. After the entire trench intercept system has been completed and the old unlined ash impoundments have been closed and capped to prevent precipitation from collecting on top of the ash and seeping through the ash, we are confident that any further migration of groundwater towards the Chaco Wash will be contained and prevented.

APS has had discussions with, and has provided information to, multiple regulatory and governmental entities concerning groundwater at the Plant and the seeps. The earliest discussions were between APS and the State of New Mexico, between 1971 and 1973. In 1974, the first NPDES permit was issued to the Plant, and it included provisions related to the seeps. A second

NPDES permit was issued to the Plant in 1977, and it, too, included provisions concerning the seeps. The third and fourth NPDES permits were issued in 1983 and 1988.

In December 1991, APS met with EPA Region VI (Region VI's regulatory jurisdiction at the time included the Navajo Nation) to discuss the seepage issue. APS provided EPA information regarding the seeps, including water quality data. Shortly thereafter, control of Clean Water Act issues, including NPDES permitting, was transferred to EPA Region IX.

In 1993 and 2001, EPA Region IX issued NPDES permits for the Plant. Like prior NPDES permits, both of these permits referenced the seeps, providing as follows: "Surface seepage intercept systems shall be constructed and operated for existing and future unlined ash ponds. Water collected by these intercept systems shall be returned to the ash ponds, or evaporation ponds."

In December 1994, as part of a nationwide EPA inventory and screening, the Navajo Nation EPA (NNEPA) conducted a Superfund site investigation at the Plant. This investigation included sampling of soil, waste streams, and groundwater. In addition, APS provided NNEPA historic groundwater quality data and other information. The report concluded that the Plant did not qualify for further remedial assessment under Superfund. No further action was recommended.

Finally, EPA and NNEPA have conducted numerous inspections at the Plant, including visits to the seep areas. APS understands that NNEPA has collected data from the Chaco Wash, the seep areas, and Morgan Lake.

Most recently, EPA Region IX raised the issue of the seeps during a 2012 Plant inspection. Agency personnel indicated that they are considering how to address the seeps in the impending NPDES permit renewal. APS intends to work with Region IX to determine how best to resolve the NPDES permitting issues associated with the seeps. APS believes that the trench intercept system represents the best available technology—the best practicable environmental option—for intercepting groundwater flows toward the Chaco Wash.

As is evident, discussions around groundwater quality and the seeps at the Plant have been on-going for multiple decades and have involved the State of New Mexico, EPA, and the Navajo Nation. Furthermore, APS has consistently applied best engineering efforts to address and mitigate the seeps. We would be pleased to respond to any questions you may have concerning the enclosed information.

Very truly yours,

Neal Brown