

August 8, 2016

Mr. Brian Burkhardt, P.E.
Environmental Quality Director
Chatham County
720 Renaissance Drive
Pittsboro, North Carolina

**RE: Split Ash Sample Results – July 2016
Charah Brickhaven Facility**

Dear Mr. Burkhardt:

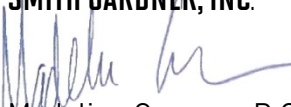
Smith Gardner, Inc. (S+G) is pleased to present the following results from the split ash sampling performed on July 29, 2016 by S+G personnel at the Charah Brickhaven Facility.

A composite ash sample was collected in the appropriate container provided by Prism Laboratories, Inc. and shipped, under proper chain of custody (COC), to the lab, on ice. Samples collected by S+G personnel were sent to Prism Laboratories, Inc.¹ (NC Certification No. 402) for analysis. Analysis was performed for 8 RCRA Metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium and silver) as well as antimony, beryllium, boron, cobalt, copper, lithium, molybdenum, nickel, thallium, vanadium and zinc. The additional parameters were added due to their analysis in groundwater samples, to provide a direct comparison.

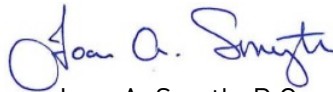
During the July event, all parameters were detected above the laboratory method detection limit (MDL) with the exception of silver. Analytical results from the July event are consistent with past events. The attached table presents the laboratory results since May 2016.

Please contact us with comments or questions at (919) 828-0577 or by email below.

Sincerely,
SMITH GARDNER, INC.


Madeline German, P.G.
Project Geologist
madeline@smithgardnerinc.com




Joan A. Smyth, P.G.
Senior Hydrogeologist
joan@smithgardnerinc.com

Attachment: Laboratory Analytical Report

cc: Dan LaMontagne – Chatham County

¹ Prism Laboratories, Inc. 449 Springbrook Road, Charlotte, NC 28224-0543

	5/26/2016	6/28/2016	7/29/2016
Antimony	0.61	0.57	0.27 J
Arsenic	53	47	46
Barium	360	390	440
Beryllium	3.8	4.1	4.4
Boron	22 J	23 J	26 J
Cadmium	0.22 J	0.22 J	0.33 J
Chromium	17	24	25
Cobalt	11	12	11
Copper	70	65	52
Lead	17	18	20
Lithium	20	20	21
Mercury	0.035	0.097	0.29
Molybdenum	2.7	2.9	1.7
Nickel	22	24	23
Selenium	2	3.7	9.9
Thallium	0.61	0.8	1.5
Vanadium	69	73	78
Zinc	30	33	35

Units are mg/kg dry.

J = Reported by the laboratory as detected but below their Reporting Limit; therefore the result is an estimated concentration



Full-Service Analytical & Environmental Solutions

NC Certification No. 402
NC Drinking Water Cert No. 37735
SC Certification No. 99012
FL NELAC Cert No. E87519
VA NELAC Cert No. 460211

Case Narrative

07/29/2016

Smith + Gardner, Inc.
Joan Smyth
14 N. Boylan Avenue
Raleigh, NC 27603

Project: Chatham-15-3 (Charah Brickhaven Site)
Project No.: Permit # 15-03
Lab Submittal Date: 07/19/2016
Prism Work Order: 6070293

This data package contains the analytical results for the project identified above and includes a Case Narrative, Sample Results and Chain of Custody. Unless otherwise noted, all samples were received in acceptable condition and processed according to the referenced methods.

Data qualifiers are flagged individually on each sample. A key reference for the data qualifiers appears at the end of this case narrative.

Please call if you have any questions relating to this analytical report.

Respectfully,

PRISM LABORATORIES, INC.

Angela D. Overcash
VP Laboratory Services

Reviewed By Terri W. Cole For Angela D. Overcash
Project Manager

Data Qualifiers Key Reference:

- J Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag).
- BRL Below Reporting Limit
- MDL Method Detection Limit
- RPD Relative Percent Difference
- * Results reported to the reporting limit. All other results are reported to the MDL with values between MDL and reporting limit indicated with a J.

This report should not be reproduced, except in its entirety, without the written consent of Prism Laboratories, Inc.

Client Sample ID	Lab Sample ID	Matrix	Date Sampled	Date Received
ASH	6070293-01	Solid	07/11/16	07/19/16

Samples were received in good condition at 1.7 degrees C unless otherwise noted.



Summary of Detections

07/29/2016

Prism Work Order: 6070293

Prism ID	Client ID	Parameter	Method	Result	Units
6070293-01	ASH	Mercury	7471B	0.29	mg/kg dry
6070293-01	ASH	Antimony	6010D	0.27 J	mg/kg dry
6070293-01	ASH	Arsenic	6010D	46	mg/kg dry
6070293-01	ASH	Barium	6010D	440	mg/kg dry
6070293-01	ASH	Beryllium	6010D	4.4	mg/kg dry
6070293-01	ASH	Boron	6010D	26 J	mg/kg dry
6070293-01	ASH	Cadmium	6010D	0.33 J	mg/kg dry
6070293-01	ASH	Chromium	6010D	25	mg/kg dry
6070293-01	ASH	Cobalt	6010D	11	mg/kg dry
6070293-01	ASH	Copper	6010D	52	mg/kg dry
6070293-01	ASH	Lead	6010D	20	mg/kg dry
6070293-01	ASH	Lithium	6010D	21	mg/kg dry
6070293-01	ASH	Molybdenum	6010D	1.7	mg/kg dry
6070293-01	ASH	Nickel	6010D	23	mg/kg dry
6070293-01	ASH	Selenium	6010D	9.9	mg/kg dry
6070293-01	ASH	Thallium	6010D	1.5	mg/kg dry
6070293-01	ASH	Vanadium	6010D	78	mg/kg dry
6070293-01	ASH	Zinc	6010D	35	mg/kg dry



Smith + Gardner, Inc.
Attn: Joan Smyth
14 N. Boylan Avenue
Raleigh, NC 27603

Project: Chatham-15-3 (Charah
Brickhaven Site)
Project No.: Permit # 15-03
Sample Matrix: Solid

Client Sample ID: ASH
Prism Sample ID: 6070293-01
Prism Work Order: 6070293
Time Collected: 07/11/16 14:00
Time Submitted: 07/19/16 07:35

Parameter	Result	Units	SWSL	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
General Chemistry Parameters										
% Solids	72.1	% by Weight		0.100	0.100	1	SM2540 G	7/22/16 17:30	JLB	P6G0402
Total Metals										
Mercury	0.29	mg/kg dry		0.027	0.0015	1	7471B	7/25/16 11:34	JAB	P6G0398
Antimony	0.27	J mg/kg dry		0.36	0.036	1	6010D	7/27/16 0:13	bgm	P6G0322
Arsenic	46	mg/kg dry		0.36	0.043	1	6010D	7/27/16 0:13	bgm	P6G0322
Barium	440	mg/kg dry		14	2.1	20	6010D	7/28/16 13:39	bgm	P6G0322
Beryllium	4.4	mg/kg dry		0.36	0.0078	1	6010D	7/27/16 0:13	bgm	P6G0322
Boron	26	J mg/kg dry		36	1.3	1	6010D	7/27/16 0:13	bgm	P6G0322
Cadmium	0.33	J mg/kg dry		0.36	0.0095	1	6010D	7/27/16 0:13	bgm	P6G0322
Chromium	25	mg/kg dry		0.36	0.059	1	6010D	7/27/16 0:13	bgm	P6G0322
Cobalt	11	mg/kg dry		0.36	0.0070	1	6010D	7/27/16 0:13	bgm	P6G0322
Copper	52	mg/kg dry		0.71	0.064	1	6010D	7/27/16 0:13	bgm	P6G0322
Lead	20	mg/kg dry		0.36	0.066	1	6010D	7/27/16 0:13	bgm	P6G0322
Lithium	21	mg/kg dry		3.6	0.075	1	6010D	7/27/16 0:13	bgm	P6G0322
Molybdenum	1.7	mg/kg dry		0.71	0.020	1	6010D	7/27/16 0:13	bgm	P6G0322
Nickel	23	mg/kg dry		0.71	0.026	1	6010D	7/27/16 0:13	bgm	P6G0322
Selenium	9.9	mg/kg dry		0.71	0.17	1	6010D	7/27/16 0:13	bgm	P6G0322
Silver	<0.0088	mg/kg dry		0.36	0.0088	1	6010D	7/27/16 0:13	bgm	P6G0322
Thallium	1.5	mg/kg dry		0.71	0.093	1	6010D	7/27/16 0:13	bgm	P6G0322
Vanadium	78	mg/kg dry		0.36	0.0084	1	6010D	7/27/16 0:13	bgm	P6G0322
Zinc	35	mg/kg dry		3.6	0.13	1	6010D	7/27/16 0:13	bgm	P6G0322



Smith + Gardner, Inc.
 Attn: Joan Smyth
 14 N. Boylan Avenue
 Raleigh, NC 27603

Project: Chatham-15-3 (Charah
 Brickhaven Site)
 Project No: Permit # 15-03

Prism Work Order: 6070293
 Time Submitted: 7/19/2016 7:35:00AM

Total Metals - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P6G0322 - 3050B

Blank (P6G0322-BLK1)

Prepared: 07/20/16 Analyzed: 07/26/16

Antimony	0.102	0.25	mg/kg wet							J
Arsenic	BRL	0.25	mg/kg wet							
Barium	BRL	0.50	mg/kg wet							
Beryllium	BRL	0.25	mg/kg wet							
Boron	BRL	25	mg/kg wet							
Cadmium	BRL	0.25	mg/kg wet							
Chromium	BRL	0.25	mg/kg wet							
Cobalt	BRL	0.25	mg/kg wet							
Copper	BRL	0.50	mg/kg wet							
Lead	0.0540	0.25	mg/kg wet							J
Lithium	BRL	2.5	mg/kg wet							
Molybdenum	BRL	0.50	mg/kg wet							
Nickel	BRL	0.50	mg/kg wet							
Selenium	BRL	0.50	mg/kg wet							
Silver	BRL	0.25	mg/kg wet							
Thallium	BRL	0.50	mg/kg wet							
Vanadium	BRL	0.25	mg/kg wet							
Zinc	0.341	2.5	mg/kg wet							J

LCS (P6G0322-BS1)

Prepared: 07/20/16 Analyzed: 07/26/16

Antimony	25.0	0.25	mg/kg wet	24.88		100	80-120			
Arsenic	24.8	0.25	mg/kg wet	24.88		100	80-120			
Barium	26.3	0.50	mg/kg wet	24.88		106	80-120			
Beryllium	24.4	0.25	mg/kg wet	24.88		98	80-120			
Boron	470	25	mg/kg wet	497.5		94	80-120			
Cadmium	25.1	0.25	mg/kg wet	24.88		101	80-120			
Chromium	26.5	0.25	mg/kg wet	24.88		106	80-120			
Cobalt	25.4	0.25	mg/kg wet	24.88		102	80-120			
Copper	26.4	0.50	mg/kg wet	24.88		106	80-120			
Lead	25.0	0.25	mg/kg wet	24.88		101	80-120			
Lithium	27.7	2.5	mg/kg wet	24.88		111	80-120			
Molybdenum	27.0	0.50	mg/kg wet	24.88		108	80-120			
Nickel	24.9	0.50	mg/kg wet	24.88		100	80-120			
Selenium	24.7	0.50	mg/kg wet	24.88		99	80-120			
Silver	10.0	0.25	mg/kg wet	9.950		100	80-120			
Thallium	25.2	0.50	mg/kg wet	24.88		102	80-120			
Vanadium	27.0	0.25	mg/kg wet	24.88		108	80-120			
Zinc	24.7	2.5	mg/kg wet	24.88		99	80-120			



Smith + Gardner, Inc.
 Attn: Joan Smyth
 14 N. Boylan Avenue
 Raleigh, NC 27603

Project: Chatham-15-3 (Charah
 Brickhaven Site)
 Project No: Permit # 15-03

Prism Work Order: 6070293
 Time Submitted: 7/19/2016 7:35:00AM

Total Metals - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P6G0398 - 7471B										
Blank (P6G0398-BLK1)				Prepared & Analyzed: 07/25/16						
Mercury	BRL	0.020	mg/kg wet							
LCS (P6G0398-BS1)				Prepared & Analyzed: 07/25/16						
Mercury	0.431	0.020	mg/kg wet	0.4167		104	80-120			
Matrix Spike (P6G0398-MS1)				Source: 6070293-01		Prepared & Analyzed: 07/25/16				
Mercury	0.954	0.026	mg/kg dry	0.5504	0.294	120	80-120			
Matrix Spike Dup (P6G0398-MSD1)				Source: 6070293-01		Prepared & Analyzed: 07/25/16				
Mercury	0.971	0.028	mg/kg dry	0.5877	0.294	115	80-120	2	20	



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Project: Chatham-15-3 (Charah
Brickhaven Site)
Project No: Permit # 15-03

Prism Work Order: 6070293
Time Submitted: 7/19/2016 7:35:00AM

General Chemistry Parameters - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P6G0402 - Solids, Dry Weight

Duplicate (P6G0402-DUP1)	Source: 6070293-01	Prepared & Analyzed: 07/22/16			
% Solids	72.6	0.100 % by Weight	72.1	0.7	20

Sample Extraction Data

Prep Method: Solids, Dry Weight

Lab Number	Batch	Initial	Final	Date/Time
6070293-01	P6G0402	30 g	30 g	07/22/16 17:30

Prep Method: 3050B

Lab Number	Batch	Initial	Final	Date/Time
6070293-01	P6G0322	1.95 g	50 mL	07/20/16 8:55
6070293-01	P6G0322	1.95 g	50 mL	07/20/16 8:55

Prep Method: 7471B

Lab Number	Batch	Initial	Final	Date/Time
6070293-01	P6G0398	0.62 g	50 mL	07/25/16 9:23

