

# STOCKPILE REUSE PLAN

PARCEL B13 SLAG STOCKPILES  
TRADEPOINT ATLANTIC  
SPARROWS POINT, MARYLAND

Prepared For:

**Tradepoint Atlantic**

1600 Sparrows Point Boulevard  
Sparrows Point, Maryland 21219

Prepared By:

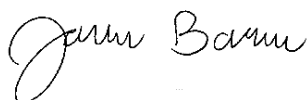


**ARM GROUP INC.**

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Columbia, Maryland 21046

ARM Project No. 190623M

Respectfully Submitted,



Joshua Barna  
Staff Geologist



T. Neil Peters, P.E.  
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Revision 0 – October 9, 2019

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## 1.0 INTRODUCTION

ARM Group Inc. (ARM), on behalf of Tradepoint Atlantic (TPA), has prepared this Stockpile Reuse Plan, including a representative Screening Level Risk Assessment (SLRA), for the roughly 18,000 cubic yards of impacted fill materials (i.e., slag) that has been stockpiled within a portion of Area B: Parcel B13 located on the TPA property. The impacted slag was encountered during reclamation activities conducted by MCM Management Corp. (MCM) under contract to DXI Construction (DXI), and the material was subsequently placed into four stockpiles on Parcel B13. The slag from each stockpile was sampled by Hillis-Carnes Engineering Associates, Inc. (HCEA) in May 2019 pursuant to Maryland Department of the Environment (MDE) direction and to provide characterization data of the material. The data from these samples have been used to conduct this SLRA in order to assess the viability of future usage of this slag material below capped development areas on the TPA property.

### 1.1 PROJECT BACKGROUND

In 2019, MCM under contract to DXI performed site grading (slag reclamation) activities in the northeastern portion of Parcel B13, shown on **Figure 1**, which then progressed toward the south. Slag reclamation activities included removing approximately 15 feet of slag from the ground surface to be processed and then repurposed in ongoing and future construction projects throughout the TPA property. Slag stockpiles were created from the excavated material at the locations shown on **Figure 2**. In mid-May 2019, MCM operators uncovered a vein of slag within the face of a cut that exhibited olfactory indications of naphthalene contamination. The MDE was notified and MCM immediately ceased slag reclamation activities in this area pending further investigation of the contamination. Five sets of analytical samples were collected by HCEA on May 20, 2019 from the slag stockpiles that had already been generated from contaminated material. These analytical samples serve as the basis for the SLRA presented herein.

### 1.2 SUMMARY OF SLAG STOCKPILE CHARACTERIZATION

This Stockpile Reuse Plan summarizes the relevant samples from HCEA's sampling event. A total of five composite samples and five grab samples were collected. One composite sample and one grab sample were collected from each slag stockpile, with the exception of Stockpile 1 (SP-1), from which two sets of samples were collected based on the size of the stockpile. Sample locations for the grab samples were chosen based on elevated photoionization detector (PID) readings. The composite samples in each set were analyzed for metals and polychlorinated biphenyls (PCBs) while the grab samples in each set were analyzed for total petroleum hydrocarbons (TPH) diesel range organics (DRO) and gasoline range organics (GRO), volatile organic compounds (VOCs), and semi-volatile organic compounds (SVOCs). Naphthalene was analyzed as both a VOC and an SVOC, so two values are reported for each set of samples.

A summary of organic and inorganic detections from the slag stockpile samples is provided in **Table 1**. Analytical results which exceeded the established Projection Action Limits (PALs) are shown on **Figure 3**. PAL exceedances among the samples included one metal (arsenic) and one VOC/SVOC (naphthalene). The highest arsenic concentration (12 mg/kg) was detected in the northern portion of SP-1 (SP-1-N). The highest naphthalene concentration (1,200 mg/kg) was detected in Stockpile 4 (SP-4-A).

The laboratory report for the stockpile characterization samples is provided as **Appendix A**. It should be noted that two additional grab samples provided in the laboratory report (identified as samples C-1 and C-2) were taken from the exposed vein of contaminated slag at the southern edge of the reclamation area, and are not representative of the stockpiled material. The sample results from C-1 and C-2 are not included in the tables or figures provided with this Stockpile Reuse Plan.

### 1.3 OBJECTIVE

This Stockpile Reuse Plan seeks to assess the risk to the Composite Worker associated with using the reclaimed slag material, currently stored in stockpiles, in future construction projects within the TPA property, and outlines appropriate conditions and precautions for slag reuse. The SLRA was completed using the slag stockpile analytical data collected by HCEA, and no additional sampling is proposed. The proposed conditions for use of the impacted material in the stockpiles would include: 1) limitations on the placement of the stockpiled slag; 2) notification and tracking requirements for the use of the stockpiled slag; 3) material handling requirements; and 4) future institutional controls.

## 2.0 HUMAN HEALTH SCREENING LEVEL RISK ASSESSMENT

### 2.1 ANALYSIS PROCESS

A human health SLRA has been completed for the Composite Worker based on the analytical data obtained from the characterization of the slag stockpiles. The SLRA included the following evaluation process:

**Identification of Exposure Units (EUs):** The Composite Worker evaluation covers all of the analytical data obtained from the slag stockpiles as a single dataset.

**Identification of Constituents of Potential Concern (COPCs):** For the project-specific SLRA, compounds that were present at concentrations at or above the United States Environmental Protection Agency (USEPA) Regional Screening Levels (RSLs) set at a target cancer risk of  $1E-6$  or target non-cancer Hazard Quotient (HQ) of 0.1 were identified as COPCs and included in the SLRA. A COPC screening analysis is provided in **Table 2** to identify compounds above the relevant screening levels.

**Exposure Point Concentrations (EPCs):** Based on the number of slag samples collected, the maximum reported value for each COPC was used as the EPC for each constituent.

**Risk Ratios:** The EPCs were compared to the USEPA RSLs for the Composite Worker to generate risk ratios for the estimated cancer risk and non-cancer hazard. The risk ratios for the carcinogens were summed to develop a screening level estimate of the baseline cumulative cancer risk. The risk ratios for the non-carcinogens were segregated and summed by target organ to develop a screening level estimate of the baseline cumulative non-cancer Hazard Index (HI).

**Assessment of Lead:** For lead, the maximum concentration among the slag samples was compared to the applicable RSL (800 mg/kg) as an initial screening. The maximum concentration of lead identified among the slag stockpile samples was 380 mg/kg, as indicated in **Table 2**.

**Risk Characterization Approach:** If the baseline risk ratio for each non-carcinogenic COPC or cumulative target organ does not exceed 1 (with the exception of lead), and the sum of the risk ratios for the carcinogenic COPCs does not exceed a cumulative cancer risk of  $1E-5$ , then a no further action determination would be recommended, and the slag would not require capping when used in future construction projects. If the baseline estimate of cumulative cancer risk exceeds  $1E-5$ , but is less than or equal to  $1E-4$ , capping of the slag material will be considered an acceptable remedy for the Composite Worker. The efficacy of capping for elevated non-cancer hazard will be evaluated in terms of the magnitude of exceedance and other factors such as bioavailability of the COPC.

## 2.2 SLRA RESULTS AND RISK CHARACTERIZATION

The data from the slag stockpiles were evaluated for a potential future Composite Worker exposure scenario. As noted above, the maximum reported value for each COPC was used as the EPC for each constituent. The EPCs for the exposure scenario are provided in **Table 3**. As indicated above, the maximum reported concentration of lead was also compared to the RSL. None of the lead results exceeded the RSL of 800 mg/kg (the lowest screening threshold).

### Composite Worker Assessment:

Risk ratios for the estimates of potential EPCs for the Composite Worker are shown in **Table 4**. The results are summarized below:

Worker Scenario	Medium	Hazard Index (>1)	Total Cancer Risk
Composite Worker	Slag	Nervous System = 2 Respiratory System = 2	7E-5

The cumulative carcinogenic risk estimate for the Composite Worker was greater than 1E-5, but less than 1E-4. Non-carcinogenic HI values slightly exceeded 1 for both the nervous and respiratory target organ systems (HI=2 in both cases). Both the cancer and non-cancer estimates were primarily influenced by the maximum concentration of naphthalene detected in the slag characterization samples.

Based on the risk ratios for the stockpile samples, the slag material is suitable for placement as construction fill within the TPA property provided it is subsequently capped to prevent future Composite Workers from contacting this material. The proposed conditions for use of the impacted material in the stockpiles would include: 1) limitations on the placement of the stockpiled slag; 2) notification and tracking requirements for the use of the stockpiled slag; 3) material handling requirements; and 4) future institutional controls. These additional requirements are further described below.

## 3.0 SUMMARY AND RECOMMENDATIONS

### 3.1 SLRA SUMMARY

A SLRA based on the slag characterization samples collected from the four stockpiles within Parcel B13 indicates that the slag is acceptable for use as construction fill material provided it is subsequently capped during development. The cumulative carcinogenic risk estimate for the Composite Worker was greater than  $1E-5$ , but less than  $1E-4$ . Non-carcinogenic HI values slightly exceeded 1 for both the nervous and respiratory target organ systems ( $HI=2$  in both cases). Several procedures will be implemented in order to ensure appropriate placement, notification, and handling of this material.

### 3.2 SLAG REUSE REQUIREMENTS

Limitations on the placement of the impacted slag:

The impacted slag currently stored in stockpiles on Parcel B13 will be used as construction fill only in areas that will be capped by engineering controls, and only beyond a minimum distance of 300 feet away from existing or proposed building footprints. Additional vapor control measures would be required to be evaluated if these materials were to be placed within 300 feet of an existing or proposed building.

The impacted slag cannot be used as utility trench backfill; however, in the future it may be necessary for utility installations to occur through areas where this material has already been placed. Should future utilities be proposed that pass through the areas containing the impacted slag material, trench plugs will be installed on either end of the utility trench at the boundaries of the slag placement area to mitigate the mobility of contaminants, in particular vapors, beyond the area of slag placement.

Although the SLRA did not identify any potentially unacceptable exposures related to the placement of this material below engineering controls, the potential exists for the mobility of VOC/SVOC vapors. By prohibiting the placement of this material within utility trenches or in close proximity to building slabs, this will minimize the potential for vapors to migrate/accumulate within these areas.

Notification and tracking requirements for the use of the impacted slag:

Appropriate notification will be provided to the MDE at least two weeks (10 business days) prior to the usage or transportation of the stockpiled slag. The proposed location of slag placement will be provided, and GPS coordinates will be collected to describe the location of slag after it is placed during construction. Documentation of the final placement location(s) will be assembled and maintained to provide a record to inform decisions on future construction projects.

**Material handling requirements for the use of the impacted slag:**

Several methods will be implemented to mitigate the risks and potential nuisance odors associated with handling the stockpiled slag material. First, an Environmental Professional (EP) will be present at the site while the impacted slag material is being handled to ensure the material is being handled in accordance with the procedures outlined herein, and to provide olfactory (odor) and PID monitoring. The following requirements are intended to limit the volatilization of COPCs and downwind transport of vapors.

The slag material will be scheduled to be processed, transported, and placed only when outdoor air temperatures are below 50 °F (10 °C) and when wind speed or direction are favorable. The prevailing winds at the Site generally come from the west. Therefore, it is proposed that, in order to schedule work with the impacted slag material without additional mitigation procedures, anticipated wind speeds will be below 2 mph (designated “calm”) or the wind direction will be toward the center of the TPA property (from the east or southeast).

If during the movement or placement of the impacted slag, the EP detects sustained PID readings greater than 10 ppm or nuisance odors in ambient air at the downwind property boundary from the work area, a vapor suppressant such as BioSolve® Pinkwater or EnviroClean® will be applied to the material until the condition is abated. In such case, the final selected vapor suppressant will be applied in accordance with the manufacturer’s recommendations.

**Institutional controls:**

The GPS coordinates of the material placement area will be recorded within the receiving parcel’s environmental covenant. Dig restrictions will be implemented; notification of any planned excavation along with Work Plan development, environmental controls, and minimum Personal Protective Equipment (PPE) requirements will be stipulated for any ground-intrusive work within the placement area.






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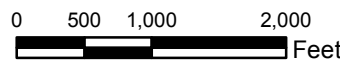
## **FIGURES**

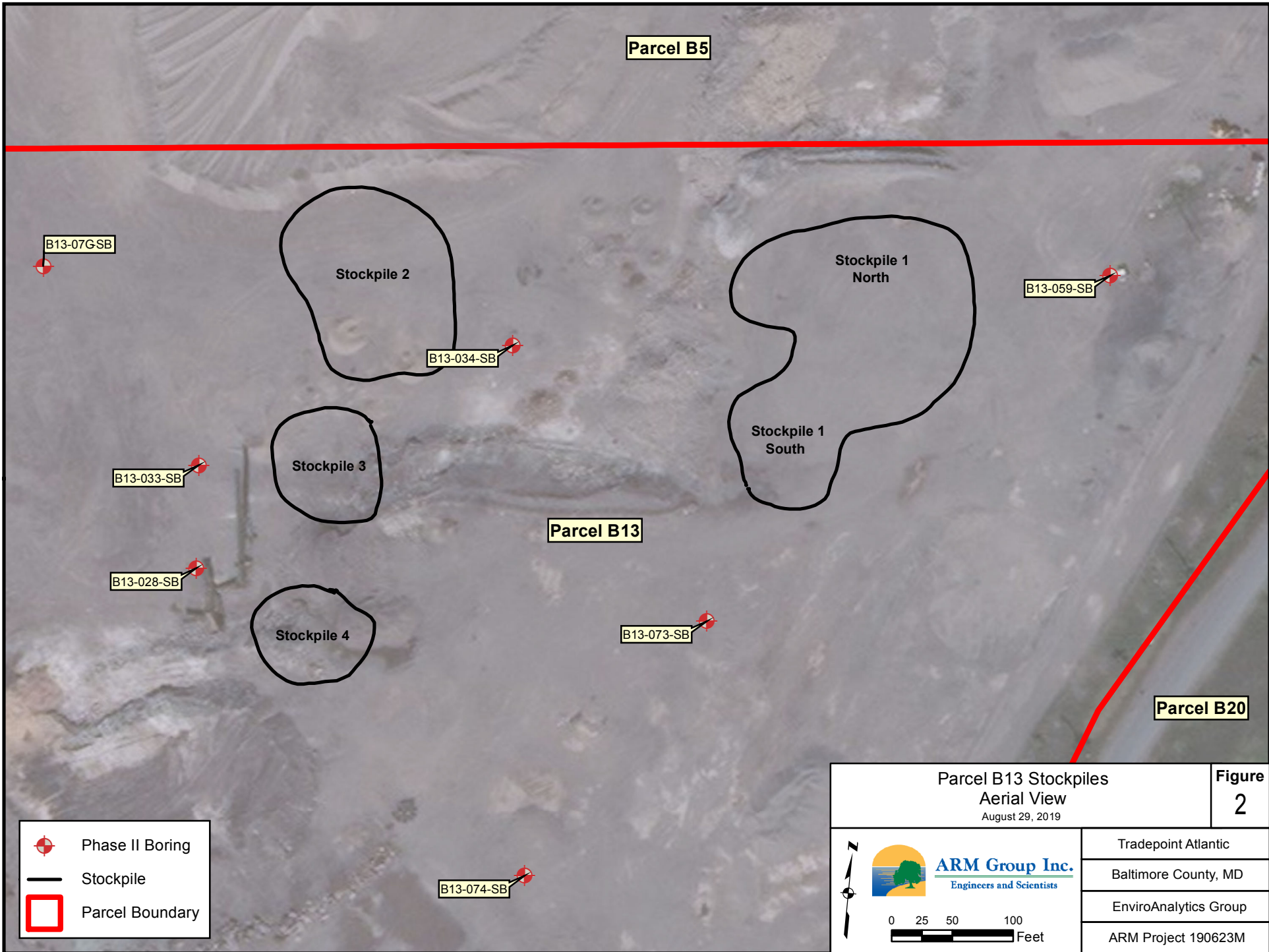
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-  Stockpiles
-  Site Boundary
-  Parcel Boundaries



<b>Tradepoint Atlantic</b> <b>Area A and Area B Parcels</b> August 29, 2019		<b>Figure</b> <span style="font-size: 2em; font-weight: bold;">1</span>
 <b>ARM Group Inc.</b> Engineers and Scientists		Tradepoint Atlantic Baltimore County, MD EnviroAnalytics Group
 		Area A: Project 150298M Area B: Project 150300M Development: Project 160443M



	Phase II Boring
	Stockpile
	Parcel Boundary

<b>Parcel B13 Stockpiles</b> <b>Aerial View</b> August 29, 2019		<b>Figure</b> <b>2</b>
	<b>ARM Group Inc.</b> Engineers and Scientists	
	Tradepoint Atlantic Baltimore County, MD	
	EnviroAnalytics Group	
	ARM Project 190623M	

Parcel B5

**SP-1-N-A (Grab)**  
VOC  
Naphthalene: 280  
SVOC  
Naphthalene: 310

**SP-1-N (Composite)**  
Inorganic  
Arsenic: 12

**SP-2-A (Grab)**  
VOC  
Naphthalene: 1,100  
SVOC  
Naphthalene: 1,100  
**SP-2 (Composite)**

**SP-3-A (Grab)**  
VOC  
Naphthalene: 50  
**SP-3 (Composite)**


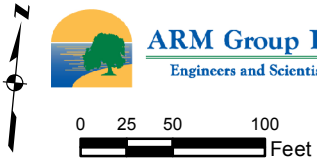
Parcel B13

**SP-1-S-A (Grab)**  
VOC  
Naphthalene: 54  
SVOC  
Naphthalene: 600  
**SP-1-S (Composite)**  
Inorganic  
Arsenic: 3.2

**SP-4-A (Grab)**  
VOC  
Naphthalene: 1,200  
SVOC  
Naphthalene: 1,100  
**SP-4 (Composite)**

Parcel B20

— Stockpile  
□ Parcel Boundary

<p>Parcel B13 Stockpiles PAL Exceedances (mg/kg) August 29, 2019</p>		<p>Figure 3</p>
 <p><b>ARM Group Inc.</b> Engineers and Scientists</p>	<p>Tradepoint Atlantic</p>	
	<p>Baltimore County, MD</p>	
	<p>EnviroAnalytics Group</p>	
	<p>ARM Project 190623M</p>	

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## **TABLES**

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**Table 1**  
**Summary of Organics and Inorganics Detected in Slag**  
**Parcel B13 - Slag Characterization Samples**  
**Tradepoint Atlantic**  
**Sparrows Point, Maryland**

Parameter	Units	PAL	SP-1-N	SP-1-N-A	SP-1-S	SP-1-S-A	SP-2	SP-2-A	SP-3	SP-3-A	SP-4	SP-4-A
<b>Metals</b>												
Antimony	mg/kg	470	<b>4.6</b>	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A
Arsenic	mg/kg	3.0	<b>12</b>	N/A	<b>3.2</b>	N/A	<b>1.6</b>	N/A	<b>1.7</b>	N/A	<b>1.6</b>	N/A
Beryllium	mg/kg	2,300	<b>3.9</b>	N/A	<b>4</b>	N/A	<b>3.2</b>	N/A	<b>5.1</b>	N/A	<b>3.8</b>	N/A
Chromium	mg/kg	120,000	<b>200</b>	N/A	<b>100</b>	N/A	<b>140</b>	N/A	<b>89</b>	N/A	<b>130</b>	N/A
Copper	mg/kg	47,000	<b>86</b>	N/A	<b>25</b>	N/A	<b>23</b>	N/A	<b>26</b>	N/A	<b>20</b>	N/A
Lead	mg/kg	800	<b>140</b>	N/A	<b>260</b>	N/A	<b>160</b>	N/A	<b>130</b>	N/A	<b>380</b>	N/A
Manganese	mg/kg	26,000	<b>5,500</b>	N/A	<b>3,500</b>	N/A	<b>5,000</b>	N/A	<b>4,800</b>	N/A	<b>5,500</b>	N/A
Nickel	mg/kg	22,000	<b>24</b>	N/A	<b>8.8</b>	N/A	<b>6.4</b>	N/A	<b>12</b>	N/A	<b>8.1</b>	N/A
Selenium	mg/kg	5,800	<b>3.9</b>	N/A	<b>4.1</b>	N/A	<b>4.1</b>	N/A	<b>3.9</b>	N/A	<b>3.8</b>	N/A
Zinc	mg/kg	350,000	<b>92</b>	N/A	<b>140</b>	N/A	<b>82</b>	N/A	<b>75</b>	N/A	<b>91</b>	N/A
<b>Total Petroleum Hydrocarbons</b>												
DRO	mg/kg	6,200	N/A	<b>3,400</b>	N/A	<b>3,800</b>	N/A	<b>4,500</b>	N/A	<b>100</b>	N/A	<b>3,300</b>
GRO	mg/kg	6,200	N/A	<b>0.55</b>	N/A	<b>0.24</b>	N/A	ND	N/A	ND	N/A	<b>0.25</b>
<b>Volatile Organic Compounds</b>												
Naphthalene	mg/kg	17	N/A	<b>280</b>	N/A	<b>54</b>	N/A	<b>1,100</b>	N/A	<b>50</b>	N/A	<b>1,200</b>
<b>Semivolatile Organic Compounds</b>												
Fluoranthene	mg/kg	30,000	N/A	<b>3.9</b>	N/A	ND	N/A	<b>2.1</b>	N/A	ND	N/A	<b>3.5</b>
Fluorene	mg/kg	30,000	N/A	ND	N/A	ND	N/A	<b>2.3</b>	N/A	ND	N/A	ND
2-Methylnaphthalene	mg/kg	3,000	N/A	<b>29</b>	N/A	<b>38</b>	N/A	<b>36</b>	N/A	ND	N/A	<b>23</b>
Naphthalene	mg/kg	17	N/A	<b>310</b>	N/A	<b>600</b>	N/A	<b>1,100</b>	N/A	<b>5.8</b>	N/A	<b>1,100</b>
Phenanthrene	mg/kg		N/A	<b>3.6</b>	N/A	ND	N/A	<b>3.0</b>	N/A	ND	N/A	<b>3.7</b>
Pyrene	mg/kg	23,000	N/A	<b>3.1</b>	N/A	ND	N/A	ND	N/A	ND	N/A	<b>2.6</b>

**Bold indicates detection**

N/A: this parameter was not analyzed for this sample

ND indicates that the analyte was not detected in the sample

Highlighted cells indicate an exceedance of the Project Action Limit (PAL)

**Table 2 - Slag Stockpiles  
COPC Screening Analysis**

Parameter	CAS#	Location of Max Result	Max Detection (mg/kg)	Final Flag	Min Detection (mg/kg)	Average Detection (mg/kg)	Total Samples	Frequency of Detection (%)	Cancer TR=1E-06 (mg/kg)	Non-Cancer HQ=0.1 (mg/kg)	COPC?
2-Methylnaphthalene	91-57-6	SP-1-S-A	38		23	31.5	5	80.00		300	no
Antimony	7440-36-0	SP-1-N	4.6		4.6	4.60	5	20.00		47	no
Arsenic	7440-38-2	SP-1-N	12		1.6	4.02	5	100.00	3	48	YES (C)
Beryllium	7440-41-7	SP-3	5.1		3.2	4.00	5	100.00	6,900	230	no
Chromium	7440-47-3	SP-1-N	200		89	132	5	100.00		180,000	no
Copper	7440-50-8	SP-1-N	86		20	36.0	5	100.00		4,700	no
Fluoranthene	206-44-0	SP-1-N-A	3.9		2.1	3.17	5	60.00		3,000	no
Fluorene	86-73-7	SP-2-A	2.3		2.3	2.30	5	20.00		3,000	no
Lead <sup>^</sup>	7439-92-1	SP-4	380		130	214	5	100.00		800	no
Manganese	7439-96-5	SP-4 & SP-1-N	5,500		3,500	4,860	5	100.00		2,600	YES (NC)
Naphthalene	91-20-3	SP-4-A	1,200		5.8	580	10	100.00	17	59	YES (C/NC)
Nickel	7440-02-0	SP-1-N	24		6.4	11.9	5	100.00	64,000	2,200	no
Phenanthrene	85-01-8	SP-4-A	3.7		3	3.43	5	60.00			no
Pyrene	129-00-0	SP-1-N-A	3.1		2.6	2.85	5	40.00		2,300	no
Selenium	7782-49-2	SP-2 & SP-1-S	4.1		3.8	3.96	5	100.00		580	no
Zinc	7440-66-6	SP-1-S	140		75	96.0	5	100.00		35,000	no

COPC = Constituent of Potential Concern

TR = Target Risk      C = Compound was identified as a cancer COPC

HQ = Hazard Quotient    NC = Compound was identified as a non-cancer COPC

<sup>^</sup>The COPC screening level for lead was not adjusted to the HQ=0.1 because lead is not assessed in the SLRA. The 800 mg/kg PAL is relevant to the Adult Lead Model procedure.

**Table 3 - Slag Stockpiles  
Slag Exposure Point Concentrations**

Parameter	Cancer COPC Screening Level (mg/kg)	Non-Cancer COPC Screening Level (mg/kg)	Slag EPCs	
			EPC Type	EPC (mg/kg)
Arsenic	3.00	48.0	Maximum Value	<b>12.0</b>
Manganese		2,600	Maximum Value	<b>5,500</b>
Naphthalene	17.0	59.0	Maximum Value	<b>1,200</b>

**Bold indicates EPC higher than lowest COPC SL**  
COPC = Constituent of Potential Concern



**Table 4 - Slag Stockpiles  
Composite Worker Risk Ratios**

Parameter	Target Organs	Slag Stockpiles				
		EPC mg/kg	Composite Worker			
			RSLs (mg/kg)		Risk Ratios	
			Cancer	Non-Cancer	Risk	HQ
<b>Arsenic</b>	<b>Cardiovascular; Dermal</b>	12.0	3.00	480	4.0E-06	0.03
<b>Manganese</b>	<b>Nervous</b>	5,500		26,000		0.2
<b>Naphthalene</b>	<b>Nervous; Respiratory</b>	1,200	17.0	590	7.1E-05	2
					<b>7E-05</b>	<b>↓</b>

RSLs were obtained from the EPA Regional Screening Levels at [https://epa-prgs.ornl.gov/cgi-bin/chemicals/csl\\_search](https://epa-prgs.ornl.gov/cgi-bin/chemicals/csl_search)

Total HI	Cardiovascular	0
	Dermal	0
	Nervous	2
	Respiratory	2

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## **APPENDIX A**

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**Analytical Report for**  
**Hillis Carnes Engineering Associates**  
**Certificate of Analysis No.: 19052018**

**Project Manager: Keith Progin**  
**Project Name : Slag Processing Area**  
**Project Location: TPA**  
**Project ID : 18019A**



**May 23, 2019**  
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# PHASE SEPARATION SCIENCE, INC.



May 23, 2019

**Keith Progin**  
**Hillis Carnes Engineering Associates**  
10975 Guilford Road, Ste. A  
Annapolis Junction, MD 20701

Reference: PSS Work Order(s) No: **19052018**  
Project Name: Slag Processing Area  
Project Location: TPA  
Project ID.: 18019A

Dear Keith Progin :

This report includes the analytical results from the analyses performed on the samples received under the project name referenced above and identified with the Phase Separation Science (PSS) Work Order(s) numbered **19052018**.

All work reported herein has been performed in accordance with current NELAP standards, referenced methodologies, PSS Standard Operating Procedures and the PSS Quality Assurance Manual unless otherwise noted in the Case Narrative Summary. PSS is limited in liability to the actual cost of the sample analysis done.

PSS reserves the right to return any unused samples, extracts or related solutions. Otherwise, the samples are scheduled for disposal, without any further notice, on June 24, 2019, with the exception of air canisters which are cleaned immediately following analysis. This includes any samples that were received with a request to be held but lacked a specific hold period. It is your responsibility to provide a written request defining a specific disposal date if additional storage is required. Upon receipt, the request will be acknowledged by PSS, thus extending the storage period.

This report shall not be reproduced except in full, without the written approval of an authorized PSS representative. A copy of this report will be retained by PSS for at least 5 years, after which time it will be disposed of without further notice, unless prior arrangements have been made.

We thank you for selecting Phase Separation Science, Inc. to serve your analytical needs. If you have any questions concerning this report, do not hesitate to contact us at 410-747-8770 or [info@phaseonline.com](mailto:info@phaseonline.com).

Sincerely,

A handwritten signature in black ink that reads 'Dan Prucnal'.

**Dan Prucnal**

Laboratory Manager



## Sample Summary

Client Name: Hillis Carnes Engineering Associates

Project Name: Slag Processing Area

Work Order Number(s): 19052018

Project ID: 18019A

The following samples were received under chain of custody by Phase Separation Science (PSS) on 05/20/2019 at 05:15 pm

Lab Sample Id	Sample Id	Matrix	Date/Time Collected
19052018-001	SP-1-N	SOIL	05/20/19 14:15
19052018-002	SP-1-N-A	SOIL	05/20/19 14:15
19052018-003	SP-1-S	SOIL	05/20/19 14:25
19052018-004	SP-1-S-A	SOIL	05/20/19 14:25
19052018-005	SP-2	SOIL	05/20/19 14:45
19052018-006	SP-2-A	SOIL	05/20/19 14:45
19052018-007	SP-3	SOIL	05/20/19 15:00
19052018-008	SP-3-A	SOIL	05/20/19 15:00
19052018-009	SP-4	SOIL	05/20/19 15:15
19052018-010	SP-4-A	SOIL	05/20/19 15:15
19052018-011	C-1	SOIL	05/20/19 15:30
19052018-012	C-2	SOIL	05/20/19 15:40

Please reference the Chain of Custody and Sample Receipt Checklist for specific container counts and preservatives. Any sample conditions not in compliance with sample acceptance criteria are described in Case Narrative Summary.

#### Notes:

1. The presence of a common laboratory contaminant such as methylene chloride may be considered a possible laboratory artifact. Where observed, appropriate consideration of data should be taken.
2. Unless otherwise noted in the case narrative, results are reported on a dry weight basis with the exception of pH, flashpoint, moisture, and paint filter test.
3. Drinking water samples collected for the purpose of compliance with SDWA may not be suitable for their intended use unless collected by a certified sampler [COMAR 26.08.05.07.C.2].
4. The analyses of 1,2-dibromo-3-chloropropane (DBCP) and 1,2-dibromoethane (EDB) by EPA 524.2 and calcium, magnesium, sodium and iron by EPA 200.8 are not currently promulgated for use in testing to meet the Safe Drinking Water Act and as such cannot be used for compliance purposes. The listings of the current promulgated methods for testing in compliance with the Safe Drinking Water Act can be found in the 40 CFR part 141.1, for the primary drinking water contaminants, and part 141.3, for the secondary drinking water contaminants.
5. Sample prepared under EPA 3550C with concentrations greater than 20 mg/Kg should employ the microtip extraction procedure if required to meet data quality objectives.
6. The analysis of acrolein by EPA 624 must be analyzed within three days of sampling unless pH is adjusted to 4-5 units [40 CFR part 136.3(e)].
7. Method 180.1, The Determination of Turbidity by Nephelometry, recommends samples over 40 NTU be diluted until the turbidity falls below 40 units. Routine samples over 40 NTU may not be diluted as long as the data quality objectives are not affected.
8. Alkalinity results analyzed by EPA 310.2 that are reported by dilution are estimated and are not in compliance with method requirements.

#### Standard Flags/Abbreviations:

- B A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- C Results Pending Final Confirmation.
- E The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- Fail The result exceeds the regulatory level for Toxicity Characteristic (TCLP) as cited in 40 CFR 261.24 Table 1.
- J The target analyte was positively identified below the reporting limit but greater than the MDL.
- MDL This is the Laboratory Method Detection Limit which is equivalent to the Limit of Detection (LOD). The LOD is an estimate of the minimum amount of a substance that an analytical process can reliably detect. This value will remain constant across multiple similar instrumentation and among different analysts. An LOD is analyte and matrix specific.
- ND Not Detected at or above the reporting limit.
- RL PSS Reporting Limit.
- U Not detected.



## Sample Summary

**Client Name: Hillis Carnes Engineering Associates**

**Project Name: Slag Processing Area**

**Work Order Number(s): 19052018**

### **Certifications:**

NELAP Certifications: PA 68-03330, VA 460156

State Certifications: MD 179, WV 303

Regulated Soil Permit: P330-12-00268

NSWC USCG Accepted Laboratory

LDBE MWA LD1997-0041-2015

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# PHASE SEPARATION SCIENCE, INC.



## CERTIFICATE OF ANALYSIS

No: 19052018

Hillis Carnes Engineering Associates, Annapolis Junction, MD

May 23, 2019

Project Name: Slag Processing Area

Project Location: TPA

Project ID: 18019A

**Sample ID: SP-1-N**      **Date/Time Sampled: 05/20/2019 14:15**      **PSS Sample ID: 19052018-001**

**Matrix: SOIL**      **Date/Time Received: 05/20/2019 17:15**      **% Solids SM2540G-11: 82**

PP Metals (plus Mn)

Analytical Method: SW-846 6020 A

Preparation Method: 3050B

Qualifier(s): See Batch 164540 on Case Narrative.

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Antimony	4.6	mg/kg	2.2		1	05/21/19	05/21/19 22:04	1064
Arsenic	12	mg/kg	0.44		1	05/21/19	05/21/19 22:04	1064
Beryllium	3.9	mg/kg	2.2		1	05/21/19	05/22/19 19:11	1064
Cadmium	ND	mg/kg	2.2		1	05/21/19	05/21/19 22:04	1064
Chromium	200	mg/kg	2.2		1	05/21/19	05/21/19 22:04	1064
Copper	86	mg/kg	2.2		1	05/21/19	05/21/19 22:04	1064
Lead	140	mg/kg	2.2		1	05/21/19	05/22/19 19:11	1064
Manganese	5,500	mg/kg	220		100	05/21/19	05/23/19 13:44	1064
Mercury	ND	mg/kg	0.087		1	05/21/19	05/21/19 22:04	1064
Nickel	24	mg/kg	2.2		1	05/21/19	05/21/19 22:04	1064
Selenium	3.9	mg/kg	2.2		1	05/21/19	05/21/19 22:04	1064
Silver	ND	mg/kg	2.2		1	05/21/19	05/21/19 22:04	1064
Thallium	ND	mg/kg	1.7		1	05/21/19	05/21/19 22:04	1064
Zinc	92	mg/kg	8.7		1	05/21/19	05/21/19 22:04	1064

Polychlorinated Biphenyls

Analytical Method: SW-846 8082 A

Preparation Method: SW3550C

Clean up Method: SW846 3665A

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
PCB-1016	ND	mg/kg	0.062		1	05/21/19	05/21/19 17:25	1029
PCB-1221	ND	mg/kg	0.062		1	05/21/19	05/21/19 17:25	1029
PCB-1232	ND	mg/kg	0.062		1	05/21/19	05/21/19 17:25	1029
PCB-1242	ND	mg/kg	0.062		1	05/21/19	05/21/19 17:25	1029
PCB-1248	ND	mg/kg	0.062		1	05/21/19	05/21/19 17:25	1029
PCB-1254	ND	mg/kg	0.062		1	05/21/19	05/21/19 17:25	1029
PCB-1260	ND	mg/kg	0.062		1	05/21/19	05/21/19 17:25	1029

Surrogate(s)	Recovery	Units	Limits		Prepared	Analyzed	Analyst
Tetrachloro-m-xylene	64	%	42-142	1	05/21/19	05/21/19 17:25	1029
Decachlorobiphenyl	101	%	61-150	1	05/21/19	05/21/19 17:25	1029

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# PHASE SEPARATION SCIENCE, INC.



## CERTIFICATE OF ANALYSIS

No: 19052018

Hillis Carnes Engineering Associates, Annapolis Junction, MD

May 23, 2019

Project Name: Slag Processing Area

Project Location: TPA

Project ID: 18019A

<b>Sample ID: SP-1-N-A</b>	<b>Date/Time Sampled: 05/20/2019 14:15</b>	<b>PSS Sample ID: 19052018-002</b>
<b>Matrix: SOIL</b>	<b>Date/Time Received: 05/20/2019 17:15</b>	<b>% Solids SM2540G-11: 80</b>
Total Petroleum Hydrocarbons - DRO	Analytical Method: SW-846 8015 C	Preparation Method: SW3550C

*DF/HF - No. 2/diesel fuel and heavier fuel/oil patterns observed in sample.*

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
TPH-DRO (Diesel Range Organics)	3,400	mg/kg	42	DF	10	05/21/19	05/22/19 02:22	1059
<b>Surrogate(s)</b>	<b>Recovery</b>		<b>Limits</b>					
<i>o-Terphenyl</i>	88	%	37-120		10	05/21/19	05/22/19 02:22	1059

Total Petroleum Hydrocarbons-GRO Analytical Method: SW-846 8015C Preparation Method: 5030

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
TPH-GRO (Gasoline Range Organics)	550	ug/kg	120		1	05/21/19	05/21/19 23:51	1045
<b>Surrogate(s)</b>	<b>Recovery</b>		<b>Limits</b>					
<i>a,a,a-Trifluorotoluene</i>	98	%	56-114		1	05/21/19	05/21/19 23:51	1045

TCL Volatile Organic Compounds Analytical Method: SW-846 8260 B Preparation Method: 5030

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/kg	13,000		1000	05/21/19	05/21/19 15:19	1011
Benzene	ND	ug/kg	1,300		1000	05/21/19	05/21/19 15:19	1011
Bromochloromethane	ND	ug/kg	1,300		1000	05/21/19	05/21/19 15:19	1011
Bromodichloromethane	ND	ug/kg	1,300		1000	05/21/19	05/21/19 15:19	1011
Bromoform	ND	ug/kg	1,300		1000	05/21/19	05/21/19 15:19	1011
Bromomethane	ND	ug/kg	1,300		1000	05/21/19	05/21/19 15:19	1011
2-Butanone (MEK)	ND	ug/kg	6,300		1000	05/21/19	05/21/19 15:19	1011
Carbon Disulfide	ND	ug/kg	1,300		1000	05/21/19	05/21/19 15:19	1011
Carbon tetrachloride	ND	ug/kg	1,300		1000	05/21/19	05/21/19 15:19	1011
Chlorobenzene	ND	ug/kg	1,300		1000	05/21/19	05/21/19 15:19	1011
Chloroethane	ND	ug/kg	1,300		1000	05/21/19	05/21/19 15:19	1011
Chloroform	ND	ug/kg	6,300		1000	05/21/19	05/21/19 15:19	1011



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# PHASE SEPARATION SCIENCE, INC.



## CERTIFICATE OF ANALYSIS

No: 19052018

Hillis Carnes Engineering Associates, Annapolis Junction, MD

May 23, 2019

Project Name: Slag Processing Area

Project Location: TPA

Project ID: 18019A

<b>Sample ID: SP-1-N-A</b>	<b>Date/Time Sampled: 05/20/2019 14:15</b>	<b>PSS Sample ID: 19052018-002</b>
<b>Matrix: SOIL</b>	<b>Date/Time Received: 05/20/2019 17:15</b>	<b>% Solids SM2540G-11: 80</b>
TCL Volatile Organic Compounds	Analytical Method: SW-846 8260 B	Preparation Method: 5030

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Chloromethane	ND	ug/kg	1,300		1000	05/21/19	05/21/19 15:19	1011
Cyclohexane	ND	ug/kg	1,300		1000	05/21/19	05/21/19 15:19	1011
1,2-Dibromo-3-chloropropane	ND	ug/kg	1,300		1000	05/21/19	05/21/19 15:19	1011
Dibromochloromethane	ND	ug/kg	1,300		1000	05/21/19	05/21/19 15:19	1011
1,2-Dibromoethane	ND	ug/kg	1,300		1000	05/21/19	05/21/19 15:19	1011
1,2-Dichlorobenzene	ND	ug/kg	1,300		1000	05/21/19	05/21/19 15:19	1011
1,3-Dichlorobenzene	ND	ug/kg	1,300		1000	05/21/19	05/21/19 15:19	1011
1,4-Dichlorobenzene	ND	ug/kg	1,300		1000	05/21/19	05/21/19 15:19	1011
Dichlorodifluoromethane	ND	ug/kg	1,300		1000	05/21/19	05/21/19 15:19	1011
1,1-Dichloroethane	ND	ug/kg	1,300		1000	05/21/19	05/21/19 15:19	1011
1,2-Dichloroethane	ND	ug/kg	1,300		1000	05/21/19	05/21/19 15:19	1011
1,1-Dichloroethene	ND	ug/kg	1,300		1000	05/21/19	05/21/19 15:19	1011
1,2-Dichloropropane	ND	ug/kg	1,300		1000	05/21/19	05/21/19 15:19	1011
cis-1,2-Dichloroethene	ND	ug/kg	1,300		1000	05/21/19	05/21/19 15:19	1011
cis-1,3-Dichloropropene	ND	ug/kg	1,300		1000	05/21/19	05/21/19 15:19	1011
trans-1,2-Dichloroethene	ND	ug/kg	1,300		1000	05/21/19	05/21/19 15:19	1011
trans-1,3-Dichloropropene	ND	ug/kg	1,300		1000	05/21/19	05/21/19 15:19	1011
Ethylbenzene	ND	ug/kg	1,300		1000	05/21/19	05/21/19 15:19	1011
2-Hexanone (MBK)	ND	ug/kg	1,300		1000	05/21/19	05/21/19 15:19	1011
Isopropylbenzene	ND	ug/kg	1,300		1000	05/21/19	05/21/19 15:19	1011
Methyl Acetate	ND	ug/kg	1,300		1000	05/21/19	05/21/19 15:19	1011
Methylcyclohexane	ND	ug/kg	1,300		1000	05/21/19	05/21/19 15:19	1011
Methylene chloride	ND	ug/kg	6,300		1000	05/21/19	05/21/19 15:19	1011
4-Methyl-2-Pentanone (MIBK)	ND	ug/kg	1,300		1000	05/21/19	05/21/19 15:19	1011
Methyl-t-Butyl Ether	ND	ug/kg	1,300		1000	05/21/19	05/21/19 15:19	1011
Naphthalene	<b>280,000</b>	ug/kg	1,300		1000	05/21/19	05/21/19 15:19	1011
Styrene	ND	ug/kg	1,300		1000	05/21/19	05/21/19 15:19	1011
1,1,2,2-Tetrachloroethane	ND	ug/kg	1,300		1000	05/21/19	05/21/19 15:19	1011
Tetrachloroethene	ND	ug/kg	1,300		1000	05/21/19	05/21/19 15:19	1011

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# PHASE SEPARATION SCIENCE, INC.



## CERTIFICATE OF ANALYSIS

No: 19052018

Hillis Carnes Engineering Associates, Annapolis Junction, MD

May 23, 2019

Project Name: Slag Processing Area

Project Location: TPA

Project ID: 18019A

<b>Sample ID: SP-1-N-A</b>	<b>Date/Time Sampled: 05/20/2019 14:15</b>	<b>PSS Sample ID: 19052018-002</b>
<b>Matrix: SOIL</b>	<b>Date/Time Received: 05/20/2019 17:15</b>	<b>% Solids SM2540G-11: 80</b>
TCL Volatile Organic Compounds	Analytical Method: SW-846 8260 B	Preparation Method: 5030

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Toluene	ND	ug/kg	1,300		1000	05/21/19	05/21/19 15:19	1011
1,2,3-Trichlorobenzene	ND	ug/kg	1,300		1000	05/21/19	05/21/19 15:19	1011
1,2,4-Trichlorobenzene	ND	ug/kg	1,300		1000	05/21/19	05/21/19 15:19	1011
1,1,1-Trichloroethane	ND	ug/kg	1,300		1000	05/21/19	05/21/19 15:19	1011
1,1,2-Trichloroethane	ND	ug/kg	1,300		1000	05/21/19	05/21/19 15:19	1011
Trichloroethene	ND	ug/kg	1,300		1000	05/21/19	05/21/19 15:19	1011
Trichlorofluoromethane	ND	ug/kg	1,300		1000	05/21/19	05/21/19 15:19	1011
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	1,300		1000	05/21/19	05/21/19 15:19	1011
Vinyl chloride	ND	ug/kg	6,300		1000	05/21/19	05/21/19 15:19	1011
m&p-Xylene	ND	ug/kg	2,500		1000	05/21/19	05/21/19 15:19	1011
o-Xylene	ND	ug/kg	1,300		1000	05/21/19	05/21/19 15:19	1011
<b>Surrogate(s)</b>	<b>Recovery</b>		<b>Limits</b>					
4-Bromofluorobenzene	100 %		81-146		1000	05/21/19	05/21/19 15:19	1011
Dibromofluoromethane	102 %		89-120		1000	05/21/19	05/21/19 15:19	1011
Toluene-D8	106 %		86-116		1000	05/21/19	05/21/19 15:19	1011

TCL Semivolatile Organic Compounds Analytical Method: SW-846 8270 C Preparation Method: SW3550C  
 Qualifier(s): See Batch 164534 on Case Narrative.

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acenaphthene	ND	ug/kg	2,100		100	05/21/19	05/21/19 18:25	1014
Acenaphthylene	ND	ug/kg	2,100		100	05/21/19	05/21/19 18:25	1014
Acetophenone	ND	ug/kg	21,000		100	05/21/19	05/21/19 18:25	1014
Anthracene	ND	ug/kg	2,100		100	05/21/19	05/21/19 18:25	1014
Atrazine	ND	ug/kg	21,000		100	05/21/19	05/21/19 18:25	1014
Benzo(a)anthracene	ND	ug/kg	2,100		100	05/21/19	05/21/19 18:25	1014
Benzo(a)pyrene	ND	ug/kg	2,100		100	05/21/19	05/21/19 18:25	1014
Benzo(b)fluoranthene	ND	ug/kg	2,100		100	05/21/19	05/21/19 18:25	1014
Benzo(g,h,i)perylene	ND	ug/kg	2,100		100	05/21/19	05/21/19 18:25	1014

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# PHASE SEPARATION SCIENCE, INC.



## CERTIFICATE OF ANALYSIS

No: 19052018

Hillis Carnes Engineering Associates, Annapolis Junction, MD

May 23, 2019

Project Name: Slag Processing Area

Project Location: TPA

Project ID: 18019A

**Sample ID: SP-1-N-A**      **Date/Time Sampled: 05/20/2019 14:15**      **PSS Sample ID: 19052018-002**  
**Matrix: SOIL**      **Date/Time Received: 05/20/2019 17:15**      **% Solids SM2540G-11: 80**

TCL Semivolatile Organic Compounds

Analytical Method: SW-846 8270 C

Preparation Method: SW3550C

Qualifier(s): See Batch 164534 on Case Narrative.

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Benzo(k)fluoranthene	ND	ug/kg	2,100		100	05/21/19	05/21/19 18:25	1014
Biphenyl (Diphenyl)	ND	ug/kg	21,000		100	05/21/19	05/21/19 18:25	1014
Butyl benzyl phthalate	ND	ug/kg	21,000		100	05/21/19	05/21/19 18:25	1014
bis(2-chloroethoxy) methane	ND	ug/kg	21,000		100	05/21/19	05/21/19 18:25	1014
bis(2-chloroethyl) ether	ND	ug/kg	21,000		100	05/21/19	05/21/19 18:25	1014
bis(2-chloroisopropyl) ether	ND	ug/kg	21,000		100	05/21/19	05/21/19 18:25	1014
bis(2-ethylhexyl) phthalate	ND	ug/kg	21,000		100	05/21/19	05/21/19 18:25	1014
4-Bromophenylphenyl ether	ND	ug/kg	21,000		100	05/21/19	05/21/19 18:25	1014
Di-n-butyl phthalate	ND	ug/kg	21,000		100	05/21/19	05/21/19 18:25	1014
Carbazole	ND	ug/kg	21,000		100	05/21/19	05/21/19 18:25	1014
Caprolactam	ND	ug/kg	21,000		100	05/21/19	05/21/19 18:25	1014
4-Chloro-3-methyl phenol	ND	ug/kg	21,000		100	05/21/19	05/21/19 18:25	1014
4-Chloroaniline	ND	ug/kg	21,000		100	05/21/19	05/21/19 18:25	1014
2-Chloronaphthalene	ND	ug/kg	21,000		100	05/21/19	05/21/19 18:25	1014
2-Chlorophenol	ND	ug/kg	21,000		100	05/21/19	05/21/19 18:25	1014
4-Chlorophenyl Phenyl ether	ND	ug/kg	21,000		100	05/21/19	05/21/19 18:25	1014
Chrysene	ND	ug/kg	2,100		100	05/21/19	05/21/19 18:25	1014
Dibenz(a,h)Anthracene	ND	ug/kg	2,100		100	05/21/19	05/21/19 18:25	1014
Dibenzofuran	ND	ug/kg	21,000		100	05/21/19	05/21/19 18:25	1014
3,3-Dichlorobenzidine	ND	ug/kg	21,000		100	05/21/19	05/21/19 18:25	1014
2,4-Dichlorophenol	ND	ug/kg	21,000		100	05/21/19	05/21/19 18:25	1014
Diethyl phthalate	ND	ug/kg	21,000		100	05/21/19	05/21/19 18:25	1014
Dimethyl phthalate	ND	ug/kg	21,000		100	05/21/19	05/21/19 18:25	1014
2,4-Dimethylphenol	ND	ug/kg	21,000		100	05/21/19	05/21/19 18:25	1014
4,6-Dinitro-2-methyl phenol	ND	ug/kg	21,000		100	05/21/19	05/21/19 18:25	1014
2,4-Dinitrophenol	ND	ug/kg	42,000		100	05/21/19	05/21/19 18:25	1014
2,4-Dinitrotoluene	ND	ug/kg	21,000		100	05/21/19	05/21/19 18:25	1014
2,6-Dinitrotoluene	ND	ug/kg	21,000		100	05/21/19	05/21/19 18:25	1014
Fluoranthene	<b>3,900</b>	ug/kg	2,100		100	05/21/19	05/21/19 18:25	1014

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# PHASE SEPARATION SCIENCE, INC.



## CERTIFICATE OF ANALYSIS

No: 19052018

Hillis Carnes Engineering Associates, Annapolis Junction, MD

May 23, 2019

Project Name: Slag Processing Area

Project Location: TPA

Project ID: 18019A

**Sample ID: SP-1-N-A**      **Date/Time Sampled: 05/20/2019 14:15**      **PSS Sample ID: 19052018-002**  
**Matrix: SOIL**      **Date/Time Received: 05/20/2019 17:15**      **% Solids SM2540G-11: 80**

TCL Semivolatile Organic Compounds

Analytical Method: SW-846 8270 C

Preparation Method: SW3550C

Qualifier(s): See Batch 164534 on Case Narrative.

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Fluorene	ND	ug/kg	2,100		100	05/21/19	05/21/19 18:25	1014
Hexachlorobenzene	ND	ug/kg	21,000		100	05/21/19	05/21/19 18:25	1014
Hexachlorobutadiene	ND	ug/kg	21,000		100	05/21/19	05/21/19 18:25	1014
Hexachlorocyclopentadiene	ND	ug/kg	21,000		100	05/21/19	05/21/19 18:25	1014
Hexachloroethane	ND	ug/kg	21,000		100	05/21/19	05/21/19 18:25	1014
Indeno(1,2,3-c,d)Pyrene	ND	ug/kg	2,100		100	05/21/19	05/21/19 18:25	1014
Isophorone	ND	ug/kg	21,000		100	05/21/19	05/21/19 18:25	1014
2-Methylnaphthalene	<b>29,000</b>	ug/kg	2,100		100	05/21/19	05/21/19 18:25	1014
2-Methyl phenol	ND	ug/kg	21,000		100	05/21/19	05/21/19 18:25	1014
3&4-Methylphenol	ND	ug/kg	21,000		100	05/21/19	05/21/19 18:25	1014
Naphthalene	<b>310,000</b>	ug/kg	21,000		1000	05/21/19	05/21/19 17:01	1014
2-Nitroaniline	ND	ug/kg	21,000		100	05/21/19	05/21/19 18:25	1014
3-Nitroaniline	ND	ug/kg	21,000		100	05/21/19	05/21/19 18:25	1014
4-Nitroaniline	ND	ug/kg	21,000		100	05/21/19	05/21/19 18:25	1014
Nitrobenzene	ND	ug/kg	21,000		100	05/21/19	05/21/19 18:25	1014
2-Nitrophenol	ND	ug/kg	21,000		100	05/21/19	05/21/19 18:25	1014
4-Nitrophenol	ND	ug/kg	21,000		100	05/21/19	05/21/19 18:25	1014
N-Nitrosodi-n-propyl amine	ND	ug/kg	21,000		100	05/21/19	05/21/19 18:25	1014
N-Nitrosodiphenylamine	ND	ug/kg	21,000		100	05/21/19	05/21/19 18:25	1014
Di-n-octyl phthalate	ND	ug/kg	21,000		100	05/21/19	05/21/19 18:25	1014
Pentachlorophenol	ND	ug/kg	21,000		100	05/21/19	05/21/19 18:25	1014
Phenanthrene	<b>3,600</b>	ug/kg	2,100		100	05/21/19	05/21/19 18:25	1014
Phenol	ND	ug/kg	21,000		100	05/21/19	05/21/19 18:25	1014
Pyrene	<b>3,100</b>	ug/kg	2,100		100	05/21/19	05/21/19 18:25	1014
Pyridine	ND	ug/kg	21,000		100	05/21/19	05/21/19 18:25	1014
2,4,5-Trichlorophenol	ND	ug/kg	21,000		100	05/21/19	05/21/19 18:25	1014
2,4,6-Trichlorophenol	ND	ug/kg	21,000		100	05/21/19	05/21/19 18:25	1014

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# PHASE SEPARATION SCIENCE, INC.



## CERTIFICATE OF ANALYSIS

No: 19052018

Hillis Carnes Engineering Associates, Annapolis Junction, MD  
 May 23, 2019

Project Name: Slag Processing Area  
 Project Location: TPA  
 Project ID: 18019A

**Sample ID: SP-1-N-A**      **Date/Time Sampled: 05/20/2019 14:15**      **PSS Sample ID: 19052018-002**  
**Matrix: SOIL**      **Date/Time Received: 05/20/2019 17:15**      **% Solids SM2540G-11: 80**

TCL Semivolatile Organic Compounds

Analytical Method: SW-846 8270 C

Preparation Method: SW3550C

Qualifier(s): See Batch 164534 on Case Narrative.

Surrogate(s)	Recovery	Limits						
2-Fluorobiphenyl	0 %	32-107	*	1000	05/21/19	05/21/19 17:01	1014	
2-Fluorophenol	0 %	34-113	*	1000	05/21/19	05/21/19 17:01	1014	
Nitrobenzene-d5	0 %	35-123	*	1000	05/21/19	05/21/19 17:01	1014	
Phenol-d6	0 %	34-120	*	1000	05/21/19	05/21/19 17:01	1014	
Terphenyl-D14	50 %	46-154		1000	05/21/19	05/21/19 17:01	1014	
2,4,6-Tribromophenol	0 %	31-113	*	1000	05/21/19	05/21/19 17:01	1014	
2-Fluorobiphenyl	65 %	32-107		100	05/21/19	05/21/19 18:25	1014	
2-Fluorophenol	8 %	34-113	*	100	05/21/19	05/21/19 18:25	1014	
Nitrobenzene-d5	50 %	35-123		100	05/21/19	05/21/19 18:25	1014	
Phenol-d6	20 %	34-120	*	100	05/21/19	05/21/19 18:25	1014	
Terphenyl-D14	90 %	46-154		100	05/21/19	05/21/19 18:25	1014	
2,4,6-Tribromophenol	0 %	31-113	*	100	05/21/19	05/21/19 18:25	1014	

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# PHASE SEPARATION SCIENCE, INC.



## CERTIFICATE OF ANALYSIS

No: 19052018

Hillis Carnes Engineering Associates, Annapolis Junction, MD

May 23, 2019

Project Name: Slag Processing Area

Project Location: TPA

Project ID: 18019A

**Sample ID: SP-1-S**      **Date/Time Sampled: 05/20/2019 14:25**      **PSS Sample ID: 19052018-003**  
**Matrix: SOIL**      **Date/Time Received: 05/20/2019 17:15**      **% Solids SM2540G-11: 80**

PP Metals (plus Mn)

Analytical Method: SW-846 6020 A

Preparation Method: 3050B

Qualifier(s): See Batch 164540 on Case Narrative.

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Antimony	ND	mg/kg	2.7		1	05/21/19	05/21/19 22:10	1064
Arsenic	3.2	mg/kg	0.54		1	05/21/19	05/21/19 22:10	1064
Beryllium	4.0	mg/kg	2.7		1	05/21/19	05/22/19 19:17	1064
Cadmium	ND	mg/kg	2.7		1	05/21/19	05/21/19 22:10	1064
Chromium	100	mg/kg	2.7		1	05/21/19	05/21/19 22:10	1064
Copper	25	mg/kg	2.7		1	05/21/19	05/21/19 22:10	1064
Lead	260	mg/kg	2.7		1	05/21/19	05/22/19 19:17	1064
Manganese	3,500	mg/kg	27		10	05/21/19	05/22/19 17:53	1064
Mercury	ND	mg/kg	0.11		1	05/21/19	05/21/19 22:10	1064
Nickel	8.8	mg/kg	2.7		1	05/21/19	05/21/19 22:10	1064
Selenium	4.1	mg/kg	2.7		1	05/21/19	05/21/19 22:10	1064
Silver	ND	mg/kg	2.7		1	05/21/19	05/21/19 22:10	1064
Thallium	ND	mg/kg	2.1		1	05/21/19	05/21/19 22:10	1064
Zinc	140	mg/kg	11		1	05/21/19	05/21/19 22:10	1064

Polychlorinated Biphenyls

Analytical Method: SW-846 8082 A

Preparation Method: SW3550C

Clean up Method: SW846 3665A

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
PCB-1016	ND	mg/kg	0.063		1	05/21/19	05/21/19 17:53	1029
PCB-1221	ND	mg/kg	0.063		1	05/21/19	05/21/19 17:53	1029
PCB-1232	ND	mg/kg	0.063		1	05/21/19	05/21/19 17:53	1029
PCB-1242	ND	mg/kg	0.063		1	05/21/19	05/21/19 17:53	1029
PCB-1248	ND	mg/kg	0.063		1	05/21/19	05/21/19 17:53	1029
PCB-1254	ND	mg/kg	0.063		1	05/21/19	05/21/19 17:53	1029
PCB-1260	ND	mg/kg	0.063		1	05/21/19	05/21/19 17:53	1029

Surrogate(s)	Recovery	Limits						
Tetrachloro-m-xylene	66 %	42-142	1		05/21/19	05/21/19 17:53	1029	
Decachlorobiphenyl	100 %	61-150	1		05/21/19	05/21/19 17:53	1029	

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# PHASE SEPARATION SCIENCE, INC.



## CERTIFICATE OF ANALYSIS

No: 19052018

Hillis Carnes Engineering Associates, Annapolis Junction, MD

May 23, 2019

Project Name: Slag Processing Area

Project Location: TPA

Project ID: 18019A

**Sample ID: SP-1-S-A**      **Date/Time Sampled: 05/20/2019 14:25**      **PSS Sample ID: 19052018-004**  
**Matrix: SOIL**      **Date/Time Received: 05/20/2019 17:15**      **% Solids SM2540G-11: 78**

Total Petroleum Hydrocarbons - DRO      Analytical Method: SW-846 8015 C      Preparation Method: SW3550C

Qualifier(s): See Batch 164528 on Case Narrative.

*DF/HF - No. 2/diesel fuel and heavier fuel/oil patterns observed in sample.*

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
TPH-DRO (Diesel Range Organics)	3,800	mg/kg	43	DF	10	05/21/19	05/22/19 01:31	1059
<b>Surrogate(s)</b>	<b>Recovery</b>		<b>Limits</b>					
o-Terphenyl	88	%	37-120		10	05/21/19	05/22/19 01:31	1059

Total Petroleum Hydrocarbons-GRO      Analytical Method: SW-846 8015C      Preparation Method: 5030

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
TPH-GRO (Gasoline Range Organics)	240	ug/kg	130		1	05/21/19	05/22/19 00:22	1045
<b>Surrogate(s)</b>	<b>Recovery</b>		<b>Limits</b>					
a,a,a-Trifluorotoluene	99	%	56-114		1	05/21/19	05/22/19 00:22	1045

TCL Volatile Organic Compounds      Analytical Method: SW-846 8260 B      Preparation Method: 5030

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/kg	13,000		1000	05/21/19	05/21/19 18:24	1011
Benzene	ND	ug/kg	1,300		1000	05/21/19	05/21/19 18:24	1011
Bromochloromethane	ND	ug/kg	1,300		1000	05/21/19	05/21/19 18:24	1011
Bromodichloromethane	ND	ug/kg	1,300		1000	05/21/19	05/21/19 18:24	1011
Bromoform	ND	ug/kg	1,300		1000	05/21/19	05/21/19 18:24	1011
Bromomethane	ND	ug/kg	1,300		1000	05/21/19	05/21/19 18:24	1011
2-Butanone (MEK)	ND	ug/kg	6,400		1000	05/21/19	05/21/19 18:24	1011
Carbon Disulfide	ND	ug/kg	1,300		1000	05/21/19	05/21/19 18:24	1011
Carbon tetrachloride	ND	ug/kg	1,300		1000	05/21/19	05/21/19 18:24	1011
Chlorobenzene	ND	ug/kg	1,300		1000	05/21/19	05/21/19 18:24	1011
Chloroethane	ND	ug/kg	1,300		1000	05/21/19	05/21/19 18:24	1011
Chloroform	ND	ug/kg	6,400		1000	05/21/19	05/21/19 18:24	1011

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# PHASE SEPARATION SCIENCE, INC.



## CERTIFICATE OF ANALYSIS

No: 19052018

Hillis Carnes Engineering Associates, Annapolis Junction, MD  
 May 23, 2019

Project Name: Slag Processing Area  
 Project Location: TPA  
 Project ID: 18019A

<b>Sample ID: SP-1-S-A</b>	<b>Date/Time Sampled: 05/20/2019 14:25</b>	<b>PSS Sample ID: 19052018-004</b>
<b>Matrix: SOIL</b>	<b>Date/Time Received: 05/20/2019 17:15</b>	<b>% Solids SM2540G-11: 78</b>
TCL Volatile Organic Compounds	Analytical Method: SW-846 8260 B	Preparation Method: 5030

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Chloromethane	ND	ug/kg	1,300		1000	05/21/19	05/21/19 18:24	1011
Cyclohexane	ND	ug/kg	1,300		1000	05/21/19	05/21/19 18:24	1011
1,2-Dibromo-3-chloropropane	ND	ug/kg	1,300		1000	05/21/19	05/21/19 18:24	1011
Dibromochloromethane	ND	ug/kg	1,300		1000	05/21/19	05/21/19 18:24	1011
1,2-Dibromoethane	ND	ug/kg	1,300		1000	05/21/19	05/21/19 18:24	1011
1,2-Dichlorobenzene	ND	ug/kg	1,300		1000	05/21/19	05/21/19 18:24	1011
1,3-Dichlorobenzene	ND	ug/kg	1,300		1000	05/21/19	05/21/19 18:24	1011
1,4-Dichlorobenzene	ND	ug/kg	1,300		1000	05/21/19	05/21/19 18:24	1011
Dichlorodifluoromethane	ND	ug/kg	1,300		1000	05/21/19	05/21/19 18:24	1011
1,1-Dichloroethane	ND	ug/kg	1,300		1000	05/21/19	05/21/19 18:24	1011
1,2-Dichloroethane	ND	ug/kg	1,300		1000	05/21/19	05/21/19 18:24	1011
1,1-Dichloroethene	ND	ug/kg	1,300		1000	05/21/19	05/21/19 18:24	1011
1,2-Dichloropropane	ND	ug/kg	1,300		1000	05/21/19	05/21/19 18:24	1011
cis-1,2-Dichloroethene	ND	ug/kg	1,300		1000	05/21/19	05/21/19 18:24	1011
cis-1,3-Dichloropropene	ND	ug/kg	1,300		1000	05/21/19	05/21/19 18:24	1011
trans-1,2-Dichloroethene	ND	ug/kg	1,300		1000	05/21/19	05/21/19 18:24	1011
trans-1,3-Dichloropropene	ND	ug/kg	1,300		1000	05/21/19	05/21/19 18:24	1011
Ethylbenzene	ND	ug/kg	1,300		1000	05/21/19	05/21/19 18:24	1011
2-Hexanone (MBK)	ND	ug/kg	1,300		1000	05/21/19	05/21/19 18:24	1011
Isopropylbenzene	ND	ug/kg	1,300		1000	05/21/19	05/21/19 18:24	1011
Methyl Acetate	ND	ug/kg	1,300		1000	05/21/19	05/21/19 18:24	1011
Methylcyclohexane	ND	ug/kg	1,300		1000	05/21/19	05/21/19 18:24	1011
Methylene chloride	ND	ug/kg	6,400		1000	05/21/19	05/21/19 18:24	1011
4-Methyl-2-Pentanone (MIBK)	ND	ug/kg	1,300		1000	05/21/19	05/21/19 18:24	1011
Methyl-t-Butyl Ether	ND	ug/kg	1,300		1000	05/21/19	05/21/19 18:24	1011
Naphthalene	<b>54,000</b>	ug/kg	1,300		1000	05/21/19	05/21/19 18:24	1011
Styrene	ND	ug/kg	1,300		1000	05/21/19	05/21/19 18:24	1011
1,1,2,2-Tetrachloroethane	ND	ug/kg	1,300		1000	05/21/19	05/21/19 18:24	1011
Tetrachloroethene	ND	ug/kg	1,300		1000	05/21/19	05/21/19 18:24	1011



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# PHASE SEPARATION SCIENCE, INC.



## CERTIFICATE OF ANALYSIS

No: 19052018

Hillis Carnes Engineering Associates, Annapolis Junction, MD  
 May 23, 2019

Project Name: Slag Processing Area  
 Project Location: TPA  
 Project ID: 18019A

**Sample ID: SP-1-S-A**      **Date/Time Sampled: 05/20/2019 14:25**      **PSS Sample ID: 19052018-004**  
**Matrix: SOIL**      **Date/Time Received: 05/20/2019 17:15**      **% Solids SM2540G-11: 78**  
 TCL Volatile Organic Compounds      Analytical Method: SW-846 8260 B      Preparation Method: 5030

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Toluene	ND	ug/kg	1,300		1000	05/21/19	05/21/19 18:24	1011
1,2,3-Trichlorobenzene	ND	ug/kg	1,300		1000	05/21/19	05/21/19 18:24	1011
1,2,4-Trichlorobenzene	ND	ug/kg	1,300		1000	05/21/19	05/21/19 18:24	1011
1,1,1-Trichloroethane	ND	ug/kg	1,300		1000	05/21/19	05/21/19 18:24	1011
1,1,2-Trichloroethane	ND	ug/kg	1,300		1000	05/21/19	05/21/19 18:24	1011
Trichloroethene	ND	ug/kg	1,300		1000	05/21/19	05/21/19 18:24	1011
Trichlorofluoromethane	ND	ug/kg	1,300		1000	05/21/19	05/21/19 18:24	1011
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	1,300		1000	05/21/19	05/21/19 18:24	1011
Vinyl chloride	ND	ug/kg	6,400		1000	05/21/19	05/21/19 18:24	1011
m&p-Xylene	ND	ug/kg	2,600		1000	05/21/19	05/21/19 18:24	1011
o-Xylene	ND	ug/kg	1,300		1000	05/21/19	05/21/19 18:24	1011
<b>Surrogate(s)</b>	<b>Recovery</b>		<b>Limits</b>					
4-Bromofluorobenzene	98 %		81-146		1000	05/21/19	05/21/19 18:24	1011
Dibromofluoromethane	98 %		89-120		1000	05/21/19	05/21/19 18:24	1011
Toluene-D8	106 %		86-116		1000	05/21/19	05/21/19 18:24	1011

TCL Semivolatile Organic Compounds      Analytical Method: SW-846 8270 C      Preparation Method: SW3550C  
 Qualifier(s): See Batch 164534 on Case Narrative.

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acenaphthene	ND	ug/kg	4,300		200	05/21/19	05/21/19 18:53	1014
Acenaphthylene	ND	ug/kg	4,300		200	05/21/19	05/21/19 18:53	1014
Acetophenone	ND	ug/kg	43,000		200	05/21/19	05/21/19 18:53	1014
Anthracene	ND	ug/kg	4,300		200	05/21/19	05/21/19 18:53	1014
Atrazine	ND	ug/kg	43,000		200	05/21/19	05/21/19 18:53	1014
Benzo(a)anthracene	ND	ug/kg	4,300		200	05/21/19	05/21/19 18:53	1014
Benzo(a)pyrene	ND	ug/kg	4,300		200	05/21/19	05/21/19 18:53	1014
Benzo(b)fluoranthene	ND	ug/kg	4,300		200	05/21/19	05/21/19 18:53	1014
Benzo(g,h,i)perylene	ND	ug/kg	4,300		200	05/21/19	05/21/19 18:53	1014

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# PHASE SEPARATION SCIENCE, INC.



## CERTIFICATE OF ANALYSIS

No: 19052018

Hillis Carnes Engineering Associates, Annapolis Junction, MD

May 23, 2019

Project Name: Slag Processing Area

Project Location: TPA

Project ID: 18019A

**Sample ID: SP-1-S-A**      **Date/Time Sampled: 05/20/2019 14:25**      **PSS Sample ID: 19052018-004**  
**Matrix: SOIL**      **Date/Time Received: 05/20/2019 17:15**      **% Solids SM2540G-11: 78**

TCL Semivolatile Organic Compounds

Analytical Method: SW-846 8270 C

Preparation Method: SW3550C

Qualifier(s): See Batch 164534 on Case Narrative.

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Benzo(k)fluoranthene	ND	ug/kg	4,300		200	05/21/19	05/21/19 18:53	1014
Biphenyl (Diphenyl)	ND	ug/kg	43,000		200	05/21/19	05/21/19 18:53	1014
Butyl benzyl phthalate	ND	ug/kg	43,000		200	05/21/19	05/21/19 18:53	1014
bis(2-chloroethoxy) methane	ND	ug/kg	43,000		200	05/21/19	05/21/19 18:53	1014
bis(2-chloroethyl) ether	ND	ug/kg	43,000		200	05/21/19	05/21/19 18:53	1014
bis(2-chloroisopropyl) ether	ND	ug/kg	43,000		200	05/21/19	05/21/19 18:53	1014
bis(2-ethylhexyl) phthalate	ND	ug/kg	43,000		200	05/21/19	05/21/19 18:53	1014
4-Bromophenylphenyl ether	ND	ug/kg	43,000		200	05/21/19	05/21/19 18:53	1014
Di-n-butyl phthalate	ND	ug/kg	43,000		200	05/21/19	05/21/19 18:53	1014
Carbazole	ND	ug/kg	43,000		200	05/21/19	05/21/19 18:53	1014
Caprolactam	ND	ug/kg	43,000		200	05/21/19	05/21/19 18:53	1014
4-Chloro-3-methyl phenol	ND	ug/kg	43,000		200	05/21/19	05/21/19 18:53	1014
4-Chloroaniline	ND	ug/kg	43,000		200	05/21/19	05/21/19 18:53	1014
2-Chloronaphthalene	ND	ug/kg	43,000		200	05/21/19	05/21/19 18:53	1014
2-Chlorophenol	ND	ug/kg	43,000		200	05/21/19	05/21/19 18:53	1014
4-Chlorophenyl Phenyl ether	ND	ug/kg	43,000		200	05/21/19	05/21/19 18:53	1014
Chrysene	ND	ug/kg	4,300		200	05/21/19	05/21/19 18:53	1014
Dibenz(a,h)Anthracene	ND	ug/kg	4,300		200	05/21/19	05/21/19 18:53	1014
Dibenzofuran	ND	ug/kg	43,000		200	05/21/19	05/21/19 18:53	1014
3,3-Dichlorobenzidine	ND	ug/kg	43,000		200	05/21/19	05/21/19 18:53	1014
2,4-Dichlorophenol	ND	ug/kg	43,000		200	05/21/19	05/21/19 18:53	1014
Diethyl phthalate	ND	ug/kg	43,000		200	05/21/19	05/21/19 18:53	1014
Dimethyl phthalate	ND	ug/kg	43,000		200	05/21/19	05/21/19 18:53	1014
2,4-Dimethylphenol	ND	ug/kg	43,000		200	05/21/19	05/21/19 18:53	1014
4,6-Dinitro-2-methyl phenol	ND	ug/kg	43,000		200	05/21/19	05/21/19 18:53	1014
2,4-Dinitrophenol	ND	ug/kg	85,000		200	05/21/19	05/21/19 18:53	1014
2,4-Dinitrotoluene	ND	ug/kg	43,000		200	05/21/19	05/21/19 18:53	1014
2,6-Dinitrotoluene	ND	ug/kg	43,000		200	05/21/19	05/21/19 18:53	1014
Fluoranthene	ND	ug/kg	4,300		200	05/21/19	05/21/19 18:53	1014

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# PHASE SEPARATION SCIENCE, INC.



## CERTIFICATE OF ANALYSIS

No: 19052018

Hillis Carnes Engineering Associates, Annapolis Junction, MD

May 23, 2019

Project Name: Slag Processing Area

Project Location: TPA

Project ID: 18019A

**Sample ID: SP-1-S-A**      **Date/Time Sampled: 05/20/2019 14:25**      **PSS Sample ID: 19052018-004**  
**Matrix: SOIL**      **Date/Time Received: 05/20/2019 17:15**      **% Solids SM2540G-11: 78**

TCL Semivolatile Organic Compounds

Analytical Method: SW-846 8270 C

Preparation Method: SW3550C

Qualifier(s): See Batch 164534 on Case Narrative.

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Fluorene	ND	ug/kg	4,300		200	05/21/19	05/21/19 18:53	1014
Hexachlorobenzene	ND	ug/kg	43,000		200	05/21/19	05/21/19 18:53	1014
Hexachlorobutadiene	ND	ug/kg	43,000		200	05/21/19	05/21/19 18:53	1014
Hexachlorocyclopentadiene	ND	ug/kg	43,000		200	05/21/19	05/21/19 18:53	1014
Hexachloroethane	ND	ug/kg	43,000		200	05/21/19	05/21/19 18:53	1014
Indeno(1,2,3-c,d)Pyrene	ND	ug/kg	4,300		200	05/21/19	05/21/19 18:53	1014
Isophorone	ND	ug/kg	43,000		200	05/21/19	05/21/19 18:53	1014
2-Methylnaphthalene	<b>38,000</b>	ug/kg	4,300		200	05/21/19	05/21/19 18:53	1014
2-Methyl phenol	ND	ug/kg	43,000		200	05/21/19	05/21/19 18:53	1014
3&4-Methylphenol	ND	ug/kg	43,000		200	05/21/19	05/21/19 18:53	1014
Naphthalene	<b>600,000</b>	ug/kg	21,000		1000	05/21/19	05/21/19 17:29	1014
2-Nitroaniline	ND	ug/kg	43,000		200	05/21/19	05/21/19 18:53	1014
3-Nitroaniline	ND	ug/kg	43,000		200	05/21/19	05/21/19 18:53	1014
4-Nitroaniline	ND	ug/kg	43,000		200	05/21/19	05/21/19 18:53	1014
Nitrobenzene	ND	ug/kg	43,000		200	05/21/19	05/21/19 18:53	1014
2-Nitrophenol	ND	ug/kg	43,000		200	05/21/19	05/21/19 18:53	1014
4-Nitrophenol	ND	ug/kg	43,000		200	05/21/19	05/21/19 18:53	1014
N-Nitrosodi-n-propyl amine	ND	ug/kg	43,000		200	05/21/19	05/21/19 18:53	1014
N-Nitrosodiphenylamine	ND	ug/kg	43,000		200	05/21/19	05/21/19 18:53	1014
Di-n-octyl phthalate	ND	ug/kg	43,000		200	05/21/19	05/21/19 18:53	1014
Pentachlorophenol	ND	ug/kg	43,000		200	05/21/19	05/21/19 18:53	1014
Phenanthrene	ND	ug/kg	4,300		200	05/21/19	05/21/19 18:53	1014
Phenol	ND	ug/kg	43,000		200	05/21/19	05/21/19 18:53	1014
Pyrene	ND	ug/kg	4,300		200	05/21/19	05/21/19 18:53	1014
Pyridine	ND	ug/kg	43,000		200	05/21/19	05/21/19 18:53	1014
2,4,5-Trichlorophenol	ND	ug/kg	43,000		200	05/21/19	05/21/19 18:53	1014
2,4,6-Trichlorophenol	ND	ug/kg	43,000		200	05/21/19	05/21/19 18:53	1014

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# PHASE SEPARATION SCIENCE, INC.



## CERTIFICATE OF ANALYSIS

No: 19052018

Hillis Carnes Engineering Associates, Annapolis Junction, MD  
 May 23, 2019

Project Name: Slag Processing Area  
 Project Location: TPA  
 Project ID: 18019A

**Sample ID: SP-1-S-A**      **Date/Time Sampled: 05/20/2019 14:25**      **PSS Sample ID: 19052018-004**  
**Matrix: SOIL**      **Date/Time Received: 05/20/2019 17:15**      **% Solids SM2540G-11: 78**

TCL Semivolatile Organic Compounds

Analytical Method: SW-846 8270 C

Preparation Method: SW3550C

Qualifier(s): See Batch 164534 on Case Narrative.

Surrogate(s)	Recovery	Limits						
2-Fluorobiphenyl	0 %	32-107	*	1000	05/21/19	05/21/19 17:29	1014	
2-Fluorophenol	0 %	34-113	*	1000	05/21/19	05/21/19 17:29	1014	
Nitrobenzene-d5	0 %	35-123	*	1000	05/21/19	05/21/19 17:29	1014	
Phenol-d6	0 %	34-120	*	1000	05/21/19	05/21/19 17:29	1014	
Terphenyl-D14	50 %	46-154		1000	05/21/19	05/21/19 17:29	1014	
2,4,6-Tribromophenol	0 %	31-113	*	1000	05/21/19	05/21/19 17:29	1014	
2-Fluorobiphenyl	60 %	32-107		200	05/21/19	05/21/19 18:53	1014	
2-Fluorophenol	0 %	34-113	*	200	05/21/19	05/21/19 18:53	1014	
Nitrobenzene-d5	10 %	35-123	*	200	05/21/19	05/21/19 18:53	1014	
Phenol-d6	5 %	34-120	*	200	05/21/19	05/21/19 18:53	1014	
Terphenyl-D14	80 %	46-154		200	05/21/19	05/21/19 18:53	1014	
2,4,6-Tribromophenol	0 %	31-113	*	200	05/21/19	05/21/19 18:53	1014	

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# PHASE SEPARATION SCIENCE, INC.



## CERTIFICATE OF ANALYSIS

No: 19052018

Hillis Carnes Engineering Associates, Annapolis Junction, MD

May 23, 2019

Project Name: Slag Processing Area

Project Location: TPA

Project ID: 18019A

**Sample ID: SP-2**      **Date/Time Sampled: 05/20/2019 14:45**      **PSS Sample ID: 19052018-005**  
**Matrix: SOIL**      **Date/Time Received: 05/20/2019 17:15**      **% Solids SM2540G-11: 82**

PP Metals (plus Mn)

Analytical Method: SW-846 6020 A

Preparation Method: 3050B

Qualifier(s): See Batch 164540 on Case Narrative.

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Antimony	ND	mg/kg	2.7		1	05/21/19	05/21/19 22:15	1064
Arsenic	1.6	mg/kg	0.54		1	05/21/19	05/21/19 22:15	1064
Beryllium	3.2	mg/kg	2.7		1	05/21/19	05/22/19 19:22	1064
Cadmium	ND	mg/kg	2.7		1	05/21/19	05/21/19 22:15	1064
Chromium	140	mg/kg	2.7		1	05/21/19	05/21/19 22:15	1064
Copper	23	mg/kg	2.7		1	05/21/19	05/21/19 22:15	1064
Lead	160	mg/kg	2.7		1	05/21/19	05/22/19 19:22	1064
Manganese	5,000	mg/kg	27		10	05/21/19	05/22/19 17:58	1064
Mercury	ND	mg/kg	0.11		1	05/21/19	05/21/19 22:15	1064
Nickel	6.4	mg/kg	2.7		1	05/21/19	05/21/19 22:15	1064
Selenium	4.1	mg/kg	2.7		1	05/21/19	05/21/19 22:15	1064
Silver	ND	mg/kg	2.7		1	05/21/19	05/21/19 22:15	1064
Thallium	ND	mg/kg	2.2		1	05/21/19	05/21/19 22:15	1064
Zinc	82	mg/kg	11		1	05/21/19	05/21/19 22:15	1064

Polychlorinated Biphenyls

Analytical Method: SW-846 8082 A

Preparation Method: SW3550C

Clean up Method: SW846 3665A

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
PCB-1016	ND	mg/kg	0.062		1	05/21/19	05/21/19 18:21	1029
PCB-1221	ND	mg/kg	0.062		1	05/21/19	05/21/19 18:21	1029
PCB-1232	ND	mg/kg	0.062		1	05/21/19	05/21/19 18:21	1029
PCB-1242	ND	mg/kg	0.062		1	05/21/19	05/21/19 18:21	1029
PCB-1248	ND	mg/kg	0.062		1	05/21/19	05/21/19 18:21	1029
PCB-1254	ND	mg/kg	0.062		1	05/21/19	05/21/19 18:21	1029
PCB-1260	ND	mg/kg	0.062		1	05/21/19	05/21/19 18:21	1029

Surrogate(s)	Recovery	Limits						
Tetrachloro-m-xylene	76 %	42-142			1	05/21/19	05/21/19 18:21	1029
Decachlorobiphenyl	109 %	61-150			1	05/21/19	05/21/19 18:21	1029

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# PHASE SEPARATION SCIENCE, INC.



## CERTIFICATE OF ANALYSIS

No: 19052018

Hillis Carnes Engineering Associates, Annapolis Junction, MD

May 23, 2019

Project Name: Slag Processing Area

Project Location: TPA

Project ID: 18019A

**Sample ID: SP-2-A**      **Date/Time Sampled: 05/20/2019 14:45**      **PSS Sample ID: 19052018-006**  
**Matrix: SOIL**      **Date/Time Received: 05/20/2019 17:15**      **% Solids SM2540G-11: 81**

Total Petroleum Hydrocarbons - DRO      Analytical Method: SW-846 8015 C      Preparation Method: SW3550C

Qualifier(s): See Batch 164544 on Case Narrative.

*DF/HF - No. 2/diesel fuel and heavier fuel/oil patterns observed in sample.*

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
TPH-DRO (Diesel Range Organics)	4,500	mg/kg	210	DF	50	05/21/19	05/22/19 09:38	1059
<b>Surrogate(s)</b>	<b>Recovery</b>		<b>Limits</b>					
o-Terphenyl	106	%	37-120		50	05/21/19	05/22/19 09:38	1059

Total Petroleum Hydrocarbons-GRO      Analytical Method: SW-846 8015C      Preparation Method: 5030

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
TPH-GRO (Gasoline Range Organics)	ND	ug/kg	120		1	05/21/19	05/22/19 00:53	1045
<b>Surrogate(s)</b>	<b>Recovery</b>		<b>Limits</b>					
a,a,a-Trifluorotoluene	95	%	56-114		1	05/21/19	05/22/19 00:53	1045

TCL Volatile Organic Compounds      Analytical Method: SW-846 8260 B      Preparation Method: 5030

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/kg	12,000		1000	05/21/19	05/21/19 18:46	1011
Benzene	ND	ug/kg	1,200		1000	05/21/19	05/21/19 18:46	1011
Bromochloromethane	ND	ug/kg	1,200		1000	05/21/19	05/21/19 18:46	1011
Bromodichloromethane	ND	ug/kg	1,200		1000	05/21/19	05/21/19 18:46	1011
Bromoform	ND	ug/kg	1,200		1000	05/21/19	05/21/19 18:46	1011
Bromomethane	ND	ug/kg	1,200		1000	05/21/19	05/21/19 18:46	1011
2-Butanone (MEK)	ND	ug/kg	6,200		1000	05/21/19	05/21/19 18:46	1011
Carbon Disulfide	ND	ug/kg	1,200		1000	05/21/19	05/21/19 18:46	1011
Carbon tetrachloride	ND	ug/kg	1,200		1000	05/21/19	05/21/19 18:46	1011
Chlorobenzene	ND	ug/kg	1,200		1000	05/21/19	05/21/19 18:46	1011
Chloroethane	ND	ug/kg	1,200		1000	05/21/19	05/21/19 18:46	1011
Chloroform	ND	ug/kg	6,200		1000	05/21/19	05/21/19 18:46	1011

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# PHASE SEPARATION SCIENCE, INC.



## CERTIFICATE OF ANALYSIS

No: 19052018

Hillis Carnes Engineering Associates, Annapolis Junction, MD

May 23, 2019

Project Name: Slag Processing Area

Project Location: TPA

Project ID: 18019A

<b>Sample ID: SP-2-A</b>	<b>Date/Time Sampled: 05/20/2019 14:45</b>	<b>PSS Sample ID: 19052018-006</b>
<b>Matrix: SOIL</b>	<b>Date/Time Received: 05/20/2019 17:15</b>	<b>% Solids SM2540G-11: 81</b>
TCL Volatile Organic Compounds	Analytical Method: SW-846 8260 B	Preparation Method: 5030

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Chloromethane	ND	ug/kg	1,200		1000	05/21/19	05/21/19 18:46	1011
Cyclohexane	ND	ug/kg	1,200		1000	05/21/19	05/21/19 18:46	1011
1,2-Dibromo-3-chloropropane	ND	ug/kg	1,200		1000	05/21/19	05/21/19 18:46	1011
Dibromochloromethane	ND	ug/kg	1,200		1000	05/21/19	05/21/19 18:46	1011
1,2-Dibromoethane	ND	ug/kg	1,200		1000	05/21/19	05/21/19 18:46	1011
1,2-Dichlorobenzene	ND	ug/kg	1,200		1000	05/21/19	05/21/19 18:46	1011
1,3-Dichlorobenzene	ND	ug/kg	1,200		1000	05/21/19	05/21/19 18:46	1011
1,4-Dichlorobenzene	ND	ug/kg	1,200		1000	05/21/19	05/21/19 18:46	1011
Dichlorodifluoromethane	ND	ug/kg	1,200		1000	05/21/19	05/21/19 18:46	1011
1,1-Dichloroethane	ND	ug/kg	1,200		1000	05/21/19	05/21/19 18:46	1011
1,2-Dichloroethane	ND	ug/kg	1,200		1000	05/21/19	05/21/19 18:46	1011
1,1-Dichloroethene	ND	ug/kg	1,200		1000	05/21/19	05/21/19 18:46	1011
1,2-Dichloropropane	ND	ug/kg	1,200		1000	05/21/19	05/21/19 18:46	1011
cis-1,2-Dichloroethene	ND	ug/kg	1,200		1000	05/21/19	05/21/19 18:46	1011
cis-1,3-Dichloropropene	ND	ug/kg	1,200		1000	05/21/19	05/21/19 18:46	1011
trans-1,2-Dichloroethene	ND	ug/kg	1,200		1000	05/21/19	05/21/19 18:46	1011
trans-1,3-Dichloropropene	ND	ug/kg	1,200		1000	05/21/19	05/21/19 18:46	1011
Ethylbenzene	ND	ug/kg	1,200		1000	05/21/19	05/21/19 18:46	1011
2-Hexanone (MBK)	ND	ug/kg	1,200		1000	05/21/19	05/21/19 18:46	1011
Isopropylbenzene	ND	ug/kg	1,200		1000	05/21/19	05/21/19 18:46	1011
Methyl Acetate	ND	ug/kg	1,200		1000	05/21/19	05/21/19 18:46	1011
Methylcyclohexane	ND	ug/kg	1,200		1000	05/21/19	05/21/19 18:46	1011
Methylene chloride	ND	ug/kg	6,200		1000	05/21/19	05/21/19 18:46	1011
4-Methyl-2-Pentanone (MIBK)	ND	ug/kg	1,200		1000	05/21/19	05/21/19 18:46	1011
Methyl-t-Butyl Ether	ND	ug/kg	1,200		1000	05/21/19	05/21/19 18:46	1011
Naphthalene	<b>1,100,000</b>	ug/kg	6,200		5000	05/21/19	05/22/19 10:46	1011
Styrene	ND	ug/kg	1,200		1000	05/21/19	05/21/19 18:46	1011
1,1,2,2-Tetrachloroethane	ND	ug/kg	1,200		1000	05/21/19	05/21/19 18:46	1011
Tetrachloroethene	ND	ug/kg	1,200		1000	05/21/19	05/21/19 18:46	1011

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# PHASE SEPARATION SCIENCE, INC.



## CERTIFICATE OF ANALYSIS

No: 19052018

Hillis Carnes Engineering Associates, Annapolis Junction, MD

May 23, 2019

Project Name: Slag Processing Area

Project Location: TPA

Project ID: 18019A

<b>Sample ID: SP-2-A</b>	<b>Date/Time Sampled: 05/20/2019 14:45</b>	<b>PSS Sample ID: 19052018-006</b>
<b>Matrix: SOIL</b>	<b>Date/Time Received: 05/20/2019 17:15</b>	<b>% Solids SM2540G-11: 81</b>
TCL Volatile Organic Compounds	Analytical Method: SW-846 8260 B	Preparation Method: 5030

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Toluene	ND	ug/kg	1,200		1000	05/21/19	05/21/19 18:46	1011
1,2,3-Trichlorobenzene	ND	ug/kg	1,200		1000	05/21/19	05/21/19 18:46	1011
1,2,4-Trichlorobenzene	ND	ug/kg	1,200		1000	05/21/19	05/21/19 18:46	1011
1,1,1-Trichloroethane	ND	ug/kg	1,200		1000	05/21/19	05/21/19 18:46	1011
1,1,2-Trichloroethane	ND	ug/kg	1,200		1000	05/21/19	05/21/19 18:46	1011
Trichloroethene	ND	ug/kg	1,200		1000	05/21/19	05/21/19 18:46	1011
Trichlorofluoromethane	ND	ug/kg	1,200		1000	05/21/19	05/21/19 18:46	1011
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	1,200		1000	05/21/19	05/21/19 18:46	1011
Vinyl chloride	ND	ug/kg	6,200		1000	05/21/19	05/21/19 18:46	1011
m&p-Xylene	ND	ug/kg	2,500		1000	05/21/19	05/21/19 18:46	1011
o-Xylene	ND	ug/kg	1,200		1000	05/21/19	05/21/19 18:46	1011

Surrogate(s)	Recovery	Units	Limits	Dil	Prepared	Analyzed	Analyst
4-Bromofluorobenzene	98	%	81-146	1000	05/21/19	05/21/19 18:46	1011
Dibromofluoromethane	98	%	89-120	1000	05/21/19	05/21/19 18:46	1011
Toluene-D8	102	%	86-116	1000	05/21/19	05/21/19 18:46	1011
4-Bromofluorobenzene	102	%	81-146	5000	05/22/19	05/22/19 10:46	1011
Dibromofluoromethane	100	%	89-120	5000	05/22/19	05/22/19 10:46	1011
Toluene-D8	104	%	86-116	5000	05/22/19	05/22/19 10:46	1011

TCL Semivolatile Organic Compounds      Analytical Method: SW-846 8270 C      Preparation Method: SW3550C  
 Qualifier(s): See Batch 164534 on Case Narrative.

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acenaphthene	ND	ug/kg	2,100		100	05/21/19	05/21/19 14:42	1014
Acenaphthylene	ND	ug/kg	2,100		100	05/21/19	05/21/19 14:42	1014
Acetophenone	ND	ug/kg	21,000		100	05/21/19	05/21/19 14:42	1014
Anthracene	ND	ug/kg	2,100		100	05/21/19	05/21/19 14:42	1014
Atrazine	ND	ug/kg	21,000		100	05/21/19	05/21/19 14:42	1014
Benzo(a)anthracene	ND	ug/kg	2,100		100	05/21/19	05/21/19 14:42	1014



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# PHASE SEPARATION SCIENCE, INC.



## CERTIFICATE OF ANALYSIS

No: 19052018

Hillis Carnes Engineering Associates, Annapolis Junction, MD

May 23, 2019

Project Name: Slag Processing Area

Project Location: TPA

Project ID: 18019A

**Sample ID: SP-2-A**      **Date/Time Sampled: 05/20/2019 14:45**      **PSS Sample ID: 19052018-006**  
**Matrix: SOIL**      **Date/Time Received: 05/20/2019 17:15**      **% Solids SM2540G-11: 81**

TCL Semivolatile Organic Compounds

Analytical Method: SW-846 8270 C

Preparation Method: SW3550C

Qualifier(s): See Batch 164534 on Case Narrative.

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Benzo(a)pyrene	ND	ug/kg	2,100		100	05/21/19	05/21/19 14:42	1014
Benzo(b)fluoranthene	ND	ug/kg	2,100		100	05/21/19	05/21/19 14:42	1014
Benzo(g,h,i)perylene	ND	ug/kg	2,100		100	05/21/19	05/21/19 14:42	1014
Benzo(k)fluoranthene	ND	ug/kg	2,100		100	05/21/19	05/21/19 14:42	1014
Biphenyl (Diphenyl)	ND	ug/kg	21,000		100	05/21/19	05/21/19 14:42	1014
Butyl benzyl phthalate	ND	ug/kg	21,000		100	05/21/19	05/21/19 14:42	1014
bis(2-chloroethoxy) methane	ND	ug/kg	21,000		100	05/21/19	05/21/19 14:42	1014
bis(2-chloroethyl) ether	ND	ug/kg	21,000		100	05/21/19	05/21/19 14:42	1014
bis(2-chloroisopropyl) ether	ND	ug/kg	21,000		100	05/21/19	05/21/19 14:42	1014
bis(2-ethylhexyl) phthalate	ND	ug/kg	21,000		100	05/21/19	05/21/19 14:42	1014
4-Bromophenylphenyl ether	ND	ug/kg	21,000		100	05/21/19	05/21/19 14:42	1014
Di-n-butyl phthalate	ND	ug/kg	21,000		100	05/21/19	05/21/19 14:42	1014
Carbazole	ND	ug/kg	21,000		100	05/21/19	05/21/19 14:42	1014
Caprolactam	ND	ug/kg	21,000		100	05/21/19	05/21/19 14:42	1014
4-Chloro-3-methyl phenol	ND	ug/kg	21,000		100	05/21/19	05/21/19 14:42	1014
4-Chloroaniline	ND	ug/kg	21,000		100	05/21/19	05/21/19 14:42	1014
2-Chloronaphthalene	ND	ug/kg	21,000		100	05/21/19	05/21/19 14:42	1014
2-Chlorophenol	ND	ug/kg	21,000		100	05/21/19	05/21/19 14:42	1014
4-Chlorophenyl Phenyl ether	ND	ug/kg	21,000		100	05/21/19	05/21/19 14:42	1014
Chrysene	ND	ug/kg	2,100		100	05/21/19	05/21/19 14:42	1014
Dibenz(a,h)Anthracene	ND	ug/kg	2,100		100	05/21/19	05/21/19 14:42	1014
Dibenzofuran	ND	ug/kg	21,000		100	05/21/19	05/21/19 14:42	1014
3,3-Dichlorobenzidine	ND	ug/kg	21,000		100	05/21/19	05/21/19 14:42	1014
2,4-Dichlorophenol	ND	ug/kg	21,000		100	05/21/19	05/21/19 14:42	1014
Diethyl phthalate	ND	ug/kg	21,000		100	05/21/19	05/21/19 14:42	1014
Dimethyl phthalate	ND	ug/kg	21,000		100	05/21/19	05/21/19 14:42	1014
2,4-Dimethylphenol	ND	ug/kg	21,000		100	05/21/19	05/21/19 14:42	1014
4,6-Dinitro-2-methyl phenol	ND	ug/kg	21,000		100	05/21/19	05/21/19 14:42	1014
2,4-Dinitrophenol	ND	ug/kg	41,000		100	05/21/19	05/21/19 14:42	1014

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# PHASE SEPARATION SCIENCE, INC.



## CERTIFICATE OF ANALYSIS

No: 19052018

Hillis Carnes Engineering Associates, Annapolis Junction, MD

May 23, 2019

Project Name: Slag Processing Area

Project Location: TPA

Project ID: 18019A

**Sample ID: SP-2-A**      **Date/Time Sampled: 05/20/2019 14:45**      **PSS Sample ID: 19052018-006**  
**Matrix: SOIL**      **Date/Time Received: 05/20/2019 17:15**      **% Solids SM2540G-11: 81**

TCL Semivolatile Organic Compounds

Analytical Method: SW-846 8270 C

Preparation Method: SW3550C

Qualifier(s): See Batch 164534 on Case Narrative.

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
2,4-Dinitrotoluene	ND	ug/kg	21,000		100	05/21/19	05/21/19 14:42	1014
2,6-Dinitrotoluene	ND	ug/kg	21,000		100	05/21/19	05/21/19 14:42	1014
Fluoranthene	<b>2,100</b>	ug/kg	2,100		100	05/21/19	05/21/19 14:42	1014
Fluorene	<b>2,300</b>	ug/kg	2,100		100	05/21/19	05/21/19 14:42	1014
Hexachlorobenzene	ND	ug/kg	21,000		100	05/21/19	05/21/19 14:42	1014
Hexachlorobutadiene	ND	ug/kg	21,000		100	05/21/19	05/21/19 14:42	1014
Hexachlorocyclopentadiene	ND	ug/kg	21,000		100	05/21/19	05/21/19 14:42	1014
Hexachloroethane	ND	ug/kg	21,000		100	05/21/19	05/21/19 14:42	1014
Indeno(1,2,3-c,d)Pyrene	ND	ug/kg	2,100		100	05/21/19	05/21/19 14:42	1014
Isophorone	ND	ug/kg	21,000		100	05/21/19	05/21/19 14:42	1014
2-Methylnaphthalene	<b>36,000</b>	ug/kg	2,100		100	05/21/19	05/21/19 14:42	1014
2-Methyl phenol	ND	ug/kg	21,000		100	05/21/19	05/21/19 14:42	1014
3&4-Methylphenol	ND	ug/kg	21,000		100	05/21/19	05/21/19 14:42	1014
Naphthalene	<b>1,100,000</b>	ug/kg	21,000		1000	05/21/19	05/21/19 15:10	1014
2-Nitroaniline	ND	ug/kg	21,000		100	05/21/19	05/21/19 14:42	1014
3-Nitroaniline	ND	ug/kg	21,000		100	05/21/19	05/21/19 14:42	1014
4-Nitroaniline	ND	ug/kg	21,000		100	05/21/19	05/21/19 14:42	1014
Nitrobenzene	ND	ug/kg	21,000		100	05/21/19	05/21/19 14:42	1014
2-Nitrophenol	ND	ug/kg	21,000		100	05/21/19	05/21/19 14:42	1014
4-Nitrophenol	ND	ug/kg	21,000		100	05/21/19	05/21/19 14:42	1014
N-Nitrosodi-n-propyl amine	ND	ug/kg	21,000		100	05/21/19	05/21/19 14:42	1014
N-Nitrosodiphenylamine	ND	ug/kg	21,000		100	05/21/19	05/21/19 14:42	1014
Di-n-octyl phthalate	ND	ug/kg	21,000		100	05/21/19	05/21/19 14:42	1014
Pentachlorophenol	ND	ug/kg	21,000		100	05/21/19	05/21/19 14:42	1014
Phenanthrene	<b>3,000</b>	ug/kg	2,100		100	05/21/19	05/21/19 14:42	1014
Phenol	ND	ug/kg	21,000		100	05/21/19	05/21/19 14:42	1014
Pyrene	ND	ug/kg	2,100		100	05/21/19	05/21/19 14:42	1014
Pyridine	ND	ug/kg	21,000		100	05/21/19	05/21/19 14:42	1014
2,4,5-Trichlorophenol	ND	ug/kg	21,000		100	05/21/19	05/21/19 14:42	1014

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# PHASE SEPARATION SCIENCE, INC.



## CERTIFICATE OF ANALYSIS

No: 19052018

Hillis Carnes Engineering Associates, Annapolis Junction, MD

May 23, 2019

Project Name: Slag Processing Area

Project Location: TPA

Project ID: 18019A

**Sample ID: SP-2-A**      **Date/Time Sampled: 05/20/2019 14:45**      **PSS Sample ID: 19052018-006**  
**Matrix: SOIL**      **Date/Time Received: 05/20/2019 17:15**      **% Solids SM2540G-11: 81**

TCL Semivolatile Organic Compounds

Analytical Method: SW-846 8270 C

Preparation Method: SW3550C

Qualifier(s): See Batch 164534 on Case Narrative.

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
2,4,6-Trichlorophenol	ND	ug/kg	21,000		100	05/21/19	05/21/19 14:42	1014
<b>Surrogate(s)</b>	<b>Recovery</b>		<b>Limits</b>					
2-Fluorobiphenyl	80	%	32-107		100	05/21/19	05/21/19 14:42	1014
2-Fluorophenol	62	%	34-113		100	05/21/19	05/21/19 14:42	1014
Nitrobenzene-d5	80	%	35-123		100	05/21/19	05/21/19 14:42	1014
Phenol-d6	52	%	34-120		100	05/21/19	05/21/19 14:42	1014
Terphenyl-D14	105	%	46-154		100	05/21/19	05/21/19 14:42	1014
2,4,6-Tribromophenol	65	%	31-113		100	05/21/19	05/21/19 14:42	1014
2-Fluorobiphenyl	0	%	32-107	*	1000	05/21/19	05/21/19 15:10	1014
2-Fluorophenol	0	%	34-113	*	1000	05/21/19	05/21/19 15:10	1014
Nitrobenzene-d5	0	%	35-123	*	1000	05/21/19	05/21/19 15:10	1014
Phenol-d6	0	%	34-120	*	1000	05/21/19	05/21/19 15:10	1014
Terphenyl-D14	150	%	46-154		1000	05/21/19	05/21/19 15:10	1014
2,4,6-Tribromophenol	0	%	31-113	*	1000	05/21/19	05/21/19 15:10	1014

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## CERTIFICATE OF ANALYSIS

No: 19052018

Hillis Carnes Engineering Associates, Annapolis Junction, MD

May 23, 2019

Project Name: Slag Processing Area

Project Location: TPA

Project ID: 18019A

**Sample ID: SP-3**      **Date/Time Sampled: 05/20/2019 15:00**      **PSS Sample ID: 19052018-007**  
**Matrix: SOIL**      **Date/Time Received: 05/20/2019 17:15**      **% Solids SM2540G-11: 82**

PP Metals (plus Mn)

Analytical Method: SW-846 6020 A

Preparation Method: 3050B

Qualifier(s): See Batch 164540 on Case Narrative.

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Antimony	ND	mg/kg	2.5		1	05/21/19	05/21/19 22:21	1064
Arsenic	1.7	mg/kg	0.49		1	05/21/19	05/21/19 22:21	1064
Beryllium	5.1	mg/kg	2.5		1	05/21/19	05/22/19 19:28	1064
Cadmium	ND	mg/kg	2.5		1	05/21/19	05/21/19 22:21	1064
Chromium	89	mg/kg	2.5		1	05/21/19	05/21/19 22:21	1064
Copper	26	mg/kg	2.5		1	05/21/19	05/21/19 22:21	1064
Lead	130	mg/kg	2.5		1	05/21/19	05/22/19 19:28	1064
Manganese	4,800	mg/kg	25		10	05/21/19	05/22/19 18:04	1064
Mercury	ND	mg/kg	0.099		1	05/21/19	05/21/19 22:21	1064
Nickel	12	mg/kg	2.5		1	05/21/19	05/21/19 22:21	1064
Selenium	3.9	mg/kg	2.5		1	05/21/19	05/21/19 22:21	1064
Silver	ND	mg/kg	2.5		1	05/21/19	05/21/19 22:21	1064
Thallium	ND	mg/kg	2.0		1	05/21/19	05/21/19 22:21	1064
Zinc	75	mg/kg	9.9		1	05/21/19	05/21/19 22:21	1064

Polychlorinated Biphenyls

Analytical Method: SW-846 8082 A

Preparation Method: SW3550C  
 Clean up Method: SW846 3665A

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
PCB-1016	ND	mg/kg	0.061		1	05/21/19	05/21/19 18:49	1029
PCB-1221	ND	mg/kg	0.061		1	05/21/19	05/21/19 18:49	1029
PCB-1232	ND	mg/kg	0.061		1	05/21/19	05/21/19 18:49	1029
PCB-1242	ND	mg/kg	0.061		1	05/21/19	05/21/19 18:49	1029
PCB-1248	ND	mg/kg	0.061		1	05/21/19	05/21/19 18:49	1029
PCB-1254	ND	mg/kg	0.061		1	05/21/19	05/21/19 18:49	1029
PCB-1260	ND	mg/kg	0.061		1	05/21/19	05/21/19 18:49	1029

Surrogate(s)	Recovery	Limits						
Tetrachloro-m-xylene	69 %	42-142			1	05/21/19	05/21/19 18:49	1029
Decachlorobiphenyl	94 %	61-150			1	05/21/19	05/21/19 18:49	1029

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## CERTIFICATE OF ANALYSIS

No: 19052018

Hillis Carnes Engineering Associates, Annapolis Junction, MD

May 23, 2019

Project Name: Slag Processing Area

Project Location: TPA

Project ID: 18019A

**Sample ID: SP-3-A**      **Date/Time Sampled: 05/20/2019 15:00**      **PSS Sample ID: 19052018-008**  
**Matrix: SOIL**      **Date/Time Received: 05/20/2019 17:15**      **% Solids SM2540G-11: 83**

Total Petroleum Hydrocarbons - DRO

Analytical Method: SW-846 8015 C

Preparation Method: SW3550C

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
TPH-DRO (Diesel Range Organics)	100	mg/kg	40		10	05/21/19	05/22/19 00:40	1059
<b>Surrogate(s)</b>	<b>Recovery</b>		<b>Limits</b>					
<i>o</i> -Terphenyl	102	%	37-120		10	05/21/19	05/22/19 00:40	1059

Total Petroleum Hydrocarbons-GRO

Analytical Method: SW-846 8015C

Preparation Method: 5030

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
TPH-GRO (Gasoline Range Organics)	ND	ug/kg	120		1	05/21/19	05/22/19 09:38	1045
<b>Surrogate(s)</b>	<b>Recovery</b>		<b>Limits</b>					
<i>a,a,a</i> -Trifluorotoluene	100	%	56-114		1	05/21/19	05/22/19 09:38	1045

TCL Volatile Organic Compounds

Analytical Method: SW-846 8260 B

Preparation Method: 5030

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/kg	12,000		1000	05/21/19	05/21/19 15:53	1011
Benzene	ND	ug/kg	1,200		1000	05/21/19	05/21/19 15:53	1011
Bromochloromethane	ND	ug/kg	1,200		1000	05/21/19	05/21/19 15:53	1011
Bromodichloromethane	ND	ug/kg	1,200		1000	05/21/19	05/21/19 15:53	1011
Bromoform	ND	ug/kg	1,200		1000	05/21/19	05/21/19 15:53	1011
Bromomethane	ND	ug/kg	1,200		1000	05/21/19	05/21/19 15:53	1011
2-Butanone (MEK)	ND	ug/kg	6,000		1000	05/21/19	05/21/19 15:53	1011
Carbon Disulfide	ND	ug/kg	1,200		1000	05/21/19	05/21/19 15:53	1011
Carbon tetrachloride	ND	ug/kg	1,200		1000	05/21/19	05/21/19 15:53	1011
Chlorobenzene	ND	ug/kg	1,200		1000	05/21/19	05/21/19 15:53	1011
Chloroethane	ND	ug/kg	1,200		1000	05/21/19	05/21/19 15:53	1011
Chloroform	ND	ug/kg	6,000		1000	05/21/19	05/21/19 15:53	1011

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## CERTIFICATE OF ANALYSIS

No: 19052018

Hillis Carnes Engineering Associates, Annapolis Junction, MD

May 23, 2019

Project Name: Slag Processing Area

Project Location: TPA

Project ID: 18019A

<b>Sample ID: SP-3-A</b>	<b>Date/Time Sampled: 05/20/2019 15:00</b>	<b>PSS Sample ID: 19052018-008</b>
<b>Matrix: SOIL</b>	<b>Date/Time Received: 05/20/2019 17:15</b>	<b>% Solids SM2540G-11: 83</b>
TCL Volatile Organic Compounds	Analytical Method: SW-846 8260 B	Preparation Method: 5030

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Chloromethane	ND	ug/kg	1,200		1000	05/21/19	05/21/19 15:53	1011
Cyclohexane	ND	ug/kg	1,200		1000	05/21/19	05/21/19 15:53	1011
1,2-Dibromo-3-chloropropane	ND	ug/kg	1,200		1000	05/21/19	05/21/19 15:53	1011
Dibromochloromethane	ND	ug/kg	1,200		1000	05/21/19	05/21/19 15:53	1011
1,2-Dibromoethane	ND	ug/kg	1,200		1000	05/21/19	05/21/19 15:53	1011
1,2-Dichlorobenzene	ND	ug/kg	1,200		1000	05/21/19	05/21/19 15:53	1011
1,3-Dichlorobenzene	ND	ug/kg	1,200		1000	05/21/19	05/21/19 15:53	1011
1,4-Dichlorobenzene	ND	ug/kg	1,200		1000	05/21/19	05/21/19 15:53	1011
Dichlorodifluoromethane	ND	ug/kg	1,200		1000	05/21/19	05/21/19 15:53	1011
1,1-Dichloroethane	ND	ug/kg	1,200		1000	05/21/19	05/21/19 15:53	1011
1,2-Dichloroethane	ND	ug/kg	1,200		1000	05/21/19	05/21/19 15:53	1011
1,1-Dichloroethene	ND	ug/kg	1,200		1000	05/21/19	05/21/19 15:53	1011
1,2-Dichloropropane	ND	ug/kg	1,200		1000	05/21/19	05/21/19 15:53	1011
cis-1,2-Dichloroethene	ND	ug/kg	1,200		1000	05/21/19	05/21/19 15:53	1011
cis-1,3-Dichloropropene	ND	ug/kg	1,200		1000	05/21/19	05/21/19 15:53	1011
trans-1,2-Dichloroethene	ND	ug/kg	1,200		1000	05/21/19	05/21/19 15:53	1011
trans-1,3-Dichloropropene	ND	ug/kg	1,200		1000	05/21/19	05/21/19 15:53	1011
Ethylbenzene	ND	ug/kg	1,200		1000	05/21/19	05/21/19 15:53	1011
2-Hexanone (MBK)	ND	ug/kg	1,200		1000	05/21/19	05/21/19 15:53	1011
Isopropylbenzene	ND	ug/kg	1,200		1000	05/21/19	05/21/19 15:53	1011
Methyl Acetate	ND	ug/kg	1,200		1000	05/21/19	05/21/19 15:53	1011
Methylcyclohexane	ND	ug/kg	1,200		1000	05/21/19	05/21/19 15:53	1011
Methylene chloride	ND	ug/kg	6,000		1000	05/21/19	05/21/19 15:53	1011
4-Methyl-2-Pentanone (MIBK)	ND	ug/kg	1,200		1000	05/21/19	05/21/19 15:53	1011
Methyl-t-Butyl Ether	ND	ug/kg	1,200		1000	05/21/19	05/21/19 15:53	1011
Naphthalene	<b>50,000</b>	ug/kg	1,200		1000	05/21/19	05/21/19 15:53	1011
Styrene	ND	ug/kg	1,200		1000	05/21/19	05/21/19 15:53	1011
1,1,2,2-Tetrachloroethane	ND	ug/kg	1,200		1000	05/21/19	05/21/19 15:53	1011
Tetrachloroethene	ND	ug/kg	1,200		1000	05/21/19	05/21/19 15:53	1011

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# PHASE SEPARATION SCIENCE, INC.



## CERTIFICATE OF ANALYSIS

No: 19052018

Hillis Carnes Engineering Associates, Annapolis Junction, MD

May 23, 2019

Project Name: Slag Processing Area

Project Location: TPA

Project ID: 18019A

<b>Sample ID: SP-3-A</b>	<b>Date/Time Sampled: 05/20/2019 15:00</b>	<b>PSS Sample ID: 19052018-008</b>
<b>Matrix: SOIL</b>	<b>Date/Time Received: 05/20/2019 17:15</b>	<b>% Solids SM2540G-11: 83</b>
TCL Volatile Organic Compounds	Analytical Method: SW-846 8260 B	Preparation Method: 5030

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Toluene	ND	ug/kg	1,200		1000	05/21/19	05/21/19 15:53	1011
1,2,3-Trichlorobenzene	ND	ug/kg	1,200		1000	05/21/19	05/21/19 15:53	1011
1,2,4-Trichlorobenzene	ND	ug/kg	1,200		1000	05/21/19	05/21/19 15:53	1011
1,1,1-Trichloroethane	ND	ug/kg	1,200		1000	05/21/19	05/21/19 15:53	1011
1,1,2-Trichloroethane	ND	ug/kg	1,200		1000	05/21/19	05/21/19 15:53	1011
Trichloroethene	ND	ug/kg	1,200		1000	05/21/19	05/21/19 15:53	1011
Trichlorofluoromethane	ND	ug/kg	1,200		1000	05/21/19	05/21/19 15:53	1011
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	1,200		1000	05/21/19	05/21/19 15:53	1011
Vinyl chloride	ND	ug/kg	6,000		1000	05/21/19	05/21/19 15:53	1011
m&p-Xylene	ND	ug/kg	2,400		1000	05/21/19	05/21/19 15:53	1011
o-Xylene	ND	ug/kg	1,200		1000	05/21/19	05/21/19 15:53	1011
<b>Surrogate(s)</b>	<b>Recovery</b>		<b>Limits</b>					
4-Bromofluorobenzene	96 %		81-146		1000	05/21/19	05/21/19 15:53	1011
Dibromofluoromethane	96 %		89-120		1000	05/21/19	05/21/19 15:53	1011
Toluene-D8	100 %		86-116		1000	05/21/19	05/21/19 15:53	1011

TCL Semivolatile Organic Compounds Analytical Method: SW-846 8270 C Preparation Method: SW3550C  
 Qualifier(s): See Batch 164534 on Case Narrative.

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acenaphthene	ND	ug/kg	2,000		100	05/21/19	05/21/19 19:21	1014
Acenaphthylene	ND	ug/kg	2,000		100	05/21/19	05/21/19 19:21	1014
Acetophenone	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:21	1014
Anthracene	ND	ug/kg	2,000		100	05/21/19	05/21/19 19:21	1014
Atrazine	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:21	1014
Benzo(a)anthracene	ND	ug/kg	2,000		100	05/21/19	05/21/19 19:21	1014
Benzo(a)pyrene	ND	ug/kg	2,000		100	05/21/19	05/21/19 19:21	1014
Benzo(b)fluoranthene	ND	ug/kg	2,000		100	05/21/19	05/21/19 19:21	1014
Benzo(g,h,i)perylene	ND	ug/kg	2,000		100	05/21/19	05/21/19 19:21	1014

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# PHASE SEPARATION SCIENCE, INC.



## CERTIFICATE OF ANALYSIS

No: 19052018

Hillis Carnes Engineering Associates, Annapolis Junction, MD

May 23, 2019

Project Name: Slag Processing Area

Project Location: TPA

Project ID: 18019A

**Sample ID: SP-3-A**      **Date/Time Sampled: 05/20/2019 15:00**      **PSS Sample ID: 19052018-008**  
**Matrix: SOIL**      **Date/Time Received: 05/20/2019 17:15**      **% Solids SM2540G-11: 83**

TCL Semivolatile Organic Compounds

Analytical Method: SW-846 8270 C

Preparation Method: SW3550C

Qualifier(s): See Batch 164534 on Case Narrative.

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Benzo(k)fluoranthene	ND	ug/kg	2,000		100	05/21/19	05/21/19 19:21	1014
Biphenyl (Diphenyl)	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:21	1014
Butyl benzyl phthalate	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:21	1014
bis(2-chloroethoxy) methane	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:21	1014
bis(2-chloroethyl) ether	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:21	1014
bis(2-chloroisopropyl) ether	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:21	1014
bis(2-ethylhexyl) phthalate	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:21	1014
4-Bromophenylphenyl ether	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:21	1014
Di-n-butyl phthalate	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:21	1014
Carbazole	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:21	1014
Caprolactam	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:21	1014
4-Chloro-3-methyl phenol	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:21	1014
4-Chloroaniline	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:21	1014
2-Chloronaphthalene	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:21	1014
2-Chlorophenol	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:21	1014
4-Chlorophenyl Phenyl ether	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:21	1014
Chrysene	ND	ug/kg	2,000		100	05/21/19	05/21/19 19:21	1014
Dibenz(a,h)Anthracene	ND	ug/kg	2,000		100	05/21/19	05/21/19 19:21	1014
Dibenzofuran	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:21	1014
3,3-Dichlorobenzidine	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:21	1014
2,4-Dichlorophenol	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:21	1014
Diethyl phthalate	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:21	1014
Dimethyl phthalate	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:21	1014
2,4-Dimethylphenol	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:21	1014
4,6-Dinitro-2-methyl phenol	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:21	1014
2,4-Dinitrophenol	ND	ug/kg	40,000		100	05/21/19	05/21/19 19:21	1014
2,4-Dinitrotoluene	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:21	1014
2,6-Dinitrotoluene	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:21	1014
Fluoranthene	ND	ug/kg	2,000		100	05/21/19	05/21/19 19:21	1014



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# PHASE SEPARATION SCIENCE, INC.



## CERTIFICATE OF ANALYSIS

No: 19052018

Hillis Carnes Engineering Associates, Annapolis Junction, MD

May 23, 2019

Project Name: Slag Processing Area

Project Location: TPA

Project ID: 18019A

**Sample ID: SP-3-A**      **Date/Time Sampled: 05/20/2019 15:00**      **PSS Sample ID: 19052018-008**  
**Matrix: SOIL**      **Date/Time Received: 05/20/2019 17:15**      **% Solids SM2540G-11: 83**

TCL Semivolatile Organic Compounds

Analytical Method: SW-846 8270 C

Preparation Method: SW3550C

Qualifier(s): See Batch 164534 on Case Narrative.

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Fluorene	ND	ug/kg	2,000		100	05/21/19	05/21/19 19:21	1014
Hexachlorobenzene	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:21	1014
Hexachlorobutadiene	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:21	1014
Hexachlorocyclopentadiene	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:21	1014
Hexachloroethane	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:21	1014
Indeno(1,2,3-c,d)Pyrene	ND	ug/kg	2,000		100	05/21/19	05/21/19 19:21	1014
Isophorone	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:21	1014
2-Methylnaphthalene	ND	ug/kg	2,000		100	05/21/19	05/21/19 19:21	1014
2-Methyl phenol	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:21	1014
3&4-Methylphenol	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:21	1014
Naphthalene	<b>5,800</b>	ug/kg	2,000		100	05/21/19	05/21/19 19:21	1014
2-Nitroaniline	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:21	1014
3-Nitroaniline	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:21	1014
4-Nitroaniline	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:21	1014
Nitrobenzene	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:21	1014
2-Nitrophenol	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:21	1014
4-Nitrophenol	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:21	1014
N-Nitrosodi-n-propyl amine	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:21	1014
N-Nitrosodiphenylamine	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:21	1014
Di-n-octyl phthalate	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:21	1014
Pentachlorophenol	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:21	1014
Phenanthrene	ND	ug/kg	2,000		100	05/21/19	05/21/19 19:21	1014
Phenol	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:21	1014
Pyrene	ND	ug/kg	2,000		100	05/21/19	05/21/19 19:21	1014
Pyridine	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:21	1014
2,4,5-Trichlorophenol	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:21	1014
2,4,6-Trichlorophenol	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:21	1014

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# PHASE SEPARATION SCIENCE, INC.



## CERTIFICATE OF ANALYSIS

No: 19052018

Hillis Carnes Engineering Associates, Annapolis Junction, MD  
 May 23, 2019

Project Name: Slag Processing Area  
 Project Location: TPA  
 Project ID: 18019A

**Sample ID: SP-3-A**      **Date/Time Sampled: 05/20/2019 15:00**      **PSS Sample ID: 19052018-008**  
**Matrix: SOIL**      **Date/Time Received: 05/20/2019 17:15**      **% Solids SM2540G-11: 83**

TCL Semivolatile Organic Compounds

Analytical Method: SW-846 8270 C

Preparation Method: SW3550C

Qualifier(s): See Batch 164534 on Case Narrative.

Surrogate(s)	Recovery		Limits					
2-Fluorobiphenyl	55	%	32-107		100	05/21/19	05/21/19 19:21	1014
2-Fluorophenol	10	%	34-113	*	100	05/21/19	05/21/19 19:21	1014
Nitrobenzene-d5	25	%	35-123	*	100	05/21/19	05/21/19 19:21	1014
Phenol-d6	20	%	34-120	*	100	05/21/19	05/21/19 19:21	1014
Terphenyl-D14	95	%	46-154		100	05/21/19	05/21/19 19:21	1014
2,4,6-Tribromophenol	0	%	31-113	*	100	05/21/19	05/21/19 19:21	1014

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# PHASE SEPARATION SCIENCE, INC.



## CERTIFICATE OF ANALYSIS

No: 19052018

Hillis Carnes Engineering Associates, Annapolis Junction, MD

May 23, 2019

Project Name: Slag Processing Area

Project Location: TPA

Project ID: 18019A

**Sample ID: SP-4**      **Date/Time Sampled: 05/20/2019 15:15**      **PSS Sample ID: 19052018-009**  
**Matrix: SOIL**      **Date/Time Received: 05/20/2019 17:15**      **% Solids SM2540G-11: 82**

PP Metals (plus Mn)

Analytical Method: SW-846 6020 A

Preparation Method: 3050B

Qualifier(s): See Batch 164540 on Case Narrative.

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Antimony	ND	mg/kg	2.8		1	05/21/19	05/21/19 22:26	1064
Arsenic	1.6	mg/kg	0.57		1	05/21/19	05/21/19 22:26	1064
Beryllium	3.8	mg/kg	2.8		1	05/21/19	05/22/19 19:34	1064
Cadmium	ND	mg/kg	2.8		1	05/21/19	05/21/19 22:26	1064
Chromium	130	mg/kg	2.8		1	05/21/19	05/21/19 22:26	1064
Copper	20	mg/kg	2.8		1	05/21/19	05/21/19 22:26	1064
Lead	380	mg/kg	2.8		1	05/21/19	05/22/19 19:34	1064
Manganese	5,500	mg/kg	28		10	05/21/19	05/22/19 18:09	1064
Mercury	ND	mg/kg	0.11		1	05/21/19	05/21/19 22:26	1064
Nickel	8.1	mg/kg	2.8		1	05/21/19	05/21/19 22:26	1064
Selenium	3.8	mg/kg	2.8		1	05/21/19	05/21/19 22:26	1064
Silver	ND	mg/kg	2.8		1	05/21/19	05/21/19 22:26	1064
Thallium	ND	mg/kg	2.3		1	05/21/19	05/21/19 22:26	1064
Zinc	91	mg/kg	11		1	05/21/19	05/21/19 22:26	1064

Polychlorinated Biphenyls

Analytical Method: SW-846 8082 A

Preparation Method: SW3550C  
 Clean up Method: SW846 3665A

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
PCB-1016	ND	mg/kg	0.060		1	05/21/19	05/21/19 19:17	1029
PCB-1221	ND	mg/kg	0.060		1	05/21/19	05/21/19 19:17	1029
PCB-1232	ND	mg/kg	0.060		1	05/21/19	05/21/19 19:17	1029
PCB-1242	ND	mg/kg	0.060		1	05/21/19	05/21/19 19:17	1029
PCB-1248	ND	mg/kg	0.060		1	05/21/19	05/21/19 19:17	1029
PCB-1254	ND	mg/kg	0.060		1	05/21/19	05/21/19 19:17	1029
PCB-1260	ND	mg/kg	0.060		1	05/21/19	05/21/19 19:17	1029

Surrogate(s)	Recovery	Limits			
Decachlorobiphenyl	88 %	61-150	1	05/21/19	05/21/19 19:17 1029
Tetrachloro-m-xylene	70 %	42-142	1	05/21/19	05/21/19 19:17 1029

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# PHASE SEPARATION SCIENCE, INC.



## CERTIFICATE OF ANALYSIS

No: 19052018

Hillis Carnes Engineering Associates, Annapolis Junction, MD

May 23, 2019

Project Name: Slag Processing Area

Project Location: TPA

Project ID: 18019A

**Sample ID: SP-4-A**      **Date/Time Sampled: 05/20/2019 15:15**      **PSS Sample ID: 19052018-010**  
**Matrix: SOIL**      **Date/Time Received: 05/20/2019 17:15**      **% Solids SM2540G-11: 80**

Total Petroleum Hydrocarbons - DRO      Analytical Method: SW-846 8015 C      Preparation Method: SW3550C

Qualifier(s): See Batch 164544 on Case Narrative.

*DF/HF - No. 2/diesel fuel and heavier fuel/oil patterns observed in sample.*

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
TPH-DRO (Diesel Range Organics)	3,300	mg/kg	210	DF	50	05/21/19	05/22/19 10:04	1059
<b>Surrogate(s)</b>	<b>Recovery</b>		<b>Limits</b>					
o-Terphenyl	99	%	37-120		50	05/21/19	05/22/19 10:04	1059

Total Petroleum Hydrocarbons-GRO      Analytical Method: SW-846 8015C      Preparation Method: 5030

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
TPH-GRO (Gasoline Range Organics)	250	ug/kg	120		1	05/21/19	05/22/19 10:09	1045
<b>Surrogate(s)</b>	<b>Recovery</b>		<b>Limits</b>					
a,a,a-Trifluorotoluene	94	%	56-114		1	05/21/19	05/22/19 10:09	1045

TCL Volatile Organic Compounds      Analytical Method: SW-846 8260 B      Preparation Method: 5030

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/kg	13,000		1000	05/21/19	05/21/19 19:07	1011
Benzene	ND	ug/kg	1,300		1000	05/21/19	05/21/19 19:07	1011
Bromochloromethane	ND	ug/kg	1,300		1000	05/21/19	05/21/19 19:07	1011
Bromodichloromethane	ND	ug/kg	1,300		1000	05/21/19	05/21/19 19:07	1011
Bromoform	ND	ug/kg	1,300		1000	05/21/19	05/21/19 19:07	1011
Bromomethane	ND	ug/kg	1,300		1000	05/21/19	05/21/19 19:07	1011
2-Butanone (MEK)	ND	ug/kg	6,300		1000	05/21/19	05/21/19 19:07	1011
Carbon Disulfide	ND	ug/kg	1,300		1000	05/21/19	05/21/19 19:07	1011
Carbon tetrachloride	ND	ug/kg	1,300		1000	05/21/19	05/21/19 19:07	1011
Chlorobenzene	ND	ug/kg	1,300		1000	05/21/19	05/21/19 19:07	1011
Chloroethane	ND	ug/kg	1,300		1000	05/21/19	05/21/19 19:07	1011
Chloroform	ND	ug/kg	6,300		1000	05/21/19	05/21/19 19:07	1011

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# PHASE SEPARATION SCIENCE, INC.



## CERTIFICATE OF ANALYSIS

No: 19052018

Hillis Carnes Engineering Associates, Annapolis Junction, MD

May 23, 2019

Project Name: Slag Processing Area

Project Location: TPA

Project ID: 18019A

<b>Sample ID: SP-4-A</b>	<b>Date/Time Sampled: 05/20/2019 15:15</b>	<b>PSS Sample ID: 19052018-010</b>
<b>Matrix: SOIL</b>	<b>Date/Time Received: 05/20/2019 17:15</b>	<b>% Solids SM2540G-11: 80</b>
TCL Volatile Organic Compounds	Analytical Method: SW-846 8260 B	Preparation Method: 5030

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Chloromethane	ND	ug/kg	1,300		1000	05/21/19	05/21/19 19:07	1011
Cyclohexane	ND	ug/kg	1,300		1000	05/21/19	05/21/19 19:07	1011
1,2-Dibromo-3-chloropropane	ND	ug/kg	1,300		1000	05/21/19	05/21/19 19:07	1011
Dibromochloromethane	ND	ug/kg	1,300		1000	05/21/19	05/21/19 19:07	1011
1,2-Dibromoethane	ND	ug/kg	1,300		1000	05/21/19	05/21/19 19:07	1011
1,2-Dichlorobenzene	ND	ug/kg	1,300		1000	05/21/19	05/21/19 19:07	1011
1,3-Dichlorobenzene	ND	ug/kg	1,300		1000	05/21/19	05/21/19 19:07	1011
1,4-Dichlorobenzene	ND	ug/kg	1,300		1000	05/21/19	05/21/19 19:07	1011
Dichlorodifluoromethane	ND	ug/kg	1,300		1000	05/21/19	05/21/19 19:07	1011
1,1-Dichloroethane	ND	ug/kg	1,300		1000	05/21/19	05/21/19 19:07	1011
1,2-Dichloroethane	ND	ug/kg	1,300		1000	05/21/19	05/21/19 19:07	1011
1,1-Dichloroethene	ND	ug/kg	1,300		1000	05/21/19	05/21/19 19:07	1011
1,2-Dichloropropane	ND	ug/kg	1,300		1000	05/21/19	05/21/19 19:07	1011
cis-1,2-Dichloroethene	ND	ug/kg	1,300		1000	05/21/19	05/21/19 19:07	1011
cis-1,3-Dichloropropene	ND	ug/kg	1,300		1000	05/21/19	05/21/19 19:07	1011
trans-1,2-Dichloroethene	ND	ug/kg	1,300		1000	05/21/19	05/21/19 19:07	1011
trans-1,3-Dichloropropene	ND	ug/kg	1,300		1000	05/21/19	05/21/19 19:07	1011
Ethylbenzene	ND	ug/kg	1,300		1000	05/21/19	05/21/19 19:07	1011
2-Hexanone (MBK)	ND	ug/kg	1,300		1000	05/21/19	05/21/19 19:07	1011
Isopropylbenzene	ND	ug/kg	1,300		1000	05/21/19	05/21/19 19:07	1011
Methyl Acetate	ND	ug/kg	1,300		1000	05/21/19	05/21/19 19:07	1011
Methylcyclohexane	ND	ug/kg	1,300		1000	05/21/19	05/21/19 19:07	1011
Methylene chloride	ND	ug/kg	6,300		1000	05/21/19	05/21/19 19:07	1011
4-Methyl-2-Pentanone (MIBK)	ND	ug/kg	1,300		1000	05/21/19	05/21/19 19:07	1011
Methyl-t-Butyl Ether	ND	ug/kg	1,300		1000	05/21/19	05/21/19 19:07	1011
Naphthalene	<b>1,200,000</b>	ug/kg	6,300		5000	05/21/19	05/22/19 11:09	1011
Styrene	ND	ug/kg	1,300		1000	05/21/19	05/21/19 19:07	1011
1,1,2,2-Tetrachloroethane	ND	ug/kg	1,300		1000	05/21/19	05/21/19 19:07	1011
Tetrachloroethene	ND	ug/kg	1,300		1000	05/21/19	05/21/19 19:07	1011

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# PHASE SEPARATION SCIENCE, INC.



## CERTIFICATE OF ANALYSIS

No: 19052018

Hillis Carnes Engineering Associates, Annapolis Junction, MD

May 23, 2019

Project Name: Slag Processing Area

Project Location: TPA

Project ID: 18019A

<b>Sample ID: SP-4-A</b>	<b>Date/Time Sampled: 05/20/2019 15:15</b>	<b>PSS Sample ID: 19052018-010</b>
<b>Matrix: SOIL</b>	<b>Date/Time Received: 05/20/2019 17:15</b>	<b>% Solids SM2540G-11: 80</b>
TCL Volatile Organic Compounds	Analytical Method: SW-846 8260 B	Preparation Method: 5030

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Toluene	ND	ug/kg	1,300		1000	05/21/19	05/21/19 19:07	1011
1,2,3-Trichlorobenzene	ND	ug/kg	1,300		1000	05/21/19	05/21/19 19:07	1011
1,2,4-Trichlorobenzene	ND	ug/kg	1,300		1000	05/21/19	05/21/19 19:07	1011
1,1,1-Trichloroethane	ND	ug/kg	1,300		1000	05/21/19	05/21/19 19:07	1011
1,1,2-Trichloroethane	ND	ug/kg	1,300		1000	05/21/19	05/21/19 19:07	1011
Trichloroethene	ND	ug/kg	1,300		1000	05/21/19	05/21/19 19:07	1011
Trichlorofluoromethane	ND	ug/kg	1,300		1000	05/21/19	05/21/19 19:07	1011
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	1,300		1000	05/21/19	05/21/19 19:07	1011
Vinyl chloride	ND	ug/kg	6,300		1000	05/21/19	05/21/19 19:07	1011
m&p-Xylene	ND	ug/kg	2,500		1000	05/21/19	05/21/19 19:07	1011
o-Xylene	ND	ug/kg	1,300		1000	05/21/19	05/21/19 19:07	1011
<b>Surrogate(s)</b>	<b>Recovery</b>		<b>Limits</b>					
4-Bromofluorobenzene	104 %		81-146		1000	05/21/19	05/21/19 19:07	1011
Dibromofluoromethane	96 %		89-120		1000	05/21/19	05/21/19 19:07	1011
Toluene-D8	106 %		86-116		1000	05/21/19	05/21/19 19:07	1011
4-Bromofluorobenzene	98 %		81-146		5000	05/22/19	05/22/19 11:09	1011
Dibromofluoromethane	100 %		89-120		5000	05/22/19	05/22/19 11:09	1011
Toluene-D8	84 %		86-116	*	5000	05/22/19	05/22/19 11:09	1011

TCL Semivolatile Organic Compounds Analytical Method: SW-846 8270 C

Preparation Method: SW3550C

Qualifier(s): See Batch 164534 on Case Narrative.

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acenaphthene	ND	ug/kg	2,100		100	05/21/19	05/21/19 20:17	1014
Acenaphthylene	ND	ug/kg	2,100		100	05/21/19	05/21/19 20:17	1014
Acetophenone	ND	ug/kg	21,000		100	05/21/19	05/21/19 20:17	1014
Anthracene	ND	ug/kg	2,100		100	05/21/19	05/21/19 20:17	1014
Atrazine	ND	ug/kg	21,000		100	05/21/19	05/21/19 20:17	1014
Benzo(a)anthracene	ND	ug/kg	2,100		100	05/21/19	05/21/19 20:17	1014

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# PHASE SEPARATION SCIENCE, INC.



## CERTIFICATE OF ANALYSIS

No: 19052018

Hillis Carnes Engineering Associates, Annapolis Junction, MD

May 23, 2019

Project Name: Slag Processing Area

Project Location: TPA

Project ID: 18019A

**Sample ID: SP-4-A**      **Date/Time Sampled: 05/20/2019 15:15**      **PSS Sample ID: 19052018-010**  
**Matrix: SOIL**      **Date/Time Received: 05/20/2019 17:15**      **% Solids SM2540G-11: 80**

TCL Semivolatile Organic Compounds

Analytical Method: SW-846 8270 C

Preparation Method: SW3550C

Qualifier(s): See Batch 164534 on Case Narrative.

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Benzo(a)pyrene	ND	ug/kg	2,100		100	05/21/19	05/21/19 20:17	1014
Benzo(b)fluoranthene	ND	ug/kg	2,100		100	05/21/19	05/21/19 20:17	1014
Benzo(g,h,i)perylene	ND	ug/kg	2,100		100	05/21/19	05/21/19 20:17	1014
Benzo(k)fluoranthene	ND	ug/kg	2,100		100	05/21/19	05/21/19 20:17	1014
Biphenyl (Diphenyl)	ND	ug/kg	21,000		100	05/21/19	05/21/19 20:17	1014
Butyl benzyl phthalate	ND	ug/kg	21,000		100	05/21/19	05/21/19 20:17	1014
bis(2-chloroethoxy) methane	ND	ug/kg	21,000		100	05/21/19	05/21/19 20:17	1014
bis(2-chloroethyl) ether	ND	ug/kg	21,000		100	05/21/19	05/21/19 20:17	1014
bis(2-chloroisopropyl) ether	ND	ug/kg	21,000		100	05/21/19	05/21/19 20:17	1014
bis(2-ethylhexyl) phthalate	ND	ug/kg	21,000		100	05/21/19	05/21/19 20:17	1014
4-Bromophenylphenyl ether	ND	ug/kg	21,000		100	05/21/19	05/21/19 20:17	1014
Di-n-butyl phthalate	ND	ug/kg	21,000		100	05/21/19	05/21/19 20:17	1014
Carbazole	ND	ug/kg	21,000		100	05/21/19	05/21/19 20:17	1014
Caprolactam	ND	ug/kg	21,000		100	05/21/19	05/21/19 20:17	1014
4-Chloro-3-methyl phenol	ND	ug/kg	21,000		100	05/21/19	05/21/19 20:17	1014
4-Chloroaniline	ND	ug/kg	21,000		100	05/21/19	05/21/19 20:17	1014
2-Chloronaphthalene	ND	ug/kg	21,000		100	05/21/19	05/21/19 20:17	1014
2-Chlorophenol	ND	ug/kg	21,000		100	05/21/19	05/21/19 20:17	1014
4-Chlorophenyl Phenyl ether	ND	ug/kg	21,000		100	05/21/19	05/21/19 20:17	1014
Chrysene	ND	ug/kg	2,100		100	05/21/19	05/21/19 20:17	1014
Dibenz(a,h)Anthracene	ND	ug/kg	2,100		100	05/21/19	05/21/19 20:17	1014
Dibenzofuran	ND	ug/kg	21,000		100	05/21/19	05/21/19 20:17	1014
3,3-Dichlorobenzidine	ND	ug/kg	21,000		100	05/21/19	05/21/19 20:17	1014
2,4-Dichlorophenol	ND	ug/kg	21,000		100	05/21/19	05/21/19 20:17	1014
Diethyl phthalate	ND	ug/kg	21,000		100	05/21/19	05/21/19 20:17	1014
Dimethyl phthalate	ND	ug/kg	21,000		100	05/21/19	05/21/19 20:17	1014
2,4-Dimethylphenol	ND	ug/kg	21,000		100	05/21/19	05/21/19 20:17	1014
4,6-Dinitro-2-methyl phenol	ND	ug/kg	21,000		100	05/21/19	05/21/19 20:17	1014
2,4-Dinitrophenol	ND	ug/kg	42,000		100	05/21/19	05/21/19 20:17	1014

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# PHASE SEPARATION SCIENCE, INC.



## CERTIFICATE OF ANALYSIS

No: 19052018

Hillis Carnes Engineering Associates, Annapolis Junction, MD

May 23, 2019

Project Name: Slag Processing Area

Project Location: TPA

Project ID: 18019A

**Sample ID: SP-4-A**      **Date/Time Sampled: 05/20/2019 15:15**      **PSS Sample ID: 19052018-010**  
**Matrix: SOIL**      **Date/Time Received: 05/20/2019 17:15**      **% Solids SM2540G-11: 80**

TCL Semivolatile Organic Compounds

Analytical Method: SW-846 8270 C

Preparation Method: SW3550C

Qualifier(s): See Batch 164534 on Case Narrative.

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
2,4-Dinitrotoluene	ND	ug/kg	21,000		100	05/21/19	05/21/19 20:17	1014
2,6-Dinitrotoluene	ND	ug/kg	21,000		100	05/21/19	05/21/19 20:17	1014
Fluoranthene	<b>3,500</b>	ug/kg	2,100		100	05/21/19	05/21/19 20:17	1014
Fluorene	ND	ug/kg	2,100		100	05/21/19	05/21/19 20:17	1014
Hexachlorobenzene	ND	ug/kg	21,000		100	05/21/19	05/21/19 20:17	1014
Hexachlorobutadiene	ND	ug/kg	21,000		100	05/21/19	05/21/19 20:17	1014
Hexachlorocyclopentadiene	ND	ug/kg	21,000		100	05/21/19	05/21/19 20:17	1014
Hexachloroethane	ND	ug/kg	21,000		100	05/21/19	05/21/19 20:17	1014
Indeno(1,2,3-c,d)Pyrene	ND	ug/kg	2,100		100	05/21/19	05/21/19 20:17	1014
Isophorone	ND	ug/kg	21,000		100	05/21/19	05/21/19 20:17	1014
2-Methylnaphthalene	<b>23,000</b>	ug/kg	2,100		100	05/21/19	05/21/19 20:17	1014
2-Methyl phenol	ND	ug/kg	21,000		100	05/21/19	05/21/19 20:17	1014
3&4-Methylphenol	ND	ug/kg	21,000		100	05/21/19	05/21/19 20:17	1014
Naphthalene	<b>1,100,000</b>	ug/kg	21,000		1000	05/21/19	05/21/19 16:06	1014
2-Nitroaniline	ND	ug/kg	21,000		100	05/21/19	05/21/19 20:17	1014
3-Nitroaniline	ND	ug/kg	21,000		100	05/21/19	05/21/19 20:17	1014
4-Nitroaniline	ND	ug/kg	21,000		100	05/21/19	05/21/19 20:17	1014
Nitrobenzene	ND	ug/kg	21,000		100	05/21/19	05/21/19 20:17	1014
2-Nitrophenol	ND	ug/kg	21,000		100	05/21/19	05/21/19 20:17	1014
4-Nitrophenol	ND	ug/kg	21,000		100	05/21/19	05/21/19 20:17	1014
N-Nitrosodi-n-propyl amine	ND	ug/kg	21,000		100	05/21/19	05/21/19 20:17	1014
N-Nitrosodiphenylamine	ND	ug/kg	21,000		100	05/21/19	05/21/19 20:17	1014
Di-n-octyl phthalate	ND	ug/kg	21,000		100	05/21/19	05/21/19 20:17	1014
Pentachlorophenol	ND	ug/kg	21,000		100	05/21/19	05/21/19 20:17	1014
Phenanthrene	<b>3,700</b>	ug/kg	2,100		100	05/21/19	05/21/19 20:17	1014
Phenol	ND	ug/kg	21,000		100	05/21/19	05/21/19 20:17	1014
Pyrene	<b>2,600</b>	ug/kg	2,100		100	05/21/19	05/21/19 20:17	1014
Pyridine	ND	ug/kg	21,000		100	05/21/19	05/21/19 20:17	1014
2,4,5-Trichlorophenol	ND	ug/kg	21,000		100	05/21/19	05/21/19 20:17	1014



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# PHASE SEPARATION SCIENCE, INC.



## CERTIFICATE OF ANALYSIS

No: 19052018

Hillis Carnes Engineering Associates, Annapolis Junction, MD

May 23, 2019

Project Name: Slag Processing Area

Project Location: TPA

Project ID: 18019A

**Sample ID: SP-4-A**      **Date/Time Sampled: 05/20/2019 15:15**      **PSS Sample ID: 19052018-010**  
**Matrix: SOIL**      **Date/Time Received: 05/20/2019 17:15**      **% Solids SM2540G-11: 80**

TCL Semivolatile Organic Compounds

Analytical Method: SW-846 8270 C

Preparation Method: SW3550C

Qualifier(s): See Batch 164534 on Case Narrative.

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
2,4,6-Trichlorophenol	ND	ug/kg	21,000		100	05/21/19	05/21/19 20:17	1014
<b>Surrogate(s)</b>	<b>Recovery</b>		<b>Limits</b>					
2-Fluorobiphenyl	0 %		32-107	*	1000	05/21/19	05/21/19 16:06	1014
2-Fluorophenol	0 %		34-113	*	1000	05/21/19	05/21/19 16:06	1014
Nitrobenzene-d5	0 %		35-123	*	1000	05/21/19	05/21/19 16:06	1014
Phenol-d6	0 %		34-120	*	1000	05/21/19	05/21/19 16:06	1014
Terphenyl-D14	50 %		46-154		1000	05/21/19	05/21/19 16:06	1014
2,4,6-Tribromophenol	0 %		31-113	*	1000	05/21/19	05/21/19 16:06	1014
2-Fluorobiphenyl	75 %		32-107		100	05/21/19	05/21/19 20:17	1014
2-Fluorophenol	8 %		34-113	*	100	05/21/19	05/21/19 20:17	1014
Nitrobenzene-d5	55 %		35-123		100	05/21/19	05/21/19 20:17	1014
Phenol-d6	20 %		34-120	*	100	05/21/19	05/21/19 20:17	1014
Terphenyl-D14	85 %		46-154		100	05/21/19	05/21/19 20:17	1014
2,4,6-Tribromophenol	0 %		31-113	*	100	05/21/19	05/21/19 20:17	1014

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## CERTIFICATE OF ANALYSIS

No: 19052018

Hillis Carnes Engineering Associates, Annapolis Junction, MD

May 23, 2019

Project Name: Slag Processing Area

Project Location: TPA

Project ID: 18019A

**Sample ID: C-1**      **Date/Time Sampled: 05/20/2019 15:30**      **PSS Sample ID: 19052018-011**

**Matrix: SOIL**      **Date/Time Received: 05/20/2019 17:15**      **% Solids SM2540G-11: 81**

PP Metals (plus Mn)

Analytical Method: SW-846 6020 A

Preparation Method: 3050B

Qualifier(s): See Batch 164540 on Case Narrative.

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Antimony	ND	mg/kg	2.4		1	05/21/19	05/21/19 22:32	1064
Arsenic	1.8	mg/kg	0.48		1	05/21/19	05/21/19 22:32	1064
Beryllium	3.3	mg/kg	2.4		1	05/21/19	05/22/19 19:39	1064
Cadmium	ND	mg/kg	2.4		1	05/21/19	05/21/19 22:32	1064
Chromium	80	mg/kg	2.4		1	05/21/19	05/21/19 22:32	1064
Copper	34	mg/kg	2.4		1	05/21/19	05/21/19 22:32	1064
Lead	110	mg/kg	2.4		1	05/21/19	05/22/19 19:39	1064
Manganese	2,700	mg/kg	24		10	05/21/19	05/22/19 18:15	1064
Mercury	ND	mg/kg	0.095		1	05/21/19	05/21/19 22:32	1064
Nickel	15	mg/kg	2.4		1	05/21/19	05/21/19 22:32	1064
Selenium	3.7	mg/kg	2.4		1	05/21/19	05/21/19 22:32	1064
Silver	ND	mg/kg	2.4		1	05/21/19	05/21/19 22:32	1064
Thallium	ND	mg/kg	1.9		1	05/21/19	05/21/19 22:32	1064
Zinc	28	mg/kg	9.5		1	05/21/19	05/21/19 22:32	1064

Total Petroleum Hydrocarbons - DRO

Analytical Method: SW-846 8015 C

Preparation Method: SW3550C

Qualifier(s): See Batch 164528 on Case Narrative.

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
TPH-DRO (Diesel Range Organics)	100	mg/kg	41		10	05/21/19	05/22/19 00:40	1059

Surrogate(s)	Recovery	Limits						
o-Terphenyl	82 %	37-120			10	05/21/19	05/22/19 00:40	1059

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# PHASE SEPARATION SCIENCE, INC.



## CERTIFICATE OF ANALYSIS

No: 19052018

Hillis Carnes Engineering Associates, Annapolis Junction, MD

May 23, 2019

Project Name: Slag Processing Area

Project Location: TPA

Project ID: 18019A

<b>Sample ID: C-1</b>	<b>Date/Time Sampled: 05/20/2019 15:30</b>	<b>PSS Sample ID: 19052018-011</b>
<b>Matrix: SOIL</b>	<b>Date/Time Received: 05/20/2019 17:15</b>	<b>% Solids SM2540G-11: 81</b>
Total Petroleum Hydrocarbons-GRO	Analytical Method: SW-846 8015C	Preparation Method: 5030

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
TPH-GRO (Gasoline Range Organics)	ND	ug/kg	120		1	05/21/19	05/21/19 22:50	1045
<b>Surrogate(s)</b>	<b>Recovery</b>		<b>Limits</b>					
<i>a,a,a-Trifluorotoluene</i>	88	%	56-114		1	05/21/19	05/21/19 22:50	1045

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Polychlorinated Biphenyls								
PCB-1016	ND	mg/kg	0.063		1	05/21/19	05/21/19 19:46	1029
PCB-1221	ND	mg/kg	0.063		1	05/21/19	05/21/19 19:46	1029
PCB-1232	ND	mg/kg	0.063		1	05/21/19	05/21/19 19:46	1029
PCB-1242	ND	mg/kg	0.063		1	05/21/19	05/21/19 19:46	1029
PCB-1248	ND	mg/kg	0.063		1	05/21/19	05/21/19 19:46	1029
PCB-1254	ND	mg/kg	0.063		1	05/21/19	05/21/19 19:46	1029
PCB-1260	ND	mg/kg	0.063		1	05/21/19	05/21/19 19:46	1029
<b>Surrogate(s)</b>	<b>Recovery</b>		<b>Limits</b>					
<i>Decachlorobiphenyl</i>	88	%	61-150		1	05/21/19	05/21/19 19:46	1029
<i>Tetrachloro-m-xylene</i>	68	%	42-142		1	05/21/19	05/21/19 19:46	1029

TCL Volatile Organic Compounds	Analytical Method: SW-846 8260 B	Preparation Method: 5030
Qualifier(s): See Batch 164549 on Case Narrative.		

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/kg	140		1	05/22/19	05/22/19 12:08	1011
Benzene	ND	ug/kg	14		1	05/22/19	05/22/19 12:08	1011
Bromochloromethane	ND	ug/kg	14		1	05/22/19	05/22/19 12:08	1011
Bromodichloromethane	ND	ug/kg	14		1	05/22/19	05/22/19 12:08	1011
Bromoform	ND	ug/kg	14		1	05/22/19	05/22/19 12:08	1011
Bromomethane	ND	ug/kg	14		1	05/22/19	05/22/19 12:08	1011

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# PHASE SEPARATION SCIENCE, INC.



## CERTIFICATE OF ANALYSIS

No: 19052018

Hillis Carnes Engineering Associates, Annapolis Junction, MD

May 23, 2019

Project Name: Slag Processing Area

Project Location: TPA

Project ID: 18019A

**Sample ID: C-1**      **Date/Time Sampled: 05/20/2019 15:30**      **PSS Sample ID: 19052018-011**

**Matrix: SOIL**      **Date/Time Received: 05/20/2019 17:15**      **% Solids SM2540G-11: 81**

TCL Volatile Organic Compounds

Analytical Method: SW-846 8260 B

Preparation Method: 5030

Qualifier(s): See Batch 164549 on Case Narrative.

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
2-Butanone (MEK)	ND	ug/kg	69		1	05/22/19	05/22/19 12:08	1011
Carbon Disulfide	ND	ug/kg	14		1	05/22/19	05/22/19 12:08	1011
Carbon tetrachloride	ND	ug/kg	14		1	05/22/19	05/22/19 12:08	1011
Chlorobenzene	ND	ug/kg	14		1	05/22/19	05/22/19 12:08	1011
Chloroethane	ND	ug/kg	14		1	05/22/19	05/22/19 12:08	1011
Chloroform	ND	ug/kg	69		1	05/22/19	05/22/19 12:08	1011
Chloromethane	ND	ug/kg	14		1	05/22/19	05/22/19 12:08	1011
Cyclohexane	ND	ug/kg	14		1	05/22/19	05/22/19 12:08	1011
1,2-Dibromo-3-chloropropane	ND	ug/kg	14		1	05/22/19	05/22/19 12:08	1011
Dibromochloromethane	ND	ug/kg	14		1	05/22/19	05/22/19 12:08	1011
1,2-Dibromoethane	ND	ug/kg	14		1	05/22/19	05/22/19 12:08	1011
1,2-Dichlorobenzene	ND	ug/kg	14		1	05/22/19	05/22/19 12:08	1011
1,3-Dichlorobenzene	ND	ug/kg	14		1	05/22/19	05/22/19 12:08	1011
1,4-Dichlorobenzene	ND	ug/kg	14		1	05/22/19	05/22/19 12:08	1011
Dichlorodifluoromethane	ND	ug/kg	14		1	05/22/19	05/22/19 12:08	1011
1,1-Dichloroethane	ND	ug/kg	14		1	05/22/19	05/22/19 12:08	1011
1,2-Dichloroethane	ND	ug/kg	14		1	05/22/19	05/22/19 12:08	1011
1,1-Dichloroethene	ND	ug/kg	14		1	05/22/19	05/22/19 12:08	1011
cis-1,2-Dichloroethene	ND	ug/kg	14		1	05/22/19	05/22/19 12:08	1011
1,2-Dichloropropane	ND	ug/kg	14		1	05/22/19	05/22/19 12:08	1011
cis-1,3-Dichloropropene	ND	ug/kg	14		1	05/22/19	05/22/19 12:08	1011
trans-1,2-Dichloroethene	ND	ug/kg	14		1	05/22/19	05/22/19 12:08	1011
trans-1,3-Dichloropropene	ND	ug/kg	14		1	05/22/19	05/22/19 12:08	1011
Ethylbenzene	ND	ug/kg	14		1	05/22/19	05/22/19 12:08	1011
2-Hexanone (MBK)	ND	ug/kg	14		1	05/22/19	05/22/19 12:08	1011
Isopropylbenzene	ND	ug/kg	14		1	05/22/19	05/22/19 12:08	1011
Methyl Acetate	ND	ug/kg	14		1	05/22/19	05/22/19 12:08	1011
Methylcyclohexane	ND	ug/kg	14		1	05/22/19	05/22/19 12:08	1011
Methylene chloride	ND	ug/kg	69		1	05/22/19	05/22/19 12:08	1011

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# PHASE SEPARATION SCIENCE, INC.



## CERTIFICATE OF ANALYSIS

No: 19052018

Hillis Carnes Engineering Associates, Annapolis Junction, MD

May 23, 2019

Project Name: Slag Processing Area

Project Location: TPA

Project ID: 18019A

**Sample ID: C-1**      **Date/Time Sampled: 05/20/2019 15:30**      **PSS Sample ID: 19052018-011**

**Matrix: SOIL**      **Date/Time Received: 05/20/2019 17:15**      **% Solids SM2540G-11: 81**

TCL Volatile Organic Compounds

Analytical Method: SW-846 8260 B

Preparation Method: 5030

Qualifier(s): See Batch 164549 on Case Narrative.

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
4-Methyl-2-Pentanone (MIBK)	ND	ug/kg	14		1	05/22/19	05/22/19 12:08	1011
Methyl-t-Butyl Ether	ND	ug/kg	14		1	05/22/19	05/22/19 12:08	1011
Naphthalene	<b>6,600</b>	ug/kg	14		1	05/22/19	05/22/19 12:08	1011
Styrene	ND	ug/kg	14		1	05/22/19	05/22/19 12:08	1011
1,1,2,2-Tetrachloroethane	ND	ug/kg	14		1	05/22/19	05/22/19 12:08	1011
Tetrachloroethene	ND	ug/kg	14		1	05/22/19	05/22/19 12:08	1011
Toluene	ND	ug/kg	14		1	05/22/19	05/22/19 12:08	1011
1,2,3-Trichlorobenzene	ND	ug/kg	14		1	05/22/19	05/22/19 12:08	1011
1,2,4-Trichlorobenzene	ND	ug/kg	14		1	05/22/19	05/22/19 12:08	1011
1,1,1-Trichloroethane	ND	ug/kg	14		1	05/22/19	05/22/19 12:08	1011
1,1,2-Trichloroethane	ND	ug/kg	14		1	05/22/19	05/22/19 12:08	1011
Trichloroethene	ND	ug/kg	14		1	05/22/19	05/22/19 12:08	1011
Trichlorofluoromethane	ND	ug/kg	14		1	05/22/19	05/22/19 12:08	1011
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	14		1	05/22/19	05/22/19 12:08	1011
Vinyl chloride	ND	ug/kg	69		1	05/22/19	05/22/19 12:08	1011
m&p-Xylene	ND	ug/kg	27		1	05/22/19	05/22/19 12:08	1011
o-Xylene	ND	ug/kg	14		1	05/22/19	05/22/19 12:08	1011
<b>Surrogate(s)</b>	<b>Recovery</b>		<b>Limits</b>					
4-Bromofluorobenzene	102 %		81-146		1	05/22/19	05/22/19 12:08	1011
Dibromofluoromethane	98 %		89-120		1	05/22/19	05/22/19 12:08	1011
Toluene-D8	88 %		86-116		1	05/22/19	05/22/19 12:08	1011

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# PHASE SEPARATION SCIENCE, INC.



## CERTIFICATE OF ANALYSIS

No: 19052018

Hillis Carnes Engineering Associates, Annapolis Junction, MD

May 23, 2019

Project Name: Slag Processing Area

Project Location: TPA

Project ID: 18019A

**Sample ID: C-1** **Date/Time Sampled: 05/20/2019 15:30** **PSS Sample ID: 19052018-011**

**Matrix: SOIL** **Date/Time Received: 05/20/2019 17:15** **% Solids SM2540G-11: 81**

TCL Semivolatile Organic Compounds

Analytical Method: SW-846 8270 C

Preparation Method: SW3550C

Qualifier(s): See Batch 164534 on Case Narrative.

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acenaphthene	ND	ug/kg	2,000		100	05/21/19	05/21/19 19:49	1014
Acenaphthylene	ND	ug/kg	2,000		100	05/21/19	05/21/19 19:49	1014
Acetophenone	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:49	1014
Anthracene	ND	ug/kg	2,000		100	05/21/19	05/21/19 19:49	1014
Atrazine	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:49	1014
Benzo(a)anthracene	ND	ug/kg	2,000		100	05/21/19	05/21/19 19:49	1014
Benzo(a)pyrene	ND	ug/kg	2,000		100	05/21/19	05/21/19 19:49	1014
Benzo(b)fluoranthene	ND	ug/kg	2,000		100	05/21/19	05/21/19 19:49	1014
Benzo(g,h,i)perylene	ND	ug/kg	2,000		100	05/21/19	05/21/19 19:49	1014
Benzo(k)fluoranthene	ND	ug/kg	2,000		100	05/21/19	05/21/19 19:49	1014
Biphenyl (Diphenyl)	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:49	1014
Butyl benzyl phthalate	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:49	1014
bis(2-chloroethoxy) methane	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:49	1014
bis(2-chloroethyl) ether	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:49	1014
bis(2-chloroisopropyl) ether	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:49	1014
bis(2-ethylhexyl) phthalate	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:49	1014
4-Bromophenylphenyl ether	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:49	1014
Di-n-butyl phthalate	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:49	1014
Carbazole	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:49	1014
Caprolactam	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:49	1014
4-Chloro-3-methyl phenol	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:49	1014
4-Chloroaniline	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:49	1014
2-Chloronaphthalene	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:49	1014
2-Chlorophenol	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:49	1014
4-Chlorophenyl Phenyl ether	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:49	1014
Chrysene	ND	ug/kg	2,000		100	05/21/19	05/21/19 19:49	1014
Dibenz(a,h)Anthracene	ND	ug/kg	2,000		100	05/21/19	05/21/19 19:49	1014
Dibenzofuran	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:49	1014
3,3-Dichlorobenzidine	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:49	1014

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# PHASE SEPARATION SCIENCE, INC.



## CERTIFICATE OF ANALYSIS

No: 19052018

Hillis Carnes Engineering Associates, Annapolis Junction, MD

May 23, 2019

Project Name: Slag Processing Area

Project Location: TPA

Project ID: 18019A

**Sample ID: C-1**      **Date/Time Sampled: 05/20/2019 15:30**      **PSS Sample ID: 19052018-011**  
**Matrix: SOIL**      **Date/Time Received: 05/20/2019 17:15**      **% Solids SM2540G-11: 81**

TCL Semivolatile Organic Compounds

Analytical Method: SW-846 8270 C

Preparation Method: SW3550C

Qualifier(s): See Batch 164534 on Case Narrative.

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
2,4-Dichlorophenol	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:49	1014
Diethyl phthalate	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:49	1014
Dimethyl phthalate	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:49	1014
2,4-Dimethylphenol	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:49	1014
4,6-Dinitro-2-methyl phenol	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:49	1014
2,4-Dinitrophenol	ND	ug/kg	41,000		100	05/21/19	05/21/19 19:49	1014
2,4-Dinitrotoluene	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:49	1014
2,6-Dinitrotoluene	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:49	1014
Fluoranthene	ND	ug/kg	2,000		100	05/21/19	05/21/19 19:49	1014
Fluorene	ND	ug/kg	2,000		100	05/21/19	05/21/19 19:49	1014
Hexachlorobenzene	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:49	1014
Hexachlorobutadiene	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:49	1014
Hexachlorocyclopentadiene	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:49	1014
Hexachloroethane	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:49	1014
Indeno(1,2,3-c,d)Pyrene	ND	ug/kg	2,000		100	05/21/19	05/21/19 19:49	1014
Isophorone	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:49	1014
2-Methylnaphthalene	ND	ug/kg	2,000		100	05/21/19	05/21/19 19:49	1014
2-Methyl phenol	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:49	1014
3&4-Methylphenol	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:49	1014
Naphthalene	<b>4,900</b>	ug/kg	2,000		100	05/21/19	05/21/19 19:49	1014
2-Nitroaniline	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:49	1014
3-Nitroaniline	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:49	1014
4-Nitroaniline	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:49	1014
Nitrobenzene	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:49	1014
2-Nitrophenol	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:49	1014
4-Nitrophenol	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:49	1014
N-Nitrosodi-n-propyl amine	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:49	1014
N-Nitrosodiphenylamine	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:49	1014
Di-n-octyl phthalate	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:49	1014

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# PHASE SEPARATION SCIENCE, INC.



## CERTIFICATE OF ANALYSIS

No: 19052018

Hillis Carnes Engineering Associates, Annapolis Junction, MD  
 May 23, 2019

Project Name: Slag Processing Area  
 Project Location: TPA  
 Project ID: 18019A

**Sample ID: C-1**      **Date/Time Sampled: 05/20/2019 15:30**      **PSS Sample ID: 19052018-011**  
**Matrix: SOIL**      **Date/Time Received: 05/20/2019 17:15**      **% Solids SM2540G-11: 81**

TCL Semivolatile Organic Compounds      Analytical Method: SW-846 8270 C      Preparation Method: SW3550C

Qualifier(s): See Batch 164534 on Case Narrative.

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Pentachlorophenol	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:49	1014
Phenanthrene	ND	ug/kg	2,000		100	05/21/19	05/21/19 19:49	1014
Phenol	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:49	1014
Pyrene	ND	ug/kg	2,000		100	05/21/19	05/21/19 19:49	1014
Pyridine	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:49	1014
2,4,5-Trichlorophenol	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:49	1014
2,4,6-Trichlorophenol	ND	ug/kg	20,000		100	05/21/19	05/21/19 19:49	1014
<b>Surrogate(s)</b>	<b>Recovery</b>		<b>Limits</b>					
2-Fluorobiphenyl	10 %		32-107	*	100	05/21/19	05/21/19 19:49	1014
2-Fluorophenol	0 %		34-113	*	100	05/21/19	05/21/19 19:49	1014
Nitrobenzene-d5	10 %		35-123	*	100	05/21/19	05/21/19 19:49	1014
Phenol-d6	3 %		34-120	*	100	05/21/19	05/21/19 19:49	1014
Terphenyl-D14	45 %		46-154	*	100	05/21/19	05/21/19 19:49	1014
2,4,6-Tribromophenol	0 %		31-113	*	100	05/21/19	05/21/19 19:49	1014



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# PHASE SEPARATION SCIENCE, INC.



## CERTIFICATE OF ANALYSIS

No: 19052018

Hillis Carnes Engineering Associates, Annapolis Junction, MD  
 May 23, 2019

Project Name: Slag Processing Area  
 Project Location: TPA  
 Project ID: 18019A

**Sample ID: C-2**      **Date/Time Sampled: 05/20/2019 15:40**      **PSS Sample ID: 19052018-012**  
**Matrix: SOIL**      **Date/Time Received: 05/20/2019 17:15**      **% Solids SM2540G-11: 81**

PP Metals (plus Mn)      Analytical Method: SW-846 6020 A      Preparation Method: 3050B

Qualifier(s): See Batch 164540 on Case Narrative.

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Antimony	ND	mg/kg	2.4		1	05/21/19	05/21/19 22:37	1064
Arsenic	<b>0.97</b>	mg/kg	0.48		1	05/21/19	05/21/19 22:37	1064
Beryllium	ND	mg/kg	2.4		1	05/21/19	05/22/19 19:45	1064
Cadmium	ND	mg/kg	2.4		1	05/21/19	05/21/19 22:37	1064
Chromium	<b>420</b>	mg/kg	2.4		1	05/21/19	05/21/19 22:37	1064
Copper	<b>17</b>	mg/kg	2.4		1	05/21/19	05/21/19 22:37	1064
Lead	<b>94</b>	mg/kg	2.4		1	05/21/19	05/22/19 19:45	1064
Manganese	<b>13,000</b>	mg/kg	240		100	05/21/19	05/23/19 13:49	1064
Mercury	ND	mg/kg	0.097		1	05/21/19	05/21/19 22:37	1064
Nickel	<b>3.8</b>	mg/kg	2.4		1	05/21/19	05/21/19 22:37	1064
Selenium	<b>3.1</b>	mg/kg	2.4		1	05/21/19	05/21/19 22:37	1064
Silver	ND	mg/kg	2.4		1	05/21/19	05/21/19 22:37	1064
Thallium	ND	mg/kg	1.9		1	05/21/19	05/21/19 22:37	1064
Zinc	ND	mg/kg	9.7		1	05/21/19	05/21/19 22:37	1064

Total Petroleum Hydrocarbons - DRO      Analytical Method: SW-846 8015 C      Preparation Method: SW3550C

Qualifier(s): See Batch 164544 on Case Narrative.

*DF/HF - No. 2/diesel fuel and heavier fuel/oil patterns observed in sample.*

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
TPH-DRO (Diesel Range Organics)	<b>30,000</b>	mg/kg	830	DF	100	05/21/19	05/22/19 10:29	1059

Surrogate(s)	Recovery	Limits						
<i>o</i> -Terphenyl	0 %	37-120	*	100	05/21/19	05/22/19 10:29	1059	

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# PHASE SEPARATION SCIENCE, INC.



## CERTIFICATE OF ANALYSIS

No: 19052018

Hillis Carnes Engineering Associates, Annapolis Junction, MD

May 23, 2019

Project Name: Slag Processing Area

Project Location: TPA

Project ID: 18019A

**Sample ID: C-2**      **Date/Time Sampled: 05/20/2019 15:40**      **PSS Sample ID: 19052018-012**  
**Matrix: SOIL**      **Date/Time Received: 05/20/2019 17:15**      **% Solids SM2540G-11: 81**

Total Petroleum Hydrocarbons-GRO      Analytical Method: SW-846 8015C      Preparation Method: 5030

Qualifier(s): See Batch 164555 on Case Narrative.

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
TPH-GRO (Gasoline Range Organics)	1,800	ug/kg	120		1	05/22/19	05/22/19 14:56	1045
<b>Surrogate(s)</b>	<b>Recovery</b>		<b>Limits</b>					
a,a,a-Trifluorotoluene	35	%	56-114	*	1	05/22/19	05/22/19 14:56	1045

Polychlorinated Biphenyls      Analytical Method: SW-846 8082 A      Preparation Method: SW3550C  
 Clean up Method: SW846 3665A

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
PCB-1016	ND	mg/kg	0.061		1	05/21/19	05/21/19 20:14	1029
PCB-1221	ND	mg/kg	0.061		1	05/21/19	05/21/19 20:14	1029
PCB-1232	ND	mg/kg	0.061		1	05/21/19	05/21/19 20:14	1029
PCB-1242	ND	mg/kg	0.061		1	05/21/19	05/21/19 20:14	1029
PCB-1248	ND	mg/kg	0.061		1	05/21/19	05/21/19 20:14	1029
PCB-1254	ND	mg/kg	0.061		1	05/21/19	05/21/19 20:14	1029
PCB-1260	ND	mg/kg	0.061		1	05/21/19	05/21/19 20:14	1029
<b>Surrogate(s)</b>	<b>Recovery</b>		<b>Limits</b>					
Tetrachloro-m-xylene	53	%	42-142		1	05/21/19	05/21/19 20:14	1029
Decachlorobiphenyl	48	%	61-150	*	1	05/21/19	05/21/19 20:14	1029

TCL Volatile Organic Compounds      Analytical Method: SW-846 8260 B      Preparation Method: 5030

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acetone	ND	ug/kg	12,000		1000	05/21/19	05/21/19 19:29	1011
Benzene	ND	ug/kg	1,200		1000	05/21/19	05/21/19 19:29	1011
Bromochloromethane	ND	ug/kg	1,200		1000	05/21/19	05/21/19 19:29	1011
Bromodichloromethane	ND	ug/kg	1,200		1000	05/21/19	05/21/19 19:29	1011
Bromoform	ND	ug/kg	1,200		1000	05/21/19	05/21/19 19:29	1011
Bromomethane	ND	ug/kg	1,200		1000	05/21/19	05/21/19 19:29	1011

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# PHASE SEPARATION SCIENCE, INC.



## CERTIFICATE OF ANALYSIS

No: 19052018

Hillis Carnes Engineering Associates, Annapolis Junction, MD

May 23, 2019

Project Name: Slag Processing Area

Project Location: TPA

Project ID: 18019A

<b>Sample ID: C-2</b>	<b>Date/Time Sampled: 05/20/2019 15:40</b>	<b>PSS Sample ID: 19052018-012</b>
<b>Matrix: SOIL</b>	<b>Date/Time Received: 05/20/2019 17:15</b>	<b>% Solids SM2540G-11: 81</b>
TCL Volatile Organic Compounds	Analytical Method: SW-846 8260 B	Preparation Method: 5030

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
2-Butanone (MEK)	ND	ug/kg	6,200		1000	05/21/19	05/21/19 19:29	1011
Carbon Disulfide	ND	ug/kg	1,200		1000	05/21/19	05/21/19 19:29	1011
Carbon tetrachloride	ND	ug/kg	1,200		1000	05/21/19	05/21/19 19:29	1011
Chlorobenzene	ND	ug/kg	1,200		1000	05/21/19	05/21/19 19:29	1011
Chloroethane	ND	ug/kg	1,200		1000	05/21/19	05/21/19 19:29	1011
Chloroform	ND	ug/kg	6,200		1000	05/21/19	05/21/19 19:29	1011
Chloromethane	ND	ug/kg	1,200		1000	05/21/19	05/21/19 19:29	1011
Cyclohexane	ND	ug/kg	1,200		1000	05/21/19	05/21/19 19:29	1011
1,2-Dibromo-3-chloropropane	ND	ug/kg	1,200		1000	05/21/19	05/21/19 19:29	1011
Dibromochloromethane	ND	ug/kg	1,200		1000	05/21/19	05/21/19 19:29	1011
1,2-Dibromoethane	ND	ug/kg	1,200		1000	05/21/19	05/21/19 19:29	1011
1,2-Dichlorobenzene	ND	ug/kg	1,200		1000	05/21/19	05/21/19 19:29	1011
1,3-Dichlorobenzene	ND	ug/kg	1,200		1000	05/21/19	05/21/19 19:29	1011
1,4-Dichlorobenzene	ND	ug/kg	1,200		1000	05/21/19	05/21/19 19:29	1011
Dichlorodifluoromethane	ND	ug/kg	1,200		1000	05/21/19	05/21/19 19:29	1011
1,1-Dichloroethane	ND	ug/kg	1,200		1000	05/21/19	05/21/19 19:29	1011
1,2-Dichloroethane	ND	ug/kg	1,200		1000	05/21/19	05/21/19 19:29	1011
1,1-Dichloroethene	ND	ug/kg	1,200		1000	05/21/19	05/21/19 19:29	1011
1,2-Dichloropropane	ND	ug/kg	1,200		1000	05/21/19	05/21/19 19:29	1011
cis-1,2-Dichloroethene	ND	ug/kg	1,200		1000	05/21/19	05/21/19 19:29	1011
cis-1,3-Dichloropropene	ND	ug/kg	1,200		1000	05/21/19	05/21/19 19:29	1011
trans-1,2-Dichloroethene	ND	ug/kg	1,200		1000	05/21/19	05/21/19 19:29	1011
trans-1,3-Dichloropropene	ND	ug/kg	1,200		1000	05/21/19	05/21/19 19:29	1011
Ethylbenzene	ND	ug/kg	1,200		1000	05/21/19	05/21/19 19:29	1011
2-Hexanone (MBK)	ND	ug/kg	1,200		1000	05/21/19	05/21/19 19:29	1011
Isopropylbenzene	ND	ug/kg	1,200		1000	05/21/19	05/21/19 19:29	1011
Methyl Acetate	ND	ug/kg	1,200		1000	05/21/19	05/21/19 19:29	1011
Methylcyclohexane	ND	ug/kg	1,200		1000	05/21/19	05/21/19 19:29	1011
Methylene chloride	ND	ug/kg	6,200		1000	05/21/19	05/21/19 19:29	1011

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# PHASE SEPARATION SCIENCE, INC.



## CERTIFICATE OF ANALYSIS

No: 19052018

Hillis Carnes Engineering Associates, Annapolis Junction, MD

May 23, 2019

Project Name: Slag Processing Area

Project Location: TPA

Project ID: 18019A

<b>Sample ID: C-2</b>	<b>Date/Time Sampled: 05/20/2019 15:40</b>	<b>PSS Sample ID: 19052018-012</b>
<b>Matrix: SOIL</b>	<b>Date/Time Received: 05/20/2019 17:15</b>	<b>% Solids SM2540G-11: 81</b>
TCL Volatile Organic Compounds	Analytical Method: SW-846 8260 B	Preparation Method: 5030

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
4-Methyl-2-Pentanone (MIBK)	ND	ug/kg	1,200		1000	05/21/19	05/21/19 19:29	1011
Methyl-t-Butyl Ether	ND	ug/kg	1,200		1000	05/21/19	05/21/19 19:29	1011
Naphthalene	<b>2,300,000</b>	ug/kg	120,000		100000	05/21/19	05/22/19 13:45	1011
Styrene	ND	ug/kg	1,200		1000	05/21/19	05/21/19 19:29	1011
1,1,2,2-Tetrachloroethane	ND	ug/kg	1,200		1000	05/21/19	05/21/19 19:29	1011
Tetrachloroethene	ND	ug/kg	1,200		1000	05/21/19	05/21/19 19:29	1011
Toluene	ND	ug/kg	1,200		1000	05/21/19	05/21/19 19:29	1011
1,2,3-Trichlorobenzene	ND	ug/kg	1,200		1000	05/21/19	05/21/19 19:29	1011
1,2,4-Trichlorobenzene	ND	ug/kg	1,200		1000	05/21/19	05/21/19 19:29	1011
1,1,1-Trichloroethane	ND	ug/kg	1,200		1000	05/21/19	05/21/19 19:29	1011
1,1,2-Trichloroethane	ND	ug/kg	1,200		1000	05/21/19	05/21/19 19:29	1011
Trichloroethene	ND	ug/kg	1,200		1000	05/21/19	05/21/19 19:29	1011
Trichlorofluoromethane	ND	ug/kg	1,200		1000	05/21/19	05/21/19 19:29	1011
1,1,2-Trichlorotrifluoroethane	ND	ug/kg	1,200		1000	05/21/19	05/21/19 19:29	1011
Vinyl chloride	ND	ug/kg	6,200		1000	05/21/19	05/21/19 19:29	1011
m&p-Xylene	<b>3,100</b>	ug/kg	2,500		1000	05/21/19	05/21/19 19:29	1011
o-Xylene	<b>1,700</b>	ug/kg	1,200		1000	05/21/19	05/21/19 19:29	1011
<b>Surrogate(s)</b>	<b>Recovery</b>		<b>Limits</b>					
4-Bromofluorobenzene	98 %		81-146		1000	05/21/19	05/21/19 19:29	1011
Dibromofluoromethane	98 %		89-120		1000	05/21/19	05/21/19 19:29	1011
Toluene-D8	102 %		86-116		1000	05/21/19	05/21/19 19:29	1011
4-Bromofluorobenzene	96 %		81-146		100000	05/22/19	05/22/19 13:45	1011
Dibromofluoromethane	96 %		89-120		100000	05/22/19	05/22/19 13:45	1011
Toluene-D8	98 %		86-116		100000	05/22/19	05/22/19 13:45	1011

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# PHASE SEPARATION SCIENCE, INC.



## CERTIFICATE OF ANALYSIS

No: 19052018

Hillis Carnes Engineering Associates, Annapolis Junction, MD

May 23, 2019

Project Name: Slag Processing Area

Project Location: TPA

Project ID: 18019A

**Sample ID: C-2**      **Date/Time Sampled: 05/20/2019 15:40**      **PSS Sample ID: 19052018-012**  
**Matrix: SOIL**      **Date/Time Received: 05/20/2019 17:15**      **% Solids SM2540G-11: 81**

TCL Semivolatile Organic Compounds

Analytical Method: SW-846 8270 C

Preparation Method: SW3550C

Qualifier(s): See Batch 164534 on Case Narrative.

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Acenaphthene	ND	ug/kg	83,000		2000	05/21/19	05/21/19 17:57	1014
Acenaphthylene	ND	ug/kg	83,000		2000	05/21/19	05/21/19 17:57	1014
Acetophenone	ND	ug/kg	830,000		2000	05/21/19	05/21/19 17:57	1014
Anthracene	ND	ug/kg	83,000		2000	05/21/19	05/21/19 17:57	1014
Atrazine	ND	ug/kg	830,000		2000	05/21/19	05/21/19 17:57	1014
Benzo(a)anthracene	ND	ug/kg	83,000		2000	05/21/19	05/21/19 17:57	1014
Benzo(a)pyrene	ND	ug/kg	83,000		2000	05/21/19	05/21/19 17:57	1014
Benzo(b)fluoranthene	ND	ug/kg	83,000		2000	05/21/19	05/21/19 17:57	1014
Benzo(g,h,i)perylene	ND	ug/kg	83,000		2000	05/21/19	05/21/19 17:57	1014
Benzo(k)fluoranthene	ND	ug/kg	83,000		2000	05/21/19	05/21/19 17:57	1014
Biphenyl (Diphenyl)	ND	ug/kg	830,000		2000	05/21/19	05/21/19 17:57	1014
Butyl benzyl phthalate	ND	ug/kg	830,000		2000	05/21/19	05/21/19 17:57	1014
bis(2-chloroethoxy) methane	ND	ug/kg	830,000		2000	05/21/19	05/21/19 17:57	1014
bis(2-chloroethyl) ether	ND	ug/kg	830,000		2000	05/21/19	05/21/19 17:57	1014
bis(2-chloroisopropyl) ether	ND	ug/kg	830,000		2000	05/21/19	05/21/19 17:57	1014
bis(2-ethylhexyl) phthalate	ND	ug/kg	830,000		2000	05/21/19	05/21/19 17:57	1014
4-Bromophenylphenyl ether	ND	ug/kg	830,000		2000	05/21/19	05/21/19 17:57	1014
Di-n-butyl phthalate	ND	ug/kg	830,000		2000	05/21/19	05/21/19 17:57	1014
Carbazole	ND	ug/kg	830,000		2000	05/21/19	05/21/19 17:57	1014
Caprolactam	ND	ug/kg	830,000		2000	05/21/19	05/21/19 17:57	1014
4-Chloro-3-methyl phenol	ND	ug/kg	830,000		2000	05/21/19	05/21/19 17:57	1014
4-Chloroaniline	ND	ug/kg	830,000		2000	05/21/19	05/21/19 17:57	1014
2-Chloronaphthalene	ND	ug/kg	830,000		2000	05/21/19	05/21/19 17:57	1014
2-Chlorophenol	ND	ug/kg	830,000		2000	05/21/19	05/21/19 17:57	1014
4-Chlorophenyl Phenyl ether	ND	ug/kg	830,000		2000	05/21/19	05/21/19 17:57	1014
Chrysene	ND	ug/kg	83,000		2000	05/21/19	05/21/19 17:57	1014
Dibenz(a,h)Anthracene	ND	ug/kg	83,000		2000	05/21/19	05/21/19 17:57	1014
Dibenzofuran	ND	ug/kg	830,000		2000	05/21/19	05/21/19 17:57	1014
3,3-Dichlorobenzidine	ND	ug/kg	830,000		2000	05/21/19	05/21/19 17:57	1014

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# PHASE SEPARATION SCIENCE, INC.



## CERTIFICATE OF ANALYSIS

No: 19052018

Hillis Carnes Engineering Associates, Annapolis Junction, MD

May 23, 2019

Project Name: Slag Processing Area

Project Location: TPA

Project ID: 18019A

**Sample ID: C-2**      **Date/Time Sampled: 05/20/2019 15:40**      **PSS Sample ID: 19052018-012**  
**Matrix: SOIL**      **Date/Time Received: 05/20/2019 17:15**      **% Solids SM2540G-11: 81**

TCL Semivolatile Organic Compounds

Analytical Method: SW-846 8270 C

Preparation Method: SW3550C

Qualifier(s): See Batch 164534 on Case Narrative.

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
2,4-Dichlorophenol	ND	ug/kg	830,000		2000	05/21/19	05/21/19 17:57	1014
Diethyl phthalate	ND	ug/kg	830,000		2000	05/21/19	05/21/19 17:57	1014
Dimethyl phthalate	ND	ug/kg	830,000		2000	05/21/19	05/21/19 17:57	1014
2,4-Dimethylphenol	ND	ug/kg	830,000		2000	05/21/19	05/21/19 17:57	1014
4,6-Dinitro-2-methyl phenol	ND	ug/kg	830,000		2000	05/21/19	05/21/19 17:57	1014
2,4-Dinitrophenol	ND	ug/kg	1,700,000		2000	05/21/19	05/21/19 17:57	1014
2,4-Dinitrotoluene	ND	ug/kg	830,000		2000	05/21/19	05/21/19 17:57	1014
2,6-Dinitrotoluene	ND	ug/kg	830,000		2000	05/21/19	05/21/19 17:57	1014
Fluoranthene	ND	ug/kg	83,000		2000	05/21/19	05/21/19 17:57	1014
Fluorene	ND	ug/kg	83,000		2000	05/21/19	05/21/19 17:57	1014
Hexachlorobenzene	ND	ug/kg	830,000		2000	05/21/19	05/21/19 17:57	1014
Hexachlorobutadiene	ND	ug/kg	830,000		2000	05/21/19	05/21/19 17:57	1014
Hexachlorocyclopentadiene	ND	ug/kg	830,000		2000	05/21/19	05/21/19 17:57	1014
Hexachloroethane	ND	ug/kg	830,000		2000	05/21/19	05/21/19 17:57	1014
Indeno(1,2,3-c,d)Pyrene	ND	ug/kg	83,000		2000	05/21/19	05/21/19 17:57	1014
Isophorone	ND	ug/kg	830,000		2000	05/21/19	05/21/19 17:57	1014
2-Methylnaphthalene	<b>390,000</b>	ug/kg	83,000		2000	05/21/19	05/21/19 17:57	1014
2-Methyl phenol	ND	ug/kg	830,000		2000	05/21/19	05/21/19 17:57	1014
3&4-Methylphenol	ND	ug/kg	830,000		2000	05/21/19	05/21/19 17:57	1014
Naphthalene	<b>7,400,000</b>	ug/kg	83,000		2000	05/21/19	05/21/19 17:57	1014
2-Nitroaniline	ND	ug/kg	830,000		2000	05/21/19	05/21/19 17:57	1014
3-Nitroaniline	ND	ug/kg	830,000		2000	05/21/19	05/21/19 17:57	1014
4-Nitroaniline	ND	ug/kg	830,000		2000	05/21/19	05/21/19 17:57	1014
Nitrobenzene	ND	ug/kg	830,000		2000	05/21/19	05/21/19 17:57	1014
2-Nitrophenol	ND	ug/kg	830,000		2000	05/21/19	05/21/19 17:57	1014
4-Nitrophenol	ND	ug/kg	830,000		2000	05/21/19	05/21/19 17:57	1014
N-Nitrosodi-n-propyl amine	ND	ug/kg	830,000		2000	05/21/19	05/21/19 17:57	1014
N-Nitrosodiphenylamine	ND	ug/kg	830,000		2000	05/21/19	05/21/19 17:57	1014
Di-n-octyl phthalate	ND	ug/kg	830,000		2000	05/21/19	05/21/19 17:57	1014

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# PHASE SEPARATION SCIENCE, INC.



## CERTIFICATE OF ANALYSIS

No: 19052018

Hillis Carnes Engineering Associates, Annapolis Junction, MD  
 May 23, 2019

Project Name: Slag Processing Area  
 Project Location: TPA  
 Project ID: 18019A

**Sample ID: C-2**      **Date/Time Sampled: 05/20/2019 15:40**      **PSS Sample ID: 19052018-012**  
**Matrix: SOIL**      **Date/Time Received: 05/20/2019 17:15**      **% Solids SM2540G-11: 81**

TCL Semivolatile Organic Compounds      Analytical Method: SW-846 8270 C      Preparation Method: SW3550C

Qualifier(s): See Batch 164534 on Case Narrative.

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Pentachlorophenol	ND	ug/kg	830,000		2000	05/21/19	05/21/19 17:57	1014
Phenanthrene	ND	ug/kg	83,000		2000	05/21/19	05/21/19 17:57	1014
Phenol	ND	ug/kg	830,000		2000	05/21/19	05/21/19 17:57	1014
Pyrene	ND	ug/kg	83,000		2000	05/21/19	05/21/19 17:57	1014
Pyridine	ND	ug/kg	830,000		2000	05/21/19	05/21/19 17:57	1014
2,4,5-Trichlorophenol	ND	ug/kg	830,000		2000	05/21/19	05/21/19 17:57	1014
2,4,6-Trichlorophenol	ND	ug/kg	830,000		2000	05/21/19	05/21/19 17:57	1014
<b>Surrogate(s)</b>	<b>Recovery</b>		<b>Limits</b>					
2-Fluorobiphenyl	0 %		32-107	*	2000	05/21/19	05/21/19 17:57	1014
2-Fluorophenol	0 %		34-113	*	2000	05/21/19	05/21/19 17:57	1014
Nitrobenzene-d5	0 %		35-123	*	2000	05/21/19	05/21/19 17:57	1014
Phenol-d6	0 %		34-120	*	2000	05/21/19	05/21/19 17:57	1014
Terphenyl-D14	0 %		46-154	*	2000	05/21/19	05/21/19 17:57	1014
2,4,6-Tribromophenol	0 %		31-113	*	2000	05/21/19	05/21/19 17:57	1014



# Case Narrative Summary

Client Name: Hillis Carnes Engineering Associates

Project Name: Slag Processing Area

Work Order Number(s): 19052018

Project ID: 18019A

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Any holding time exceedances, deviations from the method specifications, regulatory requirements or variations to the procedures outlined in the PSS Quality Assurance Manual are outlined below.

The analyses of chlorine, pH, dissolved oxygen, temperature and sulfite for drinking water and non-potable samples tested for compliance have a maximum holding time of 15 minutes. As such, all laboratory analyses for these analytes exceed holding times.

Matrix spike and matrix spike duplicate analyses may not be performed due to insufficient sample quantity. In these instances, a laboratory control sample and laboratory control sample duplicate are analyzed unless otherwise noted or specified in the method.

## Sample Receipt:

All sample receipt conditions were acceptable.

## Analytical:

### RCRA Metals

#### Batch: 164540

Continuing Calibration Verification (CCV) #5 exceeded acceptance limits (90% - 110%) for thallium at 111% recovery. Samples are non-detect for this analyte and all low level calibration verifications (LLCCV) pass.

## Analytical:

### Total Petroleum Hydrocarbons - DRO

#### Batch: 164528

The opening calibration verification (CCV-R1) had a surrogate recovery above the control limit of 120% at 123%.

#### Batch: 164544

Sample 19052018-012 showed a 0% surrogate recovery due to dilutions.

## Analytical:

### Total Petroleum Hydrocarbons-GRO

#### Batch: 164555

Surrogate exceedance identified, see QC summary. 19052018-012 was analyzed twice with low surrogate recovery both times.

## Analytical:

### TCL Volatile Organic Compounds

#### Batch: 164549

Laboratory control sample exceedances identified, matrix spike/ matrix spike duplicate samples meet LCS criteria; see LCS summary form.

## Analytical:





## Case Narrative Summary

Client Name: Hillis Carnes Engineering Associates

Project Name: Slag Processing Area

Work Order Number(s): 19052018

Project ID: 18019A

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### TCL Semivolatile Organic Compounds

**Batch: 164534**

Surrogates recoveries are outside the QC limits because the samples are diluted by 100X to 1000X.

Laboratory control sample/laboratory control sample duplicate (LCS/LCSD); see LCS summary form.

**NELAP accreditation was held for all analyses performed unless noted below. See [www.phaseonline.com](http://www.phaseonline.com) for complete PSS scope of accreditation.**

SW-846 5030



## Analytical Data Package Information Summary

**Work Order(s): 19052018**

Report Prepared For: Hillis Carnes Engineering Associates, Annapo

Project Name: Slag Processing Area

Project Manager: Keith Progin

Method	Client Sample Id	Analysis Type	Lab Sample Id	Analyst	Mtx	Prep Batch	Analytical Batch	Sampled	Prepared	Analyzed
<b>SM2540G</b>	SP-1-N	Initial	19052018-001	1061	S	164489	164489	05/20/2019	05/21/2019 11:59	05/21/2019 11:59
	SP-1-N-A	Initial	19052018-002	1061	S	164489	164489	05/20/2019	05/21/2019 11:59	05/21/2019 11:59
	SP-1-S	Initial	19052018-003	1061	S	164489	164489	05/20/2019	05/21/2019 11:59	05/21/2019 11:59
	SP-1-S-A	Initial	19052018-004	1061	S	164489	164489	05/20/2019	05/21/2019 11:59	05/21/2019 11:59
	SP-2	Initial	19052018-005	1061	S	164489	164489	05/20/2019	05/21/2019 11:59	05/21/2019 11:59
	SP-2-A	Initial	19052018-006	1061	S	164489	164489	05/20/2019	05/21/2019 11:59	05/21/2019 11:59
	SP-3	Initial	19052018-007	1061	S	164489	164489	05/20/2019	05/21/2019 11:59	05/21/2019 11:59
	SP-3-A	Initial	19052018-008	1061	S	164489	164489	05/20/2019	05/21/2019 11:59	05/21/2019 11:59
	SP-4	Initial	19052018-009	1061	S	164489	164489	05/20/2019	05/21/2019 11:59	05/21/2019 11:59
	SP-4-A	Initial	19052018-010	1061	S	164489	164489	05/20/2019	05/21/2019 11:59	05/21/2019 11:59
	C-1	Initial	19052018-011	1061	S	164489	164489	05/20/2019	05/21/2019 11:59	05/21/2019 11:59
	C-2	Initial	19052018-012	1061	S	164489	164489	05/20/2019	05/21/2019 11:59	05/21/2019 11:59
	164489-1-BLK	BLK	164489-1-BLK	1061	S	164489	164489	-----	05/21/2019 11:59	05/21/2019 11:59
	B7S4 D	MD	19051716-009 D	1061	S	164489	164489	05/16/2019	05/21/2019 11:59	05/21/2019 11:59
	SP-2 D	MD	19052018-005 D	1061	S	164489	164489	05/20/2019	05/21/2019 11:59	05/21/2019 11:59
<b>SW-846 6020 A</b>	SP-1-N	Initial	19052018-001	1064	S	76902	164540	05/20/2019	05/21/2019 11:18	05/21/2019 22:04
	SP-1-S	Initial	19052018-003	1064	S	76902	164540	05/20/2019	05/21/2019 11:18	05/21/2019 22:10
	SP-2	Initial	19052018-005	1064	S	76902	164540	05/20/2019	05/21/2019 11:18	05/21/2019 22:15
	SP-3	Initial	19052018-007	1064	S	76902	164540	05/20/2019	05/21/2019 11:18	05/21/2019 22:21
	SP-4	Initial	19052018-009	1064	S	76902	164540	05/20/2019	05/21/2019 11:18	05/21/2019 22:26
	C-1	Initial	19052018-011	1064	S	76902	164540	05/20/2019	05/21/2019 11:18	05/21/2019 22:32
	C-2	Initial	19052018-012	1064	S	76902	164540	05/20/2019	05/21/2019 11:18	05/21/2019 22:37
	76902-1-BKS	BKS	76902-1-BKS	1064	S	76902	164540	-----	05/21/2019 11:18	05/21/2019 21:08
	76902-1-BLK	BLK	76902-1-BLK	1064	S	76902	164540	-----	05/21/2019 11:18	05/21/2019 21:02
	D001 S	MS	19052011-001 S	1064	S	76902	164540	05/17/2019	05/21/2019 11:18	05/21/2019 21:19
	D001 SD	MSD	19052011-001 SD	1064	S	76902	164540	05/17/2019	05/21/2019 11:18	05/21/2019 21:47
	SP-1-N	Reanalysis	19052018-001	1064	S	76902	164578	05/20/2019	05/21/2019 11:18	05/22/2019 19:11
	SP-1-S	Reanalysis	19052018-003	1064	S	76902	164578	05/20/2019	05/21/2019 11:18	05/22/2019 19:17
	SP-2	Reanalysis	19052018-005	1064	S	76902	164578	05/20/2019	05/21/2019 11:18	05/22/2019 19:22



## Analytical Data Package Information Summary

**Work Order(s): 19052018**

Report Prepared For: Hillis Carnes Engineering Associates, Annapo

Project Name: Slag Processing Area

Project Manager: Keith Progin

Method	Client Sample Id	Analysis Type	Lab Sample Id	Analyst	Mtx	Prep Batch	Analytical Batch	Sampled	Prepared	Analyzed
<b>SW-846 6020 A</b>	SP-3	Reanalysis	19052018-007	1064	S	76902	164578	05/20/2019	05/21/2019 11:18	05/22/2019 19:28
	SP-4	Reanalysis	19052018-009	1064	S	76902	164578	05/20/2019	05/21/2019 11:18	05/22/2019 19:34
	C-1	Reanalysis	19052018-011	1064	S	76902	164578	05/20/2019	05/21/2019 11:18	05/22/2019 19:39
	C-2	Reanalysis	19052018-012	1064	S	76902	164578	05/20/2019	05/21/2019 11:18	05/22/2019 19:45
	SP-1-S	Reanalysis	19052018-003	1064	S	76902	164578	05/20/2019	05/21/2019 11:18	05/22/2019 17:53
	SP-2	Reanalysis	19052018-005	1064	S	76902	164578	05/20/2019	05/21/2019 11:18	05/22/2019 17:58
	SP-3	Reanalysis	19052018-007	1064	S	76902	164578	05/20/2019	05/21/2019 11:18	05/22/2019 18:04
	SP-4	Reanalysis	19052018-009	1064	S	76902	164578	05/20/2019	05/21/2019 11:18	05/22/2019 18:09
	C-1	Reanalysis	19052018-011	1064	S	76902	164578	05/20/2019	05/21/2019 11:18	05/22/2019 18:15
	SP-1-N	Reanalysis	19052018-001	1064	S	76902	164592	05/20/2019	05/21/2019 11:18	05/23/2019 13:44
	C-2	Reanalysis	19052018-012	1064	S	76902	164592	05/20/2019	05/21/2019 11:18	05/23/2019 13:49
<b>SW-846 8015 C</b>	SP-1-N-A	Initial	19052018-002	1059	S	76910	164526	05/20/2019	05/21/2019 13:30	05/22/2019 02:22
	SP-3-A	Initial	19052018-008	1059	S	76910	164526	05/20/2019	05/21/2019 13:30	05/22/2019 00:40
	T-1G S	MS	19051714-001 S	1059	S	76910	164526	05/13/2019	05/21/2019 13:30	05/21/2019 22:34
	T-1G SD	MSD	19051714-001 SD	1059	S	76910	164526	05/13/2019	05/21/2019 13:30	05/21/2019 22:59
	SP-1-S-A	Initial	19052018-004	1059	S	76910	164528	05/20/2019	05/21/2019 13:30	05/22/2019 01:31
	C-1	Initial	19052018-011	1059	S	76910	164528	05/20/2019	05/21/2019 13:30	05/22/2019 00:40
	76910-1-BKS	BKS	76910-1-BKS	1059	S	76910	164528	-----	05/21/2019 13:30	05/21/2019 22:34
	76910-1-BLK	BLK	76910-1-BLK	1059	S	76910	164528	-----	05/21/2019 13:30	05/21/2019 22:08
	76910-1-BSD	BSD	76910-1-BSD	1059	S	76910	164528	-----	05/21/2019 13:30	05/21/2019 22:59
	SP-2-A	Initial	19052018-006	1059	S	76910	164544	05/20/2019	05/21/2019 13:30	05/22/2019 09:38
	SP-4-A	Initial	19052018-010	1059	S	76910	164544	05/20/2019	05/21/2019 13:30	05/22/2019 10:04
C-2	Initial	19052018-012	1059	S	76910	164544	05/20/2019	05/21/2019 13:30	05/22/2019 10:29	
<b>SW-846 8015C</b>	SP-1-N-A	Initial	19052018-002	1045	S	76930	164550	05/20/2019	05/21/2019 16:15	05/21/2019 23:51
	SP-1-S-A	Initial	19052018-004	1045	S	76930	164550	05/20/2019	05/21/2019 16:15	05/22/2019 00:22
	SP-2-A	Initial	19052018-006	1045	S	76930	164550	05/20/2019	05/21/2019 16:15	05/22/2019 00:53
	SP-3-A	Initial	19052018-008	1045	S	76930	164550	05/20/2019	05/21/2019 16:15	05/22/2019 09:38
	SP-4-A	Initial	19052018-010	1045	S	76930	164550	05/20/2019	05/21/2019 16:15	05/22/2019 10:09



## Analytical Data Package Information Summary

**Work Order(s): 19052018**

Report Prepared For: Hillis Carnes Engineering Associates, Annapo

Project Name: Slag Processing Area

Project Manager: Keith Progin

Method	Client Sample Id	Analysis Type	Lab Sample Id	Analyst	Mtx	Prep Batch	Analytical Batch	Sampled	Prepared	Analyzed
<b>SW-846 8015C</b>	C-1	Initial	19052018-011	1045	S	76930	164550	05/20/2019	05/21/2019 16:15	05/21/2019 22:50
	76930-2-BKS	BKS	76930-2-BKS	1045	S	76930	164550	-----	05/21/2019 16:15	05/21/2019 16:46
	76930-2-BLK	BLK	76930-2-BLK	1045	S	76930	164550	-----	05/21/2019 16:15	05/21/2019 19:17
	76930-2-BSD	BSD	76930-2-BSD	1045	S	76930	164550	-----	05/21/2019 16:15	05/21/2019 17:16
	C-2	Initial	19052018-012	1045	S	76935	164555	05/20/2019	05/22/2019 11:09	05/22/2019 14:56
	76935-2-BKS	BKS	76935-2-BKS	1045	S	76935	164555	-----	05/22/2019 11:09	05/22/2019 13:55
	76935-2-BLK	BLK	76935-2-BLK	1045	S	76935	164555	-----	05/22/2019 11:09	05/22/2019 14:25
	76935-2-BSD	BSD	76935-2-BSD	1045	S	76935	164555	-----	05/22/2019 11:09	05/22/2019 15:57
	1A, 1B, 1C S	MS	19051701-001 S	1045	S	76935	164555	05/17/2019	05/22/2019 11:09	05/22/2019 16:28
	1A, 1B, 1C SD	MSD	19051701-001 SD	1045	S	76935	164555	05/17/2019	05/22/2019 11:09	05/22/2019 16:57
<b>SW-846 8082 A</b>	SP-1-N	Initial	19052018-001	1029	S	76893	164523	05/20/2019	05/21/2019 08:21	05/21/2019 17:25
	SP-1-S	Initial	19052018-003	1029	S	76893	164523	05/20/2019	05/21/2019 08:21	05/21/2019 17:53
	SP-2	Initial	19052018-005	1029	S	76893	164523	05/20/2019	05/21/2019 08:21	05/21/2019 18:21
	SP-3	Initial	19052018-007	1029	S	76893	164523	05/20/2019	05/21/2019 08:21	05/21/2019 18:49
	SP-4	Initial	19052018-009	1029	S	76893	164523	05/20/2019	05/21/2019 08:21	05/21/2019 19:17
	C-1	Initial	19052018-011	1029	S	76893	164523	05/20/2019	05/21/2019 08:21	05/21/2019 19:46
	C-2	Initial	19052018-012	1029	S	76893	164523	05/20/2019	05/21/2019 08:21	05/21/2019 20:14
	76893-1-BKS	BKS	76893-1-BKS	1029	S	76893	164523	-----	05/21/2019 08:21	05/21/2019 14:07
	76893-1-BLK	BLK	76893-1-BLK	1029	S	76893	164523	-----	05/21/2019 08:21	05/21/2019 13:39
	76893-1-BSD	BSD	76893-1-BSD	1029	S	76893	164523	-----	05/21/2019 08:21	05/21/2019 14:35
	SP-1-N S	MS	19052018-001 S	1029	S	76893	164523	05/20/2019	05/21/2019 08:21	05/21/2019 15:04
	SP-1-N SD	MSD	19052018-001 SD	1029	S	76893	164523	05/20/2019	05/21/2019 08:21	05/21/2019 15:32
	<b>SW-846 8260 B</b>	SP-1-N-A	Initial	19052018-002	1011	S	76923	164538	05/20/2019	05/21/2019 08:02
SP-1-S-A		Initial	19052018-004	1011	S	76923	164538	05/20/2019	05/21/2019 08:02	05/21/2019 18:24
SP-2-A		Initial	19052018-006	1011	S	76923	164538	05/20/2019	05/21/2019 08:02	05/21/2019 18:46
SP-3-A		Initial	19052018-008	1011	S	76923	164538	05/20/2019	05/21/2019 08:02	05/21/2019 15:53
SP-4-A		Initial	19052018-010	1011	S	76923	164538	05/20/2019	05/21/2019 08:02	05/21/2019 19:07
C-2		Initial	19052018-012	1011	S	76923	164538	05/20/2019	05/21/2019 08:02	05/21/2019 19:29



## Analytical Data Package Information Summary

**Work Order(s): 19052018**

Report Prepared For: Hillis Carnes Engineering Associates, Annapo

Project Name: Slag Processing Area

Project Manager: Keith Progin

Method	Client Sample Id	Analysis Type	Lab Sample Id	Analyst	Mtx	Prep Batch	Analytical Batch	Sampled	Prepared	Analyzed
<b>SW-846 8260 B</b>	76923-1-BKS	BKS	76923-1-BKS	1011	S	76923	164538	-----	05/21/2019 08:02	05/21/2019 09:49
	76923-1-BLK	BLK	76923-1-BLK	1011	S	76923	164538	-----	05/21/2019 08:02	05/21/2019 11:25
	B5S3 S	MS	19051716-006 S	1011	S	76923	164538	05/16/2019	05/21/2019 08:02	05/21/2019 16:14
	B5S3 SD	MSD	19051716-006 SD	1011	S	76923	164538	05/16/2019	05/21/2019 08:02	05/21/2019 16:37
	C-1	Initial	19052018-011	1011	S	76931	164549	05/20/2019	05/22/2019 07:54	05/22/2019 12:08
	76931-1-BKS	BKS	76931-1-BKS	1011	S	76931	164549	-----	05/22/2019 07:54	05/22/2019 08:59
	76931-1-BLK	BLK	76931-1-BLK	1011	S	76931	164549	-----	05/22/2019 07:54	05/22/2019 10:14
	SP-2-A	Reanalysis	19052018-006	1011	S	76923	164549	05/20/2019	05/21/2019 08:02	05/22/2019 10:46
	SP-4-A	Reanalysis	19052018-010	1011	S	76923	164549	05/20/2019	05/21/2019 08:02	05/22/2019 11:09
	C-2	Reanalysis	19052018-012	1011	S	76923	164549	05/20/2019	05/21/2019 08:02	05/22/2019 13:45
<b>SW-846 8270 C</b>	SP-1-N-A	Initial	19052018-002	1014	S	76895	164534	05/20/2019	05/21/2019 09:05	05/21/2019 18:25
	SP-1-S-A	Initial	19052018-004	1014	S	76895	164534	05/20/2019	05/21/2019 09:05	05/21/2019 18:53
	SP-2-A	Initial	19052018-006	1014	S	76895	164534	05/20/2019	05/21/2019 09:05	05/21/2019 14:42
	SP-3-A	Initial	19052018-008	1014	S	76895	164534	05/20/2019	05/21/2019 09:05	05/21/2019 19:21
	SP-4-A	Initial	19052018-010	1014	S	76895	164534	05/20/2019	05/21/2019 09:05	05/21/2019 20:17
	C-1	Initial	19052018-011	1014	S	76895	164534	05/20/2019	05/21/2019 09:05	05/21/2019 19:49
	C-2	Initial	19052018-012	1014	S	76895	164534	05/20/2019	05/21/2019 09:05	05/21/2019 17:57
	76895-1-BKS	BKS	76895-1-BKS	1014	S	76895	164534	-----	05/21/2019 09:05	05/21/2019 10:59
	76895-1-BLK	BLK	76895-1-BLK	1014	S	76895	164534	-----	05/21/2019 09:05	05/21/2019 10:31
	76895-1-BSD	BSD	76895-1-BSD	1014	S	76895	164534	-----	05/21/2019 09:05	05/21/2019 11:27
	13163-Directive 4-20ft S	MS	19051715-004 S	1014	S	76895	164534	05/16/2019	05/21/2019 09:05	05/21/2019 12:23
	13163-Directive 4-20ft SD	MSD	19051715-004 SD	1014	S	76895	164534	05/16/2019	05/21/2019 09:05	05/21/2019 12:50
	SP-1-N-A	Reanalysis	19052018-002	1014	S	76895	164534	05/20/2019	05/21/2019 09:05	05/21/2019 17:01
	SP-1-S-A	Reanalysis	19052018-004	1014	S	76895	164534	05/20/2019	05/21/2019 09:05	05/21/2019 17:29
	SP-2-A	Reanalysis	19052018-006	1014	S	76895	164534	05/20/2019	05/21/2019 09:05	05/21/2019 15:10
SP-4-A	Reanalysis	19052018-010	1014	S	76895	164534	05/20/2019	05/21/2019 09:05	05/21/2019 16:06	

# PHASE SEPARATION SCIENCE, INC.

## QC Summary 19052018

### Hillis Carnes Engineering Associates Slag Processing Area

**Analytical Method: SW-846 6020 A**

Seq Number: 164540

MB Sample Id: 76902-1-BLK

Matrix: Solid

LCS Sample Id: 76902-1-BKS

Prep Method: SW3050B

Date Prep: 05/21/19

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Flag
Antimony	<2.000	16.00	16.80	105	80-120	mg/kg	
Arsenic	<0.4000	16.00	16.54	103	80-120	mg/kg	
Beryllium	<2.000	16.00	17.17	107	80-120	mg/kg	
Cadmium	<2.000	16.00	16.41	103	80-120	mg/kg	
Chromium	<2.000	16.00	17.58	110	80-120	mg/kg	
Copper	<2.000	16.00	16.98	106	80-120	mg/kg	
Lead	<2.000	16.00	16.60	104	80-120	mg/kg	
Manganese	<2.000	16.00	17.08	107	80-120	mg/kg	
Mercury	<0.08001	0.4000	0.3940	99	80-120	mg/kg	
Nickel	<2.000	16.00	16.75	105	80-120	mg/kg	
Selenium	<2.000	16.00	14.84	93	80-120	mg/kg	
Silver	<2.000	16.00	16.26	102	80-120	mg/kg	
Thallium	<1.600	16.00	15.64	98	80-120	mg/kg	
Zinc	<8.001	80.01	83.71	105	80-120	mg/kg	

**Analytical Method: SM2540G**

Seq Number: 164489

Parent Sample Id: 19052018-005

Matrix: Soil

MD Sample Id: 19052018-005 D

Parameter	Parent Result	MD Result	%RPD	RPD Limit	Units	Flag
Percent Moisture	18.00	18.00	0	20	%	

**Analytical Method: SW-846 8082 A**

Seq Number: 164523

MB Sample Id: 76893-1-BLK

Matrix: Solid

LCS Sample Id: 76893-1-BKS

Prep Method: SW3550C

Date Prep: 05/21/19

LCSD Sample Id: 76893-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Flag
PCB-1016	<0.04995	0.4995	0.4310	86	0.4200	85	60-110	3	25	mg/kg	
PCB-1260	<0.04995	0.4995	0.4370	87	0.4307	87	60-98	1	25	mg/kg	

Surrogate	MB %Rec	MB Flag	LCS Result	LCS Flag	LCSD Result	LCSD Flag	Limits	Units
Decachlorobiphenyl	89		89		87		61-150	%
Tetrachloro-m-xylene	86		91		88		42-142	%

# PHASE SEPARATION SCIENCE, INC.

## QC Summary 19052018

### Hillis Carnes Engineering Associates Slag Processing Area

**Analytical Method: SW-846 8082 A**

Seq Number: 164523

Parent Sample Id: 19052018-001

Matrix: Soil

MS Sample Id: 19052018-001 S

Prep Method: SW3550C

Date Prep: 05/21/19

MSD Sample Id: 19052018-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Flag
PCB-1016	<0.06002	0.6002	0.4334	72	0.4121	68	45-130	5	30	mg/kg	
PCB-1260	<0.06002	0.6002	0.4840	81	0.4780	79	30-125	1	30	mg/kg	

Surrogate	MS Result	MS Flag	MSD Result	MSD Flag	Limits	Units
Decachlorobiphenyl	97		123		61-150	%
Tetrachloro-m-xylene	66		64		42-142	%

**Analytical Method: SW-846 8015 C**

Seq Number: 164528

MB Sample Id: 76910-1-BLK

Matrix: Solid

LCS Sample Id: 76910-1-BKS

Prep Method: SW3550C

Date Prep: 05/21/19

LCSD Sample Id: 76910-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Flag
TPH-DRO (Diesel Range Organics)	<3.337	33.37	35.08	105	34.30	103	60-108	2	22	mg/kg	

Surrogate	MB %Rec	MB Flag	LCS Result	LCS Flag	LCSD Result	LCSD Flag	Limits	Units
o-Terphenyl	86		112		108		37-120	%

# PHASE SEPARATION SCIENCE, INC.

## QC Summary 19052018

Hillis Carnes Engineering Associates  
Slag Processing Area

Analytical Method: SW-846 8270 C

Seq Number: 164534

MB Sample Id: 76895-1-BLK

Matrix: Solid

LCS Sample Id: 76895-1-BKS

Prep Method: SW3550C

Date Prep: 05/21/19

LCSD Sample Id: 76895-1-BSO

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Flag
Acenaphthene	<16.58	1326	1173	88	1148	87	60-116	2	25	ug/kg	
Acenaphthylene	<16.58	1326	1166	88	1141	86	61-112	2	25	ug/kg	
Acetophenone	<165.8	1326	1111	84	1088	82	57-114	2	25	ug/kg	
Anthracene	<16.58	1326	1144	86	1159	88	66-115	1	25	ug/kg	
Atrazine	<165.8	1326	576.3	43	591	45	7-109	3	25	ug/kg	
Benzo(a)anthracene	<16.58	1326	1241	94	1228	93	71-113	1	25	ug/kg	
Benzo(a)pyrene	<16.58	1326	1204	91	1179	89	69-118	2	25	ug/kg	
Benzo(b)fluoranthene	<16.58	1326	1209	91	1156	87	65-126	4	25	ug/kg	
Benzo(g,h,i)perylene	<16.58	1326	1164	88	1148	87	69-112	1	25	ug/kg	
Benzo(k)fluoranthene	<16.58	1326	1127	85	1167	88	57-129	3	25	ug/kg	
Biphenyl (Diphenyl)	<165.8	1326	1183	89	1161	88	62-117	2	25	ug/kg	
Butyl benzyl phthalate	<165.8	1326	1311	99	1313	99	81-111	0	25	ug/kg	
bis(2-chloroethoxy) methane	<165.8	1326	1137	86	1136	86	56-119	0	25	ug/kg	
bis(2-chloroethyl) ether	<165.8	1326	1088	82	1053	80	55-107	3	25	ug/kg	
bis(2-chloroisopropyl) ether	<165.8	1326	1054	79	1068	81	44-103	1	25	ug/kg	
bis(2-ethylhexyl) phthalate	<165.8	1326	1322	100	1324	100	84-109	0	25	ug/kg	
4-Bromophenylphenyl ether	<165.8	1326	1194	90	1172	89	63-125	2	25	ug/kg	
Di-n-butyl phthalate	<165.8	1326	1143	86	1157	87	76-110	1	25	ug/kg	
Carbazole	<165.8	1326	1261	95	1200	91	58-133	5	25	ug/kg	
Caprolactam	<165.8	1326	1679	127	1656	125	51-122	1	25	ug/kg	H
4-Chloro-3-methyl phenol	<165.8	1326	1208	91	1182	89	74-119	2	25	ug/kg	
4-Chloroaniline	<165.8	1326	1192	90	1187	90	45-107	0	25	ug/kg	
2-Chloronaphthalene	<165.8	1326	1132	85	1116	84	56-113	1	25	ug/kg	
2-Chlorophenol	<165.8	1326	1098	83	1074	81	59-113	2	25	ug/kg	
4-Chlorophenyl Phenyl ether	<165.8	1326	1169	88	1151	87	62-111	2	25	ug/kg	
Chrysene	<16.58	1326	1288	97	1298	98	72-114	1	25	ug/kg	
Dibenz(a,h)Anthracene	<16.58	1326	1160	87	1132	85	72-110	2	25	ug/kg	
Dibenzofuran	<165.8	1326	1186	89	1168	88	62-118	2	25	ug/kg	
3,3-Dichlorobenzidine	<165.8	1326	1479	112	1490	113	66-141	1	25	ug/kg	
2,4-Dichlorophenol	<165.8	1326	1176	89	1166	88	68-118	1	25	ug/kg	
Diethyl phthalate	<165.8	1326	1208	91	1196	90	61-113	1	25	ug/kg	
Dimethyl phthalate	<165.8	1326	1171	88	1157	87	69-109	1	25	ug/kg	
2,4-Dimethylphenol	<165.8	1326	1138	86	1096	83	57-122	4	25	ug/kg	
4,6-Dinitro-2-methyl phenol	<165.8	1326	1284	97	1265	96	50-134	1	25	ug/kg	
2,4-Dinitrophenol	<331.6	1326	1421	107	1325	100	24-144	7	25	ug/kg	
2,4-Dinitrotoluene	<165.8	1326	1256	95	1215	92	61-124	3	25	ug/kg	
2,6-Dinitrotoluene	<165.8	1326	1198	90	1206	91	59-124	1	25	ug/kg	
Fluoranthene	<16.58	1326	1183	89	1173	89	69-119	1	25	ug/kg	
Fluorene	<16.58	1326	1179	89	1167	88	65-115	1	25	ug/kg	
Hexachlorobenzene	<165.8	1326	1209	91	1225	93	63-118	1	25	ug/kg	
Hexachlorobutadiene	<165.8	1326	1142	86	1129	85	55-120	1	25	ug/kg	
Hexachlorocyclopentadiene	<165.8	1326	1277	96	1179	89	29-138	8	25	ug/kg	
Hexachloroethane	<165.8	1326	1098	83	1097	83	54-110	0	25	ug/kg	
Indeno(1,2,3-c,d)Pyrene	<16.58	1326	1210	91	1174	89	60-127	3	25	ug/kg	
Isophorone	<165.8	1326	1363	103	1370	103	57-116	1	25	ug/kg	
2-Methylnaphthalene	<16.58	1326	1176	89	1165	88	70-109	1	25	ug/kg	
2-Methyl phenol	<165.8	1326	1119	84	1088	82	59-118	3	25	ug/kg	
3&4-Methylphenol	<165.8	1326	1131	85	1100	83	59-113	3	25	ug/kg	
Naphthalene	<16.58	1326	1102	83	1100	83	59-108	0	25	ug/kg	
2-Nitroaniline	<165.8	1326	1174	89	1139	86	51-116	3	25	ug/kg	
3-Nitroaniline	<165.8	1326	1210	91	1183	89	57-111	2	25	ug/kg	



# PHASE SEPARATION SCIENCE, INC.

## QC Summary 19052018

Hillis Carnes Engineering Associates  
Slag Processing Area

**Analytical Method: SW-846 8270 C**

Seq Number: 164534

MB Sample Id: 76895-1-BLK

Matrix: Solid

LCS Sample Id: 76895-1-BKS

Prep Method: SW3550C

Date Prep: 05/21/19

LCSD Sample Id: 76895-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Flag
4-Nitroaniline	<165.8	1326	1192	90	1165	88	55-125	2	25	ug/kg	
Nitrobenzene	<165.8	1326	1104	83	1112	84	53-110	1	25	ug/kg	
2-Nitrophenol	<165.8	1326	1166	88	1147	87	58-124	2	25	ug/kg	
4-Nitrophenol	<165.8	1326	1294	98	1260	95	51-116	3	25	ug/kg	
N-Nitrosodi-n-propyl amine	<165.8	1326	1167	88	1077	81	60-98	8	25	ug/kg	
N-Nitrosodiphenylamine	<165.8	1326	1184	89	1175	89	65-111	1	25	ug/kg	
Di-n-octyl phthalate	<165.8	1326	1203	91	1203	91	69-120	0	25	ug/kg	
Pentachlorophenol	<165.8	1326	1203	91	1153	87	56-124	4	25	ug/kg	
Phenanthrene	<16.58	1326	1167	88	1147	87	67-117	2	25	ug/kg	
Phenol	<165.8	1326	1027	77	989.1	75	58-114	4	25	ug/kg	
Pyrene	<16.58	1326	1280	97	1290	97	77-111	1	25	ug/kg	
Pyridine	<165.8	1326	986.7	74	1017	77	37-110	3	25	ug/kg	
2,4,5-Trichlorophenol	<165.8	1326	1218	92	1179	89	64-114	3	25	ug/kg	
2,4,6-Trichlorophenol	<165.8	1326	1140	86	1114	84	60-125	2	25	ug/kg	

Surrogate	MB %Rec	MB Flag	LCS Result	LCS Flag	LCSD Result	LCSD Flag	Limits	Units
2-Fluorobiphenyl	81		91		90		32-107	%
2-Fluorophenol	73		81		80		34-113	%
Nitrobenzene-d5	78		87		88		35-123	%
Phenol-d6	73		81		79		34-120	%
Terphenyl-D14	89		93		94		46-154	%
2,4,6-Tribromophenol	86		99		95		31-113	%

**Analytical Method: SW-846 8015C**

Seq Number: 164550

MB Sample Id: 76930-2-BLK

Matrix: Solid

LCS Sample Id: 76930-2-BKS

Prep Method: SW5030

Date Prep: 05/21/19

LCSD Sample Id: 76930-2-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Flag
TPH-GRO (Gasoline Range Organic:	<99.60	4980	5320	107	5245	105	65-139	1	25	ug/kg	

Surrogate	MB %Rec	MB Flag	LCS Result	LCS Flag	LCSD Result	LCSD Flag	Limits	Units
a,a,a-Trifluorotoluene	97		110		110		56-114	%

**Analytical Method: SW-846 8015C**

Seq Number: 164555

MB Sample Id: 76935-2-BLK

Matrix: Solid

LCS Sample Id: 76935-2-BKS

Prep Method: SW5030

Date Prep: 05/22/19

LCSD Sample Id: 76935-2-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Flag
TPH-GRO (Gasoline Range Organic:	<100	5000	5448	109	4842	97	65-139	12	25	ug/kg	

Surrogate	MB %Rec	MB Flag	LCS Result	LCS Flag	LCSD Result	LCSD Flag	Limits	Units
a,a,a-Trifluorotoluene	100		110		110		56-114	%

# PHASE SEPARATION SCIENCE, INC.

## QC Summary 19052018

Hillis Carnes Engineering Associates  
Slag Processing Area

Analytical Method: SW-846 8260 B

Seq Number: 164538

MB Sample Id: 76923-1-BLK

Matrix: Solid

LCS Sample Id: 76923-1-BKS

Prep Method: SW5035

Date Prep: 05/21/19

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Flag
Acetone	16	61	60	98	66-136	ug/kg	
Benzene	<1.0	61	57	93	79-131	ug/kg	
Bromochloromethane	<1.0	61	58	95	82-124	ug/kg	
Bromodichloromethane	<1.0	61	57	93	81-128	ug/kg	
Bromoform	<1.0	61	70	115	75-128	ug/kg	
Bromomethane	<1.0	61	55	90	71-135	ug/kg	
2-Butanone (MEK)	<5.1	61	64	105	63-135	ug/kg	
Carbon Disulfide	<1.0	61	58	95	73-134	ug/kg	
Carbon tetrachloride	<1.0	61	58	95	73-130	ug/kg	
Chlorobenzene	<1.0	61	59	97	80-126	ug/kg	
Chloroethane	<1.0	61	52	85	77-133	ug/kg	
Chloroform	<5.1	61	53	87	79-125	ug/kg	
Chloromethane	<1.0	61	56	92	73-127	ug/kg	
Cyclohexane	<1.0	61	54	89	70-126	ug/kg	
1,2-Dibromo-3-chloropropane	<1.0	61	67	110	61-127	ug/kg	
Dibromochloromethane	<1.0	61	73	120	82-123	ug/kg	
1,2-Dibromoethane	<1.0	61	64	105	73-122	ug/kg	
1,2-Dichlorobenzene	<1.0	61	62	102	64-125	ug/kg	
1,3-Dichlorobenzene	<1.0	61	65	107	65-125	ug/kg	
1,4-Dichlorobenzene	<1.0	61	63	103	81-122	ug/kg	
Dichlorodifluoromethane	<1.0	61	67	110	62-134	ug/kg	
1,1-Dichloroethane	<1.0	61	54	89	80-128	ug/kg	
1,2-Dichloroethane	<1.0	61	54	89	81-124	ug/kg	
1,1-Dichloroethene	<1.0	61	56	92	75-124	ug/kg	
1,2-Dichloropropane	<1.0	61	54	89	77-134	ug/kg	
cis-1,2-Dichloroethene	<1.0	61	56	92	79-122	ug/kg	
cis-1,3-Dichloropropene	<1.0	61	54	89	71-123	ug/kg	
trans-1,2-Dichloroethene	<1.0	61	57	93	79-127	ug/kg	
trans-1,3-Dichloropropene	<1.0	61	57	93	68-126	ug/kg	
Ethylbenzene	<1.0	61	58	95	77-123	ug/kg	
2-Hexanone (MBK)	<1.0	61	63	103	58-136	ug/kg	
Isopropylbenzene	<1.0	61	61	100	78-134	ug/kg	
Methyl Acetate	<1.0	61	56	92	76-127	ug/kg	
Methylcyclohexane	<1.0	61	57	93	73-124	ug/kg	
Methylene chloride	<5.1	61	53	87	75-117	ug/kg	
4-Methyl-2-Pentanone (MIBK)	<1.0	61	60	98	67-130	ug/kg	
Methyl-t-Butyl Ether	<1.0	61	48	79	72-124	ug/kg	
Naphthalene	<1.0	61	61	100	27-128	ug/kg	
Styrene	<1.0	61	62	102	71-125	ug/kg	
1,1,2,2-Tetrachloroethane	<1.0	61	68	111	76-130	ug/kg	
Tetrachloroethene	<1.0	61	60	98	72-129	ug/kg	
Toluene	<1.0	61	56	92	76-132	ug/kg	
1,2,3-Trichlorobenzene	<1.0	61	69	113	35-131	ug/kg	
1,2,4-Trichlorobenzene	<1.0	61	67	110	67-114	ug/kg	
1,1,1-Trichloroethane	<1.0	61	54	89	77-129	ug/kg	
1,1,2-Trichloroethane	<1.0	61	62	102	77-132	ug/kg	
Trichloroethene	<1.0	61	55	90	78-129	ug/kg	
Trichlorofluoromethane	<1.0	61	57	93	73-135	ug/kg	
1,1,2-Trichlorotrifluoroethane	<1.0	61	54	89	73-129	ug/kg	
Vinyl chloride	<5.1	61	68	111	76-138	ug/kg	
m&p-Xylene	<2.0	120	110	92	79-121	ug/kg	

# PHASE SEPARATION SCIENCE, INC.

## QC Summary 19052018

### Hillis Carnes Engineering Associates Slag Processing Area

**Analytical Method: SW-846 8260 B**

Seq Number: 164538

MB Sample Id: 76923-1-BLK

Matrix: Solid

LCS Sample Id: 76923-1-BKS

Prep Method: SW5035

Date Prep: 05/21/19

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Flag
o-Xylene	<1.0	61	60	98	75-124	ug/kg	
Surrogate	MB %Rec	MB Flag	LCS Result	LCS Flag	Limits	Units	
4-Bromofluorobenzene	100		96		81-146	%	
Dibromofluoromethane	100		102		89-120	%	
Toluene-D8	104		106		86-116	%	

# PHASE SEPARATION SCIENCE, INC.

## QC Summary 19052018

Hillis Carnes Engineering Associates  
Slag Processing Area

Analytical Method: SW-846 8260 B

Seq Number: 164549

MB Sample Id: 76931-1-BLK

Matrix: Solid

LCS Sample Id: 76931-1-BKS

Prep Method: SW5035

Date Prep: 05/22/19

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Flag
Acetone	10	61	63	103	66-136	ug/kg	
Benzene	<1.0	61	68	111	79-131	ug/kg	
Bromochloromethane	<1.0	61	70	115	82-124	ug/kg	
Bromodichloromethane	<1.0	61	71	116	81-128	ug/kg	
Bromoform	<1.0	61	70	115	75-128	ug/kg	
Bromomethane	<1.0	61	67	110	71-135	ug/kg	
2-Butanone (MEK)	<5.1	61	62	102	63-135	ug/kg	
Carbon Disulfide	<1.0	61	71	116	73-134	ug/kg	
Carbon tetrachloride	<1.0	61	70	115	73-130	ug/kg	
Chlorobenzene	<1.0	61	68	111	80-126	ug/kg	
Chloroethane	<1.0	61	67	110	77-133	ug/kg	
Chloroform	<5.1	61	65	107	79-125	ug/kg	
Chloromethane	<1.0	61	65	107	73-127	ug/kg	
Cyclohexane	<1.0	61	66	108	70-126	ug/kg	
1,2-Dibromo-3-chloropropane	<1.0	61	70	115	61-127	ug/kg	
Dibromochloromethane	<1.0	61	81	133	82-123	ug/kg	H
1,2-Dibromoethane	<1.0	61	74	121	73-122	ug/kg	
1,2-Dichlorobenzene	<1.0	61	66	108	64-125	ug/kg	
1,3-Dichlorobenzene	<1.0	61	71	116	65-125	ug/kg	
1,4-Dichlorobenzene	<1.0	61	71	116	81-122	ug/kg	
Dichlorodifluoromethane	<1.0	61	75	123	62-134	ug/kg	
1,1-Dichloroethane	<1.0	61	66	108	80-128	ug/kg	
1,2-Dichloroethane	<1.0	61	64	105	81-124	ug/kg	
1,1-Dichloroethene	<1.0	61	72	118	75-124	ug/kg	
1,2-Dichloropropane	<1.0	61	66	108	77-134	ug/kg	
cis-1,2-Dichloroethene	<1.0	61	68	111	79-122	ug/kg	
cis-1,3-Dichloropropene	<1.0	61	63	103	71-123	ug/kg	
trans-1,2-Dichloroethene	<1.0	61	72	118	79-127	ug/kg	
trans-1,3-Dichloropropene	<1.0	61	67	110	68-126	ug/kg	
Ethylbenzene	<1.0	61	68	111	77-123	ug/kg	
2-Hexanone (MBK)	<1.0	61	57	93	58-136	ug/kg	
Isopropylbenzene	<1.0	61	73	120	78-134	ug/kg	
Methyl Acetate	<1.0	61	66	108	76-127	ug/kg	
Methylcyclohexane	<1.0	61	67	110	73-124	ug/kg	
Methylene chloride	<5.1	61	64	105	75-117	ug/kg	
4-Methyl-2-Pentanone (MIBK)	<1.0	61	57	93	67-130	ug/kg	
Methyl-t-Butyl Ether	<1.0	61	52	85	72-124	ug/kg	
Naphthalene	<1.0	61	70	115	27-128	ug/kg	
Styrene	<1.0	61	69	113	71-125	ug/kg	
1,1,2,2-Tetrachloroethane	<1.0	61	69	113	76-130	ug/kg	
Tetrachloroethene	<1.0	61	80	131	72-129	ug/kg	H
Toluene	<1.0	61	71	116	76-132	ug/kg	
1,2,3-Trichlorobenzene	<1.0	61	73	120	35-131	ug/kg	
1,2,4-Trichlorobenzene	<1.0	61	69	113	67-114	ug/kg	
1,1,1-Trichloroethane	<1.0	61	72	118	77-129	ug/kg	
1,1,2-Trichloroethane	<1.0	61	68	111	77-132	ug/kg	
Trichloroethene	<1.0	61	69	113	78-129	ug/kg	
Trichlorofluoromethane	<1.0	61	67	110	73-135	ug/kg	
1,1,2-Trichlorotrifluoroethane	<1.0	61	72	118	73-129	ug/kg	
Vinyl chloride	<5.1	61	84	138	76-138	ug/kg	
m&p-Xylene	<2.0	120	150	125	79-121	ug/kg	H

# PHASE SEPARATION SCIENCE, INC.

## QC Summary 19052018

### Hillis Carnes Engineering Associates Slag Processing Area

**Analytical Method: SW-846 8260 B**

Seq Number: 164549

MB Sample Id: 76931-1-BLK

Matrix: Solid

LCS Sample Id: 76931-1-BKS

Prep Method: SW5035

Date Prep: 05/22/19

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Flag
o-Xylene	<1.0	61	71	116	75-124	ug/kg	
Surrogate	MB %Rec	MB Flag	LCS Result	LCS Flag	Limits	Units	
4-Bromofluorobenzene	100		100		81-146	%	
Dibromofluoromethane	102		96		89-120	%	
Toluene-D8	90		98		86-116	%	

F = RPD exceeded the laboratory control limits

X = Recovery of MS, MSD or both outside of QC Criteria

H= Recovery of BS,BSD or both exceeded the laboratory control limits

L = Recovery of BS,BSD or both below the laboratory control limits



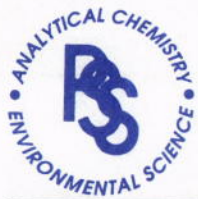
# SAMPLE CHAIN OF CUSTODY/AGREEMENT FORM

**PHASE SEPARATION SCIENCE, INC.**

www.phaseonline.com  
email: info@phaseonline.com

<b>1</b> *CLIENT: <u>Hillis-Carnes (HCCA)</u> *OFFICE LOC. <u>AS</u> *PROJECT MGR: <u>Keith Progin</u> *PHONE NO.: <u>(410) 890 4788</u> EMAIL: <u>kprogin@HCCA.com</u> FAX NO.: ( ) *PROJECT NAME: <u>Slag Processing Area</u> PROJECT NO.: <u>18019A</u> SITE LOCATION: <u>TPA</u> P.O. NO.: SAMPLER(S): <u>Nick Stella</u> DW CERT NO.:					PSS Work Order #: <u>19052018</u> PAGE <u>1</u> OF <u>2</u>																				
Matrix Codes: SW=Surface Wtr DW=Drinking Wtr GW=Ground Wtr WW=Waste Wtr O=Oil S=Soil L=Liquid SOL=Solid A=Air WI=Wipe					No. CONTAINERS	SAMPLE TYPE C = COMP G = GRAB	Preservatives Used Analysis/Method Required										REMARKS								
							<u>PCBs</u> <u>PP Metals</u> <u>Manganese</u> <u>TPH-DRG</u> <u>TPH-GRD</u> <u>VOCs</u> <u>SVOCs</u>																		
LAB NO.	*SAMPLE IDENTIFICATION	*DATE (SAMPLED)	*TIME (SAMPLED)	MATRIX (See Codes)																					
1	SP-1-N	5/20/19	2:15P	Slag			2	C	✓	✓	✓														
2	SP-1-N-A	5/20/19	2:15P	Slag			2	G				✓	✓	✓	✓										
3	SP-1-S	5/20/19	2:25P	Slag			2	C	✓	✓	✓														
4	SP-1-S-A	5/20/19	2:25P	Slag			2	G				✓	✓	✓	✓										
5	SP-2	5/20/19	2:45P	Slag			2	C	✓	✓	✓														
6	SP-2-A	5/20/19	2:45P	Slag			2	G				✓	✓	✓	✓										
7	SP-3	5/20/19	3:00P	Slag			2	C	✓	✓	✓														
8	SP-3-A	5/20/19	3:00P	Slag	2	G				✓	✓	✓	✓												
9	SP-4	5/20/19	3:15P	Slag	2	C	✓	✓	✓																
10	SP-4-A	5/20/19	3:15P	Slag	2	G				✓	✓	✓	✓												

<b>5</b> Relinquished By: (1) <u>Nick Stella</u> Date <u>5/20/19</u> Time <u>5:15P</u> Received By: <u>[Signature]</u>				<b>4</b> *Requested TAT (One TAT per COC) <input type="checkbox"/> 5-Day <input type="checkbox"/> 3-Day <input checked="" type="checkbox"/> 2-Day <input type="checkbox"/> Next Day <input type="checkbox"/> Emergency <input type="checkbox"/> Other			# of Coolers: <u>1</u> Custody Seal: <u>ABS</u>		
Relinquished By: (2) _____ Date _____ Time _____ Received By: _____				Data Deliverables Required: COA QC SUMM CLP LIKE OTHER <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> _____			Ice Present: <u>PREP</u> Temp: <u>8.8-11.0C</u> Shipping Carrier: <u>CIM2</u>		
Relinquished By: (3) _____ Date _____ Time _____ Received By: _____				Special Instructions: _____					
Relinquished By: (4) _____ Date _____ Time _____ Received By: _____				DW COMPLIANCE? YES <input type="checkbox"/>		EDD FORMAT TYPE _____		STATE RESULTS REPORTED TO: MD <input type="checkbox"/> DE <input type="checkbox"/> PA <input type="checkbox"/> VA <input type="checkbox"/> WV <input type="checkbox"/> OTHER _____	



# SAMPLE CHAIN OF CUSTODY/AGREEMENT FORM

PHASE SEPARATION SCIENCE, INC.

www.phaseonline.com  
email: info@phaseonline.com

<b>1</b> *CLIENT: _____ *OFFICE LOC. _____		PSS Work Order #: <u>19052018</u>		PAGE <u>2</u> OF <u>2</u>		
*PROJECT MGR: _____ *PHONE NO.:( ) _____		Matrix Codes: <b>SW</b> =Surface Wtr <b>DW</b> =Drinking Wtr <b>GW</b> =Ground Wtr <b>WW</b> =Waste Wtr <b>O</b> =Oil <b>S</b> =Soil <b>L</b> =Liquid <b>SOL</b> =Solid <b>A</b> =Air <b>WI</b> =Wipe				
EMAIL: _____ FAX NO.: ( ) _____		No. CONTAINERS	SAMPLE TYPE C = COMP G = GRAB	Preservatives Used Analysis/Method Required <b>3</b>	*	
*PROJECT NAME: _____ PROJECT NO.: _____						PCBs PP Metals Magnesium PHA-DRO PHA-GRO VOCs SVOCs
SITE LOCATION: _____ P.O. NO.: _____						
SAMPLER(S): _____ DW CERT NO.: _____						
LAB NO.	*SAMPLE IDENTIFICATION	*DATE (SAMPLED)	*TIME (SAMPLED)	MATRIX (See Codes)	REMARKS	
	C-1	5/20/12	3:30p	Slag	4 G	
	C-2	5/20/12	3:40p	Slag	4 G	
<b>5</b> Relinquished By: (1) <u>[Signature]</u>		Date	Time	<b>4</b> Received By: <u>[Signature]</u>		
Relinquished By: (2) _____		Date	Time	Received By: _____		
Relinquished By: (3) _____		Date	Time	Received By: _____		
Relinquished By: (4) _____		Date	Time	Received By: _____		
				*Requested TAT (One TAT per COC) <input type="checkbox"/> 5-Day <input type="checkbox"/> 3-Day <input type="checkbox"/> 2-Day <input type="checkbox"/> Next Day <input type="checkbox"/> Emergency <input type="checkbox"/> Other		
				# of Coolers: <u>1</u>		
				Custody Seal: <u>ABS</u>		
				Data Deliverables Required: COA QC SUMM CLP LIKE OTHER <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> _____		
				Ice Present: <u>PRE</u> Temp: <u>8-11.2</u>		
				Shipping Carrier: <u>CM</u>		
Special Instructions: _____						
		DW COMPLIANCE? YES <input type="checkbox"/>		EDD FORMAT TYPE _____		
STATE RESULTS REPORTED TO: MD <input type="checkbox"/> DE <input type="checkbox"/> PA <input type="checkbox"/> VA <input type="checkbox"/> WV <input type="checkbox"/> OTHER _____						

6630 Baltimore National Pike • Route 40 West • Baltimore, Maryland 21228 • (410) 747-8770 • (800) 932-9047 • Fax (410) 788-8723

The client (Client Name), by signing, or having client's agent sign, this "Sample Chain of Custody/Agreement Form", agrees to pay for the above requested services per the latest version of the Service Brochure or PSS-provided quotation including any and all attorney's or other reasonable fees if collection becomes necessary. \* = REQUIRED



# Phase Separation Science, Inc

## Sample Receipt Checklist

**Work Order #** 19052018 **Received By** Thomas Wingate  
**Client Name** Hillis Carnes Engineering Associates **Date Received** 05/20/2019 05:15:00 PM  
**Project Name** Slag Processing Area **Delivered By** Client  
**Project Number** 18019A **Tracking No** Not Applicable  
**Disposal Date** 06/24/2019 **Logged In By** Thomas Wingate

### Shipping Container(s)

No. of Coolers 1

Ice	Present
Custody Seal(s) Intact?	N/A
Temp (deg C)	11.2
Seal(s) Signed / Dated?	N/A
Temp Blank Present	No

### Documentation

COC agrees with sample labels?	Yes	Sampler Name	<u>Nick Stella</u>
Chain of Custody	Yes	MD DW Cert. No.	<u>N/A</u>

### Sample Container

Appropriate for Specified Analysis?	Yes	Custody Seal(s) Intact?	Not Applicable
Intact?	Yes	Seal(s) Signed / Dated	Not Applicable
Labeled and Labels Legible?	Yes		

Total No. of Samples Received 12

Total No. of Containers Received 28

### Preservation

Total Metals	(pH<2)	N/A
Dissolved Metals, filtered within 15 minutes of collection	(pH<2)	N/A
Orthophosphorus, filtered within 15 minutes of collection		N/A
Cyanides	(pH>12)	N/A
Sulfide	(pH>9)	N/A
TOC, DOC (field filtered), COD, Phenols	(pH<2)	N/A
TOX, TKN, NH3, Total Phos	(pH<2)	N/A
VOC, BTEX (VOA Vials Rcvd Preserved)	(pH<2)	N/A
Do VOA vials have zero headspace?		N/A
624 VOC (Rcvd at least one unpreserved VOA vial)		N/A
524 VOC (Rcvd with trip blanks)	(pH<2)	N/A

### Comments: (Any "No" response must be detailed in the comments section below.)

For any improper preservation conditions, list sample ID, preservative added (reagent ID number) below as well as documentation of any client notification as well as client instructions. Samples for pH, chlorine and dissolved oxygen should be analyzed as soon as possible, preferably in the field at the time of sampling. Samples which require thermal preservation shall be considered acceptable when received at a temperature above freezing to 6°C. Samples that are hand delivered on the day that they are collected may not meet these criteria but shall be considered acceptable if there is evidence that the chilling process has begun such as arrival on ice.

Samples Inspected/Checklist Completed By:

Thomas Wingate

Date: 05/20/2019

PM Review and Approval:

Amber Confer

Date: 05/21/2019