

December 21, 2016

Mr. Brian Hocutt  
Cooperative Energy  
P.O. Box 15849  
Hattiesburg, MS 39402

Re: CCR Impoundments – Placement Above Uppermost Aquifer  
R.D. Morrow, Sr. Generating Station  
Purvis, Lamar County, Mississippi

Dear Mr. Hocutt:

Cooperative Energy (formerly South Mississippi Electric Power Association) retained Environmental Management Services, Inc. (EMS) to evaluate Cooperative Energy's compliance with the Federal Coal Combustion Residuals Rule (CCR Rule) requirements in accordance with 40 CFR 257.60 which states:

*“(a) New CCR landfills, existing and new CCR surface impoundments, and all lateral expansions of CCR units must be constructed with a base that is located no less than 1.52 meters (five feet) above the upper limit of the uppermost aquifer, or must demonstrate that there will not be an intermittent, recurring, or sustained hydraulic connection between any portion of the base of the CCR unit and the uppermost aquifer due to normal fluctuations in groundwater elevations (including seasonal high water table).”*

Cooperative Energy has two existing CCR surface impoundments including: 1) the Emergency Scrubber Surge Pond, and 2) the Scrubber Supply Pond.

#### **§257.60 Placement Above the Uppermost Aquifer**

The vertical separation between the CCR impoundment liner and the uppermost water bearing zone identified during the installation of monitoring wells MWI-1 through MWI-4 and during subsequent water level monitoring events greatly exceeds the minimum required 1.52 meters (five feet) of vertical separation by §257.60(a). Supporting information including boring logs with monitor well construction details is attached.



**Engineer's Certification**

I hereby certify, as a Professional Engineer in the State of Mississippi, that the information in this document was assembled under my direct personal charge and that this determination was conducted in accordance with and meets the requirements of 40 CFR Part 257.60(a).



Christopher Taylor Johnson, P.E.  
Mississippi Professional Engineer No. 15761

Date: 12/21/2016



**Geologist's Certification**

I have reviewed the portions of this report having to do with geology in sufficient depth to accept full responsibility for those contents.



Kenneth D. Ruckstuhl, RPG  
MS Professional Geologist No. 0090

Date: 12/21/2016



Attachment - Boring Logs

*File: Placement Above Uppermost Aquifer*

Attachment

Project No.: SOU2-16-001    Latitude: 31.215925    Geologist: JVS  
 Project: SMEPA    Longitude: -89.395214    Drill Method: Hollow Stem  
 Location: Purvis, MS    Grd. Elev: 259.37    Driller: WHE  
 Date: 3-22-16    Total Depth (ft. bls) 60.0    Checked By: KDR

**Boring No.: MWI-1**




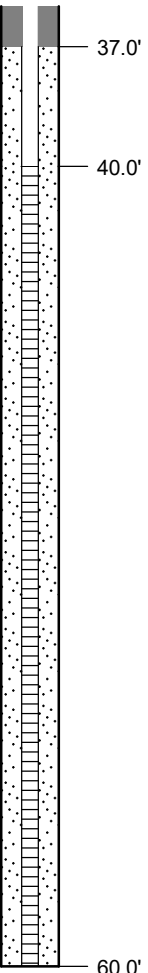






SUBSURFACE PROFILE			SAMPLE		Well Completion Details
Depth (ft.)	Symbol	Description / Unified Soil Classification	Lab Sample No.	PID (ppm)	
0		Ground Surface			
	6" Asphalt				
	Reddish brown CLAYEY GRAVEL (CLG)				
	Brown SILTY CLAY (CL-ML)				
5		Gray CLAY (CH) with red and brown streaking			
10		Gray stiff CLAY (CH)			
15	2" Gray SILTY CLAY (CL-ML)				
	Gray stiff CLAY (CH)				
	Gray SILTY CLAY (CL-ML)				
	Gray stiff CLAY (CH)				
20		Gray stiff CLAY (CH) with brown streaking			
25		Gray-green stiff CLAY (CH) with red streaking			
30		Gray-green stiff CLAY (CH) with brown streaking			
35		Gray-green stiff CLAY (CH) with red and brown streaking			
		Gray-green stiff CLAY (CH)			

NEW WELL PID SMEPA LOGS.GPJ ENV.MANAGEMENT.GDT 13/7/16

Project No.: SOU2-16-001    Latitude: 31.215925    Geologist: JVS  
 Project: SMEPA    Longitude: -89.395214    Drill Method: Hollow Stem  
 Location: Purvis, MS    Grd. Elev: 259.37    Driller: WHE  
 Date: 3-22-16    Total Depth (ft. bls) 60.0    Checked By: KDR

**Boring No.: MWI-1**

**ENVIRONMENTAL**   
 MANAGEMENT SERVICES, INC.  
 600 N. 26TH AVE  
 HATTIESBURG, MS 39401

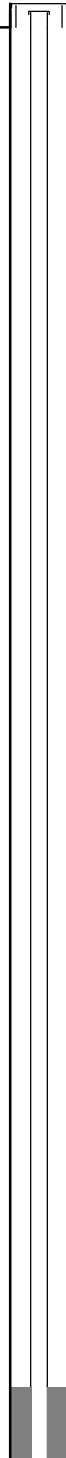

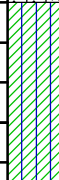










SUBSURFACE PROFILE			SAMPLE		Well Completion Details
Depth (ft.)	Symbol	Description / Unified Soil Classification	Lab Sample No.	PID (ppm)	
		Gray-green stiff CLAY (CH) (Continued)			
		Gray-green stiff CLAY (CH) with brown streaking			
40		Gray-green medium soft CLAY (CH)			
		Gray-green medium soft CLAY (CH) with silt			
45		Gray-green soft SILTY CLAY (CL-ML) with brown streaking - medium soft 45' - 45.5' - soft below 45.5'			
		Brown saturated SILT (ML)			
		Brown and gray soft SILTY CLAY (CL-ML)			
		Brown and gray-green CLAY (CH)			
		Firm brown CLAY (CH)			
50		- Soft below 49.8'			
		Brown saturated SILT (ML)			
		Soft brown CLAYEY SILT (CL-ML)			
		Firm green CLAY (CH) with brown streaking			
55		<b>BORING SAMPLED TO 54'</b>			
60		<b>SET WELL AT 60'</b>			
65					
70					

NEW WELL PID SMEPA LOGS.GPJ ENV.MANAGEMENT.GDT 13/7/16

Project No.: SOU2-16-001    Latitude: 31.214289    Geologist: JVS  
 Project: SMEPA    Longitude: -89.395711    Drill Method: Hollow Stem  
 Location: Purvis, MS    Grd. Elev: 255.27    Driller: WHE  
 Date: 3-23-16    Total Depth (ft. bls) 60.0    Checked By: KDR

**Boring No.: MWI-2**

**ENVIRONMENTAL**   
 MANAGEMENT SERVICES, INC.  
 600 N. 26TH AVE  
 HATTIESBURG, MS 39401


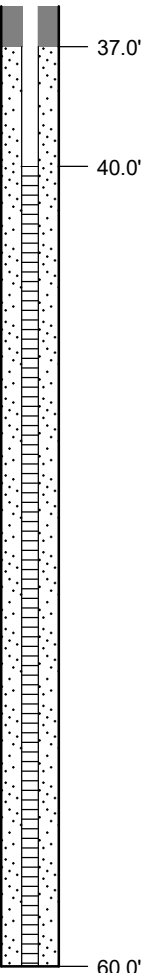










SUBSURFACE PROFILE			SAMPLE		Well Completion Details
Depth (ft.)	Symbol	Description / Unified Soil Classification	Lab Sample No.	PID (ppm)	
0		Ground Surface			 <p>0.0'</p>
		Saturated organic SILTY SAND (SM)			
		Brown SILTY CLAY (CL-ML)			
5		Dark gray fine SANDY CLAY (SC)			
		Soft brown medium SAND (SW)			
10		Medium brown SANDY CLAY (SC)			
		Soft brown medium SAND (SW)			
		Soft gray CLAY (CH) with silt			
15		CLAY (GC) with gravel			
		Soft gray CLAY (CH) with silt, brown streaking			
		CLAY (GC) with gravel			
		Brown SILTY CLAY (CL-ML) with black inclusions, red and gray streaking			
20		Firm gray CLAY (CH) with orange, black and red streaking			
		Firm brown CLAY (CH) with gray streaking			
25		Firm gray CLAY (CH) with orange and brown streaking			
		Firm gray CLAY (CH)			
30		Firm orange CLAY (CH) with black streaking			
		Firm gray CLAY (CH)			
35		Firm gray-green CLAY (CH)			
		Firm gray-green CLAY (CH)			

NEW WELL PID SMEPA LOGS.GPJ ENV.MANAGEMENT.GDT 13/7/16

Project No.: SOU2-16-001    Latitude: 31.214289    Geologist: JVS  
 Project: SMEPA    Longitude: -89.395711    Drill Method: Hollow Stem  
 Location: Purvis, MS    Grd. Elev: 255.27    Driller: WHE  
 Date: 3-23-16    Total Depth (ft. bls) 60.0    Checked By: KDR

**Boring No.: MWI-2**

**ENVIRONMENTAL**   
 MANAGEMENT SERVICES, INC.  
 600 N. 26TH AVE  
 HATTIESBURG, MS 39401

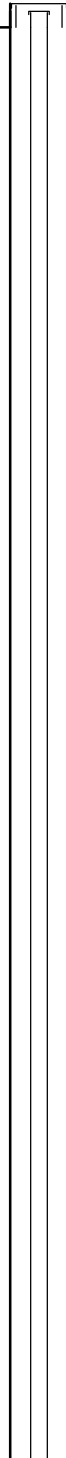
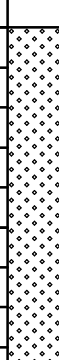
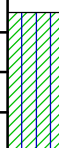


SUBSURFACE PROFILE			SAMPLE		Well Completion Details
Depth (ft.)	Symbol	Description / Unified Soil Classification	Lab Sample No.	PID (ppm)	
37.0'		Firm gray-green CLAY (CH) with orange and black streaking			
40.0'		Firm gray-green CLAY (CH) with orange streaking			
45.0'		Firm gray-green CLAY (CH) with silt and orange streaking			
		Saturated gray SILT (ML)			
		Soft gray-green SILTY CLAY (CL-ML)			
		Saturated gray SILT (ML)			
		Gray SILTY CLAY (CL-ML) with brown streaking			
		Saturated brown SILTY fine SAND (SM)			
		Gray SILT (ML) with clay			
		Gray SILT fine SAND (SM)			
		Firm gray-green CLAY (CH) with brown streaking			
55.0'		<b>BORING SAMPLED TO 54'</b>			
60.0'		<b>SET WELL AT 60'</b>			
65.0'					
70.0'					

NEW WELL PID SMEPA LOGS.GPJ ENV.MANAGEMENT.GDT 13/7/16

Project No.: SOU2-16-001    Latitude: 31.214361    Geologist: JVS  
 Project: SMEPA    Longitude: -89.395292    Drill Method: Hollow Stem  
 Location: Purvis, MS    Grd. Elev: 258.28    Driller: WHE  
 Date: 3-23-16    Total Depth (ft. bls) 76.0    Checked By: KDR

**Boring No.: MWI-3**

**ENVIRONMENTAL**   
 MANAGEMENT SERVICES, INC.  
 600 N. 26TH AVE  
 HATTIESBURG, MS 39401

SUBSURFACE PROFILE			SAMPLE		Well Completion Details
Depth (ft.)	Symbol	Description / Unified Soil Classification	Lab Sample No.	PID (ppm)	
0		Ground Surface			 <p>0.0'</p>
0 - 8		Brown to tan fine to medium SAND (SW)			
8 - 13		Brown, orange and gray SANDY CLAY (SC)			
13 - 15		Firm red, orange and gray SILTY CLAY (CL-ML)			
15 - 16		SILTY CLAY (CL-ML) with gravel			
16 - 18		Firm gray, orange and red CLAY (CH)			
18 - 20		Firm gray-green CLAY (CH)			
20 - 28		- 2" soft layer at 19' - brown streaking 20' - 28'			
28 - 34		- orange streaking 28' - 34'			
34 - 35		Firm gray-green SILTY CLAY (CL-ML)			


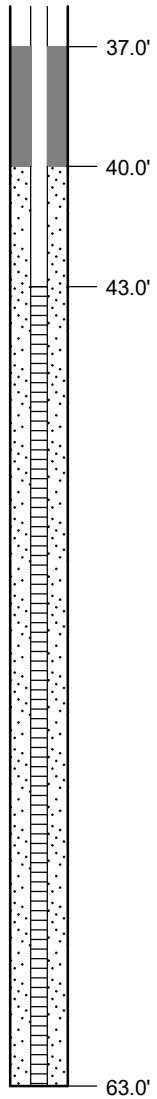




NEW WELL PID SMEPA LOGS.GPJ ENV.MANAGEMENT.GDT 13/7/16



Project No.: SOU2-16-001 Latitude: 31.214361 Geologist: JVS  
 Project: SMEPA Longitude: -89.395292 Drill Method: Hollow Stem  
 Location: Purvis, MS Grd. Elev: 258.28 Driller: WHE  
 Date: 3-23-16 Total Depth (ft. bls) 76.0 Checked By: KDR

Boring No.: MWI-3

**ENVIRONMENTAL**  
 MANAGEMENT SERVICES, INC.  
 600 N. 26TH AVE  
 HATTIESBURG, MS 39401


SUBSURFACE PROFILE			SAMPLE		Well Completion Details
Depth (ft.)	Symbol	Description / Unified Soil Classification	Lab Sample No.	PID (ppm)	
		Gray-green CLAY (CH) (Continued) - with silty clay inclusions at 37'			
		Gray-green CLAY (CH) with some silt, orange and red streaking			
40		Gray CLAY (CH) with red streaking			
		Firm gray CLAY (CH) with brown streaking			
45		Firm gray-green CLAY (CH) with brown streaking			
		Firm brown CLAY (CH) with gray streaking			
55		Medium brown firm CLAY (CH) with gray streaking			
65		Dark brown CLAY (CH) with black inclusions			
		Light brown CLAYEY SILT (CL-ML)			
		Gray CLAY (CH) with brown streaking			
		SILT (ML) pocket with green color surrounding			
		Soft gray CLAY (CH) with brown silt pockets			
70		Slightly moist soft gray CLAY (CH)			

NEW WELL PID SMEPA LOGS.GPJ ENV.MANAGEMENT.GDT 13/7/16

Project No.: SOU2-16-001    Latitude: 31.214361    Geologist: JVS  
 Project: SMEPA    Longitude: -89.395292    Drill Method: Hollow Stem  
 Location: Purvis, MS    Grd. Elev: 258.28    Driller: WHE  
 Date: 3-23-16    Total Depth (ft. bls) 76.0    Checked By: KDR

**Boring No.: MWI-3**



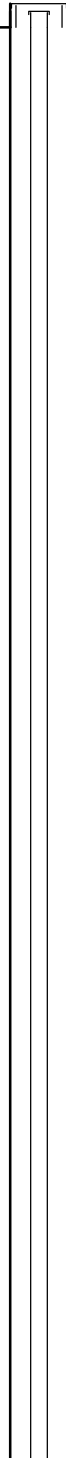




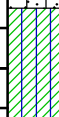










SUBSURFACE PROFILE			SAMPLE		Well Completion Details
Depth (ft.)	Symbol	Description / Unified Soil Classification	Lab Sample No.	PID (ppm)	
75		Slightly moist soft gray CLAY (CH) <i>(Continued)</i>			
		<b>BORING TERMINATED AT 76' SET WELL AT 63'</b>			

NEW WELL PID SMEPA LOGS.GPJ ENV.MANAGEMENT.GDT 13/7/16

Project No.: SOU2-16-001    Latitude: 31.214433    Geologist: JVS  
 Project: SMEPA    Longitude: -89.394908    Drill Method: Hollow Stem  
 Location: Purvis, MS    Grd. Elev: 265.96    Driller: WHE  
 Date: 3-24-16    Total Depth (ft. bls) 70.0    Checked By: KDR

**Boring No.: MWI-4**

**ENVIRONMENTAL**   
 MANAGEMENT SERVICES, INC.  
 600 N. 26TH AVE  
 HATTIESBURG, MS 39401

SUBSURFACE PROFILE			SAMPLE		Well Completion Details
Depth (ft.)	Symbol	Description / Unified Soil Classification	Lab Sample No.	PID (ppm)	
0		Ground Surface			 <p>0.0'</p>
		Organic SILTY SAND (SM)			
		Firm orange CLAY (CH) with gray, brown and red streaking			
		Brown SILTY CLAY (CL)			
		Brown SILTY SAND (SM)			
		Firm orange SILTY CLAY (CL-ML) with gray streaking			
		Firm orange CLAY (CH) with gray and red streaking			
		Firm gray CLAY (CH) with red streaking			
		Firm gray-green CLAY (CH) with red and orange streaking			
		Gray saturated SILT (ML)			
		Firm gray CLAY (CH) with brown streaking			
		Gray SILT fine SAND (SM)			
		Firm brown CLAY (CH) with gray streaking, 2" saturated silty clay lens			
		Firm brown CLAY (CH) with gray and black streaking			
		Firm gray CLAY (CH) with brown and black streaking			
		Firm brown CLAY (CH) with gray and black streaking			

NEW WELL PID SMEPA LOGS.GPJ ENV.MANAGEMENT.GDT 13/7/16

Project No.: SOU2-16-001    Latitude: 31.214433    Geologist: JVS  
 Project: SMEPA    Longitude: -89.394908    Drill Method: Hollow Stem  
 Location: Purvis, MS    Grd. Elev: 265.96    Driller: WHE  
 Date: 3-24-16    Total Depth (ft. bls) 70.0    Checked By: KDR

**Boring No.: MWI-4**



SUBSURFACE PROFILE			SAMPLE		Well Completion Details
Depth (ft.)	Symbol	Description / Unified Soil Classification	Lab Sample No.	PID (ppm)	
40		Firm gray CLAY (CH) with brown streaking			
		4" red and green layered brittle CLAYEY SILT (CL-ML)			
		4" gray-green firm CLAY (CH)			
		2" red and gray layered brittle CLAYEY SILT (CL-ML)			
		Firm gray-green CLAY (CH) with clayey silt inclusions			
45		Gray firm CLAY (CH) with red streaking			
50		- brown streaking below 50'			
55		- firm, with gray streaking below 56'			
60					
62		<b>BORING SAMPLED TO 62'</b>			
70		<b>SET WELL AT 70'</b>			

NEW WELL PID SMEPA LOGS.GPJ ENV.MANAGEMENT.GDT 13/7/16