

U.S. ENVIRONMENTAL PROTECTION AGENCY - REGION IX

WATER DIVISION

NPDES COMPLIANCE EVALUATION INSPECTION REPORT

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Permittee: Arizona Public Service Company

Facility: Four Corners Power Plant  
Fruitland, New Mexico

NPDES Permit No.: NN0000019

Date of Inspection: September 15, 2006

Inspection Participants

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### Introduction

On September 15, 2006, Patrick Antonio of Navajo EPA conducted a Compliance Evaluation Inspection (CEI) of the Arizona Public Service Company's (APS) Four Corners Power Plant. Mr. Antonio is an authorized U.S. EPA inspector (Credential No. 1051) for the purpose of conducting Clean Water Act (CWA) inspections. The purpose of the inspection was to determine the facility's compliance status with the terms of National Pollutant Discharge Elimination System (NPDES) Permit No. NM0000019, the NPDES Multi-Sector Storm Water General Permit (MSGP) No. AZR05A00I, the NPDES Storm Water General Permit for Runoff from Construction Activities (Phase II) No. AZR10CP0I, and the CWA. The inspection consisted of a visit to the facility, at which facility files were reviewed and a tour was made to the permitted outfalls and to the ash ponds area. Preparation of this report also included a review of APS materials at the Navajo EPA office covering the period of September 2004 through August 2006.

U.S. EPA designates an industrial discharger a major NPDES permit by applying a numerical permit rating system based on five characteristics of a permittee's discharge (toxic pollutant potential, flow/streamflow volume, traditional pollutants, potential public health impacts, and water quality factors). A permit assigned a point total of 80 or higher is designated as a major discharger and those below 80 points are designated minor permits. A major permit facility is subject to an annual CEI while a minor facility is subject to a CEI every five years. The APS Four Corners Power Plant is a major permit facility. The previous CEI conducted on the facility was September 24, 2004.

### Facility Description

APS operates the Four Corners Power Plant, a steam electric generating station, on land leased from the Navajo Nation. This operation is within the Nenahnezad and San Juan Chapters and is located 15 miles southwest of Farmington, New Mexico and 12 miles southeast of Shiprock, New Mexico.

The Four Corners Power Plant consists of five generating units. Units 1 and 2 (each rated at 170 megawatts) went into commercial operation in 1963. Unit 3 (rated at 220 megawatts) began producing electricity in 1964 while Units 4 and 5 (each rated at 740 megawatts) began commercial operation in 1969 and 1970 respectively. The plant's total generation capacity is 2,040,000 kilowatts.

The Four Corners Power Plant burns low-sulfur coal derived from the adjacent Navajo Mine, operated by the BHP Billiton Navajo Coal Company. The five units' boilers burn an average of 28,000 tons of coal each day, or about 10 million tons annually. Cooling water for all five units comes from the man-made Morgan Lake, adjacent to the plant, which serves as a closed cycle recirculating cooling lake. The 1200-acre lake is supplied with water from the nearby San Juan River at the rate of about 27,000 gallons per minute.

The following is a general description on the process of generating electricity at the plant: Pulverized coal is injected into a boiler where it bursts into flame. The produced intense heat is absorbed by water in tubes that line the boiler walls. The hot water turns into super-heated steam which is piped to a high pressure turbine. The steam expands turning a turbine shaft and spinning a generator. Finally, the steam arrives at a condenser where it is cooled by water from nearby Morgan Lake (the "cooling" water returns to Morgan Lake at an elevated temperature). The steam

condenses and becomes water, so that it can be pumped back to begin the cycle again. Units 1,2 and 3 employ a steam drum that further raises the steam's temperature and pressure. In contrast, Units 4 and 5 are once-through boilers that do not have a steam drum.

The Four Corners Power Plant delivers power through its switch-yard to utilities in Arizona, California, New Mexico and Texas. APS operates the entire plant and is sole owner of Units 1,2 and 3. Ownership of Units 4 and 5 is divided among six southwestern utilities: APS (15%), El Paso Electric Co. (7%), Public Service Co. of New Mexico (13%), Salt River Project (10%), Southern California Edison Co. (48%), and Tucson Electric Power Co. (7%).

#### Effluent Limitations Guidelines and Standards for Steam Electric Power Generating

U.S. EPA promulgated best practicable control technology currently available (BPT) and best available technology economically achievable (BAT) effluent limitations for three subcategories in the steam electric power generating point source category: recirculated cooling water (BPT and BAT), low volume waste sources (BPT), and chemical metal cleaning waste (BPT and BAT). As per 40 C.F.R. Part 423.11(h), recirculated cooling water is water that has passed through the main condensers to remove the waste heat, passed through a cooling device to remove such heat from the water and then passed again, except for blowdown, through the main condenser. As per 40 C.F.R. Part 423.11(b), low volume waste sources, taken collectively as if from one source, are wastewater from all sources except those for which specific limitations are otherwise established. Low volume waste sources include, but are not limited to: wastewater from wet scrubber air pollution control systems, ion exchange water treatment system, water treatment evaporator blowdown, laboratory and sampling streams, boiler blowdown, floor drains, cooling tower basin cleaning wastes, and recirculating house service water systems. As per 40 C.F.R. Part 423.11(c), chemical metal cleaning waste are any wastewater resulting from the cleaning of any metal process equipment with chemical compounds, including, but not limited to, boiler tube cleaning.

For the recirculated cooling water, there are BPT limitations for free available chlorine. For low volume waste sources, there are BPT limitations for total suspended solids (TSS) and oil & grease. For chemical metal cleaning waste, there are BPT limitations for TSS and oil & grease, and BAT limitations for total copper and total iron.

#### In-Stream Water Quality Standards

The Chaco River flows through the Navajo Nation. As such, it would ideally be protected by water quality standards developed by the Navajo Nation. The Navajo Nation Surface Water Quality Standards (NNSWQS) were originally approved by the Resources Committee of the Navajo Nation Council on November 9, 1999. Amendments to the NNSWQS were approved by the Resources Committee on July 30, 2004. The Navajo Nation received Treatment as a State (TAS) for the purposes of Sections 303 and 401 of the CWA on January 20, 2006 from U.S. EPA. However, the APS Four Corners Power Plant land area was not included in the 303/401 TAS approval. U.S. EPA may opt to use either Navajo Nation or New Mexico standards.

#### Permit History and Requirements

The original NPDES permit (No. NM0000019) for the APS Four Corners Power Plant went into effect on July 1, 1977. The current NPDES permit for the facility went into effect on April 7,

2001 and was originally set to expire on April 6, 2006. A permittee is required to submit a new application 180 days before the existing permit expires. APS submitted its NPDES application renewal on October 5, 2005.

NPDES Permit No. NM0000019 authorizes APS to discharge wastewater from one external outfall and three internal outfalls. The external outfall, 001 Cooling Pond Discharge, is the discharge of Morgan Lake ("cooling pond") water to the No Name Wash, which is a tributary to Chaco River, which drains into the San Juan River. Two internal outfalls, 01A Condenser Cooling Water Discharge and 01E Combined Waste Treatment Pond Discharge, both discharge into Morgan Lake. The other internal outfall, 01B Chemical Metal Cleaning Wastewater, is not used as the plant currently disposes of chemical metal cleaning wastewater to fly ash ponds, under the RCRA Dietrich exemption, but is retained for potential future use. Previously permitted internal Outfalls 01J, 01G, and 01I were eliminated as separate discharges and re-routed through Outfall 01E, as they met the definition of low volume wastewater in 40 C.F.R. 423.11.

The NPDES permit that went into effect on March 18, 1988 required APS to conduct biomonitoring on Outfall 01A on a monthly basis. APS conducted biomonitoring for 13 consecutive months from June 1988 to June 1989. No chronic or acute toxicity occurred in undiluted effluent during the testing period and biomonitoring was discontinued. The current permit has a condition that again required APS to conduct biomonitoring (Chronic Toxicity Testing) on Outfall 01A on a monthly basis. APS conducted biomonitoring for 26 consecutive months from February 2001 to March 2003 with none of the tests showing any toxicity detected at the outfall. On May 5, 2003, APS requested a reduction of chronic toxicity testing frequency from monthly to annually. On June 30, 2003, U.S. EPA modified the permit to reflect the new annual effluent toxicity testing frequency. APS developed a May 25, 2001 Toxicity Reduction Evaluation work plan in the event confirmed toxicity was ever identified at Outfall 01A.

On January 8, 1996, APS submitted an NPDES permit modification request to include an effluent limitation on oil and grease for Outfall 01A. APS believes that it is possible for "non-contact" coolers to develop a leak that could allow oil to enter the cooling water. U.S. EPA approved the request.

#### Storm Water Discharge Permits

APS was covered under the 1992 General Permit for Storm Water Discharges Associated with Industrial Facilities (NMR00A032) which expired on September 9, 1997. On August 13, 1997, APS submitted a Notice of Intent (NOI) to maintain extended coverage under the 1992 baseline permit. On December 4, 1998, APS submitted a NOI for coverage under the MSGP for Industrial Activities. On January 23, 2001, APS submitted a NOI for coverage under the MSGP for Industrial Activities (AZR05A00I). There are three storm water discharge outfalls at the APS plant: SW1 (near Units 4 and 5), SW2 (near Units 1 to 3), and SW3 (northeast of 500 KWSWYD). Pursuant to provisions of the MSGP, APS submits annual reports for the plant.

#### Compliance and Enforcement History

On October 29, 1992, U.S. EPA Region 6 issued a "Consent Agreement and Order Assessing Administrative Penalties" [Docket No. VI-92-1615] to APS which assessed a \$20,000

penalty for unpermitted discharges that occurred in 1991. The unpermitted discharges involved: approximately 9,350 gallons of facility transport water from the ash ponds to Morgan Lake due a pipeline rupture; approximately 350 gallons of Calgon K-35 (35% Hydrazine) to the Combined Waste Treatment Pond due to operator error; approximately 650 gallons of Metal Cleaning Wastewater to the Combined Waste Treatment Pond due to failure of an earthen dike; approximately 30 gallons of Calgon K-35 to the Combined Waste Treatment Pond due to a leak at a compression pipe fitting; approximately 76 gallons of Calgon K-35 to the Combined Waste Treatment Pond to an overflow of the charge cylinder due to an inlet valve being left open; and, approximately 3,000-4,000 gallons of Unit 4 Processor Liquor Blowdown to the plant discharge canal (01A) due to a pipe nipple failure.

In 1994, in response to temperature limitation exceedences at Outfall 001, APS undertook a project to widen the "condenser cooling water discharge canal" that flows into Morgan Lake. The intent of the project was to increase the surface area of the canal to allow the circulated water to undergo a slight temperature decrease.

On May 16, 2000, pH at Outfall 01E was determined to be 5.8 which is outside the NPDES permit pH limit of 6.0 to 9.0. This excursion was due to an APS employee draining sulfuric acid to replace an acid pump. The employee received training on the maintenance of acid handling equipment.

On March 29, 2001, an unpermitted discharge of boiler cleaning fluid into the Combined Waste Treatment Pond (Outfall 01E) occurred. The sight glass at the boiler drum clouded over causing an APS employee not to observe a high drum level leading to an overflow from the boiler drum vent. To prevent reoccurrence, the boiler drum vent was re-routed so overflows will not discharge to the Combined Waste Treatment Pond.

On June 4, 2001, due to a small leak in the bottom ash decant line, bottom ash decant water was released into the Condenser Cooling Water Discharge Canal which includes Outfall 01A. Ordinarily, bottom ash decant water is sent to the Combined Waste Treatment Pond for discharge through Outfall 01E, prior to Outfall 01A. The bottom ash decant line with the leak was replaced with new pipe.

APS participates in U.S. EPA's annual DMR-QA Study. The purpose of a DMR-QA study is to evaluate the analytical and reporting ability of the laboratory routinely performing the inorganic chemistry and whole-effluent toxicity self-monitoring analyses required by a NPDES permit.

### Findings

#### **General Site Visit**

1. On the day of the inspection, a review indicated that the APS records were in order.
2. On the day of the inspection, all five generating units were in operation.
3. On the day of the inspection, the 001 outfall was observed. The flow meter at this outfall is calibrated on a quarterly basis.

4. On the day of the inspection, the 01A outfall was observed. The last boom prior to the outfall was broken by the water current.

5. On the day of the inspection, the 01E outfall was observed. Small, silica-based beads were floating on the water surface. These beads are contained by oil booms.

6. On the day of the inspection, the vast area containing old and new ash disposal ponds was observed. Construction was occurring on a lined ash pond to add height to the walls. APS representatives pointed out the location of a new ash pond structure.

#### **NPDES Permit Requirements - Effluent Limitations**

7. Review of APS Discharge Monitoring Reports from August 2005 to July 2006 indicated no violations of NPDES permit effluent limitations.

#### **Storm Water Permit Requirements**

8. According to APS representatives, the storm water collection pond is pumped to the ash ponds.

9. Road work around the ash ponds will be incorporated into the SWPPP, with the use of low tech solutions being preferred.

#### **Other**

10. An APS representative indicated that the permit renewal for NPDES Permit No. NM0000019 will be delayed as APS seeks to comply with the Final Regulations for Cooling Water Intake Structures at Large Power Plants (Phase II) as found in Section 316(b) of the CWA.

