



December 17, 2021

Mr. Jeff Pittman, P.E.
Cooperative Energy
P.O. Box 15849
Hattiesburg, MS 39402

Re: Annual CCR Landfill Inspection Report for 2021
R.D. Morrow, Sr. Power Generating Station
Purvis, Lamar County, Mississippi

Dear Mr. Pittman:

Cooperative Energy (formerly South Mississippi Electric Power Association) retained Environmental Management Services, Inc. (EMS) to conduct the annual inspection for the coal combustion residuals (CCR) landfill at the R.D. Morrow, Sr. Generating Station in Purvis, Mississippi. The purpose of this report is to comply with the criteria in the federal Coal Combustion Residual Rule (CCR Rule) 40 CFR 257.84(b)(1) and (b)(2) requiring an annual inspection of the CCR landfill at the subject property.

1.0 Introduction

EMS performed the CCR landfill inspection on December 9, 2021. The CCR landfill has been regraded for final closure that included the installation of a synthetic turf grass composite liner cap system. The landfill capping and closure was completed as of the closure record date of October 12, 2021. The review of available existing information, inspection summary, and conclusions regarding changes in landfill geometry, CCR volume, and the structure, operation, stability, and safety of the landfill are summarized herein.

The CCR Rule requirements for the annual landfill inspection include:

- A review of available information regarding the status and condition of the CCR unit [257.84 (b)(1)(i)]
- A visual inspection of the CCR unit to identify signs of distress or malfunction [257.84(B)(1)(ii)]
- An inspection report that includes the following:
 - Changes in geometry since the last inspection [257.84 (b)(2)(i)]
 - Approximate volume of CCR in unit at time of inspection [257.84 (b)(2)(ii)]
 - Appearance of actual or potential structural weakness of the CCR unit, in addition to any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit [257.84 (b)(2)(iii)]
 - Any other changes which may have affected the stability or operation of the CCR unit since the last inspection [257.84 (b)(2)(iv)]

Cooperative Energy must notify the Mississippi Department of Environmental Quality (MDEQ) Director within 30 days of placing the CCR Landfill Annual Inspection Report in the operating record and posting to the CCR web site (40 CFR 257.106 and 257.107).

The landfill site is located in the N1/2 of the NE1/4 of Section 21, T3N, R14W, in Lamar County, Mississippi. The Site Location Map is presented as **Figure 1**. The site is located at latitude 31° 12' 40" and

longitude -89° 23' 53". The landfill site is located within the 1,200-acre R.D. Morrow, Sr. Generating Station property. The permitted landfill area is shown on the Existing Site Plan presented as **Figure 2**. The existing landfill area is approximately 46 acres.

A 2018 aerial photograph depicting the landfill area is provided in **Figure 3**. The entire existing operating footprint of the landfill is regulated as an "existing CCR landfill" in accordance with the definitions in the CCR Rule. However, the landfill also operates under a solid waste permit issued by the Mississippi Department of Environmental Quality.

2.0 Review of Available Information

EMS has provided services to Cooperative Energy for over 15 years related to the design, construction, operation, and monitoring of the CCR landfill and therefore, has a great degree of familiarity with the landfill and relevant records. EMS has also performed professional surveyor-led topographic surveys of the landfill to calculate filled and available volumes on an approximately annual basis for the past several years. In preparing this year's volume estimate EMS had direct access to prior volume survey records. Other information was available for review as needed for this annual inspection and report. EMS performed a review of this information regarding the status and condition of the CCR unit.

3.0 Inspection Summary

Chris Johnson, a senior EMS engineer, performed the annual landfill visual inspection on December 9, 2021. No signs of distress or malfunction of the CCR unit were discovered. The inspection findings are summarized in the following sections.

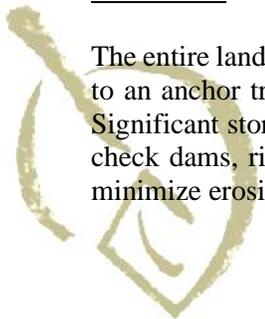
A landfill sector index map showing the various portions of the active landfill with alphanumeric sector labels is attached as **Figure 4**.

3.1 Vegetation

Closure activities have resulted in the removal of vegetation on slopes and re-grading of areas. The entire landfill area has been covered with a synthetic turf grass composite liner cap system that extends to an anchor trench that is located on the inner portion of the perimeter access road around the landfill; therefore, no vegetation is present on the landfill. The synthetic turf grass composite liner cap system is designed to eliminate dust and provide an effective cover for the closed unit. Surrounding areas and embankments are seeded and vegetation has been established.

3.2 Erosion

The entire landfill area has been covered with a synthetic turf grass composite liner cap system that extends to an anchor trench that is located on the inner portion of the perimeter access road around the landfill. Significant storm water control infrastructure has been added to the final landfill surface including berms, check dams, rip-rap lined ditches, and runoff chutes. The cap system and infrastructure are designed to minimize erosion.



3.3 Storm Water Management

Storm water management around the landfill consists primarily of a system of synthetic turf grass lined perimeter ditches that route non-contact storm water into two retention ponds. The eastern retention pond is synthetic-lined (with soil cover to protect the liner) and has replaced the prior treatment system. An additional retention pond has been added to the west side of the landfill which receives non-contact storm water from the west portion of the impermeable landfill surface liner.

3.4 Leachate Collection System

Leachate is handled by permanent automated sump pumps and associated connecting piping along the southern border of the landfill. Additional leachate control trenches have been added on the northern portions of the landfill as well as leachate control wells placed on top of the western portion of the landfill (see Figure 5). The augmented sump pumping system continues to operate and pumps water to the synthetic-lined eastern retention pond (NPDES Outfall 007).

3.5 Record Keeping

At the time of this report, Cooperative Energy's Contractor completed closure activities at the landfill, including confirmatory land surveying of the grades and configurations. Construction and survey records have been collected and retained for the closure record.

4.0 Changes in Geometry

Closure construction work changed the landfill geometry as compared to the previous annual inspection. The completion of final closure has resulted in changes to the overall shape of the landfill to create final design grades, slopes, storm water chutes, ditches and berms to conform to final landfill closure plan requirements.

5.0 CCR Volume

The volume of waste in the landfill one year ago was estimated to be approximately 2,302,600 cubic yards (CY). Since that time, final closure activities have required re-grading of much of the surface area of the landfill in order to meet final design geometry. Given that the closure construction project resulted in mass movement of material for re-grading, it is difficult to determine the amount of material that has been placed into the landfill since the prior annual volume estimate. However, only waste incidental to the closure process (stormwater collection system construction) has been added since this time, as no new CCR was generated in 2021.

6.0 Structural Weakness and Disrupting Conditions

Based on a review of available information and the December 9, 2021 observations, EMS found no indications of structural weakness of the landfill or conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit. As part of the closure construction project, infiltration trenches along the northern edge of Sector A1 and southern edge of A3 were installed improving drainage. Additionally, any wet or soft spots on the landfill were excavated and replaced with recompacted material to provide a stable structural base for the composite turf grass cap. These closure activities have improved the stability of the unit.

7.0 Changes Affecting Stability or Operations

Based on the inspections, survey, and review of records performed in association with this annual inspection, to our knowledge, closure design and construction activities included all necessary provisions to provide a stable final configuration. Consequently, the closure has positively affected the stability or operation of the closed CCR unit.

8.0 Recommendations

The CCR Rule requires deficiencies or releases to be remedied as soon as feasible in accordance with 257.84(b)(5) which states:

"If a deficiency or release is identified during an inspection, the owner or operator must remedy the deficiency or release as soon as feasible and prepare documentation detailing the corrective measures taken."

No deficiencies have been found in the landfill operation during this annual inspection.

9.0 Closing Comments

The inspection of the CCR landfill at the R. D. Morrow, Sr. Generating Station was conducted to satisfy the requirements of the federal CCR rule. Based on the field observations and a review of available information, EMS has determined that no deficiencies were observed with the design, construction, operation, and maintenance of the landfill.

Please contact us at your convenience with any questions you may have. I can be reached at (601) 544-3674.

Sincerely,
Environmental Management Services, Inc.



Christopher T. Johnson, P.E., P.S.
Engineering Manager/Vice President
Mississippi Professional Engineer No. #15761



Date: DEC. 17, 2021

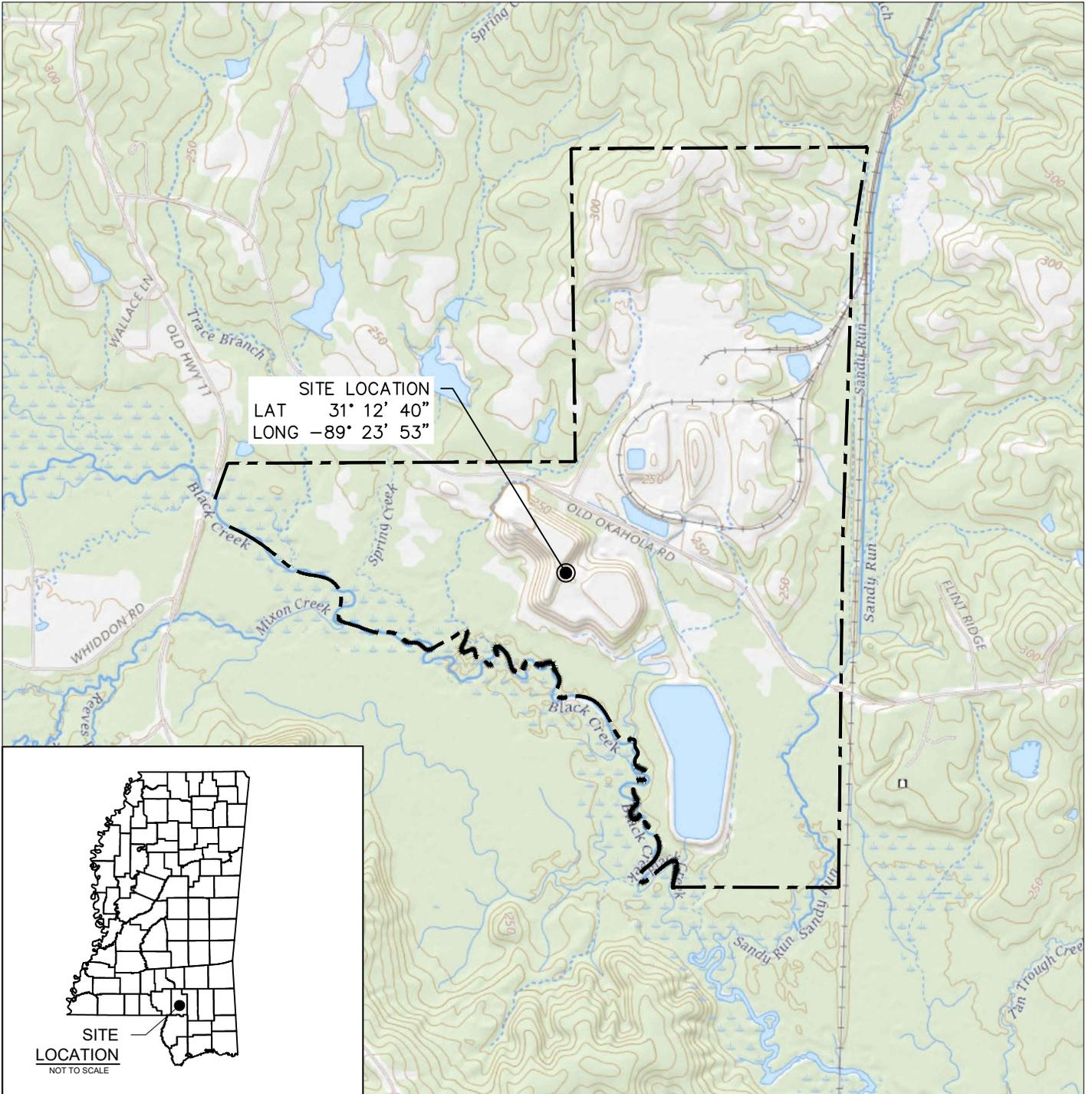
Attached Figures:

- 1 - Site Location Map
- 2 - Existing Site Plan
- 3 - 2018 Aerial Photograph
- 4 - Sector Index Map
- 5 - Closed Landfill As-Built

c: Ken Ruckstuhl, EMS

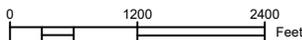
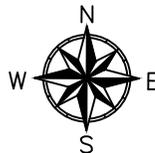
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FIGURES



LEGEND

--- SMEPA PROPERTY BOUNDARY



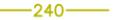
SITE LOCATION

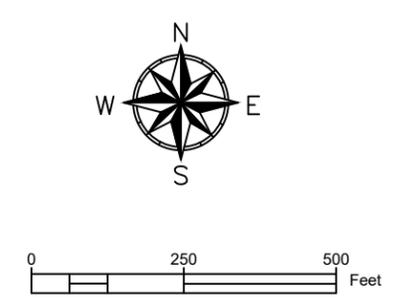
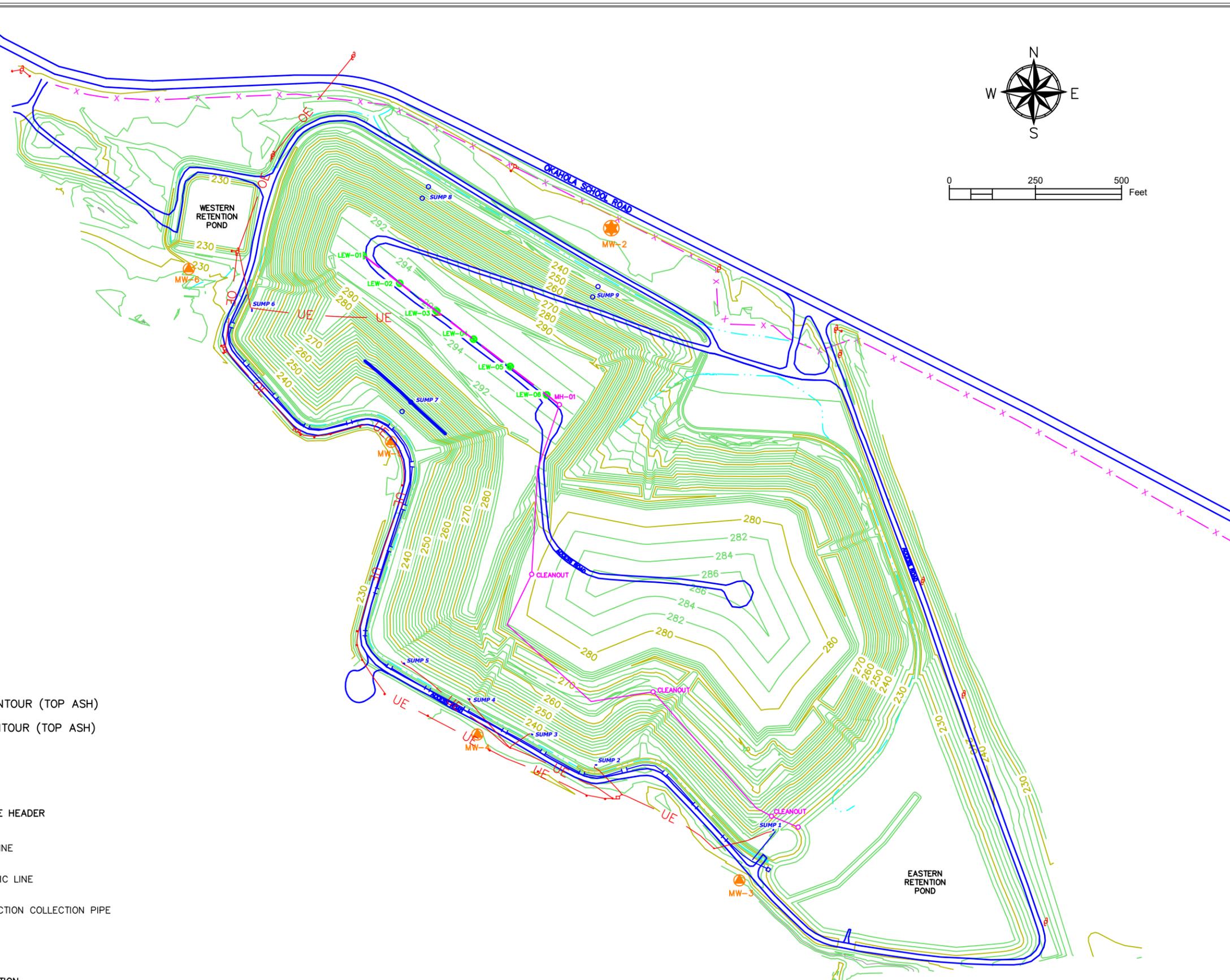
R.D. MORROW GENERATING STATION
 COOPERATIVE ENERGY
 P.O. BOX 15849
 HATTIESBURG, MS 39404-5849

DATE: 12/17/21	APPROVED: BY: KDR DATE: 12/17/21	DRAWN BY: KRK
SCALE: AS SHOWN	CAD NO.	SOU2-21-001

ENVIRONMENTAL
 MANAGEMENT SERVICES, INC.

FIGURE
1

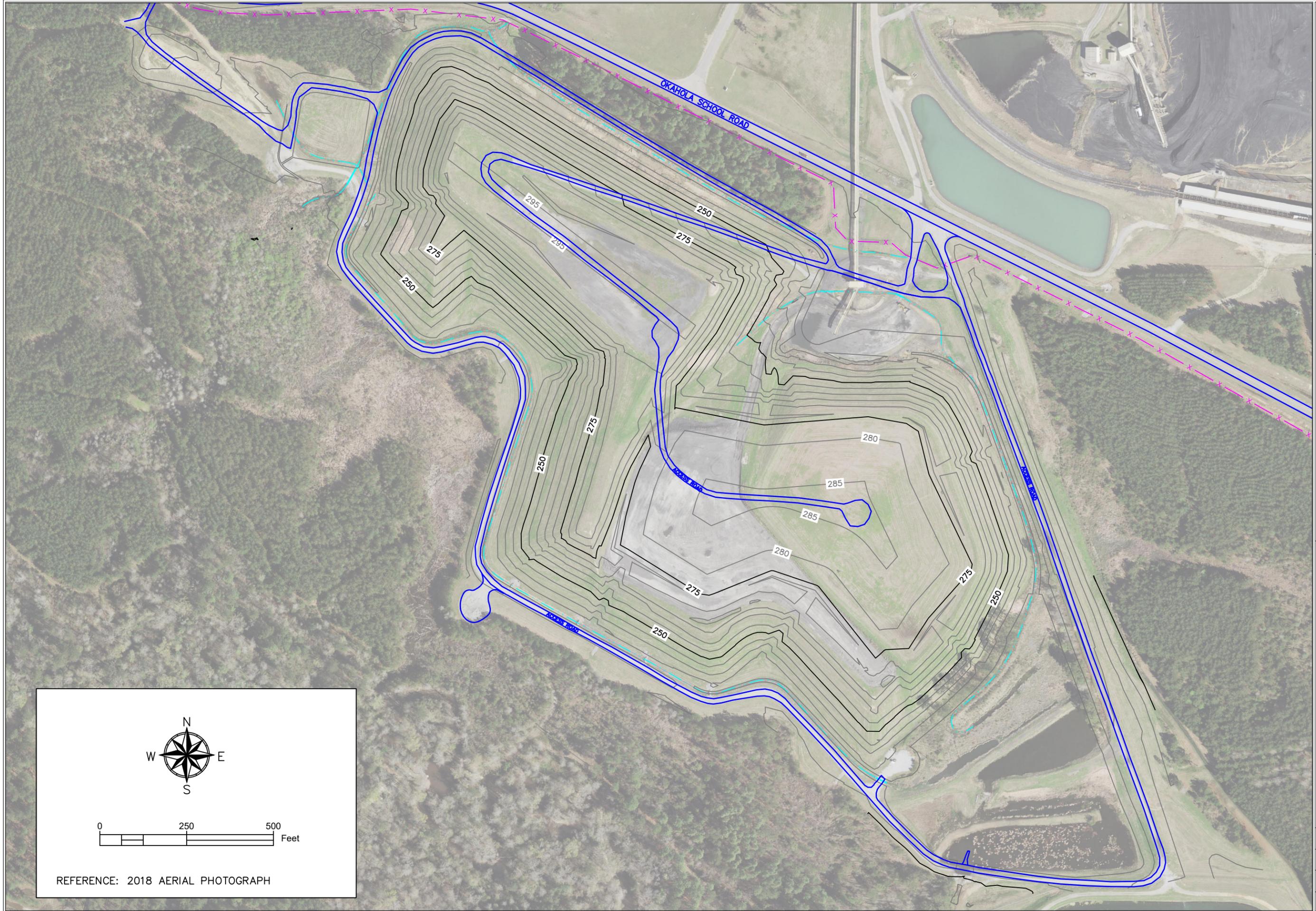
- LEGEND**
-  GOLDER DESIGN MAJOR CONTOUR (TOP ASH)
 -  GOLDER DESIGN MINOR CONTOUR (TOP ASH)
 -  DITCH
 -  FENCE
 -  EXISTING 6-INCH PVC LEACHATE HEADER
 -  EXISTING OVERHEAD ELECTRIC LINE
 -  EXISTING UNDERGROUND ELECTRIC LINE
 -  3" DIA. HDPE LEACHATE EXTRACTION COLLECTION PIPE
 -  POWER POLE
 -  LEACHATE CONTROL WELL LOCATION
 -  GROUNDWATER MONITORING WELLS (DOWN GRADIENT)
 -  GROUNDWATER MONITORING WELLS (UP GRADIENT)



PREPARED FOR

EXISTING SITE PLAN
R.D. MORROW LANDFILL
PURVIS, MS

SHEET TITLE	
DATE	12/17/21
SCALE	AS SHOWN
SHEET NO.	2 OF 5
PROJECT NO.	SOU2-21-001



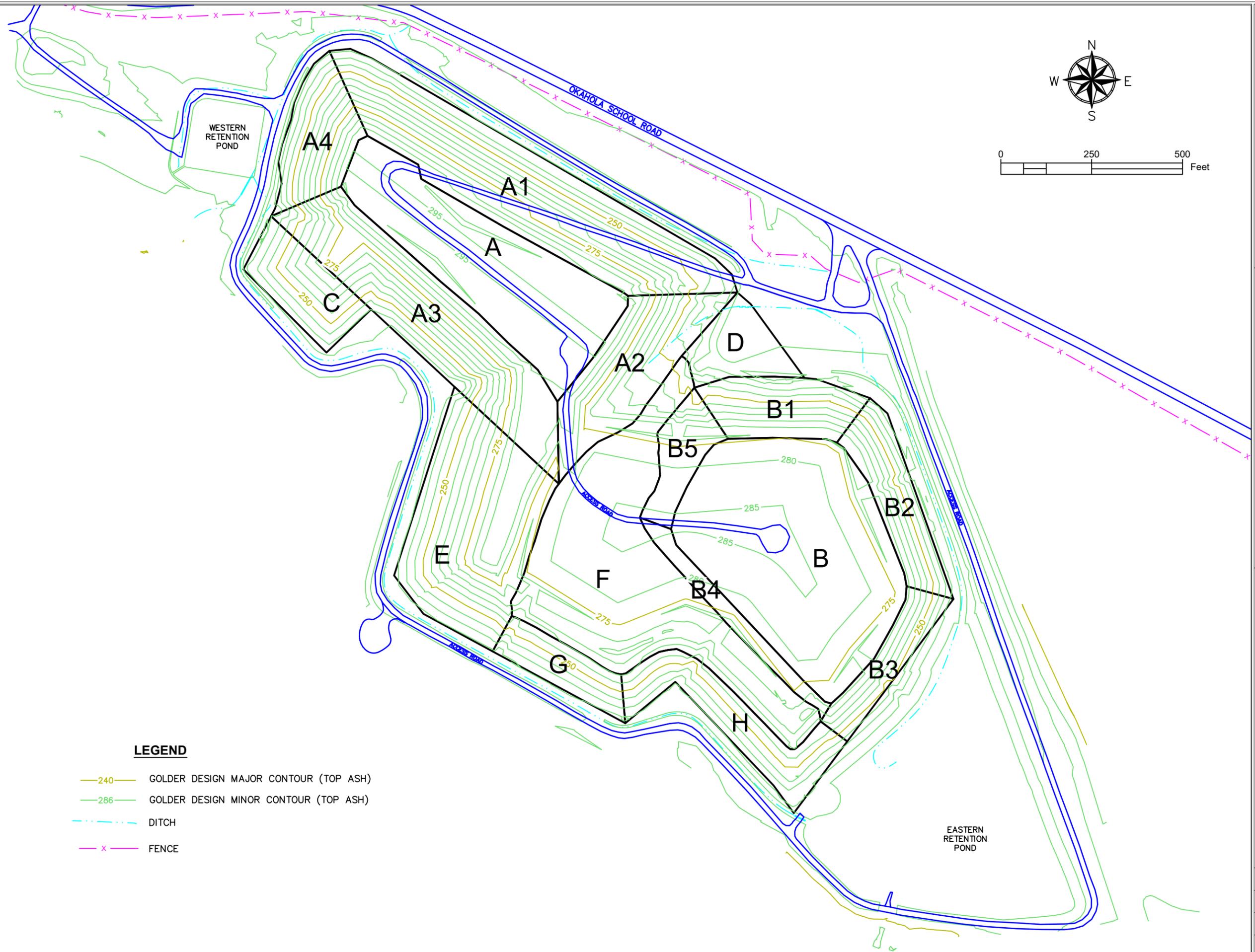
REFERENCE: 2018 AERIAL PHOTOGRAPH

SHEET TITLE
 DATE 12/13/21
 SCALE AS SHOWN
 SHEET NO. 3 OF 5
 PROJECT NO. SOU2-21-001

PREPARED FOR
2018 AERIAL PHOTOGRAPH
 R.D. MORROW LANDFILL
 PURVIS, MS



ENVIRONMENTAL
 MANAGEMENT SERVICES, INC.
 P.O. BOX 15369
 HATTIESBURG, MS 39404



LEGEND

- 240 GOLDER DESIGN MAJOR CONTOUR (TOP ASH)
- 286 GOLDER DESIGN MINOR CONTOUR (TOP ASH)
- - - DITCH
- x - FENCE



PREPARED FOR

SECTOR INDEX MAP
R.D. MORROW LANDFILL
PURVIS, MS

SHEET TITLE

DATE

12/17/21

SCALE

AS SHOWN

SHEET NO.

4 OF 5

PROJECT NO.

SOU2-21-001

