

# **2021 Annual Landfill Inspection Report**

**CCR Landfill**

**Turk Power Plant  
Southwestern Electric Power Company  
Fulton, Arkansas**

**November 2021**

Prepared for: Southwestern Electric Power Company – Turk Power Plant

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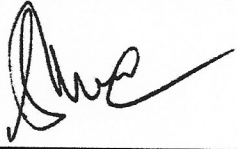
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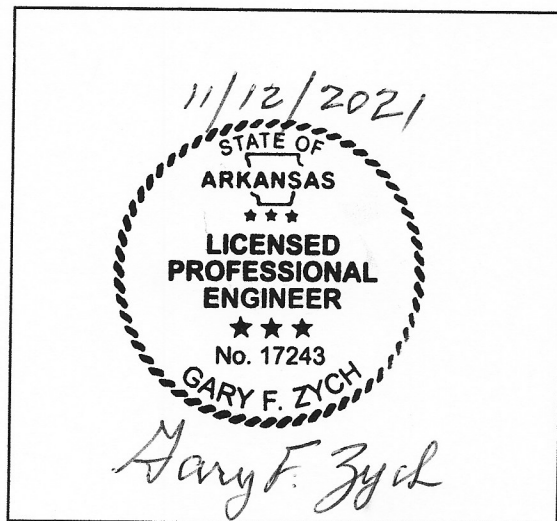
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I certify to the best of my knowledge, information and belief the information contained in this report meets the requirements of 40 CFR § 257.84(b).

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CCR Landfill  
Turk Power Plant, Fulton, AR**

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## **1.0 INTRODUCTION**

This report was prepared by AEP- Geotechnical Engineering Services (GES) section, in part, to fulfill requirements of 40 CFR 257.84 and to provide the Turk Power Plant an evaluation of the facility.

Shah Baig, P.E. of AEP-Geotechnical Engineering performed the 2021 inspection of the Landfill located at the Turk Power Plant, Fulton, AR. This report is a summary of the inspection and an assessment of the general condition of the facility. Greg Carter and Greg Johnson, AEP-SWEPCO Generation, Plant Engineering, and Michael Knobloch of Turk Plant coordinated and were present during the inspection. The inspection was performed on October 12, 2021. Weather conditions were clear skies, visibility was good, light wind, sunny, and the temperature ranged in mid-70's (°F). Mowing was performed prior to the inspection.

## **2.0 DESCRIPTION OF LANDFILL**

AEP-SWEPCO owns and operates the Turk Power plant and the CCR landfill facility. The site is located approximately 2.2 miles north of the Fulton (Hempstead County), Arkansas. The site location is exhibited on Figure 1 in Appendix A (Vicinity Map). The Power Plant has a 600 MW unit utilizing western subbituminous coal as a fuel for generating electricity. The landfill facility located to the south of the main plant is designed, approved, and used for disposal of flyash, bottom ash, scrubber waste, and other byproducts generated from the coal-fired Power Plant. Figure 2 (Site Layout Map) in Appendix A illustrates the CCR landfill facility location with respect to the power plant. The overall features of the landfill facility consists of the following main components; Leachate Collection Pond, Active Landfill Disposal Areas (Cell 1 and 2), Perimeter Berms and Haul Road, and Storm Water Pond and Drainage Ditches

The Active Landfill Disposal Area (Cell 1) had reached its maximum waste fill capacity and is currently in final stages of finishing the final grades and filling the common area between the two cells. At present, both cells (1 and 2) are used for the waste disposal. There are total of 1-5 cells that makes the total landfill footprint of 73 acres. The Leachate Collection Pond is located to the northwest of Cell 1 and collects leachate generated from the leachate collection system. The storm-

water runoff pond is located to the northeast of Cell 1 and collects storm water from the perimeter storm water ditches around the landfill. The outer perimeter of the landfill consists of the perimeter berm and haul road.

### **3.0 REVIEW OF AVAILABLE INFORMATION (257.84(b)(1)(i))**

A review of available information regarding the status and condition of the Landfill, which include files available in the operating record such as; design and construction information, previous 7 day inspection reports, and previous annual inspection report that has been conducted. Based on the review of the data there were no signs of actual or potential structural weakness or adverse conditions of the Landfill.

### **4.0 INSPECTION (257.84(b)(1)(ii))**

#### **4.1 CHANGES IN GEOMETRY SINCE LAST INSPECTION (257.84(b)(2)(i))**

Construction of landfill Cell 2 located adjacent to Cell 1 was complete in January 2019. The total active area combined of the landfill Cell 1 and Cell 2 is approximately 27.9 acre. In addition, the topography of the active disposal area has changed since the last year inspection.

#### **4.2 VOLUME (257.84(b)(2)(ii))**

The total estimated disposal capacity of the landfill (Cells 1-5) is 6,884,235 cubic-yard. The total volume of CCR disposed in the landfill from the period 11/2012 through 09/2021 is estimated to be 1,118,458 tons (816,393 cubic-yard), using a unit conversation of 1.37 tons/cubic-yard.

### 4.3 DEFINITIONS OF VISUAL OBSERVATIONS AND DEFICIENCIES

This summary of the visual observations uses terms to describe the general appearance or condition of an observed item, activity or structure. The meaning of these terms is as follows:

- Good:** A condition or activity that is generally better or slightly better than what is minimally expected or anticipated from a design or maintenance point of view.
- Fair/Satisfactory:** A condition or activity that generally meets what is minimally expected or anticipated from a design or maintenance point of view.
- Poor:** A condition or activity that is generally below what is minimally expected or anticipated from a design or maintenance point of view.
- Minor:** A reference to an observed item (e.g., erosion, seepage, vegetation, etc.) where the current maintenance condition is below what is normal or desired, but which is not currently causing concern from a structure safety or stability point of view.
- Significant:** A reference to an observed item (e.g. erosion, seepage, vegetation, etc.) where the current maintenance program has neglected to improve the condition. Usually conditions that have been identified in the previous inspections, but have not been corrected.
- Excessive:** A reference to an observed item (e.g., erosion, seepage, vegetation, etc.) where the current maintenance condition is above or worse than what is normal or desired, and which may have affected the ability of the observer to properly evaluate the structure or particular area being observed or which may be a concern from a structure safety or stability point of view.

This document also uses the definition of a “deficiency” as referenced in the CCR rule section §257.84(b)(5) Inspection Requirements for CCR Landfills. This definition has been assembled using the CCR rule preamble as well as guidance from MSHA, “Qualifications for Impoundment Inspection” CI-31, 2004. These guidance documents further elaborate on the definition of deficiency. Items not defined by deficiency are considered maintenance or items to be monitored.

A “deficiency” is some evidence that a landfill has developed a problem that could impact the structural integrity of the landfill. There are four general categories of deficiencies. These four categories are described below:

1. Uncontrolled Seepage (Leachate Outbreak)

Leachate outbreak is the uncontrolled release of leachate from the landfill.

2. Displacement of the Embankment

Displacement of the embankment (slopes) is large scale movement of Coal Combustion Byproducts, structural fill or other earthen materials associated with the landfill. Common signs of displacement are cracks, scarps, bulges, depressions, sinkholes and slides.

3. Blockage of Control Features

Blockage of Control Features is the restriction of flow at spillways, decant or pipe spillways, or drains.

4. Erosion

Erosion is the gradual movement of surface material by water, wind or ice. Erosion is considered a deficiency when it is more than a minor routine maintenance item.

**4.4 VISUAL INSPECTION (257.84(b)(1)(ii))**

A visual inspection of the Landfill was conducted to identify any signs of distress or malfunction of the landfill and appurtenant structures. Specific items inspected included all structural elements of the landfill perimeter berms, temporary and final covers, drainage features, leachate ponds, completed and open cells of the landfill, and appurtenances.

Overall, the facility is in good condition. The landfill is functioning as intended with no signs of potential structural weakness or conditions, which are disrupting to the safe operation of the landfill. Inspection Photograph Location Map and Photographs are in Appendix B. Additional pictures taken during the inspection could be available to the Owner upon request.

**Active Landfill Disposal Area, Perimeter Berm and Haul Road**

1. A temporary riprap lined channel is located at the southwest corner of Cell 1 (Photograph No. 1). The channel is installed to direct the runoff from the closure turf pad area to the toe ditch. The channel is functioning as designed and in good condition.

Minor water ponding was observed at the bottom of the channel (Photograph No. 2) on the access perimeter road. This area should be repaired by filling with roadbase gravel, regrading, and compaction.

2. A perimeter berm with a toe ditch was constructed for the landfill to support the landfill and control runoff from the landfill. The south perimeter berm is shown in Photographs No. 3 and 4. The slope of the berm consists of artificial turf (alternate to the natural grass cover) and appeared in good and stable condition. Few isolated spots indicated weeds protruding through the artificial turf. It appears that some of the sand that was placed as ballast over the artificial turf may have washed down into the toe ditch. The eastern section of the toe ditch exhibited overgrown vegetation in the ditch bottom, while the western section was in good shape without excessive vegetation.
3. A test pad using closure turf for the permanent cover system installation was completed in October 2019 at the southeast slope of the landfill (Photograph No. 5). The closure turf cover system is designed to be in compliance with the CCR rules and approved by the ADEQ for the test pad. Photograph No. 5 also illustrates an intermediate bench and ditch for runoff management. The test pad, bench, and ditch of the cover system appeared in good, intact, and in stable condition. Minor growth of weeds were observed on the surface of the sand without any impact to the closure turf.
4. Photograph No. 6 illustrates area of Cell 1 and closure turf anchored on the top. Overall the anchor trench is intact in-place and Cell 1 surface is properly graded without any ponding or erosion issues.
5. Photograph No. 7 illustrates closure turf, toe ditch, and access perimeter road. The toe ditch was recently constructed for runoff control. The ditch is functioning as designed and the access road was in good condition without any sign of settlement, misalignment, or significant erosion.



6. Overall condition of the landfill Cell 1 is illustrated in Photograph Nos. 8-10. Photograph No. 8 was taken from top of Cell 1 looking down towards Cell 2 and Photograph No. 9 is illustrating east side of Cell 1. Existing landfill Cell 1 was in good and stable condition with no sign of instability, water ponding or significant erosion of the interim slopes. The east side slope soil cover is temporary cover. Minor bare areas with sparse vegetation (Photograph No. 10) were observed on the east slope.
7. Typical perimeter berm is illustrated in Photograph Nos. 11 and 12. Overall, the berm was functioning well and in good condition. The perimeter access road appeared in good condition without any signs of settlement, instability, misalignment, or significant erosion.
8. North side of the landfill slope is partially covered with temporary soil cover in the northeast corner (Photograph No. 13). The temporary soil cover placement was in progress at the time of inspection (Photograph No. 14). The north slope appeared in good and stable condition without any significant erosion or instability.
9. Photograph Nos. 15-17 illustrate Cell 2, Cell 1 is also in the background (Photograph No. 16). Cell 2 is currently active waste disposal area and Cell 1 is used as support by filling in waste and to tie the grades to the Cell 1 slope. Both cells appeared in good and stable condition. Perimeter road appeared in good and stable condition and surface runoff and contact water was properly maintained per the design.
10. Photograph No. 16. The berm with the haul road appeared in good and stable condition.

**Leachate Collection Pond**

11. Overall, typical interior view of the leachate pond is illustrated in Photograph No. 18. The vegetative cover on the interior slopes (north, south, and east) appeared in good and controlled condition.

12. There are three leachate drainpipes (southeast, center, and southwest) on the south slope of the leachate pond. Leachate enters the pond from the Cell 1 leachate collection system through a pipe at the southeast corner of the pond (Photograph No.19). Leachate was not seen generated at the time of the inspection, but the drain pipe appeared to be functional and no obstruction to flow was noticed. Excessive vegetation was seen around the leachate pipe outlet end and in between the riprap (Photograph Nos. 19 and 20).
  
13. Photograph No. 21 illustrates the west slope of the pond. This slope was repaired a few years ago by replacing vegetative cover with a geosynthetic liner. The liner appeared in good condition without any damage or displacement. The slope appeared in good and stable condition without any sign of failure.

#### **Storm Water Pond**

14. The storm water pond is located to the east of the landfill and receives non-contact storm water run-off from areas outside the active Cells of the landfill. The pond appeared to be relatively dry but functioning as designed (Photograph No. 22).
  
15. The inlet and outlet of the overflow pipe structure of the storm-water pond are exhibited in the Photographs No. 23 and 24. The overflow pipe structure appeared in good condition. No water was flowing at the time of inspection from the outlet pipe. The outlet pipe area exhibited excessive vegetation that should be cleared as part of maintenance activities.

#### **4.5 CHANGES THAT AFFECT STABILITY OR OPERATION (257.84(b)(2)(iv))**

Based on interviews with plant personnel and field observations there were no changes to the Landfill since the last annual inspection that would affect the stability of the Landfill.

## **5.0 SUMMARY OF FINDINGS**

### **5.1 GENERAL OBSERVATIONS**

- (i) In general, the landfill is functioning as intended. The landfill areas (Cell 1 and Cell 2) are in good and stable condition.
- (ii) The storm water ditches and the perimeter haul road are in good functional condition. The recently added toe ditch at the south side is functioning as designed.
- (iii) The south ditch at the toe of the support berm indicated excessive vegetation growth at the east section of the ditch.
- (iv) Overall, the leachate pond is in good and stable condition including the west slope repair. The storm-water pond is functioning as designed and adequately handling the runoff water.
- (v) Sparse vegetation observed at the temporary cover of Cell 1 should be re-seeded and/or maintained.
- (vi) Excessive vegetation at the leachate and storm water ponds should be maintained on a regular basis.

### **5.2 MAINTENANCE ITEMS**

- (i) All the overgrown vegetation should be cleared or cut down carefully as not to disturb the artificial turf from the ditch and restored to its design condition.
- (ii) Minor rutting at the south perimeter haul road should be repaired by regrading and keeping up regular maintenance in future. Erosion control berm can be added at the bottom of the temporary channel in order to minimize future erosion.
- (iii) General vegetation control should be maintained at the leachate pond and storm-water pond, particularly around the outlet pipes. Temporary cover at the landfill should be re-seeded and/or maintained.

### **5.3 ITEMS TO MONITOR**

The exposed slopes of the landfill without soil cover should be monitored for any excessive erosion and contact water runoff outside the landfill.

### **5.4 DEFICIENCIES (257.84(b)(2)(iii))**

There were no signs of structural weakness or disruptive conditions that were observed at the time of the inspection that would require additional investigation or remedial action. There were no deficiencies noted during this inspection or during any of the periodic 7-day inspection. If any deficiency occurs until the next inspection contact AEP Geotechnical Engineering immediately.

If you have any questions with regard to this report, please contact Shah Baig at Audinet: 200-2241, or 614-716-2241 (email: [sbaig@aep.com](mailto:sbaig@aep.com)) or Gary Zych at Audinet: 200-2917, or 614-716-2917 (email: [gfzych@aep.com](mailto:gfzych@aep.com)).

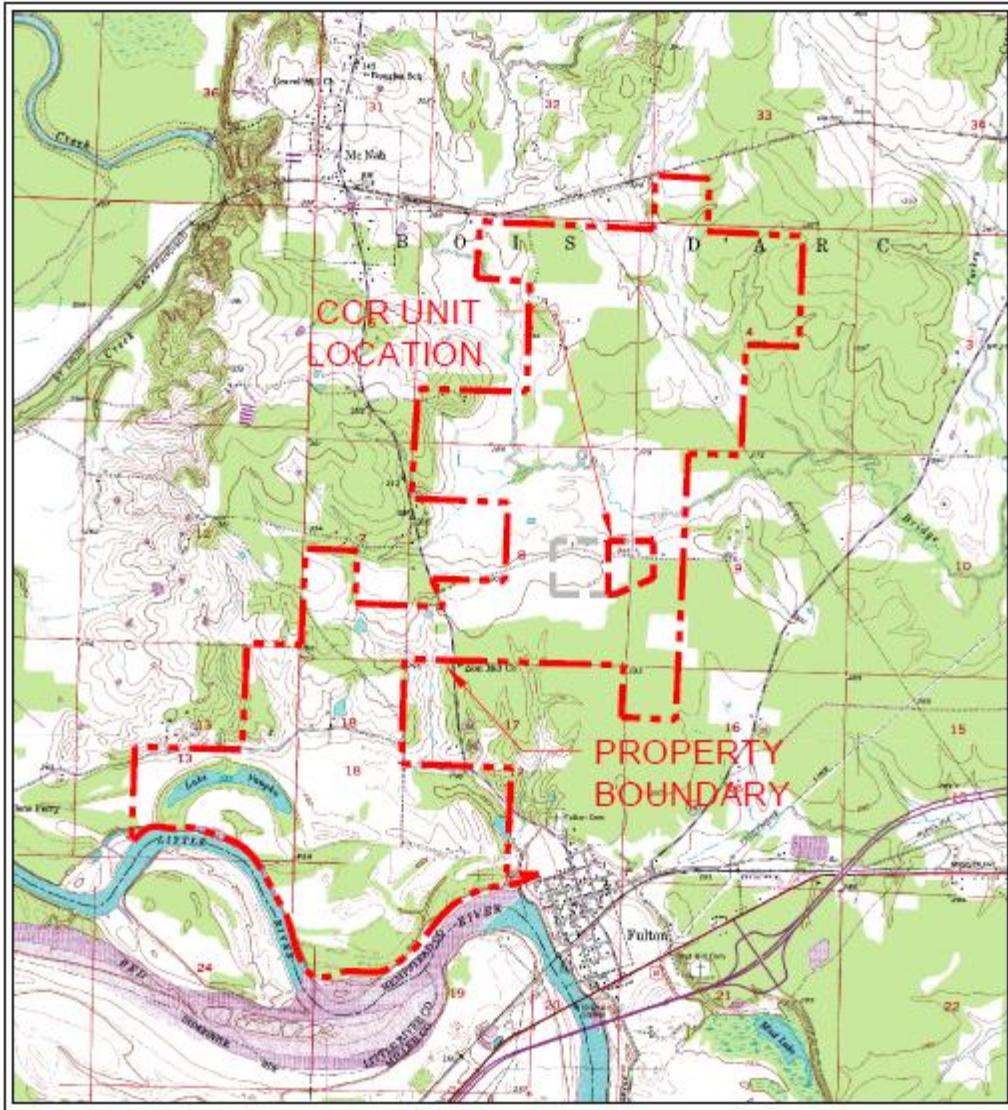
## **APPENDICES**

**APPENDIX A**

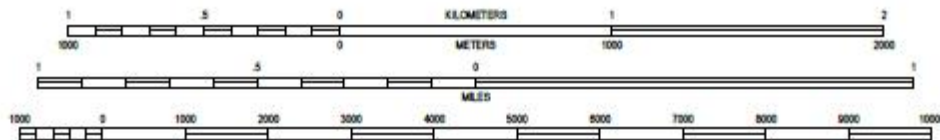
▪**FIGURE 1 - VICINITY MAP**

▪**FIGURE 2 - SITE LAYOUT MAP**

UNITED STATES — DEPARTMENT OF THE INTERIOR — GEOLOGICAL SURVEY



SCALE 1:24 000



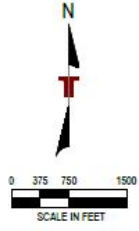
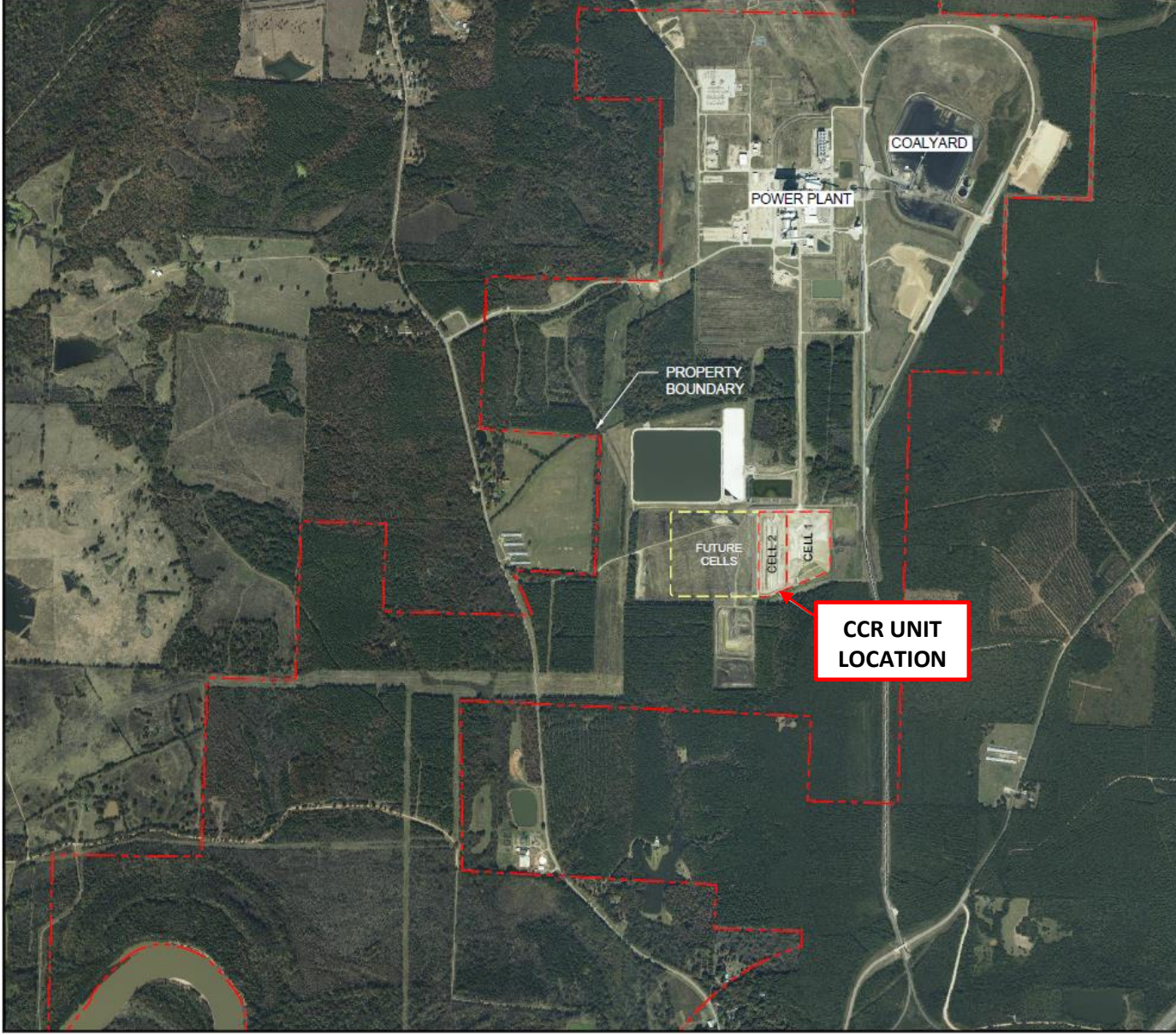
CONTOUR INTERVAL 10 FEET  
NATIONAL GEODETIC VERTICAL DATUM OF 1929

FULTON / MCNAB  
QUADRANGLES  
1951 - Revised 1970 & 1975  
7.5 MINUTE SERIES (TOPOGRAPHIC)



Project Mgr: DCM	Project No. 216-002-35207221	 Consulting Engineers and Scientists 25009 I-30 SOUTH BRYANT, AR 72022 PH. (501) 547-4292 FAX. (501) 547-4210	VICINITY MAP	FIG. No.		
Drawn By: TLB	Scale: AS SHOWN		2020 ANNUAL CCR INSPECTION AMERICAN ELECTRIC POWER JOHN W. TURK, JR. POWER PLANT	1		
Checked By: DCM	File No. 001					
Approved By: DCM	Date: 12/08/2020				FULTON	ARKANSAS





NOTE:  
 FUTURE CELLS ARE NOT PART  
 OF THE CURRENT CCR UNIT.

REV	DATE	BY	DESCRIPTION

**Terracon**  
 Consulting Engineers and Scientists  
 24851-30-350711    BRANT, MT 29222  
 PH: (807) 847-5262    FAX: (807) 847-5262

**SITE LAYOUT MAP**  
 2020 ANNUAL CCR INSPECTION  
**AMERICAN ELECTRIC POWER**  
 JOHN W. TURK, JR. POWER PLANT  
 FULTON    ARKANSAS

**FIGURE 2**

DESIGNED BY:	TCM
DRAWN BY:	TLE
APPROVED BY:	TCM
SCALE:	AS SHOWN
DATE:	08/20/20
AJG.M.L.:	216402-26/07/21
AJG.M.D.:	037
SHEET NO.:	037
OF	



**APPENDIX B**

**▪FIGURE 3 - INSPECTION PHOTOGRAPH LOCATION MAP**

**▪PHOTOGRAPHS**



**FIGURE 3 – INSPECTION PHOTOGRAPH LOCATION MAP  
TURK LANDFILL**








<p>Photograph No. 1 South temporary letdown channel.</p>	
<p>Photograph No. 2 Temporary letdown channel bottom area water ponding.</p>	
<p>Photograph No. 3 South side toe ditch (looking east).</p>	






<p>Photograph No. 4 South side toe ditch (looking west).</p>	 A photograph showing a toe ditch filled with tall, dry, brown reeds or grasses. To the right of the ditch is a well-maintained green lawn that slopes upwards. In the background, a chain-link fence runs parallel to the ditch, with a line of trees behind it under a cloudy sky.
<p>Photograph No. 5 South side closure turf test pad (looking east).</p>	 A wide-angle photograph of a large, sloping area covered in green grass. A long, narrow strip of light-colored gravel or crushed stone runs diagonally across the slope. The sky is overcast and grey.
<p>Photograph No. 6 Cell 1 top area.</p>	 A photograph of a flat, open area with dry, cracked earth in the foreground. Sparse green vegetation is scattered across the ground. In the distance, a line of trees is visible under a heavy, grey, overcast sky.



<p>Photograph No. 7 Cell 1 south side toe ditch (looking east).</p>	 <p>Toe Ditch</p>
<p>Photograph No. 8 Cell 1 west slope.</p>	
<p>Photograph No. 9 Overall view of Cell 1 east slope.</p>	






<p>Photograph No. 10 Cell 1 east slope (looking north).</p>	 A wide-angle photograph showing a grassy slope leading up to a large, flat, brownish area in the distance. A tall, thin structure is visible on the horizon under a cloudy sky.
<p>Photograph No. 11 East side berm (stormwater pond in the background).</p>	 A photograph of a grassy area with a dirt path leading towards a large, flat, brownish area in the background. A line of trees is visible in the distance under a cloudy sky.
<p>Photograph No. 12 East side slope, berm, and access road (looking south).</p>	 A photograph showing a dirt access road leading up a grassy slope. A line of trees is visible in the background under a cloudy sky.



<p>Photograph No. 13 North side of Cell 1.</p>	
<p>Photograph No. 14 Temporary soil cover placement.</p>	 <p>Temporary Cover Placement</p>
<p>Photograph No. 15 Cell 2 (looking south).</p>	



<p>Photograph No. 16 Cell 2 (looking east).</p>	 <p>This photograph shows a wide view of the landfill cells. In the foreground, there is a dirt path with sparse, dry vegetation. To the right, a large, flat, brownish area is labeled "Cell 2". In the background, a higher, rounded mound is labeled "Cell 1". Several pieces of heavy machinery, including excavators and trucks, are visible on the surface of Cell 1. The sky is overcast with grey clouds.</p>
<p>Photograph No. 17 Cell 2 and Cell 1 (looking east).</p>	 <p>This photograph shows a dirt road leading towards the landfill cells. On the left side of the road, a mound of earth is labeled "Cell 2". On the right side, a higher mound is labeled "Cell 1" with an arrow pointing to it. The ground is a mix of dirt and gravel. The sky is cloudy.</p>
<p>Photograph No. 18 Overall view of the leachate collection pond interior (looking northeast).</p>	 <p>This photograph shows a large, rectangular leachate collection pond. The water in the pond is dark and still. The surrounding area is a flat, grassy field with some patches of dry grass. In the background, there is a line of trees and several tall, thin light poles. The sky is overcast.</p>



<p>Photograph No. 19 Southeast corner leachate pipe outlet.</p>	
<p>Photograph No. 20 Center leachate collection pipe.</p>	
<p>Photograph No. 21 West slope of the leachate pipe (looking north).</p>	



<p>Photograph No. 22</p> <p>Overall view of the stormwater pond (looking south).</p>	 A wide-angle photograph of a large, shallow stormwater pond. The water is a murky, brownish-grey color. The pond is surrounded by a flat, grassy area. In the background, there is a line of trees and a gently sloping hill under a cloudy, overcast sky.
<p>Photograph No. 23</p> <p>Inlet of the overflow discharge structure (looking south).</p>	 A photograph showing the inlet of an overflow discharge structure. A black, cylindrical pipe is embedded in a mound of grey gravel. The pipe extends into a shallow, muddy pond. The surrounding area is grassy with some weeds. The background shows a line of trees and a hill under a cloudy sky.
<p>Photograph No. 24</p> <p>The overflow discharge pipe.</p>	 A close-up photograph of the overflow discharge pipe. The pipe is yellow and runs through a metal grate. The grate is set on a bed of grey gravel. The area is overgrown with green and brown weeds. The background shows a grassy area and a fence line.