



March 13, 2015

Mr. Ed Mussler, III, PE, Supervisor  
Permitting Branch, Solid Waste Section  
Division of Waste Management, NCDENR  
1646 Mail Service Center  
Raleigh NC 27699

Dear Mr. Mussler,

On behalf of Green Meadow, LLC and Charah, Inc., HDR provides the enclosed Addendum 3 regarding the permit application entitled:

*Permit Application, Brickhaven No.2 Mine Tract "A", Structural Fill, Charah, Inc., Moncure, North Carolina. Prepared for Charah, Inc. Prepared by HDR Inc. November 2014. DIN 22348.*

This addendum revises the financial assurance calculation and Closure Plan to set the largest area available for closure area to 34.8 acres. This area matches the largest Cell area that will be constructed at one time

**Financial Assurance Letter**

The attached financial assurance letter will replace the letter dated November 11, 2014 currently in the permit application.

**Closure-Post Closure Plan**

Section 2.5 of the Closure-Post Closure Plan has been revised to identify 34.8 acres as the largest area to require closure at one time.

Revisions in narrative documents are shown with deletions struckthrough (~~struckthrough~~) and additions underlined (underlined) along with a change line indicator in the left margin. As requested, upon completion of the permit application process the revisions will be combined into a final permit application document for the record.

Please contact me should you have any questions. We hope you find these design enhancements acceptable and we look forward to discussing them with you.

Sincerely,  
HDR Engineering, Inc. of the Carolinas

Michael D. Plummer, PE  
Project Manager

Enclosures: Financial Assurance Letter  
Closure-Post Closure Plan (revised pages only)

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March 13, 2015

Mr. Norman Divers  
Senior Engineer  
12601 Plantside Drive  
Louisville, KY 40299

RE: Moncure Brickhaven No. 2 Mine Tract "A" Site Structural Fill  
Financial Assurance Estimate  
HDR Project No. 237673

Dear Mr. Divers,

North Carolina General Statute (NCGS) §130A-309.217 (a) requires that a financial assurance be established to ensure sufficient funds are available for a structural fill for facility closure, post-closure care, corrective action, and to satisfy any potential liability for sudden and non-sudden accidental occurrences. The purpose of this letter is to provide an estimate of the expenses to meet the financial assurance requirements in NCGS §130A-309.217.

### **Closure**

The cost for closure is provided per acre in the Closure and Post-Closure Plan in the permit application for the Brickhaven No. 2 Mine Tract "A" Structural Fill. There are two different types of final cover caps that can be built over the Brickhaven No. 2 Mine Tract "A" Structural Fill. In addition, the final cover cap thickness varies based on the location of the cap; whether on top of the structural fill or on the side slope of the structural fill. The highest final cover cap estimate in the Closure and Post-Closure Plan is \$172,200 per acre (for a cap with a geocomposite on the top of the structural fill). The largest cell area requiring closure is 34.8 acres. Therefore approximately \$5,985,600 needs to be set aside in order to cover the closure costs for the largest area requiring closure at any time at the Brickhaven No. 2 Mine Tract "A" Structural Fill.

### **Post-Closure Care**

The cost for post-closure care is provided in the Closure and Post-Closure Plan in the permit application for the Brickhaven No. 2 Mine Tract "A" Structural Fill. The Closure and Post-Closure Plan estimates a post-closure care cost of \$2,208,000.

### **Corrective Action**

The Corrective Action costs assume a one time release, which includes assessment monitoring, an assessment of corrective measure report/selection of a remedy, and implementation of corrective action. It is assumed that corrective action occurs in post-closure and that monitored natural attenuation would be the selected remedy. The total cost for corrective action is estimated to be approximately \$1,342,300. The North Carolina Department of Environment and Natural Resources Division of Waste Management requires that at least \$2 million be set aside for corrective action for

solid waste management facilities. Because the state is requiring a permit be obtained from the Division of Waste Management, HDR has assumed that the \$2 million corrective action threshold also applies to structural fills.

**Total**

The total amount to be set aside for financial assurance is \$10,193,600, as detailed in the calculation below.

|                         |                     |
|-------------------------|---------------------|
| Closure Costs           | \$5,985,600         |
| Post-Closure Costs      | \$2,208,000         |
| Corrective Action Costs | \$2,000,000         |
| <hr/>                   |                     |
| Total Costs             | <b>\$10,193,600</b> |

If you have any questions about this cost estimate, please feel free to contact me at (704) 338-6700.

Sincerely,  
HDR Engineering, Inc. of the Carolinas



Michael D. Plummer, PE  
*Project Manager*

Enclosures



### Closure Cost Estimate – Soil /Geomembrane Cap

The following is an estimate of closure costs; actual costs may vary.

|      |   | Soil/Geomembrane Cap |              |                |          | Top                             |                         | Sideslope               |                |
|------|---|----------------------|--------------|----------------|----------|---------------------------------|-------------------------|-------------------------|----------------|
| Item | Description                                   | Unit Price           | Unit         | Thickness (in) | Quantity | Total                           | Thickness (in)          | Quantity                | Total          |
| 1    | Mobilization, Administration & Bonds          | 4%                   | of Items 2-9 |                | 4%       | \$ 4,000                        |                         | 4%                      | \$ 3,200       |
| 2    | Surveying & Control                           | \$ 1,600             | Acres        |                | 1        | \$ 1,600                        |                         | 1                       | \$ 1,600       |
| 3    | Topsoil Layer                                 | \$ 11.60             | CY           | 6              | 900      | \$ 10,400                       | 6                       | 900                     | \$ 10,400      |
| 4    | Low Permeable Soil Layer*                     | \$ 6.70              | CY           | 12             | 1,700    | \$ 11,400                       | 12                      | 1,700                   | \$ 11,400      |
| 5    | Unclassified Soil Layer*                      | \$ 6.70              | CY           | 42             | 5,700    | \$ 38,200                       | 18                      | 2,500                   | \$ 16,800      |
| 6    | Drainage Soil Layer*                          | \$ 6.70              | CY           | 12             | 1,700    | \$ 11,400                       | 12                      | 1,700                   | \$ 11,400      |
| 7    | Geocomposite Drainage Layer                   | \$ 0.70              | SF           |                | 0        | \$ -                            |                         | 0                       | \$ -           |
| 8    | Geomembrane (40 mil double sided textured PE) | \$ 0.60              | SF           |                | 43,560   | \$ 26,100                       |                         | 43,560                  | \$ 26,100      |
| 9    | Seeding/Fertilizing/Mulching                  | \$ 1,500             | Acre         |                | 1        | \$ 1,500                        |                         | 1                       | \$ 1,500       |
| 10   | Contingency                                   | 10%                  | of Items 1-9 |                | 10%      | \$ 10,500                       |                         | 10%                     | \$ 8,200       |
| 11   | Engineering - Plans & Specs                   | 6%                   | of Items 1-9 |                | 6%       | \$ 6,300                        |                         | 6%                      | \$ 4,900       |
| 12   | CQA & Certification                           | 6%                   | of Items 1-9 |                | 6%       | \$ 6,300                        |                         | 6%                      | \$ 4,900       |
| 13   | Construction Management                       | 5%                   | of Items 1-9 |                | 5%       | \$ 5,200                        |                         | 5%                      | \$ 4,100       |
|      |   |                      |              |                |          | <b>Cost Per Acre \$ 132,900</b> | <b>Cost Per Acre \$</b> | <b>Cost Per Acre \$</b> | <b>104,500</b> |

\*The permeabilities for the soil layers may be different; however, the costs have been assumed to be the same with the exception of the topsoil.



### Closure Cost Estimate – Soil /Geocomposite Drainage Layer/Geomembrane Cap

The following is an estimate of closure costs; actual costs may vary.

| Item | Description   | Unit Price | Unit         | Soil/Geocomposite Drainage Layer/Geomembrane Cap |               |            | Sideslope      |               |            |
|------|---|------------|--------------|--|---------------|------------|----------------|---------------|------------|
|      |   |            |              | Thickness (in)                                   | Quantity      | Total      | Thickness (in) | Quantity      | Total      |
| 1    | Mobilization, Administration & Bonds                                      | 4%         | of Items 2-9 |  | 4%            | \$ 5,200   |                | 4%            | \$ 4,300   |
| 2    | Surveying & Control   | \$ 1,600   | Acres        |  | 1             | \$ 1,600   |                | 1             | \$ 1,600   |
| 3    | Topsoil Layer   | \$ 11.60   | CY           | 6  | 6             | \$ 10,400  | 6              | 900           | \$ 10,400  |
| 4    | Low Permeable Soil Layer*   | \$ 6.70    | CY           | 12   | 1,700         | \$ 11,400  | 42             | 5,700         | \$ 38,200  |
| 5    | Unclassified Soil Layer*  | \$ 6.70    | CY           | 54   | 7,300         | \$ 48,900  |                | 0             | \$ -       |
| 6    | Drainage Soil Layer*  | \$ 6.70    | CY           |  | 0             | \$ -       |                | 0             | \$ -       |
| 7    | Geocomposite Drainage Layer Geomembrane (40 mil double sided textured PE) | \$ 0.70    | SF           |  | 43,560        | \$ 30,500  |                | 43,560        | \$ 30,500  |
| 8    | Seeding/Fertilizing/Mulching  | \$ 0.60    | SF           |  | 43,560        | \$ 26,100  |                | 43,560        | \$ 26,100  |
| 9    | Contingency   | \$ 1,500   | Acre         |  | 1             | \$ 1,500   |                | 1             | \$ 1,500   |
| 10   | Engineering - Plans & Specs   | 10%        | of Items 1-9 |  | 10%           | \$ 13,600  |                | 10%           | \$ 11,300  |
| 11   | CQA & Certification   | 6%         | of Items 1-9 |  | 6%            | \$ 8,100   |                | 6%            | \$ 6,800   |
| 12   | Construction Management   | 6%         | of Items 1-9 |  | 6%            | \$ 8,100   |                | 6%            | \$ 6,800   |
| 13   |   | 5%         | of Items 1-9 |  | 5%            | \$ 6,800   |                | 5%            | \$ 5,600   |
|      |   |            |              |  | Cost Per Acre | \$ 172,200 |                | Cost Per Acre | \$ 143,100 |

\*The permeabilities for the soil layers may be different; however, the costs have been assumed to be the same with the exception of the topsoil.



### Annual Post-Closure Care Cost Estimate

The following is an estimate of post-closure costs; actual costs may vary.

| Item | Description                               | Quantity | Unit    | Unit Price | Total       |
|------|---|----------|---------|------------|-------------|
| 1    | Quarterly Site Inspections                | 4        | Events  | \$5,000    | \$20,000    |
| 2    | Cap System Maintenance                    |          |         |            |             |
|      | a. Seeding/Fertilizing/Mulching           | 2        | acres   | \$1,500    | \$3,000     |
|      | b. Topsoil Replacement                    | 500      | CY      | \$11.60    | \$5,800     |
|      | c. Protective Cover Replacement           | 500      | CY      | \$6.70     | \$3,400     |
| 3    | Stormwater Management                     | 1        | LS      | \$2,000    | \$2,000     |
| 4    | Stormwater Monitoring                     | 2        | Events  | \$1,200    | \$2,400     |
| 5    | Utilities                                 | 12       | Events  | \$500      | \$6,000     |
| 6    | Mowing                                    | 2        | Events  | \$3,480    | \$7,000     |
| 7    | Fence Repairs and Security                | 1        | LS      | \$500      | \$500       |
| 8    | Administration                            | 1        | Events  | \$2,000    | \$2,000     |
| 9    | Leachate System Maintenance & Sampling    | 1        | Events  | \$2,500    | \$2,500     |
| 10   | Leachate Collection and Treatment         | 11,600   | gallons | \$0.0235   | \$300       |
| 11   | Water Quality Monitoring & Report         | 2        | Events  | \$5,500    | \$11,000    |
| 12   | Groundwater Monitoring System Maintenance | 1        | Events  | \$1,000    | \$1,000     |
| 13   | Contingency                               | 10%      |         | \$66,900   | \$6,700     |
|      | Annual Total                              |          |         |            | \$73,600    |
|      | 30-YR Total                               |          |         |            | \$2,208,000 |



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Closure and Post-Closure Plan

# Brickhaven No.2 Mine Tract "A" Structural Fill

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Charah, Inc.

*Moncure, NC*

**November 2014**

**Revised January 2015**

**Revised March 2015**

pressure construction equipment meeting the requirements of the project specifications. The topsoil will be a six-inch thick layer of soil capable of promoting the growth of vegetation. The total thickness of the final cover shall be at least six feet on the top of the structural fill and at least four feet on the side slopes of the structural fill.

## 2.2 Surface Water Runoff and Run-on

Surface water running off the structural fill during and after a rainfall event will be collected and routed off the cover by erosion control benches and slope drains. Surface water that flows toward the structural fill from uphill areas (run-on) will be intercepted and channeled away from the structural fill and final cover surface by diversion channels and perimeter berms.

## 2.3 Erosion Control

Erosion will be controlled by vegetation, erosion control benches and diversion of run-off. Vegetation will aid in reducing soil erosion. Benches break the velocity of sheet flow over the closed structural fill, control development of erosion features before they damage the final cover, and divert runoff into manageable flow volumes. Sediment laden runoff will be collected in the sediment basins.

## 2.4 Dust Control

Dust control during closure construction will be managed as outlined in the Operations Plan and appropriate for closure construction.

## 2.5 Estimate of Largest Area to Require Closure

NCGS §130A-309.218 (b) (1) b. requires the Closure Plan to provide an estimate of the largest area of the structural fill project that will require a cap at any time during the overall construction period. The largest area requiring closure at any time will be ~~62.2~~34.8 acres.

## 2.6 Estimate of Maximum Inventory of Coal Combustion Products

NCGS §130A-309.218 (b) (1) c. requires the Closure Plan to provide an estimate of the maximum inventory of CCP ever onsite over the construction duration of the structural fill. The structural fill is sized to hold an estimated total of approximately 9.2 million cubic yards of CCPs in five cells.

## 2.7 Closure Schedule

NCGS §130A-309.218 (b) (1) d. requires the Closure Plan to provide a schedule for completing all activities necessary to satisfy the closure criteria. In accordance with NCGS §130A-309.218 (a) (1), cap application will start no later than 30 working days or 60 calendar days, whichever is less, after CCP placement has ceased. Closure construction is anticipated to take up to a year to complete. Refer to the Reclamation Timeline in the Earthwork Calculations section for the anticipated closure schedule.