

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

Prepared for
Tucson Electric Power Company

January 18, 2018

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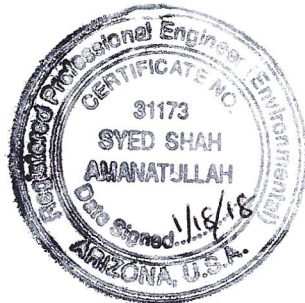
**Annual Inspection Report
Ash Landfill Area
Springerville Generating Station
Springerville, Arizona**

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 §257.84(b).

AMTECH Associates, L.L.C.



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Expires: 3/31/2018



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FIGURE

Figure 1 – Location and Site Map

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1 ANNUAL INSPECTION REPORT

1.1 Introduction

AMTECH Associates L.L.C. (AMTECH) has prepared this 2017 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, CFR Part 257 Subpart D. These standards are applicable to the facility's Ash Landfill as an "Existing CCR landfill" as defined in CFR §257.53 and receives CCR.

In accordance with §257.105(g)(9), this report will be placed in the SGS's facility operating record. Also in accordance with §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 §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 of other items in lesser quantities, i.e. reactivator sludge, construction debris and power plant outage refuse, sump sludges, demineralizer resins, PCS, 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. 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 CFR Part §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 §257.84(b)(i)

1.2.1.1 Regulatory Documents

The Arizona Department of Environmental Quality (ADEQ) issued an Aquifer Protection Permit (APP) No.: P-101448 for the SGS (last modified on November 7, 2017) that authorizes the operation of its ponds, reservoirs, and other existing discharging facilities, including the Ash Landfill.

A *Fugitive Dust Control Plan*, per the CCR requirements, 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, per the CCR requirements, was developed for the Ash Landfill by AMTECH in October 2016, based on the Drainage Study by TetraTech Inc. The Initial 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 §257.81(b), run-off from the active portion of the CCR unit must be handled in accordance with the surface water requirements under §257.3-3.

A *Closure Plan* for the Ash Landfill, per the CCR requirements, 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 §257.102(b).

A *Post Closure Plan* for the Ash Landfill, per the CCR requirements, 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 §257.104.

A *Groundwater Monitoring System Certification* report, per the CCR requirements, 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, per the CCR requirements, 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).

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 Weekly Inspections §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 §257.84. As per §257.84 (a)(i), the weekly inspections examined 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, dated January 3, 2017 through December 26, 2017. Based on the weekly inspection reports, AMTECH observed that the following inspection items have met 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.

1.2.1.3 Previous Annual Inspection Report

AMTECH conducted the previous site inspection at the Ash Landfill on January 11, 2017 and summarized the findings in the 2016 Annual Report, dated January 18, 2017. The 2016 Annual 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 was approximately 28 million tons and is now at 28.81 million tons, based on the TEP's haul truck logs during 2016.
- 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*.
- 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 §257.84(b)(ii)

AMTECH conducted a visual site inspection at the SGS Ash Landfill area on January 11, 2018. Observations made during the site inspection are summarized below.

1.2.2.1 Changes in Geometry §257.84(b)(2)(i)

The current geometry of the landfill consists of approximate 8-foot ash/waste material lifts with benches that slope inwards towards the toe of the landfill slopes. Since the previous annual inspection, the working face of 8-foot ash/waste lifts continued to be built out towards the west. In addition, ash/waste material was placed in the west end of the Ash Landfill to continue the creation of a keyway to anchor and provide a stabilized area for future deposition of ash/waste from the current working face to the west end.

1.2.2.2 Approximate Volume §257.84(b)(2)(ii)

Based on the 2017 haul truck logs provided by TEP, the total approximate volume of CCR disposed of in the Ash Landfill area is now at 29.71 million tons.

1.2.2.3 Structural Evaluation §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 §257.84(b)(2)(iv)

Groundwater monitoring wells have been installed in the Ash Landfill area. Two (2) upgradient groundwater wells and three (3) downgradient groundwater monitoring wells have been installed.

1.2.2.5 Other Comments

The landfill inspection verified that the landfill's grading and drainage system prevents surface water from surrounding areas 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 any 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, including fill areas, slopes, height, liner/cover system, access roads, seepage monitoring wells, groundwater monitoring system, etc.

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

TEP's routine facility inspection data for 2017 indicates no evidence of seepage in the seepage wells installed west of the ash landfill area.

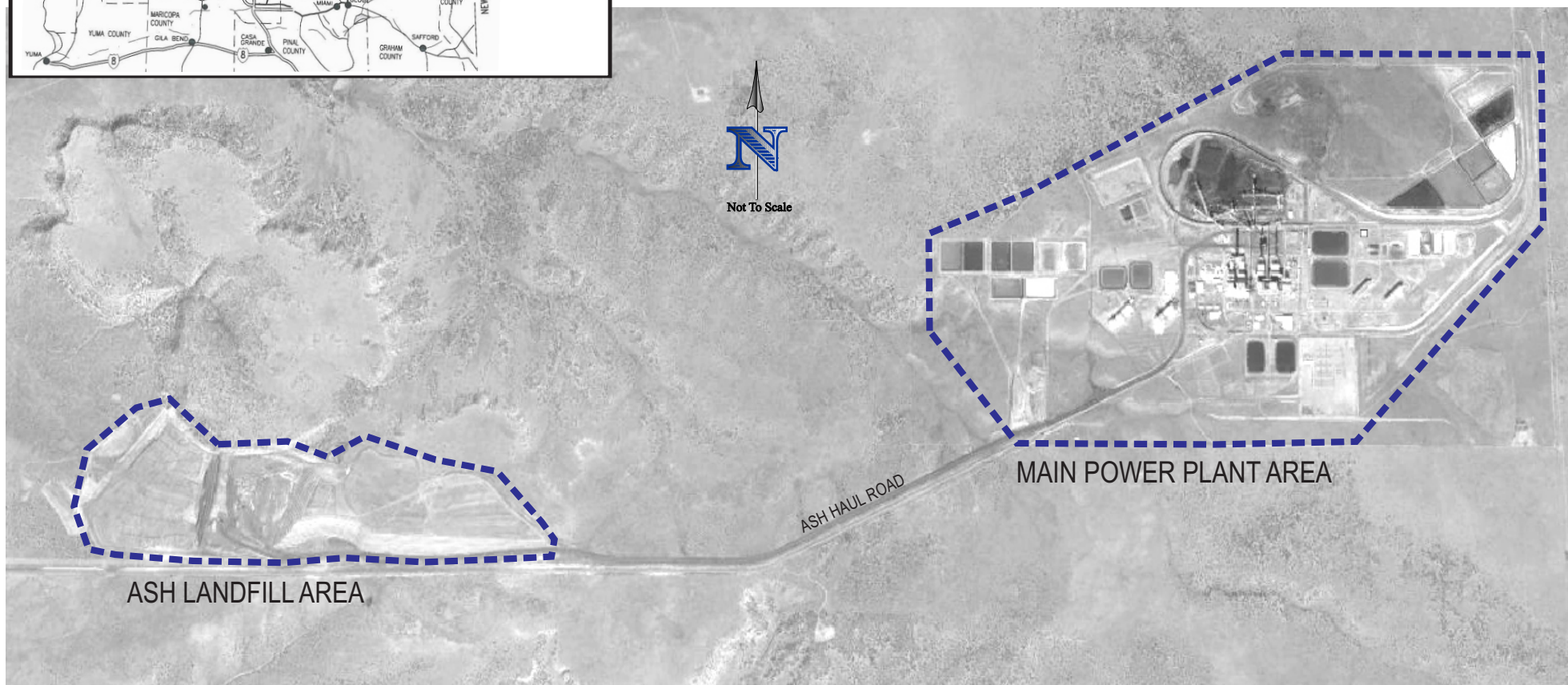
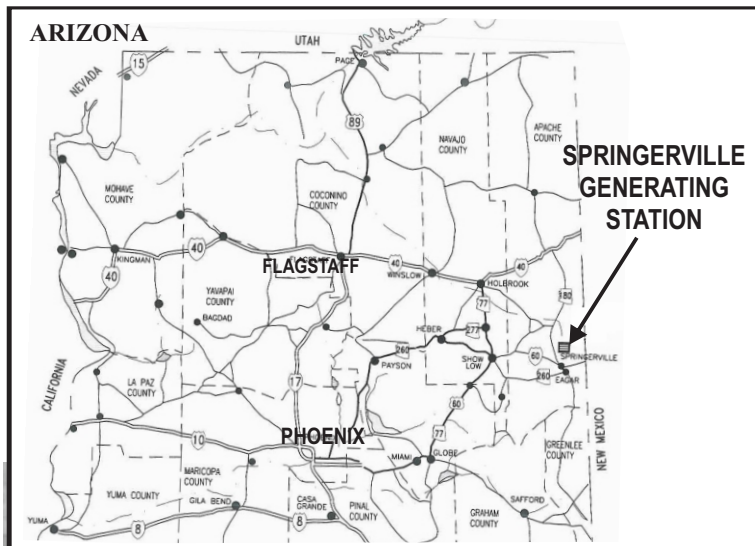
TEP applied a soil cover over most of the inactive areas of the landfill that is at least 2 feet in thickness. This soil cover experienced some natural vegetation that will assist in erosion control.

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 the design, construction, operation, and maintenance of the relevant CCR unit (Ash Landfill area) and is consistent with recognized and generally accepted good engineering standards.

FIGURE
Location and Site Map



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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.

Ash Landfill working face showing ash/waste benches. View looking from Southwest to Northeast.



PHOTOGRAPH 2.

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