CCP Annual Inspection Report

Brickhaven No. 2 Mine Tract A Structural Fill

DWM Permit 1910, DEMLR Permit 19-25

Charah, Inc.

Moncure, North Carolina

January 2019

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Contents

Appendices

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Introduction

This report summarizes the findings for the third annual inspection conducted on January 18, 2019, of the Brickhaven No.2 Mine Tract “A” structural fill located off Moncure-Flatwood Road in Chatham County, North Carolina. The site is owned by Green Meadow, LLC and operated by Charah, Inc. under North Carolina Department of Environmental Quality (NCDEQ) Division of Waste Management (DWM) Structural Fill Permit 1910 issued June 5, 2015, in conjunction with the NCDEQ Division of Energy, Mineral and Land Resources (NCDEMLR) Mining Permit 19-25 also issued June 5, 2015. The Brickhaven No. 2 Mine Tract “A” structural fill project has been permitted and constructed in accordance with the North Carolina Coal Ash Management Act of 2014 (CAMA) and NCDEQ structural fill rules. The structural fill will be developed in six cells as shown in Figure 1. As of the date of this inspection, the areas that have been constructed and granted permits to operate are Cell 1 (Subcells A, B, C and D), Cell 2 (Subcells A, B, C, D, E, F and G) and Cell 6 (Subcells A, B and C).

Inspection Report

The goal of this inspection is to ensure the design, construction, operation, and maintenance of the structural fill unit is consistent with recognized good engineering practices and a detailed level of engineering analysis of operating conditions are evaluated, which could lead to recommendations to address design or operating issues that need attention. This inspection includes the following.

- A discussion of the findings and remedies for any issues found in the document review.
- A discussion of the findings and remedies for any issues found in the site inspection.
- Any changes in the geometry of the structure since the previous annual inspection and related documentation submitted to regulators.
- The approximate volume of the coal combustion products (CCP) contained in the unit at the time of the inspection.
- Any appearance of an actual or potential structural weakness of the CCP unit.
- Any existing conditions that are disrupting, or have the potential to disrupt, the operation and safety of the CCP unit.

The inspection report below discusses the document and visual inspection review.

Document Review

HDR reviewed the availability of complete and up to date permit documents, as well as, Charah’s adherence to required recordkeeping. Operating Record documents include the following.

Permit Documents

- NCDEQ structural fill permit and modification(s)
- NCDEQ mine permit and modification(s)
- Construction Certifications

- Erosion control permit and modification(s)
- Erosion control plans
- NPDES permit
- Leachate discharge permit
- Leachate pump and haul permit
- Waterline permit
- NCDEQ inspection reports
- Stormwater pollution prevention plan

Operational Documents

- Operations plan
- Safety reports
- Groundwater reports
- Leachate collection and discharge records
- Leachate analysis reports
- Site inspection (weekly) reports
- CCP tonnage reports
- CCP source analysis reports
- Compaction test reports
- Topographic surveys
- As-built drawings
- Training records for the qualified person(s) performing the weekly inspections
- Records/receipts for all (liner, leachate, and groundwater) system repairs
- Incident reports (safety, delivery of non-CCP materials, spills, etc.)
- Documentation of cover placement

Weekly inspections were performed and documented by site personnel regarding operations, safety, maintenance of the groundwater wells, run-on and run-off controls, wind dispersal control systems, liner systems, and leachate collection systems. Where deficiencies were identified follow up corrective actions were also documented. Review of the above documents did not reveal any indications of operation or safety concerns regarding the CCP structural fill.

The CCP volume contained in the unit as of July 18, 2018, is 7,215,909 cubic yards based on data provided by Charah.

Visual Site Inspection

A visual inspection, conducted on January 18, 2019, of the CCP structural fill was performed to identify signs of distress, malfunction, or threats to safety not identified in the document review or weekly inspection records. The weather during the site visit was sunny with an approximate temperature of 43 degrees Fahrenheit. HDR staff conducted the site inspection traversing on foot from the leachate enclosure located at the southern end of Cell 1 in a counterclockwise direction around the cells. This inspection was limited to the CCP placement area and leachate systems and does not address other site operations including existing stockpiling, excavations,

and the rail unloading area. The previous annual inspection was conducted on January 16, 2018 and covered CCP placement in Cell 1, (Subcells A, B, C and D) and Cell 2 (Subcells A, B, C, D, E, F and G). The in-place amount of CCP at that time was 2,179,304 cubic yards. Since that time, the structural fill has expanded into Cell 6, Subcells A, B and C and the in-place volume has increased to 7,215,909 cubic yards. Refer to the cross-section drawings in Appendix A, Figure 3, to see the changes in the geometry of the structural fill. The site inspection included an evaluation of the following site features.

1. Structural fill access
2. Leachate management system
3. Stormwater segregation and erosion control
4. Active CCP fill areas (CCP placement, spreading, and compaction)
5. Structural fill visual stability

Structural Fill Access

Facility access from Moncure-Flatwood road is controlled by a staffed gate requiring check in and check out of visitors. CCP arrives via railroad and is unloaded onto off-road dump trucks in a lined area and then hauled to the active CCP containment area. Stone access ramps are constructed and maintained to provide access from the unloading area to the lined containment area. Currently, the structural fill has two roads to access the top of the CCP structural fill. One road, shown in Photo 8, enters from the north at the Cell 1D/2A interface and the other, shown in Photo 14, enters from the south into the Cell 2G area.

Leachate Management

The leachate management system for the structural fill includes a series of perforated HDPE pipes within the lined area that drain to either a sump in Cell 1 or a sump in Cell 6. The stone wrapped pipe in Subcell 6C can be seen in Photo 15. Both sumps have two pumps installed to pump leachate to three onsite storage tanks. At the Cell 1 sump the smaller primary pump had been pulled for maintenance. The larger secondary pump was actively pumping at approximately 41 gallons per minute. The Cell 6 sump was not actively pumping as the liquid level in the sump was below the start elevation. The leachate enclosures and tanks exhibited no signs of leakage at the time of the inspection. The leachate tanks contained leachate and were actively being drained into tanker trucks for transportation to one of the approved disposal locations. Refer to Photos 2 and 19 to see the leachate system components. The site's records indicate approximately 98,323,000 gallons of leachate have been generated since November 2015. The system was operating within its pressure range and the transducers were reading within their range.

Operationally Charah minimizes leachate generation by limiting the area of exposed CCP to rain through closure capping or the placement of interim cover soils to shed water to the stormwater system. Figure 2 shows the extent of closure capping activities at the time of this inspection. When final CCP grades have been reached, and before there is enough area to begin closure, Charah will cover the CCP with interim soil cover to limit CCP contact water. This soil may be removed prior to final cap installation. Photo 14 shows the transition from the closure cap to the interim cover soils along the Cell 2/6 boundary. Additionally, Charah constructs soil berms to

prevent leachate runoff from active placement areas as seen in Photo 17 along the subcell 6B/C divider berm.

Stormwater Segregation and Erosion Control

Stormwater for newly constructed cell areas are managed by the installation subcell divider berms and valves installed in the leachate piping at the divider berms. This allows Charah to isolate the stormwater generated in each subcell and pump to the site stormwater management system. Photos 15, 17 and 18 show stormwater segregation in the newly constructed Cell 6C.

For active CCP areas, Charah places interim cover on exterior slopes and final grades to shed stormwater to the stormwater system. A perimeter diversion berm is constructed around the perimeter of the top deck (2% slope) area to collect and direct stormwater to a slope drain inlet or lined drainage channel. Photos 3 and 11 show the slope drain outlet and inlet located near Sump 1 respectively. The slope drain pipes discharge outside of the lined structural fill into stormwater conveyance measures that drain to either the mine lake or sediment basins onsite. At the time of this inspection, all slopes draining outside of the containment were covered with soil and in good working order. Photos 15 and 18 show a lined channel to help convey stormwater from top of the Cell 2/6 slope to the bottom to help prevent erosion. All capped and interim cover areas had been seeded to prevent erosion as well. These areas appeared to have adequate soil cover, vegetation and showed no signs of erosion or structural stability concern. Some ponding was observed on the top of Cells 1 and 2 after the recent rain event, however it was very minor and there were no indications of erosion or instabilities as a result.

Active CCP Fill Areas

The site inspection included monitoring of CCP placement, spreading, and compacting in an active portion of the structural fill. The day of the inspection, CCP material was being pushed from a stockpile in Cells 6A and B into the Cell 6C area. The CCP was being spread in thin lifts as shown in Photo 15 and 17. No wind-blown CCP was observed during spreading and compacting operations. The observed CCP operations appeared to be carried out in a safe and competent manner.

The as-built survey was provided by McAdams Company and shows the current development of the structural fill. HDR has provided cross-sections in the Appendix showing the changes in geometry between the 2018 and 2019 inspection reports.

Structural Fill Stability

Based on the site inspection, no structural weaknesses were observed in the compacted CCP material.

Summary

On January 18, 2019, HDR staff conducted the third annual CCP inspection for the Brickhaven No. 2 Mine Tract “A” CCP structural fill. The inspection included a file document review and a visual inspection of the structural fill operations. Site staff is performing and maintaining the permit documents and the routine maintenance and monitoring reports as required.

McAdams Company provided a top of CCP material survey. HDR provided cross-sections to represent the changes in geometry between the 2016 and 2019 inspections. The total amount of CCP placed through January 18, 2019 has consumed 7,215,909 cubic yards of permitted airspace.

HDR's review of the means and methods and visual inspection of placement identified no apparent structural weaknesses in the CCP material placed as a part of the permanent structural fill.

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A

Appendix A – Drawings

- As-built
- Structural Fill Cross-Sections

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NOTE:

1. CONTOURS INSIDE OF THE LINED AREA REPRESENT TOP OF ASH CONTOURS.

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of the Carolinas

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ISSUE	DATE	DESCRIPTION

PROJECT MANAGER	
DESIGNED BY	J. GAUL
DRAWN BY	
CHECKED BY	
PROJECT NUMBER	

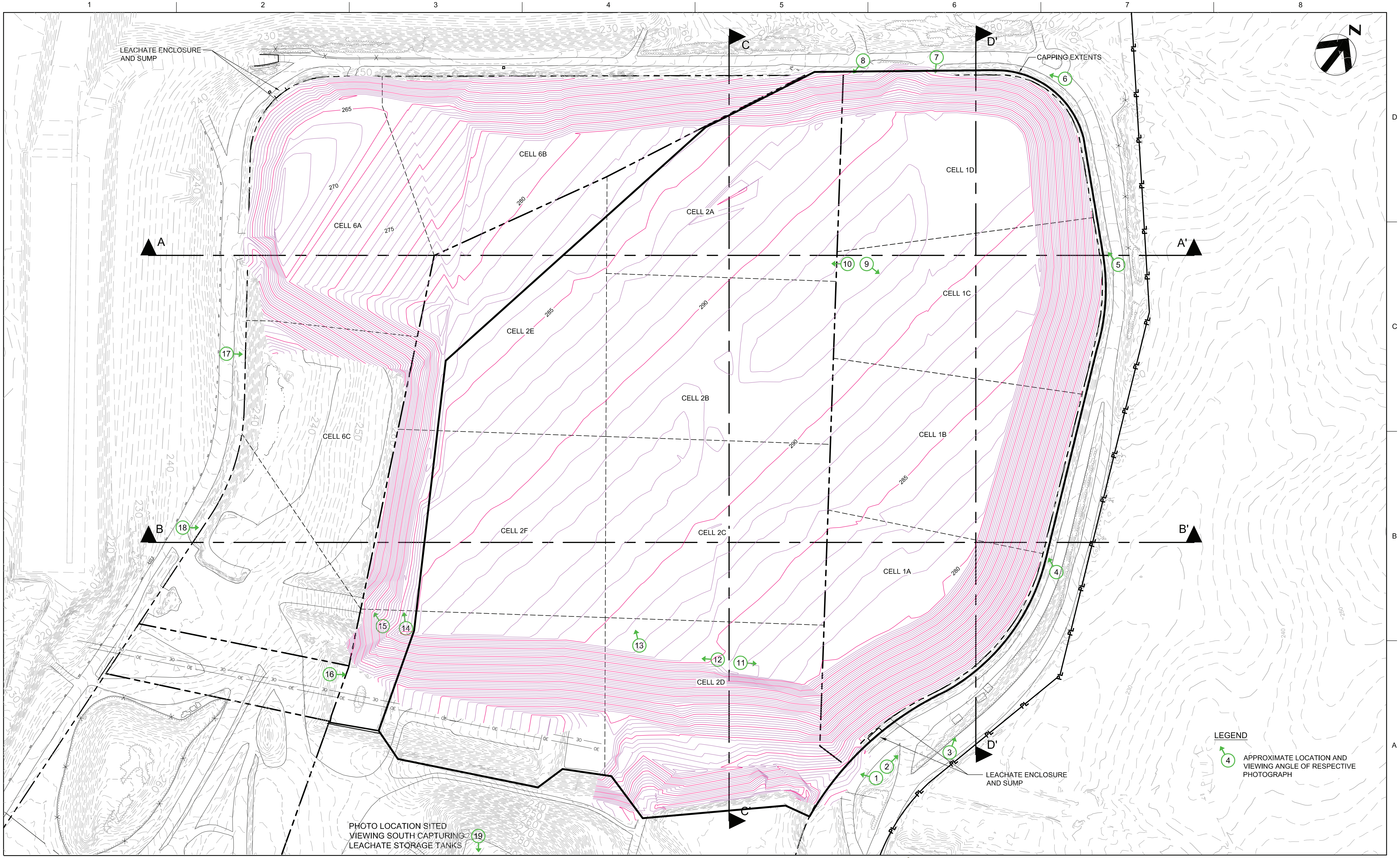
Charah®

BRICKHAVEN No. 2 MINE TRACT "A" MINE
SITE INSPECTION
MONCURE, NC

OVERALL SITE PLAN

FILENAME: Overall Site Plan.dwg
SCALE: 1"=200'

FIGURE 1



HDR

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ISSUE	DATE	DESCRIPTION

PROJECT MANAGER	M.D. PLUMMER, P.E.
DESIGNED BY	J. GAUL
DRAWN BY	
CHECKED BY	
PROJECT NUMBER	

Charah®

BRICKHAVEN No. 2 MINE TRACT "A" MINE
SITE INSPECTION
MONCURE, NC

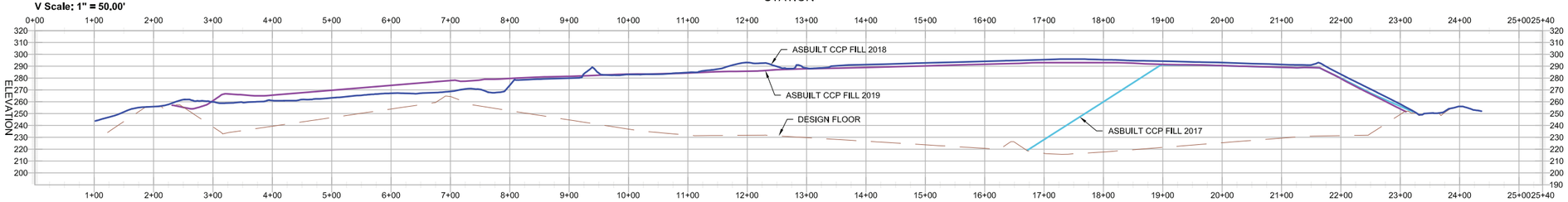
CURRENT CCP FILL AREA

0 1" 2"

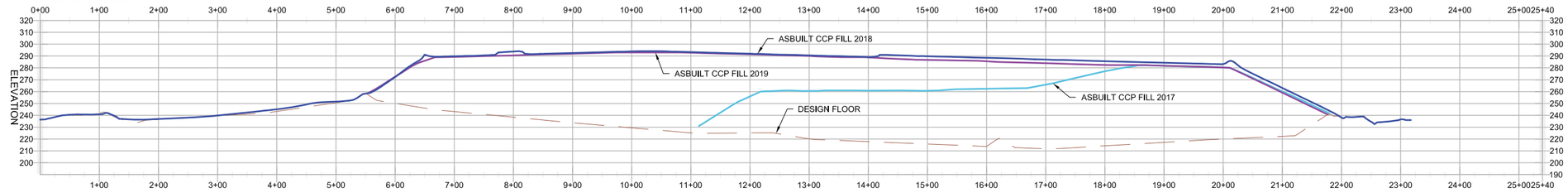
FILENAME	Overall Site Plan.dwg
SCALE	1"=100'

FIGURE
2

Alignment: Section A
H Scale: 1" = 100.00'
V Scale: 1" = 50.00'



Alignment: Section B
H Scale: 1" = 100.00'
V Scale: 1" = 50.00'



Alignment: Section C
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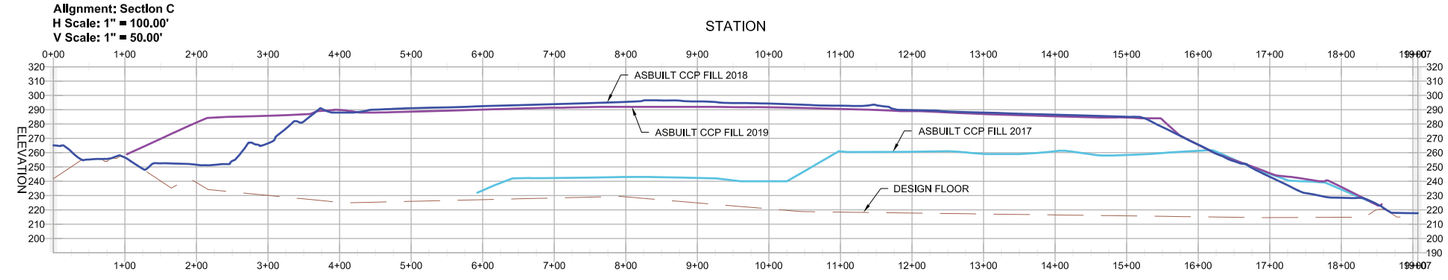
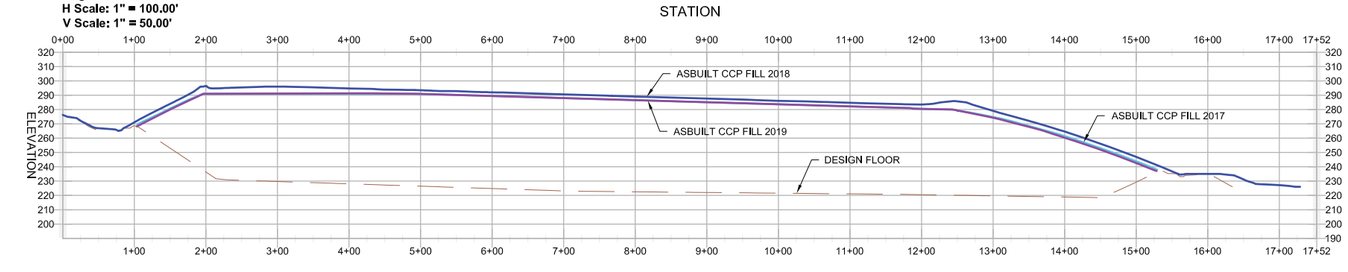
V Scale: 1" = 50.00'



Alignment: Section D
H Scale: 1" = 100.00'
V Scale: 1" = 50.00'



C:\powerking\projfol\005568\7\Overall Site Plan SI.dwg, Profiles, 10/3/2019 3:48:04 PM, JGAUL

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Charah®

BRICKHAVEN No. 2 MINE TRACT "A" MINE
SITE INSPECTIONS
MONCURE, NC

SITE SECTIONS

0 1" 2"

FILENAME	Overall Site Plan SI
SCALE	as shown

FIGURE 3

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B

Appendix B – Site Inspection Photographs

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Photo 1 - Powerline row looking west

Photo 2 - Powerline row looking at Sump 1

Photo 3 - Slope drain

Photo 4 - East side toe drain looking northwest

Photo 5 - East side closed looking north

Photo 6 - Northwest corner looking west

Photo 7 - Cleanout and toe drain

Photo 8 - Cell 1/2 access road

Photo 9 - Top of CCP looking southeast

Photo 10 - Top of Cell 2 looking at temporary stockpile in 6B

Photo 11 - Top deck diversion berm looking east at the slope drain

Photo 12 - Top deck diversion berm looking west

Photo 13 - Top deck looking northwest towards stockpile in 6B

Photo 14 - Southern access road looking northwest at operations in 6B

Photo 15 - Southern access road looking at 6C

Photo 16 - Powerline row looking east

Photo 17 - 6B/C divider berm looking east

Photo 18 - 6C termination berm looking east

Photo 19 - Leachate tanks looking south

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