

ANNUAL INSPECTION REPORT
ASH LANDFILL AREA
SPRINGERVILLE GENERATING STATION
SPRINGERVILLE, ARIZONA

Prepared for
Tucson Electric Power Company

January 18, 2022

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Project No. 1004.06




**Annual Inspection Report
Ash Landfill Area
Springerville Generating Station
Springerville, Arizona**

The material and data in this report were prepared under the supervision and direction of the undersigned. This Report has been prepared to comply with the requirements as specified in CFR 40 §257.84(b).

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FIGURE

Figure 1 – Location and Site Map

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EXECUTIVE SUMMARY

The ash disposal landfill (Ash Landfill) at the Springerville Generating Station (SGS), operated by the Tucson Electric Power Company (TEP), is an existing “CCR landfill” under the US EPA’s Coal Combustion Residuals (CCR) Rule in 40 CFR §257. The SGS, a coal-fired, steam electric generating facility located approximately 15 miles northeast of Springerville, Arizona, has been in operation since 1985.

The SGS Ash Landfill is currently subject to the Inspection requirements under the CCR Rule to ensure that the design, construction, operation, and maintenance of the CCR unit is consistent with recognized and generally accepted good engineering standards. The inspection includes a review of available information regarding the status and condition of the Ash Landfill and a visual inspection to identify signs of distress or malfunction.

The Ash Landfill, located southwest of the power plant area, is primarily used for the disposal of fly and bottom ash, products of the coal-fired units at the plant. A delineated portion of the Ash Landfill is used for the disposal of other items in lesser quantities.

Weekly inspections conducted at the Ash Landfill and recorded in the facility operating record were reviewed and the inspection items have met all expectations and no comments/recommendations have been recorded. A visual site inspection was also conducted at the SGS Ash Landfill area on January 4, 2022. The inspection included observation of the current geometry and any changes or progress; notation of the total volume disposed of in the Ash Landfill; and if there are other obvious signs of actual or potential structural weakness within the Ash Landfill.

The current geometry of the landfill consists of ash/waste material lifts with benches that are graded inwards towards the upper slope. These benches continue to expand uniformly as the landfill progresses. No obvious signs of actual or potential structural weakness were observed within the Ash Landfill.

Based on the review of the facility’s regulatory documents, inspection records, and observations noted during the site visit, TEP is in compliance with all the CCR Rule requirements pertaining to design, construction, operation, and maintenance of the relevant CCR unit (Ash Landfill area). The Ash Landfill design and operation is consistent with recognized and generally accepted good engineering standards.

1 ANNUAL INSPECTION REPORT [40 CFR §257.84(b)(2)]

1.1 Introduction

AMTECH Associates L.L.C. (AMTECH) has prepared this 2021 Annual Inspection Report for the Ash Landfill area associated with Tucson Electric Power's Springerville Generating Station (SGS) approximately 15 miles north of Springerville, Arizona (See **Figure 1**). This report was prepared to comply with annual inspection requirements as per the U.S. Environmental Protection Agency's Standards for the Disposal of Coal Combustion Residuals (CCR) in Landfill and Surface Impoundments, 40 CFR Part 257 Subpart D. These standards are applicable to the facility's Ash Landfill as an existing "CCR landfill" as defined in 40 CFR §257.53 and receives CCR.

In accordance with 40 CFR §257.105(g)(9), this report will be placed in the SGS's facility operating record. Also in accordance with 40 CFR §257.106(g)(7), this report will be noticed to the State Director and will be posted to the publicly accessible internet site in accordance with 40 CFR §257.107(g)(7).

1.1.1 Site Description and Location

The SGS is a four-unit, pulverized coal-fired, steam electric generating facility, operated by Tucson Electric Power Company (TEP), that began operations in 1985 and consists of a combined net generating output of approximately 1600-megawatts.

SGS is located approximately 15 miles northeast of Springerville, in Apache County, Arizona. The power plant area of SGS is located in Sections 27, 28, 33, and 34, of Township 11 North, Range 30 East of the Salt and Gila River Baseline and Meridian. The SGS site occupies 14,355 acres, which includes the power plant area, ash landfill area and the east and west well fields.

The Ash Landfill, located southwest of the power plant area, is primarily used for the disposal of fly and bottom ash, products of the coal-fired units at the plant. The ash, which is dry, is mixed with water in the ash unloading facility for dust control. The ash is then loaded into haul trucks for transfer to the Ash Landfill.

A delineated portion of the Ash Landfill is used for the disposal in smaller quantities of facility waste e.g., reactivator sludge, construction debris and power plant outage refuse, sump sludge, demineralizer resins, petroleum impacted soils, cooling tower sludge, lime, soda ash, sewage pond sludge, evaporation pond solids, miscellaneous pond clean-outs, cooling tower treated lumber, and other inert and non-hazardous materials. The facility's

Aquifer Protection Permit (APP) defines the waste streams that may be disposed in the Ash Landfill in addition to CCR. A site map showing the locations of the power plant area and ash landfill area is presented in **Figure 1**, Attached.

1.2 Regulatory Requirements

As per 40 CFR §257.84(b)(1), an existing CCR landfill must be inspected on a periodic basis by a Qualified Professional Engineer to ensure that the design, construction, operation, and maintenance of the CCR unit is consistent with recognized and generally accepted good engineering standards. The inspection must, at a minimum include: (i) a review of available information regarding the status and condition of the CCR unit, including but not limited to, files available in the operating record; (ii) visual inspection of the CCR unit to identify signs of distress or malfunction of the CCR unit.

1.2.1 Document Review [40 CFR §257.84(b)(i)]

1.2.1.1 Aquifer Protection Permit Regulatory Documents

The Arizona Department of Environmental Quality (ADEQ) issued an Aquifer Protection Permit (APP) No.: P-101448 for the SGS (last modified on May 7, 2019) that authorizes the operation of its ponds, reservoirs, and other existing discharging facilities, including the Ash Landfill.

An Evaluation of the Ash Landfill area including geotechnical characteristics, fly ash and bottom ash characteristics, and computer modeling were presented in the original APP Application submitted to the ADEQ for the facility in April 1998. In addition, previous chemical analyses of the existing ash at the site indicate that the ash is relatively inert. Drawings depicting the Ash Landfill layout, including the Landfill Operations Plan, was included as part of the April 1998 APP Application and subsequent APP submittals.

A Drainage Plan for the Ash Landfill area was also presented in the April 1998 APP Application and describes the retention structures constructed to retain run-off. The geotechnical evaluation found that the low permeability vadose zone in the vicinity of the ash landfill area hinders the seepage or migration of fluids into the subsurface. Depth of groundwater is approximately 600 feet below ground surface and reduces the possibility of seepage reaching the groundwater.

In addition, as part of the APP Application, an investigation utilizing the PCSTABL5 computer model was used to analyze the proposed final grades of the Ash Landfill to compute safety factors meeting the criteria for static and pseudostatic conditions. The results of the evaluation showed that the proposed final grades of the ash landfill area are stable.

1.2.1.2 CCR Regulatory Documents

The following documents were developed in accordance with the CCR requirements in 40 CFR §257 Subpart D.

A *Fugitive Dust Control Plan* was developed for the Ash Landfill by CB&I Environmental & Infrastructure, Inc. in September 2015. The Fugitive Dust Control Plan contains a description of fugitive dust sources and operating measures to effectively minimize fugitive dust emissions from the CCR facility.

An *Initial Run-on/Run-off Control System Plan* for managing stormwater at the Ash Landfill was developed for the Ash Landfill by AMTECH in October 2016, based on the Drainage Study by TetraTech Inc. An *Updated Run-on/Run-off Control System Plan* for the Ash Landfill was completed by AMTECH in October 2021. The Updated Run-on/Run-off Control System Plan contains a description of the design, operation, and maintenance of a run-on control system to prevent flow onto the active portion of the CCR facility during the peak discharge from a 24-hour, 25-year storm; and a run-off control system from the active portion of the CCR facility to collect and control at least the water volume resulting from a 24-hour, 25-year storm. In addition, as per 40 CFR §257.81(b), run-off from the active portion of the CCR unit must be handled in accordance with the surface water requirements under 40 CFR §257.3-3.

A *Closure Plan* for the Ash Landfill was developed for the Ash Landfill by AMTECH in October 2016 using TEP's conceptual closure configuration. The Closure Plan outlines the procedures to be taken in order to close the Ash Landfill as per the CCR requirements in 40 CFR §257.102(b).

A *Post Closure Plan* for the Ash Landfill was developed for the Ash Landfill by AMTECH in October 2016. The Post Closure Plan outlines the procedures to be taken in order to perform post-closure activities at the Ash Landfill as per the CCR requirements in 40 CFR §257.104.

A *Groundwater Monitoring System Certification* report was developed for the Ash Landfill by AMTECH in October 2017. The Groundwater Monitoring System Certification report certifies that the groundwater monitoring system installed at the Ash Landfill meets the CCR requirements of 40 CFR §257.91.

A *Statistical Method Certification* report was developed for the Ash Landfill by AMTECH in October 2017. The Statistical Method Certification report certifies that the selected statistical method is appropriate for evaluating the groundwater monitoring data for the Ash Landfill meets the CCR requirements of 40 CFR §257.93(f)(6).

1.2.1.3 Weekly Inspections [40 CFR §257.84(a)]

Weekly inspections by a qualified person have been conducted at the Ash Landfill area and recorded in the facility operating record as required in 40 CFR §257.84. As per 40 CFR §257.84 (a)(i), the weekly inspections were conducted to examine the CCR facility for any appearances of actual or potential structural weakness and other conditions which are disrupting or have the potential to disrupt the operation or safety of the CCR facility.

AMTECH reviewed the weekly inspection records, provided by TEP, for January 1, 2021 through December 31, 2021. Based on the weekly inspection reports, AMTECH observed that the following inspection items have met all expectations and no comments/recommendations have been recorded.

- Run-on, Run-off Controls;
- Water Retention Structure;
- Fugitive Dust Controls on Roadways and Landfill;
- Structural Stability of Landfill; and
- No Work Orders were generated from the routine inspections.

1.2.1.4 Previous Annual Inspection Report

AMTECH conducted the previous site inspection at the Ash Landfill on January 2, 2021 and summarized the findings in the 2020 Annual Inspection Report, dated January 18, 2021. The 2020 Annual Inspection Report contained the following observations for the Ash Landfill:

- The landfill geometry consisted of approximate 8-foot ash/waste material lifts with benches that slope inwards towards the toe of the landfill slopes;
- The CCR volume in the landfill is at approximately 32.55 million tons, based on the TEP's haul truck logs during 2020;
- No obvious signs of actual or potential structural weakness were observed;
- The landfill's grading and drainage system prevents off-site surface water from entering the landfill area and stormwater run-off from the bottom benches and active areas of the landfill are routed to the stormwater runoff detention basin;
- Fugitive dust was controlled as described in the *Fugitive Dust Control Plan*; and.
- A soil cover exists over most of the inactive areas of the landfill that is at least 2 feet in thickness.

1.2.2 Visual Inspection of CCR Unit [40 CFR §257.84(b)(ii)]

AMTECH conducted a visual site inspection at the SGS Ash Landfill area on January 4, 2022. Observations made during the site inspection are summarized below.

1.2.2.1 Changes in Geometry [40 CFR §257.84(b)(2)(i)]

The current geometry of the landfill consists of approximate 8-foot ash/waste material lifts with benches that are graded inwards towards the upper landfill slopes. Since the previous

annual inspection, the current working face of 8-foot ash/waste lifts continues to be built out towards the west. Overall, the working face of the Ash Landfill was observed to be consistent in its grading and slopes, which would allow for a straightforward, immediate closure, if necessary.

Since the previous annual inspection, ash material was placed in the west end of the Ash Landfill to create a keyway to anchor and provide a stabilized area for future deposition of ash/waste from the current working face to the west end. A few of the benches along the west end of the Ash Landfill were observed to be slightly inconsistent in bench height and width. TEP will correct the benches in order to maximize the volume in the west end of Ash Landfill. Correcting these bench areas will maximize the usable space in the existing Ash Landfill footprint and will prevent the need for expansion beyond the existing Ash Landfill footprint.

Also since the previous annual inspection, TEP installed silt fences along the north perimeter to retain wind-blown Ash material within the landfill boundary and away from the perimeter channel. As observed during the annual site inspection, there was no sign of any ash material migrating off the property boundary.

1.2.2.2 Approximate Volume [40 CFR §257.84(b)(2)(ii)]

Based on the 2021 haul truck logs provided by TEP, the total approximate volume of CCR disposed of in the Ash Landfill area is now at 33.31 million tons.

1.2.2.3 Structural Evaluation [40 CFR §257.84(b)(2)(iii)]

AMTECH did not observe any obvious signs of actual or potential structural weakness within the Ash Landfill.

1.2.2.4 Any Other Changes [40 CFR §257.84(b)(2)(iv)]

There were no other changes to the Ash Landfill in 2021 which may have affected the stability or operation of the CCR Unit.

1.2.2.5 Other Comments

The landfill inspection verified that the landfill's grading and drainage system prevents surface water run-on from entering the landfill and that stormwater run-off from the bottom benches and active areas of the landfill are routed to the stormwater runoff detention basin, located northwest of the Ash Landfill. TEP continues to perform grading operations as needed to address minor erosion in the areas where final cover soil has been applied, perimeter drainage channels, perimeter soil berms, and haul roads.

The Ash Landfill is operated in accordance with its existing permits and approved plans and specifications.

Fugitive dust is effectively controlled as described in the *Fugitive Dust Control Plan*, dated September 2015.

TEP applied a soil cover over most of the inactive areas of the landfill that is at least 2-feet in over-all thickness. This soil cover experienced some natural vegetation that will assist in erosion control.

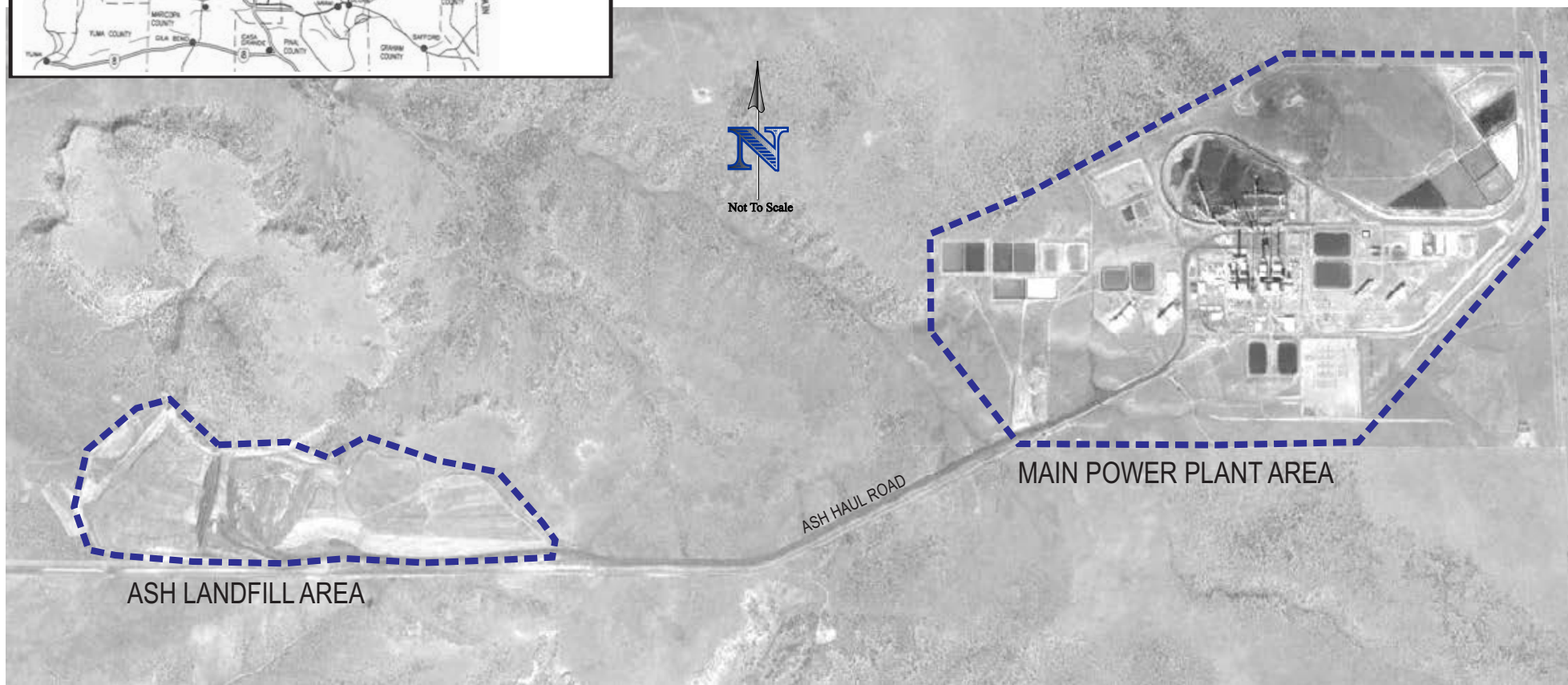
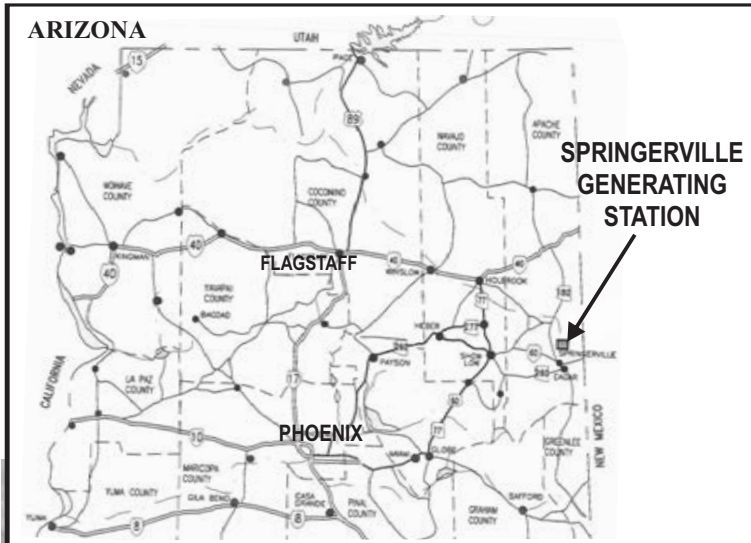
Site photographs of the Ash Landfill are presented in **Appendix A**.

1.3 Conclusion

Based on AMTECH's review of the facility's regulatory documents, inspection records, and observations noted during the site visit, TEP is in compliance with all CCR Rule requirements pertaining to the design, construction, operation, and maintenance of the relevant CCR unit (Ash Landfill area). The Ash Landfill design and operation is consistent with recognized and generally accepted good engineering standards.

FIGURE
Location and Site Map

ARIZONA



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SITE LOCATION MAP MAIN PLANT AND ASH LANDFILL AREA

Springerville Generating Station
Tucson Electric Power Company
Springerville, Arizona

Figure
1

APPENDIX A

Site Photographs



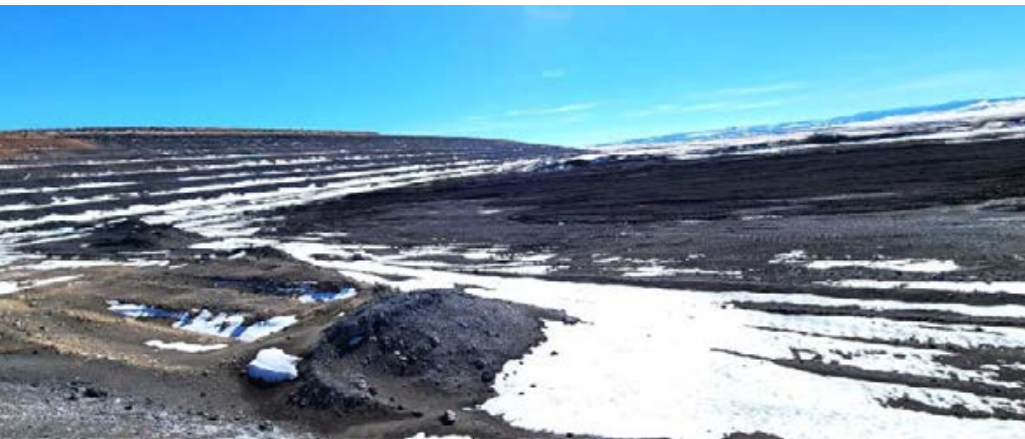
PHOTOGRAPH 1.

South area of the Ash Landfill showing ash/waste deposition. View looking from the Southwest to the Northeast.



PHOTOGRAPH 2.

North area of the Ash Landfill. View looking from the North to the South. A portion of the Silt fences shown along the northern perimeter.



PHOTOGRAPH 3.

West slope (current working face) of the Ash Landfill. View looking from the North to the Southeast.



PHOTOGRAPH 4.

Benches on the West end of the Ash Landfill. View looking from the Northwest to the Southeast.