

July 21, 2016

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

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

Dear Mr. Burkhardt:

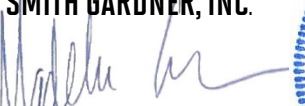
Smith Gardner, Inc. (S+G) is pleased to present the following results from the split ash sampling performed on June 28, 2016 by S+G personnel at the Charah Brickhaven Facility.

An 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 June event, all parameters were detected above the laboratory method detection limit (MDL) with the exception of silver. The attached table presents the laboratory results from May and June.

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
Antimony	0.61	0.57
Arsenic	53	47
Barium	360	390
Beryllium	3.8	4.1
Boron	22 J	23 J
Cadmium	0.22 J	0.22 J
Chromium	17	24
Cobalt	11	12
Copper	70	65
Lead	17	18
Lithium	20	20
Mercury	0.035	0.097
Molybdenum	2.7	2.9
Nickel	22	24
Selenium	2	3.7
Thallium	0.61	0.8
Vanadium	69	73
Zinc	30	33

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

07/07/2016

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: 06/29/2016
Prism Work Order: 6060522

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 Robbi A. Jones For Angela D. Overcash
President/Project Manager

Data Qualifiers Key Reference:

J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag).
MC	Sample concentration too high for recovery evaluation.
MI	Matrix spike outside of the control limits. Matrix interference suspected.
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	6060522-01	Solid	06/28/16	06/29/16

Samples were received at 24.0 degrees C. See case narrative for further information.



Summary of Detections

07/07/2016

Prism Work Order: 6060522

Prism ID	Client ID	Parameter	Method	Result	Units
6060522-01	ASH	Mercury	7471B	0.097	mg/kg dry
6060522-01	ASH	Antimony	6010D	0.57	mg/kg dry
6060522-01	ASH	Arsenic	6010D	47	mg/kg dry
6060522-01	ASH	Barium	6010D	390	mg/kg dry
6060522-01	ASH	Beryllium	6010D	4.1	mg/kg dry
6060522-01	ASH	Boron	6010D	23	J mg/kg dry
6060522-01	ASH	Cadmium	6010D	0.22	J mg/kg dry
6060522-01	ASH	Chromium	6010D	24	mg/kg dry
6060522-01	ASH	Cobalt	6010D	12	mg/kg dry
6060522-01	ASH	Copper	6010D	65	mg/kg dry
6060522-01	ASH	Lead	6010D	18	mg/kg dry
6060522-01	ASH	Lithium	6010D	20	mg/kg dry
6060522-01	ASH	Molybdenum	6010D	2.9	mg/kg dry
6060522-01	ASH	Nickel	6010D	24	mg/kg dry
6060522-01	ASH	Selenium	6010D	3.7	mg/kg dry
6060522-01	ASH	Thallium	6010D	0.80	mg/kg dry
6060522-01	ASH	Vanadium	6010D	73	mg/kg dry
6060522-01	ASH	Zinc	6010D	33	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: 6060522-01
Prism Work Order: 6060522
Time Collected: 06/28/16 10:20
Time Submitted: 06/29/16 07:55

Parameter	Result	Units	SWSL	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
General Chemistry Parameters										
% Solids	72.3	% by Weight		0.100	0.100	1	SM2540 G	6/30/16 15:50	JLB	P6G0016
Total Metals										
Mercury	0.097	mg/kg dry		0.027	0.0015	1	7471B	6/30/16 12:42	JAB	P6F0590
Antimony	0.57	mg/kg dry		0.34	0.035	1	6010D	7/5/16 20:36	bgm	P6G0032
Arsenic	47	mg/kg dry		0.34	0.042	1	6010D	7/5/16 20:36	bgm	P6G0032
Barium	390	mg/kg dry		14	2.0	20	6010D	7/6/16 20:16	bgm	P6G0032
Beryllium	4.1	mg/kg dry		0.34	0.0076	1	6010D	7/5/16 20:36	bgm	P6G0032
Boron	23	J mg/kg dry		34	1.3	1	6010D	7/5/16 20:36	bgm	P6G0032
Cadmium	0.22	J mg/kg dry		0.34	0.0092	1	6010D	7/5/16 20:36	bgm	P6G0032
Chromium	24	mg/kg dry		0.34	0.058	1	6010D	7/5/16 20:36	bgm	P6G0032
Cobalt	12	mg/kg dry		0.34	0.0067	1	6010D	7/5/16 20:36	bgm	P6G0032
Copper	65	mg/kg dry		0.69	0.062	1	6010D	7/5/16 20:36	bgm	P6G0032
Lead	18	mg/kg dry		0.34	0.064	1	6010D	7/5/16 20:36	bgm	P6G0032
Lithium	20	mg/kg dry		3.4	0.073	1	6010D	7/5/16 20:36	bgm	P6G0032
Molybdenum	2.9	mg/kg dry		0.69	0.020	1	6010D	7/5/16 20:36	bgm	P6G0032
Nickel	24	mg/kg dry		0.69	0.025	1	6010D	7/5/16 20:36	bgm	P6G0032
Selenium	3.7	mg/kg dry		0.69	0.16	1	6010D	7/5/16 20:36	bgm	P6G0032
Silver	<0.0085	mg/kg dry		0.34	0.0085	1	6010D	7/5/16 20:36	bgm	P6G0032
Thallium	0.80	mg/kg dry		0.69	0.090	1	6010D	7/5/16 20:36	bgm	P6G0032
Vanadium	73	mg/kg dry		0.34	0.0081	1	6010D	7/5/16 20:36	bgm	P6G0032
Zinc	33	mg/kg dry		3.4	0.12	1	6010D	7/5/16 20:36	bgm	P6G0032



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: 6060522
Time Submitted: 6/29/2016 7:55:00AM

Total Metals - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P6F0590 - 7471B										
Blank (P6F0590-BLK1) Prepared & Analyzed: 06/30/16										
Mercury	BRL	0.020	mg/kg wet							
LCS (P6F0590-BS1) Prepared & Analyzed: 06/30/16										
Mercury	0.442	0.020	mg/kg wet	0.4167		106	80-120			
Batch P6G0032 - 3050B										
Blank (P6G0032-BLK1) Prepared & Analyzed: 07/05/16										
Antimony	0.0713	0.25	mg/kg wet							J
Arsenic	BRL	0.25	mg/kg wet							
Barium	0.207	0.50	mg/kg wet							J
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	BRL	0.25	mg/kg wet							
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	0.171	2.5	mg/kg wet							J



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

Prism Work Order: 6060522
 Time Submitted: 6/29/2016 7:55:00AM

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 P6G0032 - 3050B

LCS (P6G0032-BS1)

Prepared & Analyzed: 07/05/16

Antimony	23.7	0.25	mg/kg wet	25.00		95	80-120			
Arsenic	24.1	0.25	mg/kg wet	25.00		96	80-120			
Barium	25.4	0.50	mg/kg wet	25.00		102	80-120			
Beryllium	25.5	0.25	mg/kg wet	25.00		102	80-120			
Boron	480	25	mg/kg wet	500.0		96	80-120			
Cadmium	24.9	0.25	mg/kg wet	25.00		100	80-120			
Chromium	25.3	0.25	mg/kg wet	25.00		101	80-120			
Cobalt	24.9	0.25	mg/kg wet	25.00		99	80-120			
Copper	25.7	0.50	mg/kg wet	25.00		103	80-120			
Lead	24.6	0.25	mg/kg wet	25.00		98	80-120			
Lithium	26.6	2.5	mg/kg wet	25.00		106	80-120			
Molybdenum	25.3	0.50	mg/kg wet	25.00		101	80-120			
Nickel	24.5	0.50	mg/kg wet	25.00		98	80-120			
Selenium	24.3	0.50	mg/kg wet	25.00		97	80-120			
Silver	9.68	0.25	mg/kg wet	10.00		97	80-120			
Thallium	24.2	0.50	mg/kg wet	25.00		97	80-120			
Vanadium	25.9	0.25	mg/kg wet	25.00		104	80-120			
Zinc	24.3	2.5	mg/kg wet	25.00		97	80-120			

Matrix Spike (P6G0032-MS1)

Source: 6060522-01

Prepared & Analyzed: 07/05/16

Antimony	16.2	0.34	mg/kg dry	33.89	0.566	46	75-125			MI
Arsenic	76.3	0.34	mg/kg dry	33.89	47.3	85	75-125			
Barium	3.39E10	0.68	mg/kg dry	33.89	390	NR	75-125			MC
Beryllium	36.0	0.34	mg/kg dry	33.89	4.12	94	75-125			
Boron	619	34	mg/kg dry	677.7	23.1	88	75-125			
Cadmium	29.8	0.34	mg/kg dry	33.89	0.220	87	75-125			
Chromium	57.3	0.34	mg/kg dry	33.89	23.6	99	75-125			
Cobalt	42.9	0.34	mg/kg dry	33.89	12.2	91	75-125			
Copper	102	0.68	mg/kg dry	33.89	64.8	109	75-125			
Lead	47.4	0.34	mg/kg dry	33.89	18.3	86	75-125			
Lithium	65.6	3.4	mg/kg dry	33.89	20.3	133	75-125			MI
Molybdenum	32.3	0.68	mg/kg dry	33.89	2.85	87	75-125			
Nickel	56.1	0.68	mg/kg dry	33.89	23.7	96	75-125			
Selenium	33.8	0.68	mg/kg dry	33.89	3.74	89	75-125			
Silver	12.4	0.34	mg/kg dry	13.55	BRL	92	75-125			
Thallium	28.7	0.68	mg/kg dry	33.89	0.797	82	75-125			
Vanadium	105	0.34	mg/kg dry	33.89	73.5	94	75-125			
Zinc	67.3	3.4	mg/kg dry	33.89	33.1	101	75-125			



Smith + Gardner, Inc.
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 Raleigh, NC 27603

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

Prism Work Order: 6060522
 Time Submitted: 6/29/2016 7:55:00AM

Total Metals - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P6G0032 - 3050B										
Matrix Spike Dup (P6G0032-MSD1)		Source: 6060522-01			Prepared & Analyzed: 07/05/16					
Antimony	15.7	0.35	mg/kg dry	34.56	0.566	44	75-125	3	20	MI
Arsenic	75.2	0.35	mg/kg dry	34.56	47.3	81	75-125	1	20	
Barium	3.46E10	0.69	mg/kg dry	34.56	390	NR	75-125	2	20	MC
Beryllium	36.2	0.35	mg/kg dry	34.56	4.12	93	75-125	0.5	20	
Boron	629	35	mg/kg dry	691.3	23.1	88	75-125	2	20	
Cadmium	30.3	0.35	mg/kg dry	34.56	0.220	87	75-125	2	20	
Chromium	60.0	0.35	mg/kg dry	34.56	23.6	105	75-125	5	20	
Cobalt	43.9	0.35	mg/kg dry	34.56	12.2	92	75-125	2	20	
Copper	101	0.69	mg/kg dry	34.56	64.8	105	75-125	0.6	20	
Lead	48.4	0.35	mg/kg dry	34.56	18.3	87	75-125	2	20	
Lithium	67.0	3.5	mg/kg dry	34.56	20.3	135	75-125	2	20	MI
Molybdenum	33.0	0.69	mg/kg dry	34.56	2.85	87	75-125	2	20	
Nickel	56.8	0.69	mg/kg dry	34.56	23.7	96	75-125	1	20	
Selenium	33.8	0.69	mg/kg dry	34.56	3.74	87	75-125	0.1	20	
Silver	12.7	0.35	mg/kg dry	13.83	BRL	92	75-125	2	20	
Thallium	29.1	0.69	mg/kg dry	34.56	0.797	82	75-125	1	20	
Vanadium	109	0.35	mg/kg dry	34.56	73.5	102	75-125	3	20	
Zinc	69.4	3.5	mg/kg dry	34.56	33.1	105	75-125	3	20	

Sample Extraction Data

Prep Method: Solids, Dry Weight

Lab Number	Batch	Initial	Final	Date/Time
6060522-01	P6G0016	30 g	30 g	06/30/16 15:50

Prep Method: 3050B

Lab Number	Batch	Initial	Final	Date/Time
6060522-01	P6G0032	2.01 g	50 mL	07/05/16 8:10
6060522-01	P6G0032	2.01 g	50 mL	07/05/16 8:10

Prep Method: 7471B

Lab Number	Batch	Initial	Final	Date/Time
6060522-01	P6F0590	0.61 g	50 mL	06/30/16 8:45

Client Company Name: SMITH GRANGER, INC.
 Report To/Contact Name: JENNIFER SMITH
 Reporting Address: 14 N. ROBERTSON AVE
PHOENIX, NC 27403

Phone: 919 828 0533 Fax (Yes) (No):
 Email Address: JENNIFER.SMITH@SMITHGRANGER.COM
 EDD Type: PDF Excel Other
 Site Location Name: BRICKMEYER NO. 2
 Site Location Physical Address:

CHAIN OF CUSTODY RECORD

PAGE 1 OF 1 QUOTE # TO ENSURE PROPER BILLING:
 Project Name: MATTHEW-K-3 UST Project: (Yes) (NO)
 Short Hold Analysis: (Yes) (No) *Please ATTACH any project specific reporting (QC LEVEL I III IIII IV) provisions and/or QC Requirements
 Invoice To:
 Address:
 Purchase Order No./Billing Reference
 Requested Due Date 1 Day 2 Days 3 Days 4 Days 5 Days
 "Working Days" 6-9 Days Standard 10 days Rush Work Must Be Pre-Approved
 Samples received after 14:00 will be processed next business day.
 Turnaround time is based on business days, excluding weekends and holidays.
 (SEE REVERSE FOR TERMS & CONDITIONS REGARDING SERVICES RENDERED BY PRISM LABORATORIES, INC. TO CLIENT)

LAB USE ONLY

Samples INTACT upon arrival? YES NO N/A

Received ON WET ICE? YES NO N/A

PROPER PRESERVATIVES indicated? YES NO N/A

Received WITHIN HOLDING TIMES? YES NO N/A

CUSTODY SEALS INTACT? YES NO N/A

VOLATILES rec'd W/OUT HEADSPACE? YES NO N/A

PROPER CONTAINERS used? YES NO N/A

TEMP: Therm ID: 115-11 Observed: 27.1 Act/Corr: 27.0 C

TO BE FILLED IN BY CLIENT/SAMPLING PERSONNEL

Certification: NELAC DOD FL NC

Water Chlorinated: YES NO

Sample Iced Upon Collection: YES NO

CLIENT SAMPLE DESCRIPTION	DATE COLLECTED	TIME COLLECTED MILITARY HOURS	MATRIX (SOIL, WATER OR SLUDGE)	SAMPLE CONTAINER			PRESERVATIVES	ANALYSIS REQUESTED	REMARKS	PRISM LAB ID NO.
				*TYPE SEE BELOW	NO.	SIZE				
<u>Asst</u>	<u>6/28/16</u>	<u>10:20</u>						<u>BRICKMEYER NO. 2 + 500 GALLONS OF WATER</u>		<u>01</u>

Sampler's Signature: Carter Shore Sampled By (Print Name) Carter Shore Affiliation _____

Upon relinquishing, this Chain of Custody is your authorization for Prism to proceed with the analyses as requested above. Any changes must be submitted in writing to the Prism Project Manager. There will be charges for any changes after analyses have been initialized.

Relinquished By: (Signature) [Signature] Received By: (Signature) [Signature] Date 6/28/16 Military/Hours 1500

Relinquished By: (Signature) [Signature] Received By: (Signature) [Signature] Date 6/29/16 Military/Hours 0715

Relinquished By: (Signature) [Signature] Received For Prism Laboratories By: [Signature] Date 6/29/16 Military/Hours 0755

Method of Shipment: NOTE: ALL SAMPLE COOLERS SHOULD BE TAPED SHUT WITH CUSTODY SEALS FOR TRANSPORTATION TO THE LABORATORY. SAMPLES ARE NOT ACCEPTED AND VERIFIED AGAINST COC UNTIL RECEIVED AT THE LABORATORY.

Method of Shipment: Fed Ex UPS Hand-delivered Prism Field Service Other BEARER / COOLER

NPDES: SC NC SC NC SC NC SC NC SC NC SC NC SC

UST: SC NC SC NC SC NC SC NC SC NC SC

GROUNDWATER: SC NC SC NC SC NC SC

DRINKING WATER: SC NC SC NC SC

SOLID WASTE: SC NC SC NC SC

RCRA: SC NC SC NC SC

CERCLA SC NC SC

LANDFILL SC NC SC

OTHER: SC NC SC

*CONTAINER TYPE CODES: A = Amber C = Clear G = Glass P = Plastic; TL = Teflon-Lined Cap VOA = Volatile Organics Analysis (Zero Head Space)

SEE REVERSE FOR TERMS & CONDITIONS

ORIGINAL

PRISM USE ONLY

Site Arrival Time: _____

Site Departure Time: _____

Field Tech Fee: _____

Mileage: _____

PRESS DOWN FIRMLY - 3 COPIES