



December 21, 2020

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

Re: Annual CCR Landfill Inspection Report for 2020
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 November 25, 2020. The CCR landfill is being regraded in preparation for final closure that will include the installation of a synthetic turf grass composite liner cap system. 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, as shown on the Site Location Map presented as **Figure 1**. The site is located at latitude 31°

12' 40" and longitude -89° 23' 53". The approximately 72-acre permitted 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 72-acre permitted landfill area includes approximately 46 acres of existing landfill area and a proposed 26-acre expansion area located to the west of the existing landfill. None of the expansion area has been constructed at this time and is not planned.

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 worked for Cooperative Energy providing services for over 15 years related to the design, construction, operation, and monitoring of the CCR landfill, and therefore, have 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 November 25, 2020. 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

Preparation for closure has required the removal of vegetation on slopes and re-grading of areas. Erosion control measures have been implemented, including, but not limited to: check dams, temporary berms, and prompt application of geomembrane materials once design parameters are achieved.

3.2 Erosion

Erosion controls are in place as part of the closure preparation project. Erosion control measures include check dams, temporary berms, silt-dewatering bags, silt curtains, and wattles. Once the landfill is capped with the composite turf grass/geomembrane liner system, erosion will be further minimized.

3.3 Storm Water Management

Storm water management around the landfill consists primarily of a system of earthen perimeter ditches that route non-contact storm water into the storm water pond. The storm water pond will be synthetic-lined and has replaced the serpentine ditch treatment system.

3.4 Leachate Collection System

In the fourth quarter of 2017 Cooperative Energy applied to the MDEQ for permission to install permanent automated sump pumps and associated connecting piping along the southern border of the landfill leading to the serpentine ditch treatment system that existed at the time. MDEQ granted permission by letter reply. Cooperative Energy completed the pump installation project during 2018. The sump pumping system is expected to continue operating once the turf grass composite cap is completed, and will pump water to the synthetic-lined storm water pond that will replace the serpentine ditch treatment system.

3.5 Record Keeping

At the time of this report Cooperative Energy's Contractor has staff working full time on preparation of closure of the landfill, and EMS is providing confirmatory land surveying of the grades and configurations. Construction and survey records are being collected and retained for the closure record.

4.0 Changes in Geometry

Ongoing closure construction work has caused a change in the landfill geometry as compared to the previous annual inspection. When final closure is completed the overall shape of the landfill will have been modified 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 2,210,000 cubic yards (CY). Since that time, preliminary activities preparing for final closure of the landfill have required re-grading of most of the surface area of the landfill in order to meeting final design.

Given that the closure construction project currently in progress required moving 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, EMS estimates that 92,600 cubic yards of material were added to the landfill since the last annual volume survey in 2019.

6.0 Structural Weakness and Disrupting Conditions

Based on a review of available information and the November 25, 2020 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, toe drains along the northern edge of Sector A1 are being retrofitted with improved drainage systems. Additionally, any wet or soft spots on the landfill are being excavated and replaced with recompacted material to provide a stable structural base for the composite turf grass cap. These ongoing conditions are not currently impacting the stability of the unit and are anticipated to provide future improvement.

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 include all necessary provisions to

provide a stable final configuration. Consequently, the progress toward closure has not negatively affected the stability or operation of the 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."

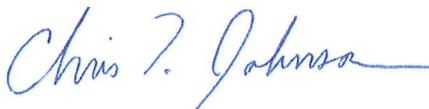
No deficiencies have been found in the landfill operation during this annual inspection.

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: December 21, 2020

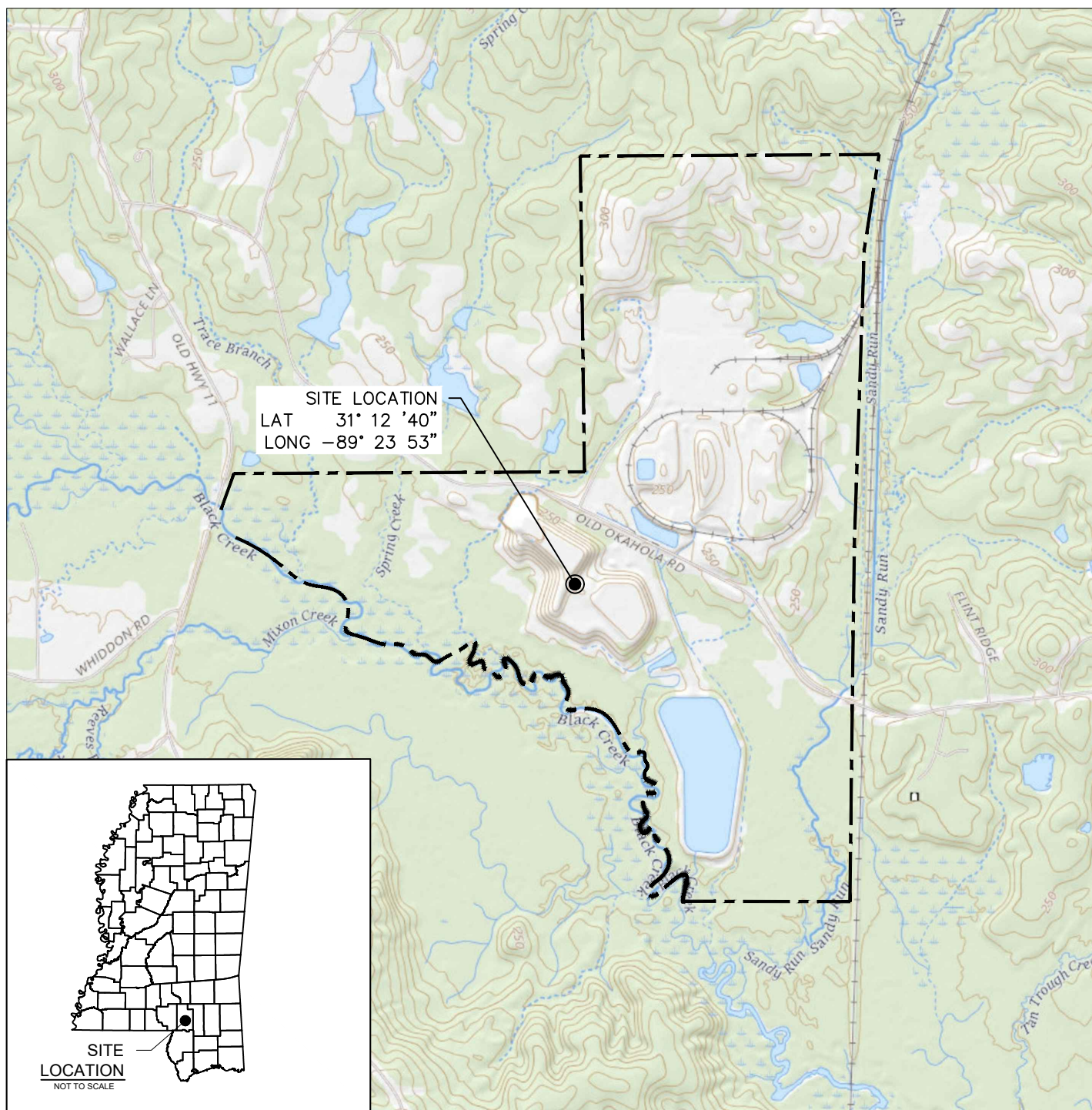
Attached Figures:

- 1 - Site Location Map
- 2 - Landfill Sector Index Map
- 3 - Proposed Final Contour Map
- 4 - Aerial Photograph
- 5 - Landfill Volume Summary

c: Ken Ruckstuhl, EMS



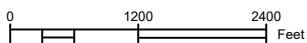
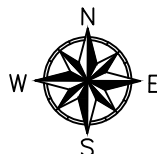
FIGURES



REFERENCE: USGS NATIONAL MAP

LEGEND

--- SMEPA PROPERTY BOUNDARY



SITE LOCATION

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

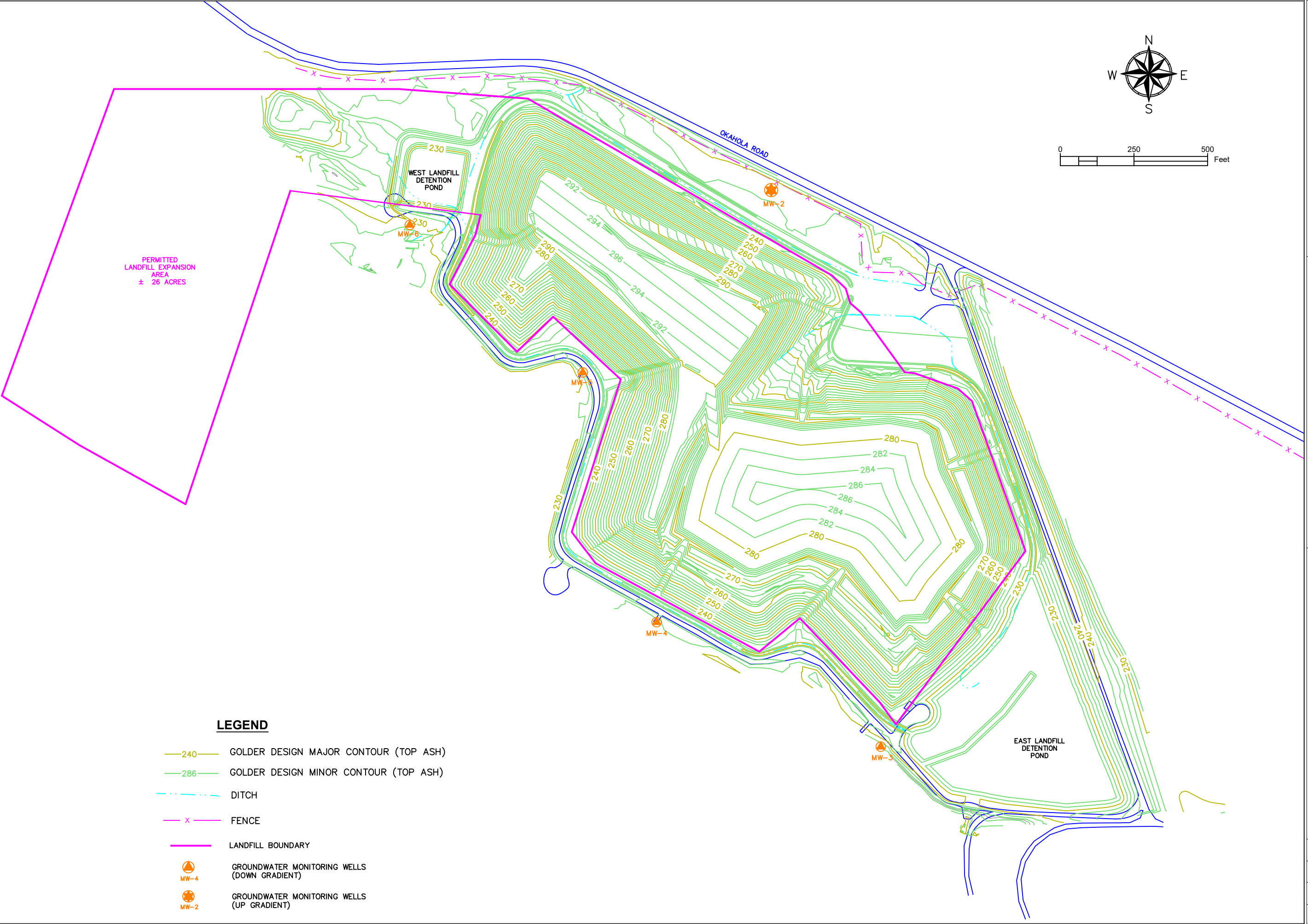
DATE:	9/24/20	APPROVED:	BY:	DRAWN BY:	KRK
SCALE:	AS SHOWN	DATE:		CAD NO.	SOU2-20-001

ENVIRONMENTAL
MANAGEMENT SERVICES, INC.



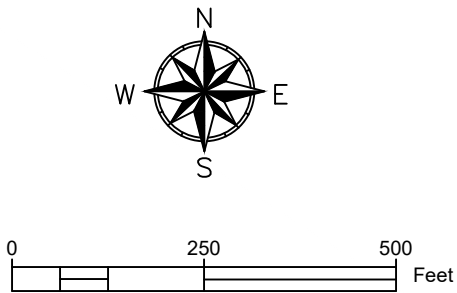
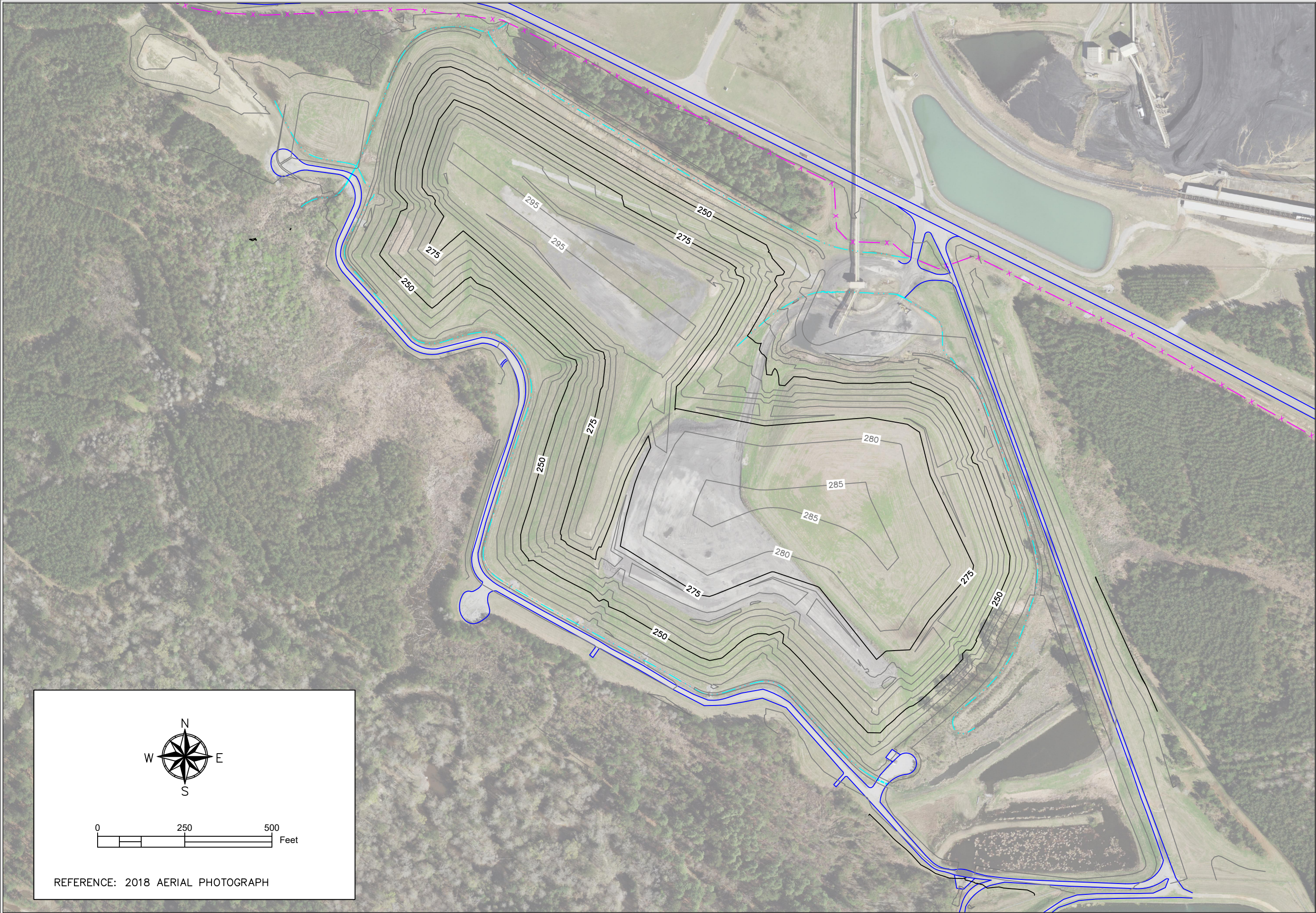
FIGURE

1



LEGEND

- 240 GOLDER DESIGN MAJOR CONTOUR (TOP ASH)
- 286 GOLDER DESIGN MINOR CONTOUR (TOP ASH)
- DITCH
- x FENCE
- LANDFILL BOUNDARY
- MW-4 GROUNDWATER MONITORING WELLS (DOWN GRADIENT)
- MW-2 GROUNDWATER MONITORING WELLS (UP GRADIENT)



REFERENCE: 2018 AERIAL PHOTOGRAPH

SHEET TITLE

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

PREPARED FOR



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

DATE

12/15/2020

SCALE

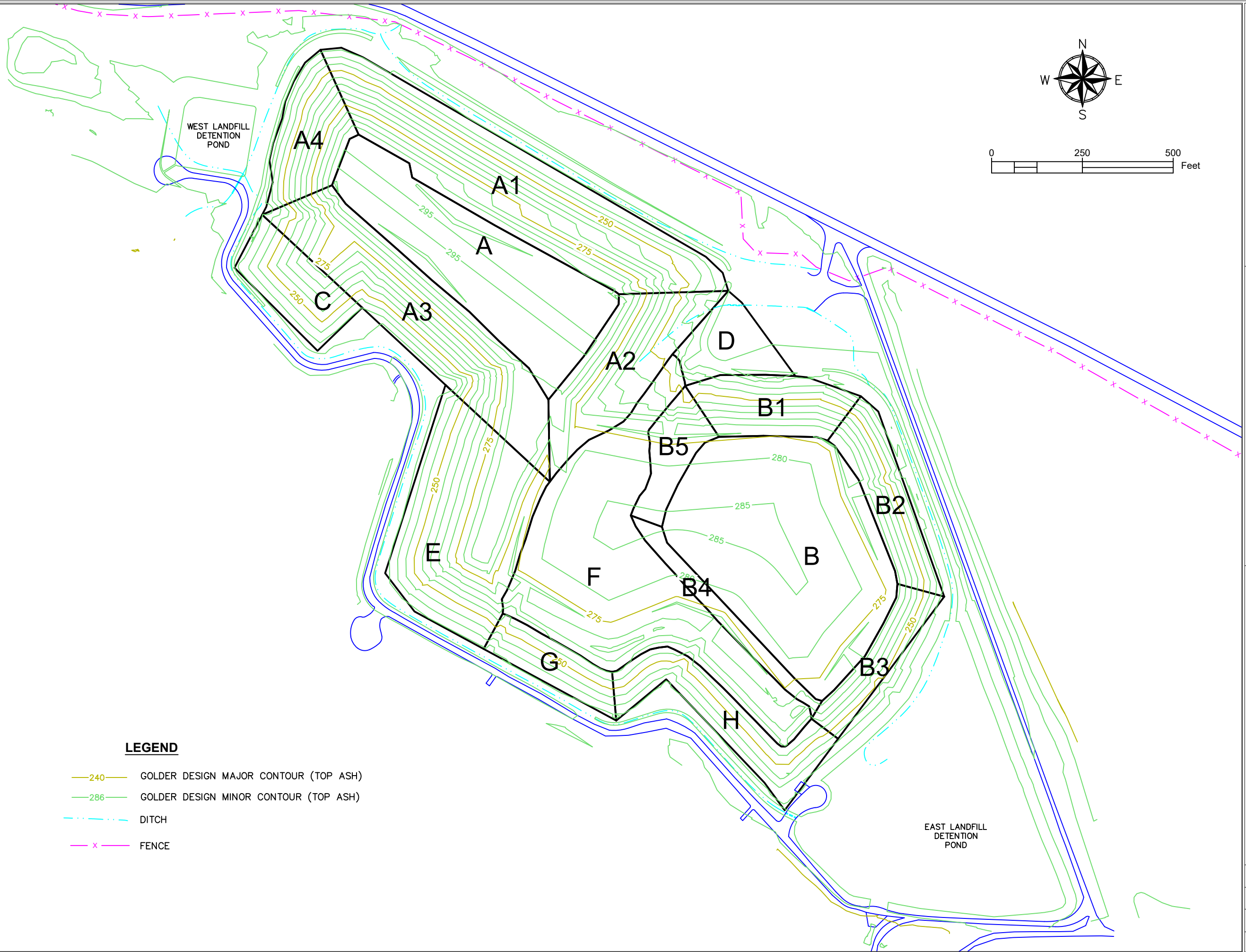
AS SHOWN

SHEET NO.

3 OF 5

PROJECT NO.

SOU2-19-001



LEGEND

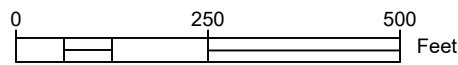
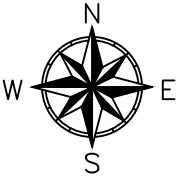
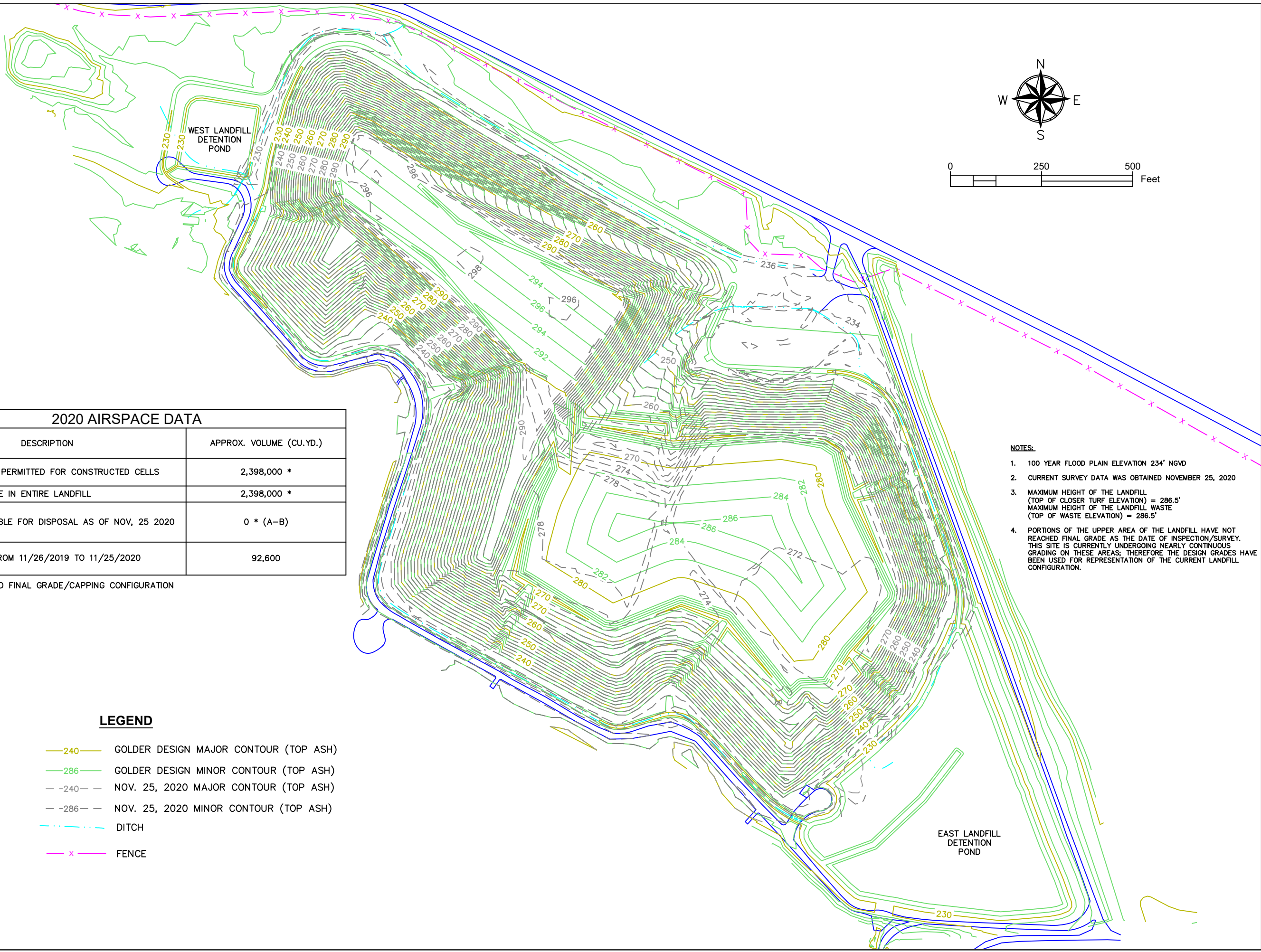
- 240 — GOLDER DESIGN MAJOR CONTOUR (TOP ASH)
- 286 — GOLDER DESIGN MINOR CONTOUR (TOP ASH)
- - - - - DITCH
- x - - - - FENCE

2020 AIRSPACE DATA	
DESCRIPTION	APPROX. VOLUME (CU.YD.)
A) GROSS AIRSPACE PERMITTED FOR CONSTRUCTED CELLS	2,398,000 *
B) VOLUME OF WASTE IN ENTIRE LANDFILL	2,398,000 *
C) AIRSPACE AVAILABLE FOR DISPOSAL AS OF NOV, 25 2020	0 * (A-B)
D) WASTE PLACED FROM 11/26/2019 TO 11/25/2020	92,600

* PER REDESIGNED FINAL GRADE/CAPPING CONFIGURATION

LEGEND

- 240 GOLDER DESIGN MAJOR CONTOUR (TOP ASH)
- 286 GOLDER DESIGN MINOR CONTOUR (TOP ASH)
- 240- NOV. 25, 2020 MAJOR CONTOUR (TOP ASH)
- 286- NOV. 25, 2020 MINOR CONTOUR (TOP ASH)
- DITCH
- x x x FENCE



- NOTES:
- 100 YEAR FLOOD PLAIN ELEVATION 234' NGVD
 - CURRENT SURVEY DATA WAS OBTAINED NOVEMBER 25, 2020
 - MAXIMUM HEIGHT OF THE LANDFILL (TOP OF CLOSER TURF ELEVATION) = 286.5' MAXIMUM HEIGHT OF THE LANDFILL WASTE (TOP OF WASTE ELEVATION) = 286.5'
 - PORTIONS OF THE UPPER AREA OF THE LANDFILL HAVE NOT REACHED FINAL GRADE AS THE DATE OF INSPECTION/SURVEY. THIS SITE IS CURRENTLY UNDERGOING NEARLY CONTINUOUS GRADING ON THESE AREAS; THEREFORE THE DESIGN GRADES HAVE BEEN USED FOR REPRESENTATION OF THE CURRENT LANDFILL CONFIGURATION.