

# FOUR CORNERS POWER PLANT COMBINED WASTE TREATMENT POND – Periodic Structural Integrity Assessment

Periodic Hazard Potential Classification  
Periodic Structural Stability Assessment  
Periodic Safety Factor Assessment

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AECOM Project 60664563

Prepared for:

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## Attachment

Attachment A: AECOM, 2016. *Final Summary Report, Structural Integrity Assessment: Combined Waste Treatment Pond, Four Corners Power Plant, Fruitland, New Mexico*. Prepared for: Arizona Public Service, AECOM Job No. 60445844, August 2016.

## 1. Introduction

This periodic update to the Structural Integrity Assessment for the Combined Waste Treatment Pond (CWTP) at Four Corners Power Plant operated by Arizona Public Service (APS) has been prepared in accordance with the requirements of Title 40 of the Code of Federal Regulations Part 257 (40 CFR 257) (“the Coal Combustion Residuals [CCR] Rule” or “the Rule”) and the specific requirements within 40 CFR § 257.73 for periodic (every 5 years) assessment regarding structural integrity.

## 2. Methodology

The methodology used to prepare this 2021 Periodic Assessment of Hazard Potential Classification, Structural Stability Assessment, and Periodic Safety Factor Assessment for the CWTP at the Four Corners Power Plant is for the certifying Qualified Professional Engineer (QPE) to:

- a. Perform a documented review of the 5 years of annual inspection reports since 2016, the most recent of which is:
  - i. APS, 2020. Annual CCR Impoundment and Landfill Inspection Report: Four Corners Power Plant Lined Ash Impoundment, Lined Decant Water Pond, Combined Waste Treatment Pond, and Dry Fly Ash Disposal Area. Generation Engineering, Phoenix, AZ.
- b. Perform a documented review of each major component of the contributing technical information from:
  - i. AECOM, 2016. Final Summary Report, Structural Integrity Assessment: Combined Waste Treatment Pond, Four Corners Power Plant, Fruitland, New Mexico. Prepared for: Arizona Public Service, AECOM Job No. 60445844, August 2016 (hereafter referred to as the “2016 Report” and incorporated and referenced directly as Attachment A to this document); and
- c. Consider and document whether the 2016 Report and its conclusions:
  - i. Meet the current reporting requirements of the Rule;
  - ii. Reflect the current condition of the structure, as known to the QPE and documented in the annual inspections;
  - iii. Are compromised by any identified issues of concern; and
  - iv. Are consistent with the standard of care of professionals performing similar evaluations in this region of the country; and
- d. Identify any additional analyses, investigations, inspections, and/or repairs that should be completed in order to complete this 2021 Periodic Assessment.

This report documents the results of these considerations, incorporates the 2016 Report as an Appendix, identifies any additional technical investigation or evaluations (if needed), and presents an updated certification by the QPE.

### **3. 2017–2021 Annual Inspection Reports**

Information relevant to the general site conditions and current adequacy and performance of the CWTP embankment and outlet works have been considered. No issues were identified during the review that would affect the performance of the system and its compliance, as described in the 2016 Report, with the various requirements of the CCR Rule relative to (1) hazard potential classification, (2) structural stability, or (3) safety factor assessment.

The number of entries to the annual list of “Observed Conditions,” over the last 5 years of reports, has gradually increased each year, reflecting the continued need for crest maintenance, grass and bush cutting/removal on the downstream slope, and possible sloughing-type erosion, above the riprap zone, of the over-steepened downstream slope. At the scale reported, none of these conditions threaten the structural stability of the embankment.

The 2017-2021 Annual Inspection Reports also provide information on minimum and maximum values for various types of geotechnical instrumentation installed within the embankments and foundations. There are no instruments associated with the CWTP.

### **4. 2016 Certification – Review by Section**

Other than as described in the remainder of this section, the details presented in this section of the 2016 Report adequately represent current conditions and satisfy the requirements of the Rule.

#### **4.1 “1.4 Facility Description”**

Other than as described in the remainder of this section, the details presented in this section of the 2016 Report adequately represent current conditions and satisfy the requirements of the Rule.

The CWTP is no longer an operating CCR surface impoundment. The CWTP no longer discharges to Morgan Lake through a National Pollutant Discharge Elimination System (NPDES)-permitted internal outfall. APS provided notification, dated November 23, 2020, of its intent to close the CWTP and APS ceased discharge of CCR to the CWTP on or before November 23, 2020. APS is currently considering construction bids for a closure-by-removal project that will be accomplished largely by dredging. A temporary pump system delivers water from the Plant’s “hot canal” into the CWTP to maintain a minimum pond level for stability of the dike and to feed to Navajo Mine’s water intake pump station. APS intends to breach the dike with a culvert to provide free flow from the hot canal after successful completion and certification of closure-by-removal.

The downstream face of the CWTP embankment was reinforced with approximately 1,160 cubic yards of additional riprap in 2017. Riprap was placed from 5 feet below to 2 feet above the canal water surface elevation and between Stations 1+00 and 3+50 and Stations 8+00 and 12+90.

## 4.2 “2 Hazard Potential Classification”

The details presented in this section of the 2016 Report adequately represent current conditions and satisfy the requirements of the Rule.

Based on a review of the information presented in the 2016 Report, the CWTP impoundment currently satisfies the criteria for Low Hazard Potential classification.

## 4.3 “3 History of Construction”

The details presented in this section of the 2016 Report adequately represent current conditions and satisfy the requirements of the Rule.

## 4.4 “4 Structural Stability Assessment”

The details presented in this section of the 2016 Report adequately represent current conditions and satisfy the requirements of the Rule.

This review notes that the identified “interim conditions” listed in Section “4.9 Structural Stability” have been resolved as follows:

- a. The “(l)ack of adequate erosion protection along the downstream slope of the CWTP embankment” was remedied by a riprap placement project in 2017; and
- b. The “(r)eduction of the crest elevation about a one foot below the design elevations” was not remedied, although a small amount of fill was placed to restore the crest elevation of the south abutment to the same El. 5337 feet (North American Vertical Datum of 1988 [NAVD88]) as the rest of the crest.

The current 1-foot difference between the design and actual crest elevations is no longer considered to be a concern because, following cessation of discharge in 2020, the normal level of the pond has been lowered to El. 5330.0 feet (NAVD88) from the previous active operating level (El. 5332.6 feet, NAVD88) reported in Table 3-1 (AECOM, 2016).

AECOM assesses that the design, construction, operation, and maintenance of the CWTP are consistent with recognized and generally accepted good engineering practice for the maximum volume of CCR and CCR wastewater that can be impounded therein.

## 4.5 “5 Safety Factor Assessment”

The details presented in this section of the 2016 Report adequately represent current conditions and satisfy the requirements of the Rule.

The calculated factors of safety for the two critical cross sections along the CWTP embankment exceeded the required minimum values for the long-term, maximum storage pool; the maximum surcharge pool; the seismic (pseudo-static) loading conditions; and liquefaction triggering.

## 4.6 “6 Conclusions”

The details presented in this section of the 2016 Report adequately represent current conditions and satisfy the requirements of the Rule.

This review notes that the activities recommended in the 2016 Report to address identified “interim conditions” have been completed as described:

- a. The “(l)ack of adequate erosion protection along the downstream slope of the CWTP embankment” was remedied by a riprap placement project in 2017; and
- b. The “(r)eduction of the crest elevation about a one foot below the design elevations” was not remedied, although a small amount of fill was placed to restore the crest elevation of the south abutment to the same El. 5337 feet (NAVD88) as the rest of the crest.

The current 1-foot difference between the design and actual crest elevations is no longer considered to be a concern because, following cessation of discharge in 2020, the normal operating level of the pond has been lowered to El. 5330.0 feet (NAVD88) from the active operating level (El. 5332.6 feet, NAVD88) reported in Table 3-1 (AECOM, 2016).

## 5. Recommended Additional Technical Investigations or Evaluations

None identified and none recommended.

## 6. Conclusion

The 2016 Report and its conclusions meet the current reporting requirements of the Rule, reflect the current condition of the structure as known to the QPE and documented in the annual inspections, are not compromised by any identified issues of concern, and are consistent with the standard of care of professionals performing similar evaluations in this region of the country.

## 7. Limitations

This report is for the sole use of APS on this project only and is not to be used for other projects. In the event that conclusions based upon the data presented in this report are made by others, such conclusions are the responsibility of others.

The Periodic Structural Integrity Assessment presented in this report is based on the 2016 Report and relies and incorporates any Limitations expressed in that report.

The Certification of Professional Opinion in this report is limited to the information available to AECOM at the time this Assessment was performed in accordance with current practice and the standard of care. Standard of care is defined as the ordinary diligence exercised by fellow

practitioners in this area performing the same services under similar circumstances during the same period. Professional judgments presented herein are primarily based on information from previous reports that have been assumed to be accurate, knowledge of the site, and partly on our general experience with dam safety evaluations performed on other dams.

No warranty or guarantee, either written or implied, is applicable to this work. The use of the word “certification” and/or “certify” in this document shall be interpreted and construed as a Statement of Professional Opinion and is not and shall not be interpreted or construed as a guarantee, warranty, or legal opinion.

## 8. Certification Statement

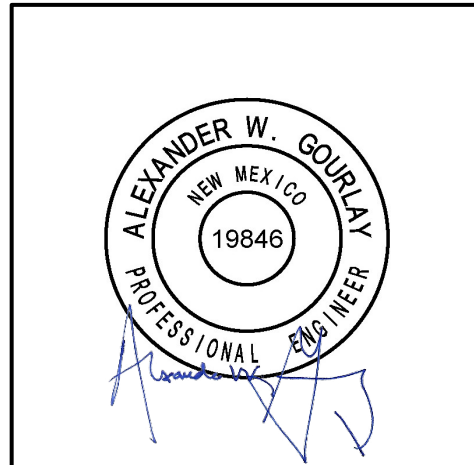
### Certification Statement for:

- 40 CFR § 257.73(a)(2)(ii) – Periodic Hazard Potential Classification for an Existing CCR Surface Impoundment
- 40 CFR § 257.73(d)(3) – Periodic Structural Stability Assessment for an Existing CCR Surface Impoundment
- 40 CFR § 257.73(e)(2) – Periodic Safety Factor Assessment for an Existing CCR Surface Impoundment

I, Alexander W. Gourlay, being a Registered Professional Engineer in good standing in the State of New Mexico, do hereby certify, to the best of my knowledge, information, and belief, that the information contained in this certification has been prepared in accordance with the accepted practice of engineering. I certify, for the above-referenced CCR Unit, that the periodic hazard potential classification, periodic structural stability assessment, and periodic safety factor assessment provided in this Periodic Structural Integrity Assessment Report, and referencing the 2016 Report, were conducted in accordance with the requirements of 40 CFR § 257.73.

Alexander W. Gourlay, P.E.  
Printed Name

October 11, 2021  
Date



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**ATTACHMENT A**

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