Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

April 07, 2015

Ms. Tiffani Doerr
Aquaterra Technologies
122 South Church Street
West Chester, PA 19381

RE: Project: Marcus Hook AOI-4
Pace Project No.: 30143544

Dear Ms. Doerr:
Enclosed are the analytical results for sample(s) received by the laboratory on March 21, 2015. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Rachel D Christner

Rachel Christner
rachel.christner@pacelabs.com
Project Manager

Enclosures

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CERTIFICATIONS

Project:	Marcus Hook AOI-4
Pace Project No.:	30143544

Pennsylvania Certification IDs
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ACLASS DOD-ELAP Accreditation #: ADE-1544
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California/TNI Certification #: 04222CA
Colorado Certification
Connecticut Certification #: PH-0694
Delaware Certification
Florida/TNI Certification #: E87683
Guam/PADEP Certification
Hawaii/PADEP Certification
Idaho Certification
Illinois/PADEP Certification
Indiana/PADEP Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: 90133
Louisiana DHH/TNI Certification #: LA140008
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: PA00091
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification
Missouri Certification #: 235
Montana Certification #: Cert 0082
Nebraska Certification #: NE-05-29-14
Nevada Certification
New Hampshire/TNI Certification #: 2976
New Jersey/TNI Certification #: PA 051
New Mexico Certification
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Oregon/TNI Certification #: PA200002
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
South Dakota Certification
Tennessee Certification #: TN2867
Texas/TNI Certification #: T104704188
Utah/TNI Certification #: PA014572014-4
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin/PADEP Certification
Wyoming Certification #: 8TMS-Q

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SAMPLE SUMMARY

Project: Marcus Hook AOI-4
Pace Project No.: 30143544

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30143544001	**AOI4_MW-510_0-2_03192015**	Solid	03/19/15 08:00	03/21/15 09:50
30143544002	**AOI4_MW-510_4-6_03192015**	Solid	03/19/15 08:15	03/21/15 09:50
30143544003	**AOI4_MW-507_0-2_03192015**	Solid	03/19/15 10:15	03/21/15 09:50
30143544004	**AOI4_MW-507_6-8_03192015**	Solid	03/19/15 10:30	03/21/15 09:50
30143544005	**AOI4_MW-508_0-2_03192015**	Solid	03/19/15 11:15	03/21/15 09:50
30143544006	**AOI4_MW-508_4-6_03192015**	Solid	03/19/15 11:30	03/21/15 09:50
30143544007	**AOI4_BH-15-40_0-2_03192015**	Solid	03/19/15 12:00	03/21/15 09:50
30143544008	**AOI4_BH-15-40_4-6_03192015**	Solid	03/19/15 12:15	03/21/15 09:50
30143544009	**AOI4_BH-15-39_0-2_03192015**	Solid	03/19/15 12:45	03/21/15 09:50
30143544010	**AOI4_BH-15-39_4-6_03192015**	Solid	03/19/15 13:00	03/21/15 09:50
30143544011	**AOI4_BH-15-46_0-2_03192015**	Solid	03/19/15 13:30	03/21/15 09:50
30143544012	**AOI4_BH-15-46_4-6_03192015**	Solid	03/19/15 13:45	03/21/15 09:50
30143544013	**AOI4_BH-15-47_0-2_03202015**	Solid	03/20/15 08:00	03/21/15 09:50
30143544014	**AOI4_BH-15-47_4-6_03202015**	Solid	03/20/15 08:15	03/21/15 09:50
30143544015	**AOI4_BH-15-48_0-2_03202015**	Solid	03/20/15 08:45	03/21/15 09:50
30143544016	**AOI4_BH-15-48_6-8_03202015**	Solid	03/20/15 09:00	03/21/15 09:50
30143544017	**AOI4_MW-505_0-2_03202015**	Solid	03/20/15 09:30	03/21/15 09:50
30143544018	**AOI4_MW-505_6-8_03202015**	Solid	03/20/15 09:45	03/21/15 09:50
30143544019	**AOI4_MW-506_0-2_03202015**	Solid	03/20/15 10:15	03/21/15 09:50
30143544020	**AOI4_MW-506_4-6_03202015**	Solid	03/20/15 10:30	03/21/15 09:50
30143544021	**AOI4_MW-504_0-2_03202015**	Solid	03/20/15 12:00	03/21/15 09:50
30143544022	**AOI4_MW-504_4-6_03202015**	Solid	03/20/15 12:30	03/21/15 09:50

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SAMPLE ANALYTE COUNT

Project: Marcus Hook AOI-4
Pace Project No.: 30143544

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30143544001	**AOI4_MW-510_0-2_03192015**	EPA 6010B	RAC	1	PASI-PA
		EPA 8270C by SIM	JSH	12	PASI-PA
		EPA 8260B	MAK	13	PASI-PA
		ASTM D2974-87	AMR	1	PASI-PA
30143544002	**AOI4_MW-510_4-6_03192015**	EPA 6010B	RAC	1	PASI-PA
		EPA 8270C by SIM	JSH	12	PASI-PA
		EPA 8260B	MAK	13	PASI-PA
		ASTM D2974-87	AMR	1	PASI-PA
30143544003	**AOI4_MW-507_0-2_03192015**	EPA 6010B	RAC	1	PASI-PA
		EPA 8270C by SIM	JSH	12	PASI-PA
		EPA 8260B	MAK	13	PASI-PA
		ASTM D2974-87	AMR	1	PASI-PA
30143544004	**AOI4_MW-507_6-8_03192015**	EPA 6010B	RAC	1	PASI-PA
		EPA 8270C by SIM	JSH	12	PASI-PA
		EPA 8260B	MAK	13	PASI-PA
		ASTM D2974-87	AMR	1	PASI-PA
30143544005	**AOI4_MW-508_0-2_03192015**	EPA 6010B	RAC	1	PASI-PA
		EPA 8270C by SIM	JSH	12	PASI-PA
		EPA 8260B	MAK	13	PASI-PA
		ASTM D2974-87	AMR	1	PASI-PA
30143544006	**AOI4_MW-508_4-6_03192015**	EPA 6010B	RAC	1	PASI-PA
		EPA 8270C by SIM	JSH	12	PASI-PA
		EPA 8260B	MAK	13	PASI-PA
		ASTM D2974-87	AMR	1	PASI-PA
30143544007	**AOI4_BH-15-40_0-2_03192015**	EPA 6010B	RAC	1	PASI-PA
		EPA 8270C by SIM	JSH	12	PASI-PA
		EPA 8260B	MAK	13	PASI-PA
		ASTM D2974-87	AMR	1	PASI-PA
30143544008	**AOI4_BH-15-40_4-6_03192015**	EPA 6010B	RAC	1	PASI-PA
		EPA 8270C by SIM	JSH	12	PASI-PA
		EPA 8260B	MAK	13	PASI-PA
		ASTM D2974-87	AMR	1	PASI-PA
30143544009	**AOI4_BH-15-39_0-2_03192015**	EPA 6010B	RAC	1	PASI-PA
		EPA 8270C by SIM	JSH	12	PASI-PA
		EPA 8260B	MAK	13	PASI-PA
		ASTM D2974-87	AMR	1	PASI-PA
30143544010	**AOI4_BH-15-39_4-6_03192015**	EPA 6010B	RAC	1	PASI-PA

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SAMPLE ANALYTE COUNT

Project: Marcus Hook AOI-4
Pace Project No.: 30143544

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 8270C by SIM	JSH	12	PASI-PA
		EPA 8260B	MAK	13	PASI-PA
		ASTM D2974-87	AMR	1	PASI-PA
30143544011	**AOI4_BH-15-46_0-2_03192015**	EPA 6010B	RAC	5	PASI-PA
		EPA 8270C by SIM	JSH	18	PASI-PA
		EPA 8270C	DJL	18	PASI-PA
		EPA 8260B	MAK	17	PASI-PA
		ASTM D2974-87	AMR	1	PASI-PA
30143544012	**AOI4_BH-15-46_4-6_03192015**	EPA 6010B	RAC	5	PASI-PA
		EPA 8270C by SIM	JSH	18	PASI-PA
		EPA 8270C	DJL	18	PASI-PA
		EPA 8260B	MAK	17	PASI-PA
		ASTM D2974-87	AMR	1	PASI-PA
30143544013	**AOI4_BH-15-47_0-2_03202015**	EPA 6010B	RAC	5	PASI-PA
		EPA 8270C by SIM	JSH	18	PASI-PA
		EPA 8270C	DJL	18	PASI-PA
		EPA 8260B	MAK	17	PASI-PA
		ASTM D2974-87	AMR	1	PASI-PA
30143544014	**AOI4_BH-15-47_4-6_03202015**	EPA 6010B	RAC	5	PASI-PA
		EPA 8270C by SIM	JSH	18	PASI-PA
		EPA 8270C	DJL	18	PASI-PA
		EPA 8260B	MAK	17	PASI-PA
		ASTM D2974-87	AMR	1	PASI-PA
30143544015	**AOI4_BH-15-48_0-2_03202015**	EPA 6010B	RAC	5	PASI-PA
		EPA 8270C by SIM	JSH	18	PASI-PA
		EPA 8270C	DJL	18	PASI-PA
		EPA 8260B	MAK	17	PASI-PA
		ASTM D2974-87	AMR	1	PASI-PA
30143544016	**AOI4_BH-15-48_6-8_03202015**	EPA 6010B	RAC	5	PASI-PA
		EPA 8270C by SIM	JSH	18	PASI-PA
		EPA 8270C	DJL	18	PASI-PA
		EPA 8260B	MAK	17	PASI-PA
		ASTM D2974-87	AMR	1	PASI-PA
30143544017	**AOI4_MW-505_0-2_03202015**	EPA 6010B	RAC	5	PASI-PA
		EPA 8270C by SIM	JSH	18	PASI-PA
		EPA 8270C	DJL	18	PASI-PA
		EPA 8260B	MAK	17	PASI-PA

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SAMPLE ANALYTE COUNT

Project: Marcus Hook AOI-4
Pace Project No.: 30143544

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		ASTM D2974-87	AMR	1	PASI-PA
30143544018	**AOI4_MW-505_6-8_03202015**	EPA 6010B	RAC	5	PASI-PA
		EPA 8270C by SIM	JSH	18	PASI-PA
		EPA 8270C	DJL	18	PASI-PA
		EPA 8260B	MAK	17	PASI-PA
		ASTM D2974-87	AMR	1	PASI-PA
30143544019	**AOI4_MW-506_0-2_03202015**	EPA 6010B	RAC	5	PASI-PA
		EPA 8270C by SIM	JSH	18	PASI-PA
		EPA 8270C	DJL	18	PASI-PA
		EPA 8260B	MAK	17	PASI-PA
		ASTM D2974-87	AMR	1	PASI-PA
30143544020	**AOI4_MW-506_4-6_03202015**	EPA 6010B	RAC	5	PASI-PA
		EPA 8270C by SIM	JSH	18	PASI-PA
		EPA 8270C	DJL	18	PASI-PA
		EPA 8260B	MAK	17	PASI-PA
		ASTM D2974-87	AMR	1	PASI-PA
30143544021	**AOI4_MW-504_0-2_03202015**	EPA 6010B	RAC	5	PASI-PA
		EPA 8270C by SIM	JSH	18	PASI-PA
		EPA 8270C	DJL	18	PASI-PA
		EPA 8260B	MAK	17	PASI-PA
		ASTM D2974-87	AMR	1	PASI-PA
30143544022	**AOI4_MW-504_4-6_03202015**	EPA 6010B	RAC	5	PASI-PA
		EPA 8270C by SIM	JSH	18	PASI-PA
		EPA 8270C	DJL	18	PASI-PA
		EPA 8260B	MAK	17	PASI-PA
		ASTM D2974-87	AMR	1	PASI-PA

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PROJECT NARRATIVE

Project: Marcus Hook AOI-4
Pace Project No.: 30143544

Method: **EPA 6010B**
Description: 6010 MET ICP
Client: Sunoco_Langan
Date: April 07, 2015

General Information:
22 samples were analyzed for EPA 6010B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 3050B with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/15157

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 30143544001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 868868)
  - Nickel
  - Vanadium

QC Batch: MPRP/15158

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 30143544021

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 868872)
  - Vanadium

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

QC Batch: MPRP/15157

D6: The relative percent difference (RPD) between the sample and sample duplicate exceeded laboratory control limits.

- DUP (Lab ID: 868867)
  - Cobalt

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PROJECT NARRATIVE

Project: Marcus Hook AOI-4
Pace Project No.: 30143544

Method: **EPA 6010B**
Description: 6010 MET ICP
Client: Sunoco_Langan
Date: April 07, 2015

QC Batch: MPRP/15157

D6: The relative percent difference (RPD) between the sample and sample duplicate exceeded laboratory control limits.

- Lead

QC Batch: MPRP/15158

D6: The relative percent difference (RPD) between the sample and sample duplicate exceeded laboratory control limits.

- DUP (Lab ID: 868871)
  - Lead

Additional Comments:

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PROJECT NARRATIVE

Project: Marcus Hook AOI-4
Pace Project No.: 30143544

Method: **EPA 8270C by SIM**
Description: 8270 MSSV PAH by SIM
Client: Sunoco_Langan
Date: April 07, 2015

General Information:
22 samples were analyzed for EPA 8270C by SIM. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 3546 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Surrogates:
All surrogates were within QC limits with any exceptions noted below.

QC Batch: OEXT/23061

S4: Surrogate recovery not evaluated against control limits due to sample dilution.

- AOI4_MW-507_0-2_03192015 (Lab ID: 30143544003)
  - 2-Fluorobiphenyl (S)

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: OEXT/23061

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 30143195008

R1: RPD value was outside control limits.

- MSD (Lab ID: 871233)
  - Benzo(a)anthracene
  - Benzo(a)pyrene
  - Chrysene
  - Phenanthrene
  - Pyrene

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PROJECT NARRATIVE

Project: Marcus Hook AOI-4
Pace Project No.: 30143544

Method: **EPA 8270C by SIM**
Description: 8270 MSSV PAH by SIM
Client: Sunoco_Langan
Date: April 07, 2015

QC Batch: OEXT/23090

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 30143922003

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 872465)
  - Quinoline

R1: RPD value was outside control limits.

- MSD (Lab ID: 872466)
  - Quinoline

Additional Comments:

Analyte Comments:

QC Batch: OEXT/23061

1c: Benzo(b)fluoranthene and benzo(k)fluoranthene were separated in the check standard but did not meet the resolution criteria in SW846 Method 8270C. Whereas sample results included are reported as individual isomers, the lab and the customer must recognize them as an isomeric pair.

- AOI4_BH-15-40_4-6_03192015 (Lab ID: 30143544008)
  - Benzo(b)fluoranthene
- AOI4_MW-508_4-6_03192015 (Lab ID: 30143544006)
  - Benzo(b)fluoranthene
- AOI4_MW-510_0-2_03192015 (Lab ID: 30143544001)
  - Benzo(b)fluoranthene

QC Batch: OEXT/23090

1c: Benzo(b)fluoranthene and benzo(k)fluoranthene were separated in the check standard but did not meet the resolution criteria in SW846 Method 8270C. Whereas sample results included are reported as individual isomers, the lab and the customer must recognize them as an isomeric pair.

- AOI4_MW-504_0-2_03202015 (Lab ID: 30143544021)
  - Benzo(k)fluoranthene
  - Benzo(b)fluoranthene
- AOI4_MW-504_4-6_03202015 (Lab ID: 30143544022)
  - Benzo(k)fluoranthene
  - Benzo(b)fluoranthene

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PROJECT NARRATIVE

Project: Marcus Hook AOI-4
Pace Project No.: 30143544

Method: **EPA 8270C**
Description: 8270 MSSV FULL LIST MICROWAVE
Client: Sunoco_Langan
Date: April 07, 2015

General Information:
12 samples were analyzed for EPA 8270C. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 3546 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Surrogates:
All surrogates were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: OEXT/23107

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 30144101006

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 873043)
  - 2,4-Dinitrophenol
  - Diethylphthalate
- MSD (Lab ID: 873044)
  - 2,4-Dinitrophenol

R1: RPD value was outside control limits.

- MSD (Lab ID: 873044)
  - 2-Methylnaphthalene
  - 4-Nitrophenol
  - Biphenyl (Diphenyl)

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PROJECT NARRATIVE

Project: Marcus Hook AOI-4
Pace Project No.: 30143544

Method: **EPA 8270C**
Description: 8270 MSSV FULL LIST MICROWAVE
Client: Sunoco_Langan
Date: April 07, 2015

Additional Comments:

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PROJECT NARRATIVE

Project: Marcus Hook AOI-4
Pace Project No.: 30143544

Method: **EPA 8260B**
Description: 8260 MSV 5030 Low Level
Client: Sunoco_Langan
Date: April 07, 2015

General Information:
12 samples were analyzed for EPA 8260B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Surrogates:
All surrogates were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: Marcus Hook AOI-4
Pace Project No.: 30143544

Method: **EPA 8260B**
Description: 8260 MSV UST
Client: Sunoco_Langan
Date: April 07, 2015

General Information:
10 samples were analyzed for EPA 8260B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Surrogates:
All surrogates were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

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ANALYTICAL RESULTS

Project: Marcus Hook AOI-4
Pace Project No.: 30143544

Sample: AOI4_MW-510_0-2_03192015 **Lab ID: 30143544001** Collected: 03/19/15 08:00 Received: 03/21/15 09:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010B Preparation Method: EPA 3050B								
Lead	**23.8**	mg/kg	0.51	0.49	1	03/24/15 12:34	03/25/15 15:42	7439-92-1	D6
8270 MSSV PAH by SIM	Analytical Method: EPA 8270C by SIM Preparation Method: EPA 3546								
Anthracene	**0.0056J**	mg/kg	0.016	0.0020	2	03/27/15 16:00	03/30/15 23:33	120-12-7	
Benzo(a)anthracene	**0.017**	mg/kg	0.016	0.0011	2	03/27/15 16:00	03/30/15 23:33	56-55-3	
Benzo(a)pyrene	**0.015J**	mg/kg	0.016	0.00092	2	03/27/15 16:00	03/30/15 23:33	50-32-8	
Benzo(b)fluoranthene	**0.034**	mg/kg	0.016	0.0015	2	03/27/15 16:00	03/30/15 23:33	205-99-2	1c
Benzo(g,h,i)perylene	**0.013J**	mg/kg	0.016	0.0013	2	03/27/15 16:00	03/30/15 23:33	191-24-2	
Chrysene	**0.023**	mg/kg	0.016	0.0020	2	03/27/15 16:00	03/30/15 23:33	218-01-9	
Fluorene	**0.016 U**	mg/kg	0.016	0.0026	2	03/27/15 16:00	03/30/15 23:33	86-73-7	
Naphthalene	**0.029**	mg/kg	0.016	0.0041	2	03/27/15 16:00	03/30/15 23:33	91-20-3	
Phenanthrene	**0.027**	mg/kg	0.016	0.0020	2	03/27/15 16:00	03/30/15 23:33	85-01-8	
Pyrene	**0.074**	mg/kg	0.016	0.0016	2	03/27/15 16:00	03/30/15 23:33	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	89	%	35-141		2	03/27/15 16:00	03/30/15 23:33	321-60-8	
Terphenyl-d14 (S)	108	%	64-141		2	03/27/15 16:00	03/30/15 23:33	1718-51-0	
8260 MSV UST	Analytical Method: EPA 8260B								
Benzene	**0.33 U**	mg/kg	0.33	0.052	50		03/31/15 16:16	71-43-2	
1,2-Dibromoethane (EDB)	ND	mg/kg	0.20	0.17	50		03/31/15 16:16	106-93-4	
1,2-Dichloroethane	**0.33 U**	mg/kg	0.33	0.061	50		03/31/15 16:16	107-06-2	
Ethylbenzene	**0.33 U**	mg/kg	0.33	0.17	50		03/31/15 16:16	100-41-4	
Isopropylbenzene (Cumene)	**0.33 U**	mg/kg	0.33	0.071	50		03/31/15 16:16	98-82-8	
Methyl-tert-butyl ether	**0.33 U**	mg/kg	0.33	0.047	50		03/31/15 16:16	1634-04-4	
Toluene	**0.33 U**	mg/kg	0.33	0.043	50		03/31/15 16:16	108-88-3	
1,2,4-Trimethylbenzene	**0.33 U**	mg/kg	0.33	0.077	50		03/31/15 16:16	95-63-6	
1,3,5-Trimethylbenzene	**0.33 U**	mg/kg	0.33	0.090	50		03/31/15 16:16	108-67-8	
Xylene (Total)	**1.0 U**	mg/kg	1.0	0.20	50		03/31/15 16:16	1330-20-7	
Surrogates									
Toluene-d8 (S)	95	%	73-124		50		03/31/15 16:16	2037-26-5	
4-Bromofluorobenzene (S)	101	%	71-124		50		03/31/15 16:16	460-00-4	
1,2-Dichloroethane-d4 (S)	92	%	83-138		50		03/31/15 16:16	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**17.5**	%	0.10	0.10	1		04/03/15 10:21		

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ANALYTICAL RESULTS

Project: Marcus Hook AOI-4
Pace Project No.: 30143544

Sample: AOI4_MW-510_4-6_03192015 **Lab ID: 30143544002** Collected: 03/19/15 08:15 Received: 03/21/15 09:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010B Preparation Method: EPA 3050B								
Lead	**6.9**	mg/kg	0.31	0.30	1	03/24/15 12:34	03/25/15 15:51	7439-92-1	
8270 MSSV PAH by SIM	Analytical Method: EPA 8270C by SIM Preparation Method: EPA 3546								
Anthracene	**0.025**	mg/kg	0.015	0.0019	2	03/27/15 16:00	03/30/15 23:50	120-12-7	
Benzo(a)anthracene	**0.026**	mg/kg	0.015	0.0010	2	03/27/15 16:00	03/30/15 23:50	56-55-3	
Benzo(a)pyrene	**0.068**	mg/kg	0.015	0.00089	2	03/27/15 16:00	03/30/15 23:50	50-32-8	
Benzo(b)fluoranthene	**0.041**	mg/kg	0.015	0.0014	2	03/27/15 16:00	03/30/15 23:50	205-99-2	
Benzo(g,h,i)perylene	**0.056**	mg/kg	0.015	0.0012	2	03/27/15 16:00	03/30/15 23:50	191-24-2	
Chrysene	**0.035**	mg/kg	0.015	0.0019	2	03/27/15 16:00	03/30/15 23:50	218-01-9	
Fluorene	**0.24**	mg/kg	0.015	0.0025	2	03/27/15 16:00	03/30/15 23:50	86-73-7	
Naphthalene	**0.48**	mg/kg	0.015	0.0040	2	03/27/15 16:00	03/30/15 23:50	91-20-3	
Phenanthrene	**0.27**	mg/kg	0.015	0.0019	2	03/27/15 16:00	03/30/15 23:50	85-01-8	
Pyrene	**0.15**	mg/kg	0.015	0.0016	2	03/27/15 16:00	03/30/15 23:50	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	108	%	35-141		2	03/27/15 16:00	03/30/15 23:50	321-60-8	
Terphenyl-d14 (S)	107	%	64-141		2	03/27/15 16:00	03/30/15 23:50	1718-51-0	
8260 MSV UST	Analytical Method: EPA 8260B								
Benzene	**0.25 U**	mg/kg	0.25	0.039	50		03/31/15 16:43	71-43-2	
1,2-Dibromoethane (EDB)	ND	mg/kg	0.15	0.13	50		03/31/15 16:43	106-93-4	
1,2-Dichloroethane	**0.25 U**	mg/kg	0.25	0.045	50		03/31/15 16:43	107-06-2	
Ethylbenzene	**0.38**	mg/kg	0.25	0.13	50		03/31/15 16:43	100-41-4	
Isopropylbenzene (Cumene)	**0.37**	mg/kg	0.25	0.053	50		03/31/15 16:43	98-82-8	
Methyl-tert-butyl ether	**0.25 U**	mg/kg	0.25	0.035	50		03/31/15 16:43	1634-04-4	
Toluene	**0.14J**	mg/kg	0.25	0.032	50		03/31/15 16:43	108-88-3	
1,2,4-Trimethylbenzene	**0.62**	mg/kg	0.25	0.058	50		03/31/15 16:43	95-63-6	
1,3,5-Trimethylbenzene	**0.30**	mg/kg	0.25	0.067	50		03/31/15 16:43	108-67-8	
Xylene (Total)	**1.2**	mg/kg	0.75	0.15	50		03/31/15 16:43	1330-20-7	
Surrogates									
Toluene-d8 (S)	99	%	73-124		50		03/31/15 16:43	2037-26-5	
4-Bromofluorobenzene (S)	95	%	71-124		50		03/31/15 16:43	460-00-4	
1,2-Dichloroethane-d4 (S)	96	%	83-138		50		03/31/15 16:43	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**13.6**	%	0.10	0.10	1		04/03/15 10:22		

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ANALYTICAL RESULTS

Project: Marcus Hook AOI-4
Pace Project No.: 30143544

Sample: AOI4_MW-507_0-2_03192015 **Lab ID: 30143544003** Collected: 03/19/15 10:15 Received: 03/21/15 09:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010B Preparation Method: EPA 3050B								
Lead	**10.9**	mg/kg	0.36	0.35	1	03/24/15 12:34	03/25/15 15:53	7439-92-1	
8270 MSSV PAH by SIM	Analytical Method: EPA 8270C by SIM Preparation Method: EPA 3546								
Anthracene	**15.1**	mg/kg	0.14	0.018	20	03/27/15 16:00	03/31/15 01:19	120-12-7	
Benzo(a)anthracene	**0.46**	mg/kg	0.14	0.0095	20	03/27/15 16:00	03/31/15 01:19	56-55-3	
Benzo(a)pyrene	**0.11J**	mg/kg	0.14	0.0083	20	03/27/15 16:00	03/31/15 01:19	50-32-8	
Benzo(b)fluoranthene	**0.072J**	mg/kg	0.14	0.013	20	03/27/15 16:00	03/31/15 01:19	205-99-2	
Benzo(g,h,i)perylene	**0.094J**	mg/kg	0.14	0.012	20	03/27/15 16:00	03/31/15 01:19	191-24-2	
Chrysene	**0.73**	mg/kg	0.14	0.018	20	03/27/15 16:00	03/31/15 01:19	218-01-9	
Fluorene	**23.3**	mg/kg	0.14	0.024	20	03/27/15 16:00	03/31/15 01:19	86-73-7	
Naphthalene	**46.1**	mg/kg	0.71	0.19	100	03/27/15 16:00	03/31/15 17:46	91-20-3	
Phenanthrene	**94.8**	mg/kg	0.71	0.090	100	03/27/15 16:00	03/31/15 17:46	85-01-8	
Pyrene	**12.2**	mg/kg	0.14	0.015	20	03/27/15 16:00	03/31/15 01:19	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	233	%	35-141		20	03/27/15 16:00	03/31/15 01:19	321-60-8	S4
Terphenyl-d14 (S)	122	%	64-141		20	03/27/15 16:00	03/31/15 01:19	1718-51-0	
8260 MSV UST	Analytical Method: EPA 8260B								
Benzene	**0.29 U**	mg/kg	0.29	0.045	50		03/31/15 17:09	71-43-2	
1,2-Dibromoethane (EDB)	ND	mg/kg	0.17	0.15	50		03/31/15 17:09	106-93-4	
1,2-Dichloroethane	**0.29 U**	mg/kg	0.29	0.053	50		03/31/15 17:09	107-06-2	
Ethylbenzene	**13.0**	mg/kg	0.29	0.15	50		03/31/15 17:09	100-41-4	
Isopropylbenzene (Cumene)	**1.4**	mg/kg	0.29	0.061	50		03/31/15 17:09	98-82-8	
Methyl-tert-butyl ether	**0.29 U**	mg/kg	0.29	0.041	50		03/31/15 17:09	1634-04-4	
Toluene	**0.16J**	mg/kg	0.29	0.037	50		03/31/15 17:09	108-88-3	
1,2,4-Trimethylbenzene	**58.1**	mg/kg	5.8	1.3	1000		03/31/15 17:36	95-63-6	
1,3,5-Trimethylbenzene	**15.0**	mg/kg	0.29	0.078	50		03/31/15 17:09	108-67-8	
Xylene (Total)	**46.8**	mg/kg	0.87	0.18	50		03/31/15 17:09	1330-20-7	
Surrogates									
Toluene-d8 (S)	94	%	73-124		50		03/31/15 17:09	2037-26-5	
4-Bromofluorobenzene (S)	103	%	71-124		50		03/31/15 17:09	460-00-4	
1,2-Dichloroethane-d4 (S)	90	%	83-138		50		03/31/15 17:09	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**6.9**	%	0.10	0.10	1		04/03/15 10:22		

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ANALYTICAL RESULTS

Project: Marcus Hook AOI-4
Pace Project No.: 30143544

Sample: AOI4_MW-507_6-8_03192015 **Lab ID: 30143544004** Collected: 03/19/15 10:30 Received: 03/21/15 09:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010B Preparation Method: EPA 3050B								
Lead	**23.4**	mg/kg	0.42	0.40	1	03/24/15 12:34	03/25/15 15:56	7439-92-1	
8270 MSSV PAH by SIM	Analytical Method: EPA 8270C by SIM Preparation Method: EPA 3546								
Anthracene	**0.10**	mg/kg	0.041	0.0052	5	03/27/15 16:00	03/31/15 00:43	120-12-7	
Benzo(a)anthracene	**0.12**	mg/kg	0.041	0.0027	5	03/27/15 16:00	03/31/15 00:43	56-55-3	
Benzo(a)pyrene	**0.14**	mg/kg	0.041	0.0024	5	03/27/15 16:00	03/31/15 00:43	50-32-8	
Benzo(b)fluoranthene	**0.075**	mg/kg	0.041	0.0038	5	03/27/15 16:00	03/31/15 00:43	205-99-2	
Benzo(g,h,i)perylene	**0.10**	mg/kg	0.041	0.0033	5	03/27/15 16:00	03/31/15 00:43	191-24-2	
Chrysene	**0.095**	mg/kg	0.041	0.0051	5	03/27/15 16:00	03/31/15 00:43	218-01-9	
Fluorene	**0.22**	mg/kg	0.041	0.0068	5	03/27/15 16:00	03/31/15 00:43	86-73-7	
Naphthalene	**6.5**	mg/kg	0.041	0.011	5	03/27/15 16:00	03/31/15 00:43	91-20-3	
Phenanthrene	**0.73**	mg/kg	0.041	0.0052	5	03/27/15 16:00	03/31/15 00:43	85-01-8	
Pyrene	**1.3**	mg/kg	0.041	0.0043	5	03/27/15 16:00	03/31/15 00:43	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	87	%	35-141		5	03/27/15 16:00	03/31/15 00:43	321-60-8	
Terphenyl-d14 (S)	105	%	64-141		5	03/27/15 16:00	03/31/15 00:43	1718-51-0	
8260 MSV UST	Analytical Method: EPA 8260B								
Benzene	**0.34**	mg/kg	0.25	0.038	50		03/31/15 18:02	71-43-2	
1,2-Dibromoethane (EDB)	ND	mg/kg	0.15	0.13	50		03/31/15 18:02	106-93-4	
1,2-Dichloroethane	**0.25 U**	mg/kg	0.25	0.045	50		03/31/15 18:02	107-06-2	
Ethylbenzene	**0.71**	mg/kg	0.25	0.13	50		03/31/15 18:02	100-41-4	
Isopropylbenzene (Cumene)	**9.7**	mg/kg	0.25	0.052	50		03/31/15 18:02	98-82-8	
Methyl-tert-butyl ether	**0.25 U**	mg/kg	0.25	0.035	50		03/31/15 18:02	1634-04-4	
Toluene	**0.035J**	mg/kg	0.25	0.032	50		03/31/15 18:02	108-88-3	
1,2,4-Trimethylbenzene	**0.26**	mg/kg	0.25	0.057	50		03/31/15 18:02	95-63-6	
1,3,5-Trimethylbenzene	**0.077J**	mg/kg	0.25	0.066	50		03/31/15 18:02	108-67-8	
Xylene (Total)	**0.22J**	mg/kg	0.74	0.15	50		03/31/15 18:02	1330-20-7	
Surrogates									
Toluene-d8 (S)	88	%	73-124		50		03/31/15 18:02	2037-26-5	
4-Bromofluorobenzene (S)	75	%	71-124		50		03/31/15 18:02	460-00-4	
1,2-Dichloroethane-d4 (S)	93	%	83-138		50		03/31/15 18:02	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**20.2**	%	0.10	0.10	1		04/03/15 10:23		

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ANALYTICAL RESULTS

Project: Marcus Hook AOI-4
Pace Project No.: 30143544

Sample: AOI4_MW-508_0-2_03192015 **Lab ID: 30143544005** Collected: 03/19/15 11:15 Received: 03/21/15 09:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010B Preparation Method: EPA 3050B								
Lead	**64.1**	mg/kg	0.31	0.30	1	03/24/15 12:34	03/25/15 15:58	7439-92-1	
8270 MSSV PAH by SIM	Analytical Method: EPA 8270C by SIM Preparation Method: EPA 3546								
Anthracene	**0.79**	mg/kg	0.15	0.019	20	03/27/15 16:00	03/31/15 01:55	120-12-7	
Benzo(a)anthracene	**0.70**	mg/kg	0.15	0.010	20	03/27/15 16:00	03/31/15 01:55	56-55-3	
Benzo(a)pyrene	**0.44**	mg/kg	0.15	0.0089	20	03/27/15 16:00	03/31/15 01:55	50-32-8	
Benzo(b)fluoranthene	**1.4**	mg/kg	0.15	0.014	20	03/27/15 16:00	03/31/15 01:55	205-99-2	
Benzo(g,h,i)perylene	**0.16**	mg/kg	0.15	0.012	20	03/27/15 16:00	03/31/15 01:55	191-24-2	
Chrysene	**0.80**	mg/kg	0.15	0.019	20	03/27/15 16:00	03/31/15 01:55	218-01-9	
Fluorene	**1.8**	mg/kg	0.15	0.025	20	03/27/15 16:00	03/31/15 01:55	86-73-7	
Naphthalene	**8.1**	mg/kg	0.15	0.040	20	03/27/15 16:00	03/31/15 01:55	91-20-3	
Phenanthrene	**4.5**	mg/kg	0.15	0.019	20	03/27/15 16:00	03/31/15 01:55	85-01-8	
Pyrene	**3.5**	mg/kg	0.15	0.016	20	03/27/15 16:00	03/31/15 01:55	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	104	%	35-141		20	03/27/15 16:00	03/31/15 01:55	321-60-8	
Terphenyl-d14 (S)	108	%	64-141		20	03/27/15 16:00	03/31/15 01:55	1718-51-0	
8260 MSV UST	Analytical Method: EPA 8260B								
Benzene	**0.31 U**	mg/kg	0.31	0.048	50		03/31/15 18:56	71-43-2	
1,2-Dibromoethane (EDB)	ND	mg/kg	0.18	0.16	50		03/31/15 18:56	106-93-4	
1,2-Dichloroethane	**0.31 U**	mg/kg	0.31	0.056	50		03/31/15 18:56	107-06-2	
Ethylbenzene	**0.58**	mg/kg	0.31	0.16	50		03/31/15 18:56	100-41-4	
Isopropylbenzene (Cumene)	**72.0**	mg/kg	3.1	0.65	500		04/01/15 20:34	98-82-8	
Methyl-tert-butyl ether	**0.31 U**	mg/kg	0.31	0.044	50		03/31/15 18:56	1634-04-4	
Toluene	**0.18J**	mg/kg	0.31	0.039	50		03/31/15 18:56	108-88-3	
1,2,4-Trimethylbenzene	**0.31**	mg/kg	0.31	0.071	50		03/31/15 18:56	95-63-6	
1,3,5-Trimethylbenzene	**0.13J**	mg/kg	0.31	0.083	50		03/31/15 18:56	108-67-8	
Xylene (Total)	**1.5**	mg/kg	0.92	0.19	50		03/31/15 18:56	1330-20-7	
Surrogates									
Toluene-d8 (S)	94	%	73-124		50		03/31/15 18:56	2037-26-5	
4-Bromofluorobenzene (S)	103	%	71-124		50		03/31/15 18:56	460-00-4	
1,2-Dichloroethane-d4 (S)	95	%	83-138		50		03/31/15 18:56	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**13.6**	%	0.10	0.10	1		04/03/15 10:23		

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ANALYTICAL RESULTS

Project: Marcus Hook AOI-4
Pace Project No.: 30143544

Sample: AOI4_MW-508_4-6_03192015 **Lab ID: 30143544006** Collected: 03/19/15 11:30 Received: 03/21/15 09:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010B Preparation Method: EPA 3050B								
Lead	**12.6**	mg/kg	0.45	0.44	1	03/24/15 12:34	03/25/15 16:13	7439-92-1	
8270 MSSV PAH by SIM	Analytical Method: EPA 8270C by SIM Preparation Method: EPA 3546								
Anthracene	**0.028**	mg/kg	0.0082	0.0010	1	03/27/15 16:00	03/31/15 00:08	120-12-7	
Benzo(a)anthracene	**0.0056J**	mg/kg	0.0082	0.00055	1	03/27/15 16:00	03/31/15 00:08	56-55-3	
Benzo(a)pyrene	**0.0034J**	mg/kg	0.0082	0.00048	1	03/27/15 16:00	03/31/15 00:08	50-32-8	
Benzo(b)fluoranthene	**0.010**	mg/kg	0.0082	0.00077	1	03/27/15 16:00	03/31/15 00:08	205-99-2	1c
Benzo(g,h,i)perylene	**0.0082 U**	mg/kg	0.0082	0.00067	1	03/27/15 16:00	03/31/15 00:08	191-24-2	
Chrysene	**0.0080J**	mg/kg	0.0082	0.0010	1	03/27/15 16:00	03/31/15 00:08	218-01-9	
Fluorene	**0.17**	mg/kg	0.0082	0.0014	1	03/27/15 16:00	03/31/15 00:08	86-73-7	
Naphthalene	**7.1**	mg/kg	0.082	0.022	10	03/27/15 16:00	03/31/15 17:29	91-20-3	
Phenanthrene	**0.19**	mg/kg	0.0082	0.0010	1	03/27/15 16:00	03/31/15 00:08	85-01-8	
Pyrene	**0.034**	mg/kg	0.0082	0.00086	1	03/27/15 16:00	03/31/15 00:08	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	101	%	35-141		1	03/27/15 16:00	03/31/15 00:08	321-60-8	
Terphenyl-d14 (S)	107	%	64-141		1	03/27/15 16:00	03/31/15 00:08	1718-51-0	
8260 MSV UST	Analytical Method: EPA 8260B								
Benzene	**0.26 U**	mg/kg	0.26	0.041	50		03/31/15 19:22	71-43-2	
1,2-Dibromoethane (EDB)	ND	mg/kg	0.16	0.14	50		03/31/15 19:22	106-93-4	
1,2-Dichloroethane	**0.26 U**	mg/kg	0.26	0.048	50		03/31/15 19:22	107-06-2	
Ethylbenzene	**0.26 U**	mg/kg	0.26	0.13	50		03/31/15 19:22	100-41-4	
Isopropylbenzene (Cumene)	**1.3**	mg/kg	0.26	0.055	50		03/31/15 19:22	98-82-8	
Methyl-tert-butyl ether	**0.20J**	mg/kg	0.26	0.037	50		03/31/15 19:22	1634-04-4	
Toluene	**0.26 U**	mg/kg	0.26	0.034	50		03/31/15 19:22	108-88-3	
1,2,4-Trimethylbenzene	**0.17J**	mg/kg	0.26	0.061	50		03/31/15 19:22	95-63-6	
1,3,5-Trimethylbenzene	**0.26 U**	mg/kg	0.26	0.071	50		03/31/15 19:22	108-67-8	
Xylene (Total)	**0.18J**	mg/kg	0.78	0.16	50		03/31/15 19:22	1330-20-7	
Surrogates									
Toluene-d8 (S)	95	%	73-124		50		03/31/15 19:22	2037-26-5	
4-Bromofluorobenzene (S)	93	%	71-124		50		03/31/15 19:22	460-00-4	
1,2-Dichloroethane-d4 (S)	91	%	83-138		50		03/31/15 19:22	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**20.1**	%	0.10	0.10	1		04/03/15 10:24		

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ANALYTICAL RESULTS

Project: Marcus Hook AOI-4
Pace Project No.: 30143544

Sample: AOI4_BH-15-40_0-2_03192015 **Lab ID: 30143544007** Collected: 03/19/15 12:00 Received: 03/21/15 09:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010B Preparation Method: EPA 3050B								
Lead	**67.8**	mg/kg	0.46	0.44	1	03/24/15 12:34	03/25/15 16:15	7439-92-1	
8270 MSSV PAH by SIM	Analytical Method: EPA 8270C by SIM Preparation Method: EPA 3546								
Anthracene	**0.077 U**	mg/kg	0.077	0.0098	10	03/27/15 16:00	03/31/15 01:01	120-12-7	
Benzo(a)anthracene	**0.077 U**	mg/kg	0.077	0.0051	10	03/27/15 16:00	03/31/15 01:01	56-55-3	
Benzo(a)pyrene	**0.077 U**	mg/kg	0.077	0.0045	10	03/27/15 16:00	03/31/15 01:01	50-32-8	
Benzo(b)fluoranthene	**0.077 U**	mg/kg	0.077	0.0072	10	03/27/15 16:00	03/31/15 01:01	205-99-2	
Benzo(g,h,i)perylene	**0.077 U**	mg/kg	0.077	0.0062	10	03/27/15 16:00	03/31/15 01:01	191-24-2	
Chrysene	**0.077 U**	mg/kg	0.077	0.0096	10	03/27/15 16:00	03/31/15 01:01	218-01-9	
Fluorene	**0.077 U**	mg/kg	0.077	0.013	10	03/27/15 16:00	03/31/15 01:01	86-73-7	
Naphthalene	**0.056J**	mg/kg	0.077	0.020	10	03/27/15 16:00	03/31/15 01:01	91-20-3	
Phenanthrene	**0.028J**	mg/kg	0.077	0.0098	10	03/27/15 16:00	03/31/15 01:01	85-01-8	
Pyrene	**0.077 U**	mg/kg	0.077	0.0080	10	03/27/15 16:00	03/31/15 01:01	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	76	%	35-141		10	03/27/15 16:00	03/31/15 01:01	321-60-8	
Terphenyl-d14 (S)	97	%	64-141		10	03/27/15 16:00	03/31/15 01:01	1718-51-0	
8260 MSV UST	Analytical Method: EPA 8260B								
Benzene	**0.0050 U**	mg/kg	0.0050	0.00077	1		03/31/15 19:49	71-43-2	
1,2-Dibromoethane (EDB)	ND	mg/kg	0.0030	0.0026	1		03/31/15 19:49	106-93-4	
1,2-Dichloroethane	**0.0050 U**	mg/kg	0.0050	0.00090	1		03/31/15 19:49	107-06-2	
Ethylbenzene	**0.0050 U**	mg/kg	0.0050	0.0025	1		03/31/15 19:49	100-41-4	
Isopropylbenzene (Cumene)	**0.0050 U**	mg/kg	0.0050	0.0011	1		03/31/15 19:49	98-82-8	
Methyl-tert-butyl ether	**0.0050 U**	mg/kg	0.0050	0.00070	1		03/31/15 19:49	1634-04-4	
Toluene	**0.0050 U**	mg/kg	0.0050	0.00064	1		03/31/15 19:49	108-88-3	
1,2,4-Trimethylbenzene	**0.0052**	mg/kg	0.0050	0.0012	1		03/31/15 19:49	95-63-6	
1,3,5-Trimethylbenzene	**0.0014J**	mg/kg	0.0050	0.0013	1		03/31/15 19:49	108-67-8	
Xylene (Total)	**0.010J**	mg/kg	0.015	0.0030	1		03/31/15 19:49	1330-20-7	
Surrogates									
Toluene-d8 (S)	104	%	73-124		1		03/31/15 19:49	2037-26-5	
4-Bromofluorobenzene (S)	110	%	71-124		1		03/31/15 19:49	460-00-4	
1,2-Dichloroethane-d4 (S)	94	%	83-138		1		03/31/15 19:49	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**13.3**	%	0.10	0.10	1		04/03/15 10:24		

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ANALYTICAL RESULTS

Project: Marcus Hook AOI-4
Pace Project No.: 30143544

Sample: AOI4_BH-15-40_4-6_03192015 **Lab ID: 30143544008** Collected: 03/19/15 12:15 Received: 03/21/15 09:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010B Preparation Method: EPA 3050B								
Lead	**50.7**	mg/kg	0.49	0.47	1	03/24/15 12:34	03/25/15 16:17	7439-92-1	
8270 MSSV PAH by SIM	Analytical Method: EPA 8270C by SIM Preparation Method: EPA 3546								
Anthracene	**0.0087J**	mg/kg	0.018	0.0023	2	03/27/15 16:00	03/31/15 00:26	120-12-7	
Benzo(a)anthracene	**0.013J**	mg/kg	0.018	0.0012	2	03/27/15 16:00	03/31/15 00:26	56-55-3	
Benzo(a)pyrene	**0.012J**	mg/kg	0.018	0.0010	2	03/27/15 16:00	03/31/15 00:26	50-32-8	
Benzo(b)fluoranthene	**0.049**	mg/kg	0.018	0.0017	2	03/27/15 16:00	03/31/15 00:26	205-99-2	1c
Benzo(g,h,i)perylene	**0.012J**	mg/kg	0.018	0.0014	2	03/27/15 16:00	03/31/15 00:26	191-24-2	
Chrysene	**0.028**	mg/kg	0.018	0.0022	2	03/27/15 16:00	03/31/15 00:26	218-01-9	
Fluorene	**0.15**	mg/kg	0.018	0.0030	2	03/27/15 16:00	03/31/15 00:26	86-73-7	
Naphthalene	**1.0**	mg/kg	0.018	0.0047	2	03/27/15 16:00	03/31/15 00:26	91-20-3	
Phenanthrene	**0.075**	mg/kg	0.018	0.0023	2	03/27/15 16:00	03/31/15 00:26	85-01-8	
Pyrene	**0.037**	mg/kg	0.018	0.0019	2	03/27/15 16:00	03/31/15 00:26	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	105	%	35-141		2	03/27/15 16:00	03/31/15 00:26	321-60-8	
Terphenyl-d14 (S)	108	%	64-141		2	03/27/15 16:00	03/31/15 00:26	1718-51-0	
8260 MSV UST	Analytical Method: EPA 8260B								
Benzene	**0.47 U**	mg/kg	0.47	0.073	50		03/31/15 20:15	71-43-2	
1,2-Dibromoethane (EDB)	ND	mg/kg	0.28	0.24	50		03/31/15 20:15	106-93-4	
1,2-Dichloroethane	**0.47 U**	mg/kg	0.47	0.085	50		03/31/15 20:15	107-06-2	
Ethylbenzene	**1.4**	mg/kg	0.47	0.24	50		03/31/15 20:15	100-41-4	
Isopropylbenzene (Cumene)	**1.4**	mg/kg	0.47	0.099	50		03/31/15 20:15	98-82-8	
Methyl-tert-butyl ether	**0.47 U**	mg/kg	0.47	0.066	50		03/31/15 20:15	1634-04-4	
Toluene	**0.47 U**	mg/kg	0.47	0.060	50		03/31/15 20:15	108-88-3	
1,2,4-Trimethylbenzene	**2.8**	mg/kg	0.47	0.11	50		03/31/15 20:15	95-63-6	
1,3,5-Trimethylbenzene	**1.6**	mg/kg	0.47	0.13	50		03/31/15 20:15	108-67-8	
Xylene (Total)	**3.8**	mg/kg	1.4	0.29	50		03/31/15 20:15	1330-20-7	
Surrogates									
Toluene-d8 (S)	104	%	73-124		50		03/31/15 20:15	2037-26-5	
4-Bromofluorobenzene (S)	86	%	71-124		50		03/31/15 20:15	460-00-4	
1,2-Dichloroethane-d4 (S)	89	%	83-138		50		03/31/15 20:15	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**25.4**	%	0.10	0.10	1		04/03/15 10:25		

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ANALYTICAL RESULTS

Project: Marcus Hook AOI-4
Pace Project No.: 30143544

Sample: AOI4_BH-15-39_0-2_03192015 **Lab ID: 30143544009** Collected: 03/19/15 12:45 Received: 03/21/15 09:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010B Preparation Method: EPA 3050B								
Lead	**30.2**	mg/kg	0.41	0.39	1	03/24/15 12:34	03/25/15 16:19	7439-92-1	
8270 MSSV PAH by SIM	Analytical Method: EPA 8270C by SIM Preparation Method: EPA 3546								
Anthracene	**0.15 U**	mg/kg	0.15	0.019	20	03/27/15 16:00	03/31/15 01:37	120-12-7	
Benzo(a)anthracene	**0.15 U**	mg/kg	0.15	0.010	20	03/27/15 16:00	03/31/15 01:37	56-55-3	
Benzo(a)pyrene	**0.15 U**	mg/kg	0.15	0.0089	20	03/27/15 16:00	03/31/15 01:37	50-32-8	
Benzo(b)fluoranthene	**0.15 U**	mg/kg	0.15	0.014	20	03/27/15 16:00	03/31/15 01:37	205-99-2	
Benzo(g,h,i)perylene	**0.15 U**	mg/kg	0.15	0.012	20	03/27/15 16:00	03/31/15 01:37	191-24-2	
Chrysene	**0.15 U**	mg/kg	0.15	0.019	20	03/27/15 16:00	03/31/15 01:37	218-01-9	
Fluorene	**0.15 U**	mg/kg	0.15	0.025	20	03/27/15 16:00	03/31/15 01:37	86-73-7	
Naphthalene	**0.15 U**	mg/kg	0.15	0.040	20	03/27/15 16:00	03/31/15 01:37	91-20-3	
Phenanthrene	**0.15 U**	mg/kg	0.15	0.019	20	03/27/15 16:00	03/31/15 01:37	85-01-8	
Pyrene	**0.15 U**	mg/kg	0.15	0.016	20	03/27/15 16:00	03/31/15 01:37	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	81	%	35-141		20	03/27/15 16:00	03/31/15 01:37	321-60-8	
Terphenyl-d14 (S)	106	%	64-141		20	03/27/15 16:00	03/31/15 01:37	1718-51-0	
8260 MSV UST	Analytical Method: EPA 8260B								
Benzene	**0.0066**	mg/kg	0.0059	0.00091	1		03/31/15 20:42	71-43-2	
1,2-Dibromoethane (EDB)	ND	mg/kg	0.0035	0.0031	1		03/31/15 20:42	106-93-4	
1,2-Dichloroethane	**0.0059 U**	mg/kg	0.0059	0.0011	1		03/31/15 20:42	107-06-2	
Ethylbenzene	**0.0059 U**	mg/kg	0.0059	0.0030	1		03/31/15 20:42	100-41-4	
Isopropylbenzene (Cumene)	**0.0059 U**	mg/kg	0.0059	0.0012	1		03/31/15 20:42	98-82-8	
Methyl-tert-butyl ether	**0.0059 U**	mg/kg	0.0059	0.00083	1		03/31/15 20:42	1634-04-4	
Toluene	**0.0032J**	mg/kg	0.0059	0.00075	1		03/31/15 20:42	108-88-3	
1,2,4-Trimethylbenzene	**0.0059 U**	mg/kg	0.0059	0.0014	1		03/31/15 20:42	95-63-6	
1,3,5-Trimethylbenzene	**0.0059 U**	mg/kg	0.0059	0.0016	1		03/31/15 20:42	108-67-8	
Xylene (Total)	**0.018 U**	mg/kg	0.018	0.0036	1		03/31/15 20:42	1330-20-7	
Surrogates									
Toluene-d8 (S)	96	%	73-124		1		03/31/15 20:42	2037-26-5	
4-Bromofluorobenzene (S)	99	%	71-124		1		03/31/15 20:42	460-00-4	
1,2-Dichloroethane-d4 (S)	108	%	83-138		1		03/31/15 20:42	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**12.1**	%	0.10	0.10	1		04/03/15 10:25		

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ANALYTICAL RESULTS

Project: Marcus Hook AOI-4
Pace Project No.: 30143544

Sample: AOI4_BH-15-39_4-6_03192015 **Lab ID: 30143544010** Collected: 03/19/15 13:00 Received: 03/21/15 09:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010B Preparation Method: EPA 3050B								
Lead	**15.6**	mg/kg	0.52	0.50	1	03/24/15 12:34	03/25/15 16:22	7439-92-1	
8270 MSSV PAH by SIM	Analytical Method: EPA 8270C by SIM Preparation Method: EPA 3546								
Anthracene	**0.0084 U**	mg/kg	0.0084	0.0011	1	03/27/15 16:00	03/30/15 23:15	120-12-7	
Benzo(a)anthracene	**0.0084 U**	mg/kg	0.0084	0.00056	1	03/27/15 16:00	03/30/15 23:15	56-55-3	
Benzo(a)pyrene	**0.0084 U**	mg/kg	0.0084	0.00049	1	03/27/15 16:00	03/30/15 23:15	50-32-8	
Benzo(b)fluoranthene	**0.0084 U**	mg/kg	0.0084	0.00078	1	03/27/15 16:00	03/30/15 23:15	205-99-2	
Benzo(g,h,i)perylene	**0.0084 U**	mg/kg	0.0084	0.00068	1	03/27/15 16:00	03/30/15 23:15	191-24-2	
Chrysene	**0.0084 U**	mg/kg	0.0084	0.0011	1	03/27/15 16:00	03/30/15 23:15	218-01-9	
Fluorene	**0.0084 U**	mg/kg	0.0084	0.0014	1	03/27/15 16:00	03/30/15 23:15	86-73-7	
Naphthalene	**0.0028J**	mg/kg	0.0084	0.0022	1	03/27/15 16:00	03/30/15 23:15	91-20-3	
Phenanthrene	**0.0084 U**	mg/kg	0.0084	0.0011	1	03/27/15 16:00	03/30/15 23:15	85-01-8	
Pyrene	**0.0084 U**	mg/kg	0.0084	0.00088	1	03/27/15 16:00	03/30/15 23:15	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	80	%	35-141		1	03/27/15 16:00	03/30/15 23:15	321-60-8	
Terphenyl-d14 (S)	100	%	64-141		1	03/27/15 16:00	03/30/15 23:15	1718-51-0	
8260 MSV UST	Analytical Method: EPA 8260B								
Benzene	**0.30 U**	mg/kg	0.30	0.047	50		03/31/15 21:35	71-43-2	
1,2-Dibromoethane (EDB)	ND	mg/kg	0.18	0.16	50		03/31/15 21:35	106-93-4	
1,2-Dichloroethane	**0.30 U**	mg/kg	0.30	0.055	50		03/31/15 21:35	107-06-2	
Ethylbenzene	**0.30 U**	mg/kg	0.30	0.15	50		03/31/15 21:35	100-41-4	
Isopropylbenzene (Cumene)	**0.30 U**	mg/kg	0.30	0.064	50		03/31/15 21:35	98-82-8	
Methyl-tert-butyl ether	**0.30 U**	mg/kg	0.30	0.043	50		03/31/15 21:35	1634-04-4	
Toluene	**0.30 U**	mg/kg	0.30	0.039	50		03/31/15 21:35	108-88-3	
1,2,4-Trimethylbenzene	**0.30 U**	mg/kg	0.30	0.070	50		03/31/15 21:35	95-63-6	
1,3,5-Trimethylbenzene	**0.30 U**	mg/kg	0.30	0.081	50		03/31/15 21:35	108-67-8	
Xylene (Total)	**0.90 U**	mg/kg	0.90	0.18	50		03/31/15 21:35	1330-20-7	
Surrogates									
Toluene-d8 (S)	97	%	73-124		50		03/31/15 21:35	2037-26-5	
4-Bromofluorobenzene (S)	94	%	71-124		50		03/31/15 21:35	460-00-4	
1,2-Dichloroethane-d4 (S)	93	%	83-138		50		03/31/15 21:35	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**20.6**	%	0.10	0.10	1		04/03/15 10:26		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Marcus Hook AOI-4
Pace Project No.: 30143544

Sample: AOI4_BH-15-46_0-2_03192015 **Lab ID: 30143544011** Collected: 03/19/15 13:30 Received: 03/21/15 09:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010B Preparation Method: EPA 3050B								
Cobalt	**5.1**	mg/kg	0.73	0.054	1	03/24/15 12:34	03/25/15 16:24	7440-48-4	
Lead	**13.2**	mg/kg	0.37	0.35	1	03/24/15 12:34	03/25/15 16:24	7439-92-1	
Nickel	**10.5**	mg/kg	1.5	0.18	1	03/24/15 12:34	03/25/15 16:24	7440-02-0	
Vanadium	**21.9**	mg/kg	0.73	0.060	1	03/24/15 12:34	03/25/15 16:24	7440-62-2	
Zinc	**31.5**	mg/kg	0.73	0.32	1	03/24/15 12:34	03/25/15 16:24	7440-66-6	
8270 MSSV PAH by SIM	Analytical Method: EPA 8270C by SIM Preparation Method: EPA 3546								
Acenaphthene	**0.0040J**	mg/kg	0.0078	0.00069	1	03/31/15 16:45	04/03/15 13:32	83-32-9	
Anthracene	**0.012**	mg/kg	0.0078	0.00076	1	03/31/15 16:45	04/03/15 13:32	120-12-7	
Benzo(a)anthracene	**0.0078 U**	mg/kg	0.0078	0.0020	1	03/31/15 16:45	04/03/15 13:32	56-55-3	
Benzo(a)pyrene	**0.0078 U**	mg/kg	0.0078	0.00075	1	03/31/15 16:45	04/03/15 13:32	50-32-8	
Benzo(b)fluoranthene	**0.0078 U**	mg/kg	0.0078	0.00069	1	03/31/15 16:45	04/03/15 13:32	205-99-2	
Benzo(g,h,i)perylene	**0.0078 U**	mg/kg	0.0078	0.0012	1	03/31/15 16:45	04/03/15 13:32	191-24-2	
Benzo(k)fluoranthene	**0.0078 U**	mg/kg	0.0078	0.00074	1	03/31/15 16:45	04/03/15 13:32	207-08-9	
Chrysene	**0.0050J**	mg/kg	0.0078	0.00052	1	03/31/15 16:45	04/03/15 13:32	218-01-9	
Dibenz(a,h)anthracene	**0.0078 U**	mg/kg	0.0078	0.0010	1	03/31/15 16:45	04/03/15 13:32	53-70-3	
Fluoranthene	**0.0035J**	mg/kg	0.0078	0.00052	1	03/31/15 16:45	04/03/15 13:32	206-44-0	
Fluorene	**0.0052J**	mg/kg	0.0078	0.00068	1	03/31/15 16:45	04/03/15 13:32	86-73-7	
Indeno(1,2,3-cd)pyrene	**0.0078 U**	mg/kg	0.0078	0.00093	1	03/31/15 16:45	04/03/15 13:32	193-39-5	
Naphthalene	**0.014**	mg/kg	0.0078	0.0011	1	03/31/15 16:45	04/03/15 13:32	91-20-3	
Phenanthrene	**0.023**	mg/kg	0.0078	0.00078	1	03/31/15 16:45	04/03/15 13:32	85-01-8	
Pyrene	**0.017**	mg/kg	0.0078	0.00063	1	03/31/15 16:45	04/03/15 13:32	129-00-0	
Quinoline	**0.018**	mg/kg	0.0078	0.0019	1	03/31/15 16:45	04/03/15 13:32	91-22-5	
Surrogates									
2-Fluorobiphenyl (S)	107	%	35-141		1	03/31/15 16:45	04/03/15 13:32	321-60-8	
Terphenyl-d14 (S)	97	%	64-141		1	03/31/15 16:45	04/03/15 13:32	1718-51-0	
8270 MSSV FULL LIST MICROWAVE	Analytical Method: EPA 8270C Preparation Method: EPA 3546								
Biphenyl (Diphenyl)	**0.39 U**	mg/kg	0.39	0.012	1	03/31/15 15:45	04/01/15 19:08	92-52-4	
Diethylphthalate	**0.39 U**	mg/kg	0.39	0.013	1	03/31/15 15:45	04/01/15 19:08	84-66-2	
2,4-Dimethylphenol	**0.64**	mg/kg	0.39	0.069	1	03/31/15 15:45	04/01/15 19:08	105-67-9	
Di-n-butylphthalate	**0.39 U**	mg/kg	0.39	0.013	1	03/31/15 15:45	04/01/15 19:08	84-74-2	
2,4-Dinitrophenol	**0.97 U**	mg/kg	0.97	0.11	1	03/31/15 15:45	04/01/15 19:08	51-28-5	
bis(2-Ethylhexyl)phthalate	**0.39 U**	mg/kg	0.39	0.012	1	03/31/15 15:45	04/01/15 19:08	117-81-7	
2-Methylnaphthalene	**0.39 U**	mg/kg	0.39	0.0093	1	03/31/15 15:45	04/01/15 19:08	91-57-6	
2-Methylphenol(o-Cresol)	**0.39 U**	mg/kg	0.39	0.23	1	03/31/15 15:45	04/01/15 19:08	95-48-7	
3&4-Methylphenol(m&p Cresol)	**0.78 U**	mg/kg	0.78	0.33	1	03/31/15 15:45	04/01/15 19:08		
4-Nitrophenol	**0.39 U**	mg/kg	0.39	0.22	1	03/31/15 15:45	04/01/15 19:08	100-02-7	
Phenol	**0.39 U**	mg/kg	0.39	0.12	1	03/31/15 15:45	04/01/15 19:08	108-95-2	
Pyridine	**0.97 U**	mg/kg	0.97	0.11	1	03/31/15 15:45	04/01/15 19:08	110-86-1	
Surrogates									
Nitrobenzene-d5 (S)	92	%	40-117		1	03/31/15 15:45	04/01/15 19:08	4165-60-0	
2-Fluorobiphenyl (S)	95	%	50-112		1	03/31/15 15:45	04/01/15 19:08	321-60-8	
Terphenyl-d14 (S)	101	%	52-130		1	03/31/15 15:45	04/01/15 19:08	1718-51-0	

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ANALYTICAL RESULTS

Project: Marcus Hook AOI-4
Pace Project No.: 30143544

Sample: AOI4_BH-15-46_0-2_03192015 **Lab ID: 30143544011** Collected: 03/19/15 13:30 Received: 03/21/15 09:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV FULL LIST MICROWAVE	Analytical Method: EPA 8270C Preparation Method: EPA 3546								
Surrogates									
Phenol-d6 (S)	90	%	53-115		1	03/31/15 15:45	04/01/15 19:08	13127-88-3	
2-Fluorophenol (S)	87	%	38-124		1	03/31/15 15:45	04/01/15 19:08	367-12-4	
2,4,6-Tribromophenol (S)	103	%	21-133		1	03/31/15 15:45	04/01/15 19:08	118-79-6	
8260 MSV 5030 Low Level	Analytical Method: EPA 8260B								
Benzene	**0.0060 U**	mg/kg	0.0060	0.00094	1		03/31/15 18:16	71-43-2	
sec-Butylbenzene	**0.0060 U**	mg/kg	0.0060	0.0018	1		03/31/15 18:16	135-98-8	
tert-Butylbenzene	**0.0060 U**	mg/kg	0.0060	0.0024	1		03/31/15 18:16	98-06-6	
Cyclohexane	**0.012 U**	mg/kg	0.012	0.0015	1		03/31/15 18:16	110-82-7	
1,2-Dibromoethane (EDB)	ND	mg/kg	0.0036	0.0031	1		03/31/15 18:16	106-93-4	
1,2-Dichloroethane	**0.0060 U**	mg/kg	0.0060	0.0011	1		03/31/15 18:16	107-06-2	
Ethylbenzene	**0.0060 U**	mg/kg	0.0060	0.0031	1		03/31/15 18:16	100-41-4	
Hexane	**0.012 U**	mg/kg	0.012	0.012	1		03/31/15 18:16		
Isopropylbenzene (Cumene)	**0.0060 U**	mg/kg	0.0060	0.0013	1		03/31/15 18:16	98-82-8	
Methyl-tert-butyl ether	**0.0060 U**	mg/kg	0.0060	0.00086	1		03/31/15 18:16	1634-04-4	
Toluene	**0.0060 U**	mg/kg	0.0060	0.00077	1		03/31/15 18:16	108-88-3	
1,2,4-Trimethylbenzene	**0.0060 U**	mg/kg	0.0060	0.0014	1		03/31/15 18:16	95-63-6	
1,3,5-Trimethylbenzene	**0.0060 U**	mg/kg	0.0060	0.0016	1		03/31/15 18:16	108-67-8	
Xylene (Total)	**0.018 U**	mg/kg	0.018	0.0037	1		03/31/15 18:16	1330-20-7	
Surrogates									
Toluene-d8 (S)	99	%	73-124		1		03/31/15 18:16	2037-26-5	
4-Bromofluorobenzene (S)	107	%	71-124		1		03/31/15 18:16	460-00-4	
1,2-Dichloroethane-d4 (S)	107	%	83-138		1		03/31/15 18:16	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**15.6**	%	0.10	0.10	1		04/03/15 10:26		

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ANALYTICAL RESULTS

Project: Marcus Hook AOI-4
Pace Project No.: 30143544

Sample: AOI4_BH-15-46_4-6_03192015 **Lab ID: 30143544012** Collected: 03/19/15 13:45 Received: 03/21/15 09:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010B Preparation Method: EPA 3050B								
Cobalt	**11.9**	mg/kg	0.81	0.060	1	03/24/15 12:34	03/25/15 16:26	7440-48-4	
Lead	**8.8**	mg/kg	0.41	0.39	1	03/24/15 12:34	03/25/15 16:26	7439-92-1	
Nickel	**14.1**	mg/kg	1.6	0.21	1	03/24/15 12:34	03/25/15 16:26	7440-02-0	
Vanadium	**32.9**	mg/kg	0.81	0.067	1	03/24/15 12:34	03/25/15 16:26	7440-62-2	
Zinc	**36.7**	mg/kg	0.81	0.36	1	03/24/15 12:34	03/25/15 16:26	7440-66-6	
8270 MSSV PAH by SIM	Analytical Method: EPA 8270C by SIM Preparation Method: EPA 3546								
Acenaphthene	**0.0083 U**	mg/kg	0.0083	0.00073	1	03/31/15 16:45	04/03/15 13:49	83-32-9	
Anthracene	**0.0083 U**	mg/kg	0.0083	0.00080	1	03/31/15 16:45	04/03/15 13:49	120-12-7	
Benzo(a)anthracene	**0.0083 U**	mg/kg	0.0083	0.0021	1	03/31/15 16:45	04/03/15 13:49	56-55-3	
Benzo(a)pyrene	**0.0083 U**	mg/kg	0.0083	0.00079	1	03/31/15 16:45	04/03/15 13:49	50-32-8	
Benzo(b)fluoranthene	**0.0083 U**	mg/kg	0.0083	0.00073	1	03/31/15 16:45	04/03/15 13:49	205-99-2	
Benzo(g,h,i)perylene	**0.0083 U**	mg/kg	0.0083	0.0013	1	03/31/15 16:45	04/03/15 13:49	191-24-2	
Benzo(k)fluoranthene	**0.0083 U**	mg/kg	0.0083	0.00078	1	03/31/15 16:45	04/03/15 13:49	207-08-9	
Chrysene	**0.0083 U**	mg/kg	0.0083	0.00054	1	03/31/15 16:45	04/03/15 13:49	218-01-9	
Dibenz(a,h)anthracene	**0.0083 U**	mg/kg	0.0083	0.0011	1	03/31/15 16:45	04/03/15 13:49	53-70-3	
Fluoranthene	**0.0083 U**	mg/kg	0.0083	0.00054	1	03/31/15 16:45	04/03/15 13:49	206-44-0	
Fluorene	**0.0083 U**	mg/kg	0.0083	0.00072	1	03/31/15 16:45	04/03/15 13:49	86-73-7	
Indeno(1,2,3-cd)pyrene	**0.0083 U**	mg/kg	0.0083	0.00098	1	03/31/15 16:45	04/03/15 13:49	193-39-5	
Naphthalene	**0.0083 U**	mg/kg	0.0083	0.0012	1	03/31/15 16:45	04/03/15 13:49	91-20-3	
Phenanthrene	**0.0083 U**	mg/kg	0.0083	0.00083	1	03/31/15 16:45	04/03/15 13:49	85-01-8	
Pyrene	**0.0083 U**	mg/kg	0.0083	0.00067	1	03/31/15 16:45	04/03/15 13:49	129-00-0	
Quinoline	**0.0083 U**	mg/kg	0.0083	0.0020	1	03/31/15 16:45	04/03/15 13:49	91-22-5	
Surrogates									
2-Fluorobiphenyl (S)	87	%	35-141		1	03/31/15 16:45	04/03/15 13:49	321-60-8	
Terphenyl-d14 (S)	91	%	64-141		1	03/31/15 16:45	04/03/15 13:49	1718-51-0	
8270 MSSV FULL LIST MICROWAVE	Analytical Method: EPA 8270C Preparation Method: EPA 3546								
Biphenyl (Diphenyl)	**0.41 U**	mg/kg	0.41	0.013	1	03/31/15 15:45	04/01/15 14:15	92-52-4	
Diethylphthalate	**0.41 U**	mg/kg	0.41	0.014	1	03/31/15 15:45	04/01/15 14:15	84-66-2	
2,4-Dimethylphenol	**0.41 U**	mg/kg	0.41	0.073	1	03/31/15 15:45	04/01/15 14:15	105-67-9	
Di-n-butylphthalate	**0.41 U**	mg/kg	0.41	0.014	1	03/31/15 15:45	04/01/15 14:15	84-74-2	
2,4-Dinitrophenol	**1.0 U**	mg/kg	1.0	0.12	1	03/31/15 15:45	04/01/15 14:15	51-28-5	
bis(2-Ethylhexyl)phthalate	**0.41 U**	mg/kg	0.41	0.013	1	03/31/15 15:45	04/01/15 14:15	117-81-7	
2-Methylnaphthalene	**0.41 U**	mg/kg	0.41	0.0099	1	03/31/15 15:45	04/01/15 14:15	91-57-6	
2-Methylphenol(o-Cresol)	**0.41 U**	mg/kg	0.41	0.24	1	03/31/15 15:45	04/01/15 14:15	95-48-7	
3&4-Methylphenol(m&p Cresol)	**0.83 U**	mg/kg	0.83	0.35	1	03/31/15 15:45	04/01/15 14:15		
4-Nitrophenol	**0.41 U**	mg/kg	0.41	0.23	1	03/31/15 15:45	04/01/15 14:15	100-02-7	
Phenol	**0.41 U**	mg/kg	0.41	0.13	1	03/31/15 15:45	04/01/15 14:15	108-95-2	
Pyridine	**1.0 U**	mg/kg	1.0	0.12	1	03/31/15 15:45	04/01/15 14:15	110-86-1	
Surrogates									
Nitrobenzene-d5 (S)	92	%	40-117		1	03/31/15 15:45	04/01/15 14:15	4165-60-0	
2-Fluorobiphenyl (S)	87	%	50-112		1	03/31/15 15:45	04/01/15 14:15	321-60-8	
Terphenyl-d14 (S)	94	%	52-130		1	03/31/15 15:45	04/01/15 14:15	1718-51-0	

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ANALYTICAL RESULTS

Project: Marcus Hook AOI-4
Pace Project No.: 30143544

Sample: AOI4_BH-15-46_4-6_03192015 **Lab ID: 30143544012** Collected: 03/19/15 13:45 Received: 03/21/15 09:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV FULL LIST MICROWAVE	Analytical Method: EPA 8270C Preparation Method: EPA 3546								
Surrogates									
Phenol-d6 (S)	97	%	53-115		1	03/31/15 15:45	04/01/15 14:15	13127-88-3	
2-Fluorophenol (S)	94	%	38-124		1	03/31/15 15:45	04/01/15 14:15	367-12-4	
2,4,6-Tribromophenol (S)	93	%	21-133		1	03/31/15 15:45	04/01/15 14:15	118-79-6	
8260 MSV 5030 Low Level	Analytical Method: EPA 8260B								
Benzene	**0.0087 U**	mg/kg	0.0087	0.0013	1		03/31/15 13:06	71-43-2	
sec-Butylbenzene	**0.0087 U**	mg/kg	0.0087	0.0025	1		03/31/15 13:06	135-98-8	
tert-Butylbenzene	**0.0087 U**	mg/kg	0.0087	0.0034	1		03/31/15 13:06	98-06-6	
Cyclohexane	**0.017 U**	mg/kg	0.017	0.0022	1		03/31/15 13:06	110-82-7	
1,2-Dibromoethane (EDB)	ND	mg/kg	0.0052	0.0045	1		03/31/15 13:06	106-93-4	
1,2-Dichloroethane	**0.0087 U**	mg/kg	0.0087	0.0016	1		03/31/15 13:06	107-06-2	
Ethylbenzene	**0.0087 U**	mg/kg	0.0087	0.0044	1		03/31/15 13:06	100-41-4	
Hexane	**0.017 U**	mg/kg	0.017	0.017	1		03/31/15 13:06		
Isopropylbenzene (Cumene)	**0.0087 U**	mg/kg	0.0087	0.0018	1		03/31/15 13:06	98-82-8	
Methyl-tert-butyl ether	**0.0087 U**	mg/kg	0.0087	0.0012	1		03/31/15 13:06	1634-04-4	
Toluene	**0.0087 U**	mg/kg	0.0087	0.0011	1		03/31/15 13:06	108-88-3	
1,2,4-Trimethylbenzene	**0.0087 U**	mg/kg	0.0087	0.0020	1		03/31/15 13:06	95-63-6	
1,3,5-Trimethylbenzene	**0.0087 U**	mg/kg	0.0087	0.0023	1		03/31/15 13:06	108-67-8	
Xylene (Total)	**0.026 U**	mg/kg	0.026	0.0053	1		03/31/15 13:06	1330-20-7	
Surrogates									
Toluene-d8 (S)	99	%	73-124		1		03/31/15 13:06	2037-26-5	
4-Bromofluorobenzene (S)	103	%	71-124		1		03/31/15 13:06	460-00-4	
1,2-Dichloroethane-d4 (S)	113	%	83-138		1		03/31/15 13:06	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**20.2**	%	0.10	0.10	1		04/03/15 10:27		

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ANALYTICAL RESULTS

Project: Marcus Hook AOI-4
Pace Project No.: 30143544

Sample: AOI4_BH-15-47_0-2_03202015 **Lab ID: 30143544013** Collected: 03/20/15 08:00 Received: 03/21/15 09:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010B Preparation Method: EPA 3050B								
Cobalt	**4.1**	mg/kg	0.88	0.065	1	03/24/15 12:34	03/25/15 16:29	7440-48-4	
Lead	**11.8**	mg/kg	0.44	0.43	1	03/24/15 12:34	03/25/15 16:29	7439-92-1	
Nickel	**9.5**	mg/kg	1.8	0.22	1	03/24/15 12:34	03/25/15 16:29	7440-02-0	
Vanadium	**32.3**	mg/kg	0.88	0.072	1	03/24/15 12:34	03/25/15 16:29	7440-62-2	
Zinc	**29.4**	mg/kg	0.88	0.39	1	03/24/15 12:34	03/25/15 16:29	7440-66-6	
8270 MSSV PAH by SIM	Analytical Method: EPA 8270C by SIM Preparation Method: EPA 3546								
Acenaphthene	**0.011J**	mg/kg	0.017	0.0015	2	03/31/15 16:45	04/03/15 16:58	83-32-9	
Anthracene	**0.017**	mg/kg	0.017	0.0016	2	03/31/15 16:45	04/03/15 16:58	120-12-7	
Benzo(a)anthracene	**0.017 U**	mg/kg	0.017	0.0042	2	03/31/15 16:45	04/03/15 16:58	56-55-3	
Benzo(a)pyrene	**0.0021J**	mg/kg	0.017	0.0016	2	03/31/15 16:45	04/03/15 16:58	50-32-8	
Benzo(b)fluoranthene	**0.0046J**	mg/kg	0.017	0.0015	2	03/31/15 16:45	04/03/15 16:58	205-99-2	
Benzo(g,h,i)perylene	**0.0063J**	mg/kg	0.017	0.0026	2	03/31/15 16:45	04/03/15 16:58	191-24-2	
Benzo(k)fluoranthene	**0.0039J**	mg/kg	0.017	0.0016	2	03/31/15 16:45	04/03/15 16:58	207-08-9	
Chrysene	**0.023**	mg/kg	0.017	0.0011	2	03/31/15 16:45	04/03/15 16:58	218-01-9	
Dibenz(a,h)anthracene	**0.017 U**	mg/kg	0.017	0.0022	2	03/31/15 16:45	04/03/15 16:58	53-70-3	
Fluoranthene	**0.0037J**	mg/kg	0.017	0.0011	2	03/31/15 16:45	04/03/15 16:58	206-44-0	
Fluorene	**0.0080J**	mg/kg	0.017	0.0014	2	03/31/15 16:45	04/03/15 16:58	86-73-7	
Indeno(1,2,3-cd)pyrene	**0.017 U**	mg/kg	0.017	0.0020	2	03/31/15 16:45	04/03/15 16:58	193-39-5	
Naphthalene	**0.011J**	mg/kg	0.017	0.0023	2	03/31/15 16:45	04/03/15 16:58	91-20-3	
Phenanthrene	**0.024**	mg/kg	0.017	0.0017	2	03/31/15 16:45	04/03/15 16:58	85-01-8	
Pyrene	**0.025**	mg/kg	0.017	0.0013	2	03/31/15 16:45	04/03/15 16:58	129-00-0	
Quinoline	**0.017 U**	mg/kg	0.017	0.0041	2	03/31/15 16:45	04/03/15 16:58	91-22-5	
Surrogates									
2-Fluorobiphenyl (S)	76	%	35-141		2	03/31/15 16:45	04/03/15 16:58	321-60-8	
Terphenyl-d14 (S)	87	%	64-141		2	03/31/15 16:45	04/03/15 16:58	1718-51-0	
8270 MSSV FULL LIST MICROWAVE	Analytical Method: EPA 8270C Preparation Method: EPA 3546								
Biphenyl (Diphenyl)	**0.41 U**	mg/kg	0.41	0.013	1	03/31/15 15:45	04/01/15 14:34	92-52-4	
Diethylphthalate	**0.41 U**	mg/kg	0.41	0.014	1	03/31/15 15:45	04/01/15 14:34	84-66-2	
2,4-Dimethylphenol	**0.41 U**	mg/kg	0.41	0.073	1	03/31/15 15:45	04/01/15 14:34	105-67-9	
Di-n-butylphthalate	**0.41 U**	mg/kg	0.41	0.014	1	03/31/15 15:45	04/01/15 14:34	84-74-2	
2,4-Dinitrophenol	**1.0 U**	mg/kg	1.0	0.11	1	03/31/15 15:45	04/01/15 14:34	51-28-5	
bis(2-Ethylhexyl)phthalate	**0.41 U**	mg/kg	0.41	0.013	1	03/31/15 15:45	04/01/15 14:34	117-81-7	
2-Methylnaphthalene	**0.41 U**	mg/kg	0.41	0.0099	1	03/31/15 15:45	04/01/15 14:34	91-57-6	
2-Methylphenol(o-Cresol)	**0.41 U**	mg/kg	0.41	0.24	1	03/31/15 15:45	04/01/15 14:34	95-48-7	
3&4-Methylphenol(m&p Cresol)	**0.83 U**	mg/kg	0.83	0.35	1	03/31/15 15:45	04/01/15 14:34		
4-Nitrophenol	**0.41 U**	mg/kg	0.41	0.23	1	03/31/15 15:45	04/01/15 14:34	100-02-7	
Phenol	**0.41 U**	mg/kg	0.41	0.13	1	03/31/15 15:45	04/01/15 14:34	108-95-2	
Pyridine	**1.0 U**	mg/kg	1.0	0.12	1	03/31/15 15:45	04/01/15 14:34	110-86-1	
Surrogates									
Nitrobenzene-d5 (S)	88	%	40-117		1	03/31/15 15:45	04/01/15 14:34	4165-60-0	
2-Fluorobiphenyl (S)	88	%	50-112		1	03/31/15 15:45	04/01/15 14:34	321-60-8	
Terphenyl-d14 (S)	97	%	52-130		1	03/31/15 15:45	04/01/15 14:34	1718-51-0	

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ANALYTICAL RESULTS

Project: Marcus Hook AOI-4
Pace Project No.: 30143544

Sample: AOI4_BH-15-47_0-2_03202015 **Lab ID: 30143544013** Collected: 03/20/15 08:00 Received: 03/21/15 09:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV FULL LIST MICROWAVE	Analytical Method: EPA 8270C Preparation Method: EPA 3546								
Surrogates									
Phenol-d6 (S)	97	%	53-115		1	03/31/15 15:45	04/01/15 14:34	13127-88-3	
2-Fluorophenol (S)	93	%	38-124		1	03/31/15 15:45	04/01/15 14:34	367-12-4	
2,4,6-Tribromophenol (S)	98	%	21-133		1	03/31/15 15:45	04/01/15 14:34	118-79-6	
8260 MSV 5030 Low Level	Analytical Method: EPA 8260B								
Benzene	**0.0054 U**	mg/kg	0.0054	0.00085	1		03/31/15 13:33	71-43-2	
sec-Butylbenzene	**0.0054 U**	mg/kg	0.0054	0.0016	1		03/31/15 13:33	135-98-8	
tert-Butylbenzene	**0.0054 U**	mg/kg	0.0054	0.0021	1		03/31/15 13:33	98-06-6	
Cyclohexane	**0.011 U**	mg/kg	0.011	0.0014	1		03/31/15 13:33	110-82-7	
1,2-Dibromoethane (EDB)	ND	mg/kg	0.0033	0.0028	1		03/31/15 13:33	106-93-4	
1,2-Dichloroethane	**0.0054 U**	mg/kg	0.0054	0.00099	1		03/31/15 13:33	107-06-2	
Ethylbenzene	**0.0054 U**	mg/kg	0.0054	0.0028	1		03/31/15 13:33	100-41-4	
Hexane	**0.011 U**	mg/kg	0.011	0.011	1		03/31/15 13:33		
Isopropylbenzene (Cumene)	**0.0054 U**	mg/kg	0.0054	0.0011	1		03/31/15 13:33	98-82-8	
Methyl-tert-butyl ether	**0.020**	mg/kg	0.0054	0.00077	1		03/31/15 13:33	1634-04-4	
Toluene	**0.0054 U**	mg/kg	0.0054	0.00070	1		03/31/15 13:33	108-88-3	
1,2,4-Trimethylbenzene	**0.0054 U**	mg/kg	0.0054	0.0013	1		03/31/15 13:33	95-63-6	
1,3,5-Trimethylbenzene	**0.0054 U**	mg/kg	0.0054	0.0015	1		03/31/15 13:33	108-67-8	
Xylene (Total)	**0.016 U**	mg/kg	0.016	0.0033	1		03/31/15 13:33	1330-20-7	
Surrogates									
Toluene-d8 (S)	97	%	73-124		1		03/31/15 13:33	2037-26-5	
4-Bromofluorobenzene (S)	99	%	71-124		1		03/31/15 13:33	460-00-4	
1,2-Dichloroethane-d4 (S)	110	%	83-138		1		03/31/15 13:33	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**20.1**	%	0.10	0.10	1		04/03/15 10:27		

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ANALYTICAL RESULTS

Project: Marcus Hook AOI-4
Pace Project No.: 30143544

Sample: AOI4_BH-15-47_4-6_03202015 **Lab ID: 30143544014** Collected: 03/20/15 08:15 Received: 03/21/15 09:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010B Preparation Method: EPA 3050B								
Cobalt	**6.5**	mg/kg	0.96	0.071	1	03/24/15 12:34	03/25/15 16:31	7440-48-4	
Lead	**8.5**	mg/kg	0.48	0.46	1	03/24/15 12:34	03/25/15 16:31	7439-92-1	
Nickel	**13.2**	mg/kg	1.9	0.24	1	03/24/15 12:34	03/25/15 16:31	7440-02-0	
Vanadium	**33.9**	mg/kg	0.96	0.079	1	03/24/15 12:34	03/25/15 16:31	7440-62-2	
Zinc	**32.2**	mg/kg	0.96	0.42	1	03/24/15 12:34	03/25/15 16:31	7440-66-6	
8270 MSSV PAH by SIM	Analytical Method: EPA 8270C by SIM Preparation Method: EPA 3546								
Acenaphthene	**0.0080 U**	mg/kg	0.0080	0.00071	1	03/31/15 16:45	04/03/15 14:06	83-32-9	
Anthracene	**0.0080 U**	mg/kg	0.0080	0.00078	1	03/31/15 16:45	04/03/15 14:06	120-12-7	
Benzo(a)anthracene	**0.0080 U**	mg/kg	0.0080	0.0021	1	03/31/15 16:45	04/03/15 14:06	56-55-3	
Benzo(a)pyrene	**0.0080 U**	mg/kg	0.0080	0.00077	1	03/31/15 16:45	04/03/15 14:06	50-32-8	
Benzo(b)fluoranthene	**0.0080 U**	mg/kg	0.0080	0.00071	1	03/31/15 16:45	04/03/15 14:06	205-99-2	
Benzo(g,h,i)perylene	**0.0080 U**	mg/kg	0.0080	0.0012	1	03/31/15 16:45	04/03/15 14:06	191-24-2	
Benzo(k)fluoranthene	**0.0080 U**	mg/kg	0.0080	0.00076	1	03/31/15 16:45	04/03/15 14:06	207-08-9	
Chrysene	**0.0080 U**	mg/kg	0.0080	0.00053	1	03/31/15 16:45	04/03/15 14:06	218-01-9	
Dibenz(a,h)anthracene	**0.0080 U**	mg/kg	0.0080	0.0011	1	03/31/15 16:45	04/03/15 14:06	53-70-3	
Fluoranthene	**0.0080 U**	mg/kg	0.0080	0.00053	1	03/31/15 16:45	04/03/15 14:06	206-44-0	
Fluorene	**0.0080 U**	mg/kg	0.0080	0.00070	1	03/31/15 16:45	04/03/15 14:06	86-73-7	
Indeno(1,2,3-cd)pyrene	**0.0080 U**	mg/kg	0.0080	0.00095	1	03/31/15 16:45	04/03/15 14:06	193-39-5	
Naphthalene	**0.0080 U**	mg/kg	0.0080	0.0011	1	03/31/15 16:45	04/03/15 14:06	91-20-3	
Phenanthrene	**0.0080 U**	mg/kg	0.0080	0.00080	1	03/31/15 16:45	04/03/15 14:06	85-01-8	
Pyrene	**0.0059J**	mg/kg	0.0080	0.00065	1	03/31/15 16:45	04/03/15 14:06	129-00-0	
Quinoline	**0.0080 U**	mg/kg	0.0080	0.0020	1	03/31/15 16:45	04/03/15 14:06	91-22-5	
Surrogates									
2-Fluorobiphenyl (S)	86	%	35-141		1	03/31/15 16:45	04/03/15 14:06	321-60-8	
Terphenyl-d14 (S)	86	%	64-141		1	03/31/15 16:45	04/03/15 14:06	1718-51-0	
8270 MSSV FULL LIST MICROWAVE	Analytical Method: EPA 8270C Preparation Method: EPA 3546								
Biphenyl (Diphenyl)	**0.40 U**	mg/kg	0.40	0.013	1	03/31/15 15:45	04/01/15 14:54	92-52-4	
Diethylphthalate	**0.40 U**	mg/kg	0.40	0.013	1	03/31/15 15:45	04/01/15 14:54	84-66-2	
2,4-Dimethylphenol	**0.40 U**	mg/kg	0.40	0.071	1	03/31/15 15:45	04/01/15 14:54	105-67-9	
Di-n-butylphthalate	**0.40 U**	mg/kg	0.40	0.013	1	03/31/15 15:45	04/01/15 14:54	84-74-2	
2,4-Dinitrophenol	**1.0 U**	mg/kg	1.0	0.11	1	03/31/15 15:45	04/01/15 14:54	51-28-5	
bis(2-Ethylhexyl)phthalate	**0.40 U**	mg/kg	0.40	0.012	1	03/31/15 15:45	04/01/15 14:54	117-81-7	
2-Methylnaphthalene	**0.40 U**	mg/kg	0.40	0.0096	1	03/31/15 15:45	04/01/15 14:54	91-57-6	
2-Methylphenol(o-Cresol)	**0.40 U**	mg/kg	0.40	0.24	1	03/31/15 15:45	04/01/15 14:54	95-48-7	
3&4-Methylphenol(m&p Cresol)	**0.80 U**	mg/kg	0.80	0.34	1	03/31/15 15:45	04/01/15 14:54		
4-Nitrophenol	**0.40 U**	mg/kg	0.40	0.23	1	03/31/15 15:45	04/01/15 14:54	100-02-7	
Phenol	**0.40 U**	mg/kg	0.40	0.12	1	03/31/15 15:45	04/01/15 14:54	108-95-2	
Pyridine	**1.0 U**	mg/kg	1.0	0.12	1	03/31/15 15:45	04/01/15 14:54	110-86-1	
Surrogates									
Nitrobenzene-d5 (S)	90	%	40-117		1	03/31/15 15:45	04/01/15 14:54	4165-60-0	
2-Fluorobiphenyl (S)	87	%	50-112		1	03/31/15 15:45	04/01/15 14:54	321-60-8	
Terphenyl-d14 (S)	100	%	52-130		1	03/31/15 15:45	04/01/15 14:54	1718-51-0	

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ANALYTICAL RESULTS

Project: Marcus Hook AOI-4
Pace Project No.: 30143544

Sample: AOI4_BH-15-47_4-6_03202015 **Lab ID: 30143544014** Collected: 03/20/15 08:15 Received: 03/21/15 09:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV FULL LIST MICROWAVE	Analytical Method: EPA 8270C Preparation Method: EPA 3546								
Surrogates									
Phenol-d6 (S)	100	%	53-115		1	03/31/15 15:45	04/01/15 14:54	13127-88-3	
2-Fluorophenol (S)	96	%	38-124		1	03/31/15 15:45	04/01/15 14:54	367-12-4	
2,4,6-Tribromophenol (S)	94	%	21-133		1	03/31/15 15:45	04/01/15 14:54	118-79-6	
8260 MSV 5030 Low Level	Analytical Method: EPA 8260B								
Benzene	**0.0048 U**	mg/kg	0.0048	0.00075	1		03/31/15 13:59	71-43-2	
sec-Butylbenzene	**0.0048 U**	mg/kg	0.0048	0.0014	1		03/31/15 13:59	135-98-8	
tert-Butylbenzene	**0.0048 U**	mg/kg	0.0048	0.0019	1		03/31/15 13:59	98-06-6	
Cyclohexane	**0.0096 U**	mg/kg	0.0096	0.0012	1		03/31/15 13:59	110-82-7	
1,2-Dibromoethane (EDB)	ND	mg/kg	0.0029	0.0025	1		03/31/15 13:59	106-93-4	
1,2-Dichloroethane	**0.0048 U**	mg/kg	0.0048	0.00087	1		03/31/15 13:59	107-06-2	
Ethylbenzene	**0.0048 U**	mg/kg	0.0048	0.0025	1		03/31/15 13:59	100-41-4	
Hexane	**0.0096 U**	mg/kg	0.0096	0.0096	1		03/31/15 13:59		
Isopropylbenzene (Cumene)	**0.0048 U**	mg/kg	0.0048	0.0010	1		03/31/15 13:59	98-82-8	
Methyl-tert-butyl ether	**0.0071**	mg/kg	0.0048	0.00068	1		03/31/15 13:59	1634-04-4	
Toluene	**0.0048 U**	mg/kg	0.0048	0.00062	1		03/31/15 13:59	108-88-3	
1,2,4-Trimethylbenzene	**0.0048 U**	mg/kg	0.0048	0.0011	1		03/31/15 13:59	95-63-6	
1,3,5-Trimethylbenzene	**0.0048 U**	mg/kg	0.0048	0.0013	1		03/31/15 13:59	108-67-8	
Xylene (Total)	**0.014 U**	mg/kg	0.014	0.0029	1		03/31/15 13:59	1330-20-7	
Surrogates									
Toluene-d8 (S)	95	%	73-124		1		03/31/15 13:59	2037-26-5	
4-Bromofluorobenzene (S)	97	%	71-124		1		03/31/15 13:59	460-00-4	
1,2-Dichloroethane-d4 (S)	101	%	83-138		1		03/31/15 13:59	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**18.7**	%	0.10	0.10	1		04/03/15 10:41		

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ANALYTICAL RESULTS

Project: Marcus Hook AOI-4
Pace Project No.: 30143544

Sample: AOI4_BH-15-48_0-2_03202015 **Lab ID: 30143544015** Collected: 03/20/15 08:45 Received: 03/21/15 09:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010B Preparation Method: EPA 3050B								
Cobalt	**3.9**	mg/kg	0.79	0.058	1	03/24/15 12:34	03/25/15 16:33	7440-48-4	
Lead	**10.8**	mg/kg	0.40	0.38	1	03/24/15 12:34	03/25/15 16:33	7439-92-1	
Nickel	**10.3**	mg/kg	1.6	0.20	1	03/24/15 12:34	03/25/15 16:33	7440-02-0	
Vanadium	**27.8**	mg/kg	0.79	0.065	1	03/24/15 12:34	03/25/15 16:33	7440-62-2	
Zinc	**34.9**	mg/kg	0.79	0.35	1	03/24/15 12:34	03/25/15 16:33	7440-66-6	
8270 MSSV PAH by SIM	Analytical Method: EPA 8270C by SIM Preparation Method: EPA 3546								
Acenaphthene	**0.015**	mg/kg	0.0077	0.00067	1	03/31/15 16:45	04/03/15 14:23	83-32-9	
Anthracene	**0.0077 U**	mg/kg	0.0077	0.00074	1	03/31/15 16:45	04/03/15 14:23	120-12-7	
Benzo(a)anthracene	**0.0077 U**	mg/kg	0.0077	0.0020	1	03/31/15 16:45	04/03/15 14:23	56-55-3	
Benzo(a)pyrene	**0.0077 U**	mg/kg	0.0077	0.00073	1	03/31/15 16:45	04/03/15 14:23	50-32-8	
Benzo(b)fluoranthene	**0.0077 U**	mg/kg	0.0077	0.00067	1	03/31/15 16:45	04/03/15 14:23	205-99-2	
Benzo(g,h,i)perylene	**0.0077 U**	mg/kg	0.0077	0.0012	1	03/31/15 16:45	04/03/15 14:23	191-24-2	
Benzo(k)fluoranthene	**0.0077 U**	mg/kg	0.0077	0.00072	1	03/31/15 16:45	04/03/15 14:23	207-08-9	
Chrysene	**0.0077 U**	mg/kg	0.0077	0.00050	1	03/31/15 16:45	04/03/15 14:23	218-01-9	
Dibenz(a,h)anthracene	**0.0077 U**	mg/kg	0.0077	0.0010	1	03/31/15 16:45	04/03/15 14:23	53-70-3	
Fluoranthene	**0.00071J**	mg/kg	0.0077	0.00050	1	03/31/15 16:45	04/03/15 14:23	206-44-0	
Fluorene	**0.013**	mg/kg	0.0077	0.00066	1	03/31/15 16:45	04/03/15 14:23	86-73-7	
Indeno(1,2,3-cd)pyrene	**0.0077 U**	mg/kg	0.0077	0.00090	1	03/31/15 16:45	04/03/15 14:23	193-39-5	
Naphthalene	**0.081**	mg/kg	0.0077	0.0011	1	03/31/15 16:45	04/03/15 14:23	91-20-3	
Phenanthrene	**0.0071J**	mg/kg	0.0077	0.00077	1	03/31/15 16:45	04/03/15 14:23	85-01-8	
Pyrene	**0.00065J**	mg/kg	0.0077	0.00062	1	03/31/15 16:45	04/03/15 14:23	129-00-0	
Quinoline	**0.0077 U**	mg/kg	0.0077	0.0019	1	03/31/15 16:45	04/03/15 14:23	91-22-5	
Surrogates									
2-Fluorobiphenyl (S)	109	%	35-141		1	03/31/15 16:45	04/03/15 14:23	321-60-8	
Terphenyl-d14 (S)	97	%	64-141		1	03/31/15 16:45	04/03/15 14:23	1718-51-0	
8270 MSSV FULL LIST MICROWAVE	Analytical Method: EPA 8270C Preparation Method: EPA 3546								
Biphenyl (Diphenyl)	**0.39 U**	mg/kg	0.39	0.012	1	03/31/15 15:45	04/01/15 15:14	92-52-4	
Diethylphthalate	**0.39 U**	mg/kg	0.39	0.013	1	03/31/15 15:45	04/01/15 15:14	84-66-2	
2,4-Dimethylphenol	**0.39 U**	mg/kg	0.39	0.068	1	03/31/15 15:45	04/01/15 15:14	105-67-9	
Di-n-butylphthalate	**0.39 U**	mg/kg	0.39	0.013	1	03/31/15 15:45	04/01/15 15:14	84-74-2	
2,4-Dinitrophenol	**0.97 U**	mg/kg	0.97	0.11	1	03/31/15 15:45	04/01/15 15:14	51-28-5	
bis(2-Ethylhexyl)phthalate	**0.39 U**	mg/kg	0.39	0.012	1	03/31/15 15:45	04/01/15 15:14	117-81-7	
2-Methylnaphthalene	**0.39 U**	mg/kg	0.39	0.0093	1	03/31/15 15:45	04/01/15 15:14	91-57-6	
2-Methylphenol(o-Cresol)	**0.39 U**	mg/kg	0.39	0.23	1	03/31/15 15:45	04/01/15 15:14	95-48-7	
3&4-Methylphenol(m&p Cresol)	**0.77 U**	mg/kg	0.77	0.32	1	03/31/15 15:45	04/01/15 15:14		
4-Nitrophenol	**0.39 U**	mg/kg	0.39	0.22	1	03/31/15 15:45	04/01/15 15:14	100-02-7	
Phenol	**0.39 U**	mg/kg	0.39	0.12	1	03/31/15 15:45	04/01/15 15:14	108-95-2	
Pyridine	**0.97 U**	mg/kg	0.97	0.11	1	03/31/15 15:45	04/01/15 15:14	110-86-1	
Surrogates									
Nitrobenzene-d5 (S)	91	%	40-117		1	03/31/15 15:45	04/01/15 15:14	4165-60-0	
2-Fluorobiphenyl (S)	90	%	50-112		1	03/31/15 15:45	04/01/15 15:14	321-60-8	
Terphenyl-d14 (S)	99	%	52-130		1	03/31/15 15:45	04/01/15 15:14	1718-51-0	

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ANALYTICAL RESULTS

Project: Marcus Hook AOI-4
Pace Project No.: 30143544

Sample: AOI4_BH-15-48_0-2_03202015 **Lab ID: 30143544015** Collected: 03/20/15 08:45 Received: 03/21/15 09:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV FULL LIST MICROWAVE	Analytical Method: EPA 8270C Preparation Method: EPA 3546								
Surrogates									
Phenol-d6 (S)	100	%	53-115		1	03/31/15 15:45	04/01/15 15:14	13127-88-3	
2-Fluorophenol (S)	96	%	38-124		1	03/31/15 15:45	04/01/15 15:14	367-12-4	
2,4,6-Tribromophenol (S)	99	%	21-133		1	03/31/15 15:45	04/01/15 15:14	118-79-6	
8260 MSV 5030 Low Level	Analytical Method: EPA 8260B								
Benzene	**0.11**	mg/kg	0.0054	0.00084	1		03/31/15 14:26	71-43-2	
sec-Butylbenzene	**0.0054 U**	mg/kg	0.0054	0.0016	1		03/31/15 14:26	135-98-8	
tert-Butylbenzene	**0.0054 U**	mg/kg	0.0054	0.0021	1		03/31/15 14:26	98-06-6	
Cyclohexane	**0.14**	mg/kg	0.011	0.0013	1		03/31/15 14:26	110-82-7	
1,2-Dibromoethane (EDB)	ND	mg/kg	0.0032	0.0028	1		03/31/15 14:26	106-93-4	
1,2-Dichloroethane	**0.0054 U**	mg/kg	0.0054	0.00098	1		03/31/15 14:26	107-06-2	
Ethylbenzene	**0.067**	mg/kg	0.0054	0.0028	1		03/31/15 14:26	100-41-4	
Hexane	**0.15**	mg/kg	0.011	0.011	1		03/31/15 14:26		
Isopropylbenzene (Cumene)	**0.015**	mg/kg	0.0054	0.0011	1		03/31/15 14:26	98-82-8	
Methyl-tert-butyl ether	**0.0054 U**	mg/kg	0.0054	0.00076	1		03/31/15 14:26	1634-04-4	
Toluene	**0.0028J**	mg/kg	0.0054	0.00069	1		03/31/15 14:26	108-88-3	
1,2,4-Trimethylbenzene	**0.40**	mg/kg	0.0054	0.0012	1		03/31/15 14:26	95-63-6	
1,3,5-Trimethylbenzene	**0.043**	mg/kg	0.0054	0.0014	1		03/31/15 14:26	108-67-8	
Xylene (Total)	**0.036**	mg/kg	0.016	0.0033	1		03/31/15 14:26	1330-20-7	
Surrogates									
Toluene-d8 (S)	99	%	73-124		1		03/31/15 14:26	2037-26-5	
4-Bromofluorobenzene (S)	92	%	71-124		1		03/31/15 14:26	460-00-4	
1,2-Dichloroethane-d4 (S)	127	%	83-138		1		03/31/15 14:26	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**14.7**	%	0.10	0.10	1		04/03/15 10:42		

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ANALYTICAL RESULTS

Project: Marcus Hook AOI-4
Pace Project No.: 30143544

Sample: AOI4_BH-15-48_6-8_03202015 **Lab ID: 30143544016** Collected: 03/20/15 09:00 Received: 03/21/15 09:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010B Preparation Method: EPA 3050B								
Cobalt	**5.7**	mg/kg	0.89	0.066	1	03/24/15 12:34	03/25/15 16:45	7440-48-4	
Lead	**8.6**	mg/kg	0.45	0.43	1	03/24/15 12:34	03/25/15 16:45	7439-92-1	
Nickel	**9.0**	mg/kg	1.8	0.23	1	03/24/15 12:34	03/25/15 16:45	7440-02-0	
Vanadium	**30.2**	mg/kg	0.89	0.073	1	03/24/15 12:34	03/25/15 16:45	7440-62-2	
Zinc	**19.8**	mg/kg	0.89	0.39	1	03/24/15 12:34	03/25/15 16:45	7440-66-6	
8270 MSSV PAH by SIM	Analytical Method: EPA 8270C by SIM Preparation Method: EPA 3546								
Acenaphthene	**0.0077 U**	mg/kg	0.0077	0.00068	1	03/31/15 16:45	04/03/15 14:40	83-32-9	
Anthracene	**0.0077 U**	mg/kg	0.0077	0.00074	1	03/31/15 16:45	04/03/15 14:40	120-12-7	
Benzo(a)anthracene	**0.0077 U**	mg/kg	0.0077	0.0020	1	03/31/15 16:45	04/03/15 14:40	56-55-3	
Benzo(a)pyrene	**0.0077 U**	mg/kg	0.0077	0.00073	1	03/31/15 16:45	04/03/15 14:40	50-32-8	
Benzo(b)fluoranthene	**0.0077 U**	mg/kg	0.0077	0.00068	1	03/31/15 16:45	04/03/15 14:40	205-99-2	
Benzo(g,h,i)perylene	**0.0077 U**	mg/kg	0.0077	0.0012	1	03/31/15 16:45	04/03/15 14:40	191-24-2	
Benzo(k)fluoranthene	**0.0077 U**	mg/kg	0.0077	0.00072	1	03/31/15 16:45	04/03/15 14:40	207-08-9	
Chrysene	**0.0077 U**	mg/kg	0.0077	0.00050	1	03/31/15 16:45	04/03/15 14:40	218-01-9	
Dibenz(a,h)anthracene	**0.0077 U**	mg/kg	0.0077	0.0010	1	03/31/15 16:45	04/03/15 14:40	53-70-3	
Fluoranthene	**0.0077 U**	mg/kg	0.0077	0.00050	1	03/31/15 16:45	04/03/15 14:40	206-44-0	
Fluorene	**0.0016J**	mg/kg	0.0077	0.00066	1	03/31/15 16:45	04/03/15 14:40	86-73-7	
Indeno(1,2,3-cd)pyrene	**0.0077 U**	mg/kg	0.0077	0.00090	1	03/31/15 16:45	04/03/15 14:40	193-39-5	
Naphthalene	**2.3**	mg/kg	0.077	0.011	10	03/31/15 16:45	04/07/15 12:30	91-20-3	
Phenanthrene	**0.0077 U**	mg/kg	0.0077	0.00077	1	03/31/15 16:45	04/03/15 14:40	85-01-8	
Pyrene	**0.00095J**	mg/kg	0.0077	0.00062	1	03/31/15 16:45	04/03/15 14:40	129-00-0	
Quinoline	**0.057**	mg/kg	0.0077	0.0019	1	03/31/15 16:45	04/03/15 14:40	91-22-5	
Surrogates									
2-Fluorobiphenyl (S)	88	%	35-141		1	03/31/15 16:45	04/03/15 14:40	321-60-8	
Terphenyl-d14 (S)	97	%	64-141		1	03/31/15 16:45	04/03/15 14:40	1718-51-0	
8270 MSSV FULL LIST MICROWAVE	Analytical Method: EPA 8270C Preparation Method: EPA 3546								
Biphenyl (Diphenyl)	**0.38 U**	mg/kg	0.38	0.012	1	03/31/15 15:45	04/01/15 15:33	92-52-4	
Diethylphthalate	**0.38 U**	mg/kg	0.38	0.013	1	03/31/15 15:45	04/01/15 15:33	84-66-2	
2,4-Dimethylphenol	**0.22J**	mg/kg	0.38	0.068	1	03/31/15 15:45	04/01/15 15:33	105-67-9	
Di-n-butylphthalate	**0.38 U**	mg/kg	0.38	0.013	1	03/31/15 15:45	04/01/15 15:33	84-74-2	
2,4-Dinitrophenol	**0.95 U**	mg/kg	0.95	0.11	1	03/31/15 15:45	04/01/15 15:33	51-28-5	
bis(2-Ethylhexyl)phthalate	**0.38 U**	mg/kg	0.38	0.012	1	03/31/15 15:45	04/01/15 15:33	117-81-7	
2-Methylnaphthalene	**1.2**	mg/kg	0.38	0.0091	1	03/31/15 15:45	04/01/15 15:33	91-57-6	
2-Methylphenol(o-Cresol)	**0.74**	mg/kg	0.38	0.22	1	03/31/15 15:45	04/01/15 15:33	95-48-7	
3&4-Methylphenol(m&p Cresol)	**0.76 U**	mg/kg	0.76	0.32	1	03/31/15 15:45	04/01/15 15:33		
4-Nitrophenol	**0.38 U**	mg/kg	0.38	0.22	1	03/31/15 15:45	04/01/15 15:33	100-02-7	
Phenol	**0.72**	mg/kg	0.38	0.12	1	03/31/15 15:45	04/01/15 15:33	108-95-2	
Pyridine	**0.95 U**	mg/kg	0.95	0.11	1	03/31/15 15:45	04/01/15 15:33	110-86-1	
Surrogates									
Nitrobenzene-d5 (S)	92	%	40-117		1	03/31/15 15:45	04/01/15 15:33	4165-60-0	
2-Fluorobiphenyl (S)	90	%	50-112		1	03/31/15 15:45	04/01/15 15:33	321-60-8	
Terphenyl-d14 (S)	101	%	52-130		1	03/31/15 15:45	04/01/15 15:33	1718-51-0	

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ANALYTICAL RESULTS

Project: Marcus Hook AOI-4
Pace Project No.: 30143544

Sample: AOI4_BH-15-48_6-8_03202015 **Lab ID: 30143544016** Collected: 03/20/15 09:00 Received: 03/21/15 09:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV FULL LIST MICROWAVE	Analytical Method: EPA 8270C Preparation Method: EPA 3546								
Surrogates									
Phenol-d6 (S)	97	%	53-115		1	03/31/15 15:45	04/01/15 15:33	13127-88-3	
2-Fluorophenol (S)	92	%	38-124		1	03/31/15 15:45	04/01/15 15:33	367-12-4	
2,4,6-Tribromophenol (S)	101	%	21-133		1	03/31/15 15:45	04/01/15 15:33	118-79-6	
8260 MSV 5030 Low Level	Analytical Method: EPA 8260B								
Benzene	**0.77**	mg/kg	0.24	0.038	50		03/31/15 14:53	71-43-2	
sec-Butylbenzene	**0.24 U**	mg/kg	0.24	0.070	50		03/31/15 14:53	135-98-8	
tert-Butylbenzene	**0.24 U**	mg/kg	0.24	0.095	50		03/31/15 14:53	98-06-6	
Cyclohexane	**2.7**	mg/kg	0.48	0.060	50		03/31/15 14:53	110-82-7	
1,2-Dibromoethane (EDB)	ND	mg/kg	0.14	0.13	50		03/31/15 14:53	106-93-4	
1,2-Dichloroethane	**0.24 U**	mg/kg	0.24	0.044	50		03/31/15 14:53	107-06-2	
Ethylbenzene	**6.9**	mg/kg	0.24	0.12	50		03/31/15 14:53	100-41-4	
Hexane	**2.4**	mg/kg	0.48	0.48	50		03/31/15 14:53		
Isopropylbenzene (Cumene)	**0.27**	mg/kg	0.24	0.051	50		03/31/15 14:53	98-82-8	
Methyl-tert-butyl ether	**0.24 U**	mg/kg	0.24	0.034	50		03/31/15 14:53	1634-04-4	
Toluene	**0.85**	mg/kg	0.24	0.031	50		03/31/15 14:53	108-88-3	
1,2,4-Trimethylbenzene	**21.3**	mg/kg	2.4	0.56	500		04/01/15 19:41	95-63-6	
1,3,5-Trimethylbenzene	**9.6**	mg/kg	0.24	0.065	50		03/31/15 14:53	108-67-8	
Xylene (Total)	**27.2**	mg/kg	0.72	0.15	50		03/31/15 14:53	1330-20-7	
Surrogates									
Toluene-d8 (S)	100	%	73-124		50		03/31/15 14:53	2037-26-5	
4-Bromofluorobenzene (S)	101	%	71-124		50		03/31/15 14:53	460-00-4	
1,2-Dichloroethane-d4 (S)	97	%	83-138		50		03/31/15 14:53	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**14.0**	%	0.10	0.10	1		04/03/15 10:42		

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ANALYTICAL RESULTS

Project: Marcus Hook AOI-4
Pace Project No.: 30143544

Sample: AOI4_MW-505_0-2_03202015 **Lab ID: 30143544017** Collected: 03/20/15 09:30 Received: 03/21/15 09:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010B Preparation Method: EPA 3050B								
Cobalt	**7.1**	mg/kg	0.74	0.054	1	03/24/15 12:34	03/25/15 16:48	7440-48-4	
Lead	**70.8**	mg/kg	0.37	0.36	1	03/24/15 12:34	03/25/15 16:48	7439-92-1	
Nickel	**11.2**	mg/kg	1.5	0.19	1	03/24/15 12:34	03/25/15 16:48	7440-02-0	
Vanadium	**34.3**	mg/kg	0.74	0.061	1	03/24/15 12:34	03/25/15 16:48	7440-62-2	
Zinc	**58.8**	mg/kg	0.74	0.32	1	03/24/15 12:34	03/25/15 16:48	7440-66-6	
8270 MSSV PAH by SIM	Analytical Method: EPA 8270C by SIM Preparation Method: EPA 3546								
Acenaphthene	**0.48**	mg/kg	0.040	0.0035	5	03/31/15 16:45	04/03/15 17:50	83-32-9	
Anthracene	**0.33**	mg/kg	0.040	0.0039	5	03/31/15 16:45	04/03/15 17:50	120-12-7	
Benzo(a)anthracene	**0.53**	mg/kg	0.040	0.010	5	03/31/15 16:45	04/03/15 17:50	56-55-3	
Benzo(a)pyrene	**0.81**	mg/kg	0.040	0.0038	5	03/31/15 16:45	04/03/15 17:50	50-32-8	
Benzo(b)fluoranthene	**0.42**	mg/kg	0.040	0.0035	5	03/31/15 16:45	04/03/15 17:50	205-99-2	
Benzo(g,h,i)perylene	**0.54**	mg/kg	0.040	0.0061	5	03/31/15 16:45	04/03/15 17:50	191-24-2	
Benzo(k)fluoranthene	**0.12**	mg/kg	0.040	0.0038	5	03/31/15 16:45	04/03/15 17:50	207-08-9	
Chrysene	**0.93**	mg/kg	0.040	0.0026	5	03/31/15 16:45	04/03/15 17:50	218-01-9	
Dibenz(a,h)anthracene	**0.083**	mg/kg	0.040	0.0052	5	03/31/15 16:45	04/03/15 17:50	53-70-3	
Fluoranthene	**0.26**	mg/kg	0.040	0.0026	5	03/31/15 16:45	04/03/15 17:50	206-44-0	
Fluorene	**0.59**	mg/kg	0.040	0.0035	5	03/31/15 16:45	04/03/15 17:50	86-73-7	
Indeno(1,2,3-cd)pyrene	**0.040 U**	mg/kg	0.040	0.0047	5	03/31/15 16:45	04/03/15 17:50	193-39-5	
Naphthalene	**0.22**	mg/kg	0.040	0.0056	5	03/31/15 16:45	04/03/15 17:50	91-20-3	
Phenanthrene	**2.6**	mg/kg	0.040	0.0040	5	03/31/15 16:45	04/03/15 17:50	85-01-8	
Pyrene	**2.0**	mg/kg	0.040	0.0032	5	03/31/15 16:45	04/03/15 17:50	129-00-0	
Quinoline	**0.022J**	mg/kg	0.040	0.0098	5	03/31/15 16:45	04/03/15 17:50	91-22-5	
Surrogates									
2-Fluorobiphenyl (S)	88	%	35-141		5	03/31/15 16:45	04/03/15 17:50	321-60-8	
Terphenyl-d14 (S)	84	%	64-141		5	03/31/15 16:45	04/03/15 17:50	1718-51-0	
8270 MSSV FULL LIST MICROWAVE	Analytical Method: EPA 8270C Preparation Method: EPA 3546								
Biphenyl (Diphenyl)	**0.21J**	mg/kg	0.39	0.013	1	03/31/15 15:45	04/01/15 15:53	92-52-4	
Diethylphthalate	**0.39 U**	mg/kg	0.39	0.013	1	03/31/15 15:45	04/01/15 15:53	84-66-2	
2,4-Dimethylphenol	**0.13J**	mg/kg	0.39	0.070	1	03/31/15 15:45	04/01/15 15:53	105-67-9	
Di-n-butylphthalate	**0.39 U**	mg/kg	0.39	0.013	1	03/31/15 15:45	04/01/15 15:53	84-74-2	
2,4-Dinitrophenol	**0.99 U**	mg/kg	0.99	0.11	1	03/31/15 15:45	04/01/15 15:53	51-28-5	
bis(2-Ethylhexyl)phthalate	**0.39 U**	mg/kg	0.39	0.012	1	03/31/15 15:45	04/01/15 15:53	117-81-7	
2-Methylnaphthalene	**1.4**	mg/kg	0.39	0.0095	1	03/31/15 15:45	04/01/15 15:53	91-57-6	
2-Methylphenol(o-Cresol)	**0.39 U**	mg/kg	0.39	0.23	1	03/31/15 15:45	04/01/15 15:53	95-48-7	
3&4-Methylphenol(m&p Cresol)	**0.79 U**	mg/kg	0.79	0.33	1	03/31/15 15:45	04/01/15 15:53		
4-Nitrophenol	**0.39 U**	mg/kg	0.39	0.22	1	03/31/15 15:45	04/01/15 15:53	100-02-7	
Phenol	**0.39 U**	mg/kg	0.39	0.12	1	03/31/15 15:45	04/01/15 15:53	108-95-2	
Pyridine	**0.99 U**	mg/kg	0.99	0.12	1	03/31/15 15:45	04/01/15 15:53	110-86-1	
Surrogates									
Nitrobenzene-d5 (S)	104	%	40-117		1	03/31/15 15:45	04/01/15 15:53	4165-60-0	
2-Fluorobiphenyl (S)	95	%	50-112		1	03/31/15 15:45	04/01/15 15:53	321-60-8	
Terphenyl-d14 (S)	130	%	52-130		1	03/31/15 15:45	04/01/15 15:53	1718-51-0	

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ANALYTICAL RESULTS

Project: Marcus Hook AOI-4
Pace Project No.: 30143544

Sample: AOI4_MW-505_0-2_03202015 **Lab ID: 30143544017** Collected: 03/20/15 09:30 Received: 03/21/15 09:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV FULL LIST MICROWAVE	Analytical Method: EPA 8270C Preparation Method: EPA 3546								
Surrogates									
Phenol-d6 (S)	102	%	53-115		1	03/31/15 15:45	04/01/15 15:53	13127-88-3	
2-Fluorophenol (S)	92	%	38-124		1	03/31/15 15:45	04/01/15 15:53	367-12-4	
2,4,6-Tribromophenol (S)	104	%	21-133		1	03/31/15 15:45	04/01/15 15:53	118-79-6	
8260 MSV 5030 Low Level	Analytical Method: EPA 8260B								
Benzene	**0.32 U**	mg/kg	0.32	0.050	50		03/31/15 15:36	71-43-2	
sec-Butylbenzene	**0.32 U**	mg/kg	0.32	0.093	50		03/31/15 15:36	135-98-8	
tert-Butylbenzene	**0.32 U**	mg/kg	0.32	0.13	50		03/31/15 15:36	98-06-6	
Cyclohexane	**0.64 U**	mg/kg	0.64	0.080	50		03/31/15 15:36	110-82-7	
1,2-Dibromoethane (EDB)	ND	mg/kg	0.19	0.17	50		03/31/15 15:36	106-93-4	
1,2-Dichloroethane	**0.32 U**	mg/kg	0.32	0.058	50		03/31/15 15:36	107-06-2	
Ethylbenzene	**0.32 U**	mg/kg	0.32	0.16	50		03/31/15 15:36	100-41-4	
Hexane	**0.64 U**	mg/kg	0.64	0.64	50		03/31/15 15:36		
Isopropylbenzene (Cumene)	**0.32 U**	mg/kg	0.32	0.068	50		03/31/15 15:36	98-82-8	
Methyl-tert-butyl ether	**0.32 U**	mg/kg	0.32	0.045	50		03/31/15 15:36	1634-04-4	
Toluene	**0.32 U**	mg/kg	0.32	0.041	50		03/31/15 15:36	108-88-3	
1,2,4-Trimethylbenzene	**0.64**	mg/kg	0.32	0.074	50		03/31/15 15:36	95-63-6	
1,3,5-Trimethylbenzene	**0.21J**	mg/kg	0.32	0.086	50		03/31/15 15:36	108-67-8	
Xylene (Total)	**0.48J**	mg/kg	0.96	0.20	50		03/31/15 15:36	1330-20-7	
Surrogates									
Toluene-d8 (S)	99	%	73-124		50		03/31/15 15:36	2037-26-5	
4-Bromofluorobenzene (S)	101	%	71-124		50		03/31/15 15:36	460-00-4	
1,2-Dichloroethane-d4 (S)	103	%	83-138		50		03/31/15 15:36	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**16.5**	%	0.10	0.10	1		04/03/15 10:43		

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ANALYTICAL RESULTS

Project: Marcus Hook AOI-4
Pace Project No.: 30143544

Sample: AOI4_MW-505_6-8_03202015 **Lab ID: 30143544018** Collected: 03/20/15 09:45 Received: 03/21/15 09:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010B Preparation Method: EPA 3050B								
Cobalt	**11.3**	mg/kg	0.90	0.066	1	03/24/15 12:34	03/25/15 16:50	7440-48-4	
Lead	**10**	mg/kg	0.45	0.43	1	03/24/15 12:34	03/25/15 16:50	7439-92-1	
Nickel	**12.3**	mg/kg	1.8	0.23	1	03/24/15 12:34	03/25/15 16:50	7440-02-0	
Vanadium	**43.9**	mg/kg	0.90	0.074	1	03/24/15 12:34	03/25/15 16:50	7440-62-2	
Zinc	**35.7**	mg/kg	0.90	0.39	1	03/24/15 12:34	03/25/15 16:50	7440-66-6	
8270 MSSV PAH by SIM	Analytical Method: EPA 8270C by SIM Preparation Method: EPA 3546								
Acenaphthene	**0.54**	mg/kg	0.016	0.0014	2	03/31/15 16:45	04/03/15 17:32	83-32-9	
Anthracene	**0.27**	mg/kg	0.016	0.0015	2	03/31/15 16:45	04/03/15 17:32	120-12-7	
Benzo(a)anthracene	**0.32**	mg/kg	0.016	0.0040	2	03/31/15 16:45	04/03/15 17:32	56-55-3	
Benzo(a)pyrene	**0.35**	mg/kg	0.016	0.0015	2	03/31/15 16:45	04/03/15 17:32	50-32-8	
Benzo(b)fluoranthene	**0.19**	mg/kg	0.016	0.0014	2	03/31/15 16:45	04/03/15 17:32	205-99-2	
Benzo(g,h,i)perylene	**0.20**	mg/kg	0.016	0.0024	2	03/31/15 16:45	04/03/15 17:32	191-24-2	
Benzo(k)fluoranthene	**0.057**	mg/kg	0.016	0.0015	2	03/31/15 16:45	04/03/15 17:32	207-08-9	
Chrysene	**0.52**	mg/kg	0.016	0.0010	2	03/31/15 16:45	04/03/15 17:32	218-01-9	
Dibenz(a,h)anthracene	**0.034**	mg/kg	0.016	0.0020	2	03/31/15 16:45	04/03/15 17:32	53-70-3	
Fluoranthene	**0.15**	mg/kg	0.016	0.0010	2	03/31/15 16:45	04/03/15 17:32	206-44-0	
Fluorene	**0.97**	mg/kg	0.016	0.0013	2	03/31/15 16:45	04/03/15 17:32	86-73-7	
Indeno(1,2,3-cd)pyrene	**0.039**	mg/kg	0.016	0.0018	2	03/31/15 16:45	04/03/15 17:32	193-39-5	
Naphthalene	**0.091**	mg/kg	0.016	0.0022	2	03/31/15 16:45	04/03/15 17:32	91-20-3	
Phenanthrene	**2.1**	mg/kg	0.016	0.0016	2	03/31/15 16:45	04/03/15 17:32	85-01-8	
Pyrene	**1.4**	mg/kg	0.016	0.0013	2	03/31/15 16:45	04/03/15 17:32	129-00-0	
Quinoline	**0.081**	mg/kg	0.016	0.0038	2	03/31/15 16:45	04/03/15 17:32	91-22-5	
Surrogates									
2-Fluorobiphenyl (S)	89	%	35-141		2	03/31/15 16:45	04/03/15 17:32	321-60-8	
Terphenyl-d14 (S)	84	%	64-141		2	03/31/15 16:45	04/03/15 17:32	1718-51-0	
8270 MSSV FULL LIST MICROWAVE	Analytical Method: EPA 8270C Preparation Method: EPA 3546								
Biphenyl (Diphenyl)	**0.39 U**	mg/kg	0.39	0.012	1	03/31/15 15:45	04/01/15 16:12	92-52-4	
Diethylphthalate	**0.39 U**	mg/kg	0.39	0.013	1	03/31/15 15:45	04/01/15 16:12	84-66-2	
2,4-Dimethylphenol	**0.13J**	mg/kg	0.39	0.069	1	03/31/15 15:45	04/01/15 16:12	105-67-9	
Di-n-butylphthalate	**0.39 U**	mg/kg	0.39	0.013	1	03/31/15 15:45	04/01/15 16:12	84-74-2	
2,4-Dinitrophenol	**0.98 U**	mg/kg	0.98	0.11	1	03/31/15 15:45	04/01/15 16:12	51-28-5	
bis(2-Ethylhexyl)phthalate	**0.39 U**	mg/kg	0.39	0.012	1	03/31/15 15:45	04/01/15 16:12	117-81-7	
2-Methylnaphthalene	**0.39 U**	mg/kg	0.39	0.0094	1	03/31/15 15:45	04/01/15 16:12	91-57-6	
2-Methylphenol(o-Cresol)	**0.39 U**	mg/kg	0.39	0.23	1	03/31/15 15:45	04/01/15 16:12	95-48-7	
3&4-Methylphenol(m&p Cresol)	**0.78 U**	mg/kg	0.78	0.33	1	03/31/15 15:45	04/01/15 16:12		
4-Nitrophenol	**0.39 U**	mg/kg	0.39	0.22	1	03/31/15 15:45	04/01/15 16:12	100-02-7	
Phenol	**0.39 U**	mg/kg	0.39	0.12	1	03/31/15 15:45	04/01/15 16:12	108-95-2	
Pyridine	**0.98 U**	mg/kg	0.98	0.11	1	03/31/15 15:45	04/01/15 16:12	110-86-1	
Surrogates									
Nitrobenzene-d5 (S)	102	%	40-117		1	03/31/15 15:45	04/01/15 16:12	4165-60-0	
2-Fluorobiphenyl (S)	87	%	50-112		1	03/31/15 15:45	04/01/15 16:12	321-60-8	
Terphenyl-d14 (S)	104	%	52-130		1	03/31/15 15:45	04/01/15 16:12	1718-51-0	

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ANALYTICAL RESULTS

Project: Marcus Hook AOI-4
Pace Project No.: 30143544

Sample: AOI4_MW-505_6-8_03202015 **Lab ID: 30143544018** Collected: 03/20/15 09:45 Received: 03/21/15 09:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV FULL LIST MICROWAVE	Analytical Method: EPA 8270C Preparation Method: EPA 3546								
Surrogates									
Phenol-d6 (S)	107	%	53-115		1	03/31/15 15:45	04/01/15 16:12	13127-88-3	
2-Fluorophenol (S)	104	%	38-124		1	03/31/15 15:45	04/01/15 16:12	367-12-4	
2,4,6-Tribromophenol (S)	100	%	21-133		1	03/31/15 15:45	04/01/15 16:12	118-79-6	
8260 MSV 5030 Low Level	Analytical Method: EPA 8260B								
Benzene	**0.29 U**	mg/kg	0.29	0.046	50		03/31/15 16:03	71-43-2	
sec-Butylbenzene	**0.29 U**	mg/kg	0.29	0.086	50		03/31/15 16:03	135-98-8	
tert-Butylbenzene	**0.29 U**	mg/kg	0.29	0.12	50		03/31/15 16:03	98-06-6	
Cyclohexane	**0.18J**	mg/kg	0.59	0.073	50		03/31/15 16:03	110-82-7	
1,2-Dibromoethane (EDB)	ND	mg/kg	0.18	0.15	50		03/31/15 16:03	106-93-4	
1,2-Dichloroethane	**0.29 U**	mg/kg	0.29	0.053	50		03/31/15 16:03	107-06-2	
Ethylbenzene	**0.29 U**	mg/kg	0.29	0.15	50		03/31/15 16:03	100-41-4	
Hexane	**0.59 U**	mg/kg	0.59	0.59	50		03/31/15 16:03		
Isopropylbenzene (Cumene)	**0.29 U**	mg/kg	0.29	0.062	50		03/31/15 16:03	98-82-8	
Methyl-tert-butyl ether	**0.16J**	mg/kg	0.29	0.042	50		03/31/15 16:03	1634-04-4	
Toluene	**0.29 U**	mg/kg	0.29	0.038	50		03/31/15 16:03	108-88-3	
1,2,4-Trimethylbenzene	**0.29 U**	mg/kg	0.29	0.068	50		03/31/15 16:03	95-63-6	
1,3,5-Trimethylbenzene	**0.29 U**	mg/kg	0.29	0.079	50		03/31/15 16:03	108-67-8	
Xylene (Total)	**0.88 U**	mg/kg	0.88	0.18	50		03/31/15 16:03	1330-20-7	
Surrogates									
Toluene-d8 (S)	106	%	73-124		50		03/31/15 16:03	2037-26-5	
4-Bromofluorobenzene (S)	91	%	71-124		50		03/31/15 16:03	460-00-4	
1,2-Dichloroethane-d4 (S)	100	%	83-138		50		03/31/15 16:03	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**15.8**	%	0.10	0.10	1		04/03/15 10:43		

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ANALYTICAL RESULTS

Project: Marcus Hook AOI-4
Pace Project No.: 30143544

Sample: AOI4_MW-506_0-2_03202015 **Lab ID: 30143544019** Collected: 03/20/15 10:15 Received: 03/21/15 09:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010B Preparation Method: EPA 3050B								
Cobalt	**8.8**	mg/kg	0.80	0.059	1	03/24/15 12:34	03/25/15 16:53	7440-48-4	
Lead	**16.7**	mg/kg	0.40	0.39	1	03/24/15 12:34	03/25/15 16:53	7439-92-1	
Nickel	**30.1**	mg/kg	1.6	0.20	1	03/24/15 12:34	03/25/15 16:53	7440-02-0	
Vanadium	**86.2**	mg/kg	0.80	0.066	1	03/24/15 12:34	03/25/15 16:53	7440-62-2	
Zinc	**75.9**	mg/kg	0.80	0.35	1	03/24/15 12:34	03/25/15 16:53	7440-66-6	
8270 MSSV PAH by SIM	Analytical Method: EPA 8270C by SIM Preparation Method: EPA 3546								
Acenaphthene	**0.0081 U**	mg/kg	0.0081	0.00071	1	03/31/15 16:45	04/03/15 14:57	83-32-9	
Anthracene	**0.0081 U**	mg/kg	0.0081	0.00079	1	03/31/15 16:45	04/03/15 14:57	120-12-7	
Benzo(a)anthracene	**0.0081 U**	mg/kg	0.0081	0.0021	1	03/31/15 16:45	04/03/15 14:57	56-55-3	
Benzo(a)pyrene	**0.0081 U**	mg/kg	0.0081	0.00077	1	03/31/15 16:45	04/03/15 14:57	50-32-8	
Benzo(b)fluoranthene	**0.0081 U**	mg/kg	0.0081	0.00071	1	03/31/15 16:45	04/03/15 14:57	205-99-2	
Benzo(g,h,i)perylene	**0.0081 U**	mg/kg	0.0081	0.0012	1	03/31/15 16:45	04/03/15 14:57	191-24-2	
Benzo(k)fluoranthene	**0.0081 U**	mg/kg	0.0081	0.00076	1	03/31/15 16:45	04/03/15 14:57	207-08-9	
Chrysene	**0.0081 U**	mg/kg	0.0081	0.00053	1	03/31/15 16:45	04/03/15 14:57	218-01-9	
Dibenz(a,h)anthracene	**0.0081 U**	mg/kg	0.0081	0.0011	1	03/31/15 16:45	04/03/15 14:57	53-70-3	
Fluoranthene	**0.0081 U**	mg/kg	0.0081	0.00053	1	03/31/15 16:45	04/03/15 14:57	206-44-0	
Fluorene	**0.0012J**	mg/kg	0.0081	0.00070	1	03/31/15 16:45	04/03/15 14:57	86-73-7	
Indeno(1,2,3-cd)pyrene	**0.0081 U**	mg/kg	0.0081	0.00096	1	03/31/15 16:45	04/03/15 14:57	193-39-5	
Naphthalene	**0.0081 U**	mg/kg	0.0081	0.0011	1	03/31/15 16:45	04/03/15 14:57	91-20-3	
Phenanthrene	**0.0081 U**	mg/kg	0.0081	0.00081	1	03/31/15 16:45	04/03/15 14:57	85-01-8	
Pyrene	**0.0081 U**	mg/kg	0.0081	0.00065	1	03/31/15 16:45	04/03/15 14:57	129-00-0	
Quinoline	**0.0081 U**	mg/kg	0.0081	0.0020	1	03/31/15 16:45	04/03/15 14:57	91-22-5	
Surrogates									
2-Fluorobiphenyl (S)	87	%	35-141		1	03/31/15 16:45	04/03/15 14:57	321-60-8	
Terphenyl-d14 (S)	92	%	64-141		1	03/31/15 16:45	04/03/15 14:57	1718-51-0	
8270 MSSV FULL LIST MICROWAVE	Analytical Method: EPA 8270C Preparation Method: EPA 3546								
Biphenyl (Diphenyl)	**0.40 U**	mg/kg	0.40	0.013	1	03/31/15 15:45	04/01/15 16:32	92-52-4	
Diethylphthalate	**0.40 U**	mg/kg	0.40	0.013	1	03/31/15 15:45	04/01/15 16:32	84-66-2	
2,4-Dimethylphenol	**0.40 U**	mg/kg	0.40	0.070	1	03/31/15 15:45	04/01/15 16:32	105-67-9	
Di-n-butylphthalate	**0.40 U**	mg/kg	0.40	0.013	1	03/31/15 15:45	04/01/15 16:32	84-74-2	
2,4-Dinitrophenol	**0.99 U**	mg/kg	0.99	0.11	1	03/31/15 15:45	04/01/15 16:32	51-28-5	
bis(2-Ethylhexyl)phthalate	**0.40 U**	mg/kg	0.40	0.012	1	03/31/15 15:45	04/01/15 16:32	117-81-7	
2-Methylnaphthalene	**0.40 U**	mg/kg	0.40	0.0095	1	03/31/15 15:45	04/01/15 16:32	91-57-6	
2-Methylphenol(o-Cresol)	**0.40 U**	mg/kg	0.40	0.23	1	03/31/15 15:45	04/01/15 16:32	95-48-7	
3&4-Methylphenol(m&p Cresol)	**0.79 U**	mg/kg	0.79	0.33	1	03/31/15 15:45	04/01/15 16:32		
4-Nitrophenol	**0.40 U**	mg/kg	0.40	0.22	1	03/31/15 15:45	04/01/15 16:32	100-02-7	
Phenol	**0.40 U**	mg/kg	0.40	0.12	1	03/31/15 15:45	04/01/15 16:32	108-95-2	
Pyridine	**0.99 U**	mg/kg	0.99	0.12	1	03/31/15 15:45	04/01/15 16:32	110-86-1	
Surrogates									
Nitrobenzene-d5 (S)	94	%	40-117		1	03/31/15 15:45	04/01/15 16:32	4165-60-0	
2-Fluorobiphenyl (S)	89	%	50-112		1	03/31/15 15:45	04/01/15 16:32	321-60-8	
Terphenyl-d14 (S)	98	%	52-130		1	03/31/15 15:45	04/01/15 16:32	1718-51-0	

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ANALYTICAL RESULTS

Project: Marcus Hook AOI-4
Pace Project No.: 30143544

Sample: AOI4_MW-506_0-2_03202015 **Lab ID: 30143544019** Collected: 03/20/15 10:15 Received: 03/21/15 09:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV FULL LIST MICROWAVE	Analytical Method: EPA 8270C Preparation Method: EPA 3546								
Surrogates									
Phenol-d6 (S)	92	%	53-115		1	03/31/15 15:45	04/01/15 16:32	13127-88-3	
2-Fluorophenol (S)	89	%	38-124		1	03/31/15 15:45	04/01/15 16:32	367-12-4	
2,4,6-Tribromophenol (S)	97	%	21-133		1	03/31/15 15:45	04/01/15 16:32	118-79-6	
8260 MSV 5030 Low Level	Analytical Method: EPA 8260B								
Benzene	**0.059**	mg/kg	0.0056	0.00087	1		03/31/15 16:29	71-43-2	
sec-Butylbenzene	**0.0056 U**	mg/kg	0.0056	0.0016	1		03/31/15 16:29	135-98-8	
tert-Butylbenzene	**0.0056 U**	mg/kg	0.0056	0.0022	1		03/31/15 16:29	98-06-6	
Cyclohexane	**0.025**	mg/kg	0.011	0.0014	1		03/31/15 16:29	110-82-7	
1,2-Dibromoethane (EDB)	ND	mg/kg	0.0033	0.0029	1		03/31/15 16:29	106-93-4	
1,2-Dichloroethane	**0.0056 U**	mg/kg	0.0056	0.0010	1		03/31/15 16:29	107-06-2	
Ethylbenzene	**0.0056 U**	mg/kg	0.0056	0.0029	1		03/31/15 16:29	100-41-4	
Hexane	**0.011 U**	mg/kg	0.011	0.011	1		03/31/15 16:29		
Isopropylbenzene (Cumene)	**0.0056 U**	mg/kg	0.0056	0.0012	1		03/31/15 16:29	98-82-8	
Methyl-tert-butyl ether	**0.14**	mg/kg	0.0056	0.00079	1		03/31/15 16:29	1634-04-4	
Toluene	**0.0056 U**	mg/kg	0.0056	0.00072	1		03/31/15 16:29	108-88-3	
1,2,4-Trimethylbenzene	**0.0056 U**	mg/kg	0.0056	0.0013	1		03/31/15 16:29	95-63-6	
1,3,5-Trimethylbenzene	**0.0056 U**	mg/kg	0.0056	0.0015	1		03/31/15 16:29	108-67-8	
Xylene (Total)	**0.017 U**	mg/kg	0.017	0.0034	1		03/31/15 16:29	1330-20-7	
Surrogates									
Toluene-d8 (S)	97	%	73-124		1		03/31/15 16:29	2037-26-5	
4-Bromofluorobenzene (S)	90	%	71-124		1		03/31/15 16:29	460-00-4	
1,2-Dichloroethane-d4 (S)	106	%	83-138		1		03/31/15 16:29	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**17.9**	%	0.10	0.10	1		04/03/15 10:44		

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ANALYTICAL RESULTS

Project: Marcus Hook AOI-4
Pace Project No.: 30143544

Sample: AOI4_MW-506_4-6_03202015 **Lab ID: 30143544020** Collected: 03/20/15 10:30 Received: 03/21/15 09:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010B Preparation Method: EPA 3050B								
Cobalt	**4.0**	mg/kg	0.96	0.071	1	03/24/15 12:34	03/25/15 16:56	7440-48-4	
Lead	**11.5**	mg/kg	0.48	0.47	1	03/24/15 12:34	03/25/15 16:56	7439-92-1	
Nickel	**10.6**	mg/kg	1.9	0.24	1	03/24/15 12:34	03/25/15 16:56	7440-02-0	
Vanadium	**56.4**	mg/kg	0.96	0.079	1	03/24/15 12:34	03/25/15 16:56	7440-62-2	
Zinc	**25.1**	mg/kg	0.96	0.42	1	03/24/15 12:34	03/25/15 16:56	7440-66-6	
8270 MSSV PAH by SIM	Analytical Method: EPA 8270C by SIM Preparation Method: EPA 3546								
Acenaphthene	**0.36**	mg/kg	0.0078	0.00069	1	03/31/15 16:45	04/03/15 15:15	83-32-9	
Anthracene	**0.055**	mg/kg	0.0078	0.00075	1	03/31/15 16:45	04/03/15 15:15	120-12-7	
Benzo(a)anthracene	**0.0054J**	mg/kg	0.0078	0.0020	1	03/31/15 16:45	04/03/15 15:15	56-55-3	
Benzo(a)pyrene	**0.0010J**	mg/kg	0.0078	0.00074	1	03/31/15 16:45	04/03/15 15:15	50-32-8	
Benzo(b)fluoranthene	**0.0011J**	mg/kg	0.0078	0.00069	1	03/31/15 16:45	04/03/15 15:15	205-99-2	
Benzo(g,h,i)perylene	**0.0078 U**	mg/kg	0.0078	0.0012	1	03/31/15 16:45	04/03/15 15:15	191-24-2	
Benzo(k)fluoranthene	**0.00094J**	mg/kg	0.0078	0.00073	1	03/31/15 16:45	04/03/15 15:15	207-08-9	
Chrysene	**0.010**	mg/kg	0.0078	0.00051	1	03/31/15 16:45	04/03/15 15:15	218-01-9	
Dibenz(a,h)anthracene	**0.0078 U**	mg/kg	0.0078	0.0010	1	03/31/15 16:45	04/03/15 15:15	53-70-3	
Fluoranthene	**0.025**	mg/kg	0.0078	0.00051	1	03/31/15 16:45	04/03/15 15:15	206-44-0	
Fluorene	**0.47**	mg/kg	0.0078	0.00067	1	03/31/15 16:45	04/03/15 15:15	86-73-7	
Indeno(1,2,3-cd)pyrene	**0.0078 U**	mg/kg	0.0078	0.00092	1	03/31/15 16:45	04/03/15 15:15	193-39-5	
Naphthalene	**0.71**	mg/kg	0.0078	0.0011	1	03/31/15 16:45	04/03/15 15:15	91-20-3	
Phenanthrene	**0.93**	mg/kg	0.0078	0.00078	1	03/31/15 16:45	04/03/15 15:15	85-01-8	
Pyrene	**0.093**	mg/kg	0.0078	0.00063	1	03/31/15 16:45	04/03/15 15:15	129-00-0	
Quinoline	**0.075**	mg/kg	0.0078	0.0019	1	03/31/15 16:45	04/03/15 15:15	91-22-5	
Surrogates									
2-Fluorobiphenyl (S)	103	%	35-141		1	03/31/15 16:45	04/03/15 15:15	321-60-8	
Terphenyl-d14 (S)	95	%	64-141		1	03/31/15 16:45	04/03/15 15:15	1718-51-0	
8270 MSSV FULL LIST MICROWAVE	Analytical Method: EPA 8270C Preparation Method: EPA 3546								
Biphenyl (Diphenyl)	**0.40 U**	mg/kg	0.40	0.013	1	03/31/15 15:45	04/01/15 16:51	92-52-4	
Diethylphthalate	**0.40 U**	mg/kg	0.40	0.013	1	03/31/15 15:45	04/01/15 16:51	84-66-2	
2,4-Dimethylphenol	**0.40 U**	mg/kg	0.40	0.070	1	03/31/15 15:45	04/01/15 16:51	105-67-9	
Di-n-butylphthalate	**0.40 U**	mg/kg	0.40	0.013	1	03/31/15 15:45	04/01/15 16:51	84-74-2	
2,4-Dinitrophenol	**0.99 U**	mg/kg	0.99	0.11	1	03/31/15 15:45	04/01/15 16:51	51-28-5	
bis(2-Ethylhexyl)phthalate	**0.40 U**	mg/kg	0.40	0.012	1	03/31/15 15:45	04/01/15 16:51	117-81-7	
2-Methylnaphthalene	**3.8**	mg/kg	0.40	0.0095	1	03/31/15 15:45	04/01/15 16:51	91-57-6	
2-Methylphenol(o-Cresol)	**0.40 U**	mg/kg	0.40	0.23	1	03/31/15 15:45	04/01/15 16:51	95-48-7	
3&4-Methylphenol(m&p Cresol)	**0.79 U**	mg/kg	0.79	0.33	1	03/31/15 15:45	04/01/15 16:51		
4-Nitrophenol	**0.40 U**	mg/kg	0.40	0.22	1	03/31/15 15:45	04/01/15 16:51	100-02-7	
Phenol	**0.40 U**	mg/kg	0.40	0.12	1	03/31/15 15:45	04/01/15 16:51	108-95-2	
Pyridine	**0.99 U**	mg/kg	0.99	0.12	1	03/31/15 15:45	04/01/15 16:51	110-86-1	
Surrogates									
Nitrobenzene-d5 (S)	93	%	40-117		1	03/31/15 15:45	04/01/15 16:51	4165-60-0	
2-Fluorobiphenyl (S)	88	%	50-112		1	03/31/15 15:45	04/01/15 16:51	321-60-8	
Terphenyl-d14 (S)	98	%	52-130		1	03/31/15 15:45	04/01/15 16:51	1718-51-0	

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ANALYTICAL RESULTS

Project: Marcus Hook AOI-4
Pace Project No.: 30143544

Sample: AOI4_MW-506_4-6_03202015 **Lab ID: 30143544020** Collected: 03/20/15 10:30 Received: 03/21/15 09:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV FULL LIST MICROWAVE	Analytical Method: EPA 8270C Preparation Method: EPA 3546								
Surrogates									
Phenol-d6 (S)	98	%	53-115		1	03/31/15 15:45	04/01/15 16:51	13127-88-3	
2-Fluorophenol (S)	95	%	38-124		1	03/31/15 15:45	04/01/15 16:51	367-12-4	
2,4,6-Tribromophenol (S)	97	%	21-133		1	03/31/15 15:45	04/01/15 16:51	118-79-6	
8260 MSV 5030 Low Level	Analytical Method: EPA 8260B								
Benzene	**1.1**	mg/kg	0.33	0.052	50		04/01/15 20:07	71-43-2	
sec-Butylbenzene	**0.014**	mg/kg	0.0056	0.0016	1		03/31/15 16:56	135-98-8	
tert-Butylbenzene	**0.0068**	mg/kg	0.0056	0.0022	1		03/31/15 16:56	98-06-6	
Cyclohexane	**0.31**	mg/kg	0.011	0.0014	1		03/31/15 16:56	110-82-7	
1,2-Dibromoethane (EDB)	ND	mg/kg	0.0034	0.0029	1		03/31/15 16:56	106-93-4	
1,2-Dichloroethane	**0.0056 U**	mg/kg	0.0056	0.0010	1		03/31/15 16:56	107-06-2	
Ethylbenzene	**0.20**	mg/kg	0.0056	0.0029	1		03/31/15 16:56	100-41-4	
Hexane	**0.13**	mg/kg	0.011	0.011	1		03/31/15 16:56		
Isopropylbenzene (Cumene)	**0.042**	mg/kg	0.0056	0.0012	1		03/31/15 16:56	98-82-8	
Methyl-tert-butyl ether	**0.61**	mg/kg	0.33	0.047	50		04/01/15 20:07	1634-04-4	
Toluene	**0.056**	mg/kg	0.0056	0.00072	1		03/31/15 16:56	108-88-3	
1,2,4-Trimethylbenzene	**0.043**	mg/kg	0.0056	0.0013	1		03/31/15 16:56	95-63-6	
1,3,5-Trimethylbenzene	**0.028**	mg/kg	0.0056	0.0015	1		03/31/15 16:56	108-67-8	
Xylene (Total)	**0.099**	mg/kg	0.017	0.0034	1		03/31/15 16:56	1330-20-7	
Surrogates									
Toluene-d8 (S)	103	%	73-124		1		03/31/15 16:56	2037-26-5	
4-Bromofluorobenzene (S)	91	%	71-124		1		03/31/15 16:56	460-00-4	
1,2-Dichloroethane-d4 (S)	120	%	83-138		1		03/31/15 16:56	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**16.4**	%	0.10	0.10	1		04/03/15 10:44		

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ANALYTICAL RESULTS

Project: Marcus Hook AOI-4
Pace Project No.: 30143544

Sample: AOI4_MW-504_0-2_03202015 **Lab ID: 30143544021** Collected: 03/20/15 12:00 Received: 03/21/15 09:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010B Preparation Method: EPA 3050B								
Cobalt	**7.8**	mg/kg	1.0	0.075	1	03/24/15 12:35	03/26/15 14:36	7440-48-4	
Lead	**48.0**	mg/kg	0.51	0.49	1	03/24/15 12:35	03/26/15 14:36	7439-92-1	D6
Nickel	**8.3**	mg/kg	2.0	0.26	1	03/24/15 12:35	03/26/15 14:36	7440-02-0	
Vanadium	**42.2**	mg/kg	1.0	0.083	1	03/24/15 12:35	03/26/15 14:36	7440-62-2	M1
Zinc	**49.8**	mg/kg	1.0	0.44	1	03/24/15 12:35	03/26/15 14:36	7440-66-6	
8270 MSSV PAH by SIM	Analytical Method: EPA 8270C by SIM Preparation Method: EPA 3546								
Acenaphthene	**0.0080 U**	mg/kg	0.0080	0.00070	1	03/31/15 16:45	04/03/15 15:32	83-32-9	
Anthracene	**0.0035J**	mg/kg	0.0080	0.00078	1	03/31/15 16:45	04/03/15 15:32	120-12-7	
Benzo(a)anthracene	**0.016**	mg/kg	0.0080	0.0020	1	03/31/15 16:45	04/03/15 15:32	56-55-3	
Benzo(a)pyrene	**0.018**	mg/kg	0.0080	0.00076	1	03/31/15 16:45	04/03/15 15:32	50-32-8	
Benzo(b)fluoranthene	**0.044**	mg/kg	0.0080	0.00070	1	03/31/15 16:45	04/03/15 15:32	205-99-2	1c
Benzo(g,h,i)perylene	**0.014**	mg/kg	0.0080	0.0012	1	03/31/15 16:45	04/03/15 15:32	191-24-2	
Benzo(k)fluoranthene	**0.037**	mg/kg	0.0080	0.00075	1	03/31/15 16:45	04/03/15 15:32	207-08-9	1c
Chrysene	**0.026**	mg/kg	0.0080	0.00053	1	03/31/15 16:45	04/03/15 15:32	218-01-9	
Dibenz(a,h)anthracene	**0.0058J**	mg/kg	0.0080	0.0011	1	03/31/15 16:45	04/03/15 15:32	53-70-3	
Fluoranthene	**0.031**	mg/kg	0.0080	0.00053	1	03/31/15 16:45	04/03/15 15:32	206-44-0	
Fluorene	**0.0012J**	mg/kg	0.0080	0.00069	1	03/31/15 16:45	04/03/15 15:32	86-73-7	
Indeno(1,2,3-cd)pyrene	**0.012**	mg/kg	0.0080	0.00094	1	03/31/15 16:45	04/03/15 15:32	193-39-5	
Naphthalene	**0.0074J**	mg/kg	0.0080	0.0011	1	03/31/15 16:45	04/03/15 15:32	91-20-3	
Phenanthrene	**0.016**	mg/kg	0.0080	0.00080	1	03/31/15 16:45	04/03/15 15:32	85-01-8	
Pyrene	**0.028**	mg/kg	0.0080	0.00064	1	03/31/15 16:45	04/03/15 15:32	129-00-0	
Quinoline	**0.0080 U**	mg/kg	0.0080	0.0020	1	03/31/15 16:45	04/03/15 15:32	91-22-5	
Surrogates									
2-Fluorobiphenyl (S)	86	%	35-141		1	03/31/15 16:45	04/03/15 15:32	321-60-8	
Terphenyl-d14 (S)	92	%	64-141		1	03/31/15 16:45	04/03/15 15:32	1718-51-0	
8270 MSSV FULL LIST MICROWAVE	Analytical Method: EPA 8270C Preparation Method: EPA 3546								
Biphenyl (Diphenyl)	**0.40 U**	mg/kg	0.40	0.013	1	03/31/15 15:45	04/01/15 17:11	92-52-4	
Diethylphthalate	**0.40 U**	mg/kg	0.40	0.013	1	03/31/15 15:45	04/01/15 17:11	84-66-2	
2,4-Dimethylphenol	**0.40 U**	mg/kg	0.40	0.070	1	03/31/15 15:45	04/01/15 17:11	105-67-9	
Di-n-butylphthalate	**0.40 U**	mg/kg	0.40	0.013	1	03/31/15 15:45	04/01/15 17:11	84-74-2	
2,4-Dinitrophenol	**0.99 U**	mg/kg	0.99	0.11	1	03/31/15 15:45	04/01/15 17:11	51-28-5	
bis(2-Ethylhexyl)phthalate	**0.40 U**	mg/kg	0.40	0.012	1	03/31/15 15:45	04/01/15 17:11	117-81-7	
2-Methylnaphthalene	**0.40 U**	mg/kg	0.40	0.0095	1	03/31/15 15:45	04/01/15 17:11	91-57-6	
2-Methylphenol(o-Cresol)	**0.40 U**	mg/kg	0.40	0.23	1	03/31/15 15:45	04/01/15 17:11	95-48-7	
3&4-Methylphenol(m&p Cresol)	**0.79 U**	mg/kg	0.79	0.33	1	03/31/15 15:45	04/01/15 17:11		
4-Nitrophenol	**0.40 U**	mg/kg	0.40	0.22	1	03/31/15 15:45	04/01/15 17:11	100-02-7	
Phenol	**0.40 U**	mg/kg	0.40	0.12	1	03/31/15 15:45	04/01/15 17:11	108-95-2	
Pyridine	**0.99 U**	mg/kg	0.99	0.12	1	03/31/15 15:45	04/01/15 17:11	110-86-1	
Surrogates									
Nitrobenzene-d5 (S)	84	%	40-117		1	03/31/15 15:45	04/01/15 17:11	4165-60-0	
2-Fluorobiphenyl (S)	82	%	50-112		1	03/31/15 15:45	04/01/15 17:11	321-60-8	
Terphenyl-d14 (S)	90	%	52-130		1	03/31/15 15:45	04/01/15 17:11	1718-51-0	

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ANALYTICAL RESULTS

Project: Marcus Hook AOI-4
Pace Project No.: 30143544

Sample: AOI4_MW-504_0-2_03202015 **Lab ID: 30143544021** Collected: 03/20/15 12:00 Received: 03/21/15 09:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV FULL LIST MICROWAVE	Analytical Method: EPA 8270C Preparation Method: EPA 3546								
Surrogates									
Phenol-d6 (S)	93	%	53-115		1	03/31/15 15:45	04/01/15 17:11	13127-88-3	
2-Fluorophenol (S)	87	%	38-124		1	03/31/15 15:45	04/01/15 17:11	367-12-4	
2,4,6-Tribromophenol (S)	88	%	21-133		1	03/31/15 15:45	04/01/15 17:11	118-79-6	
8260 MSV 5030 Low Level	Analytical Method: EPA 8260B								
Benzene	**0.0050 U**	mg/kg	0.0050	0.00078	1		03/31/15 17:23	71-43-2	
sec-Butylbenzene	**0.0050 U**	mg/kg	0.0050	0.0015	1		03/31/15 17:23	135-98-8	
tert-Butylbenzene	**0.0050 U**	mg/kg	0.0050	0.0020	1		03/31/15 17:23	98-06-6	
Cyclohexane	**0.010 U**	mg/kg	0.010	0.0012	1		03/31/15 17:23	110-82-7	
1,2-Dibromoethane (EDB)	ND	mg/kg	0.0030	0.0026	1		03/31/15 17:23	106-93-4	
1,2-Dichloroethane	**0.0050 U**	mg/kg	0.0050	0.00091	1		03/31/15 17:23	107-06-2	
Ethylbenzene	**0.0050 U**	mg/kg	0.0050	0.0026	1		03/31/15 17:23	100-41-4	
Hexane	**0.010 U**	mg/kg	0.010	0.010	1		03/31/15 17:23		
Isopropylbenzene (Cumene)	**0.0050 U**	mg/kg	0.0050	0.0011	1		03/31/15 17:23	98-82-8	
Methyl-tert-butyl ether	**0.0050 U**	mg/kg	0.0050	0.00071	1		03/31/15 17:23	1634-04-4	
Toluene	**0.0050 U**	mg/kg	0.0050	0.00064	1		03/31/15 17:23	108-88-3	
1,2,4-Trimethylbenzene	**0.0042J**	mg/kg	0.0050	0.0012	1		03/31/15 17:23	95-63-6	
1,3,5-Trimethylbenzene	**0.0050 U**	mg/kg	0.0050	0.0013	1		03/31/15 17:23	108-67-8	
Xylene (Total)	**0.015 U**	mg/kg	0.015	0.0031	1		03/31/15 17:23	1330-20-7	
Surrogates									
Toluene-d8 (S)	94	%	73-124		1		03/31/15 17:23	2037-26-5	
4-Bromofluorobenzene (S)	92	%	71-124		1		03/31/15 17:23	460-00-4	
1,2-Dichloroethane-d4 (S)	115	%	83-138		1		03/31/15 17:23	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**17.6**	%	0.10	0.10	1		04/03/15 10:45		

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ANALYTICAL RESULTS

Project: Marcus Hook AOI-4
Pace Project No.: 30143544

Sample: AOI4_MW-504_4-6_03202015 **Lab ID: 30143544022** Collected: 03/20/15 12:30 Received: 03/21/15 09:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010B Preparation Method: EPA 3050B								
Cobalt	**4.9**	mg/kg	0.66	0.049	1	03/24/15 12:35	03/26/15 14:46	7440-48-4	
Lead	**11.4**	mg/kg	0.33	0.32	1	03/24/15 12:35	03/26/15 14:46	7439-92-1	
Nickel	**5.1**	mg/kg	1.3	0.17	1	03/24/15 12:35	03/26/15 14:46	7440-02-0	
Vanadium	**30.0**	mg/kg	0.66	0.054	1	03/24/15 12:35	03/26/15 14:46	7440-62-2	
Zinc	**14.9**	mg/kg	0.66	0.29	1	03/24/15 12:35	03/26/15 14:46	7440-66-6	
8270 MSSV PAH by SIM	Analytical Method: EPA 8270C by SIM Preparation Method: EPA 3546								
Acenaphthene	**0.013**	mg/kg	0.0078	0.00069	1	03/31/15 16:45	04/03/15 15:49	83-32-9	
Anthracene	**0.038**	mg/kg	0.0078	0.00076	1	03/31/15 16:45	04/03/15 15:49	120-12-7	
Benzo(a)anthracene	**0.032**	mg/kg	0.0078	0.0020	1	03/31/15 16:45	04/03/15 15:49	56-55-3	
Benzo(a)pyrene	**0.012**	mg/kg	0.0078	0.00074	1	03/31/15 16:45	04/03/15 15:49	50-32-8	
Benzo(b)fluoranthene	**0.021**	mg/kg	0.0078	0.00069	1	03/31/15 16:45	04/03/15 15:49	205-99-2	1c
Benzo(g,h,i)perylene	**0.0059J**	mg/kg	0.0078	0.0012	1	03/31/15 16:45	04/03/15 15:49	191-24-2	
Benzo(k)fluoranthene	**0.018**	mg/kg	0.0078	0.00073	1	03/31/15 16:45	04/03/15 15:49	207-08-9	1c
Chrysene	**0.020**	mg/kg	0.0078	0.00051	1	03/31/15 16:45	04/03/15 15:49	218-01-9	
Dibenz(a,h)anthracene	**0.0078 U**	mg/kg	0.0078	0.0010	1	03/31/15 16:45	04/03/15 15:49	53-70-3	
Fluoranthene	**0.11**	mg/kg	0.0078	0.00051	1	03/31/15 16:45	04/03/15 15:49	206-44-0	
Fluorene	**0.031**	mg/kg	0.0078	0.00068	1	03/31/15 16:45	04/03/15 15:49	86-73-7	
Indeno(1,2,3-cd)pyrene	**0.0035J**	mg/kg	0.0078	0.00092	1	03/31/15 16:45	04/03/15 15:49	193-39-5	
Naphthalene	**0.017**	mg/kg	0.0078	0.0011	1	03/31/15 16:45	04/03/15 15:49	91-20-3	
Phenanthrene	**0.0078 U**	mg/kg	0.0078	0.00078	1	03/31/15 16:45	04/03/15 15:49	85-01-8	
Pyrene	**0.088**	mg/kg	0.0078	0.00063	1	03/31/15 16:45	04/03/15 15:49	129-00-0	
Quinoline	**0.0078 U**	mg/kg	0.0078	0.0019	1	03/31/15 16:45	04/03/15 15:49	91-22-5	
Surrogates									
2-Fluorobiphenyl (S)	76	%	35-141		1	03/31/15 16:45	04/03/15 15:49	321-60-8	
Terphenyl-d14 (S)	93	%	64-141		1	03/31/15 16:45	04/03/15 15:49	1718-51-0	
8270 MSSV FULL LIST MICROWAVE	Analytical Method: EPA 8270C Preparation Method: EPA 3546								
Biphenyl (Diphenyl)	**0.39 U**	mg/kg	0.39	0.012	1	03/31/15 15:45	04/01/15 17:31	92-52-4	
Diethylphthalate	**0.39 U**	mg/kg	0.39	0.013	1	03/31/15 15:45	04/01/15 17:31	84-66-2	
2,4-Dimethylphenol	**0.39 U**	mg/kg	0.39	0.069	1	03/31/15 15:45	04/01/15 17:31	105-67-9	
Di-n-butylphthalate	**0.39 U**	mg/kg	0.39	0.013	1	03/31/15 15:45	04/01/15 17:31	84-74-2	
2,4-Dinitrophenol	**0.97 U**	mg/kg	0.97	0.11	1	03/31/15 15:45	04/01/15 17:31	51-28-5	
bis(2-Ethylhexyl)phthalate	**0.39 U**	mg/kg	0.39	0.012	1	03/31/15 15:45	04/01/15 17:31	117-81-7	
2-Methylnaphthalene	**0.39 U**	mg/kg	0.39	0.0093	1	03/31/15 15:45	04/01/15 17:31	91-57-6	
2-Methylphenol(o-Cresol)	**0.39 U**	mg/kg	0.39	0.23	1	03/31/15 15:45	04/01/15 17:31	95-48-7	
3&4-Methylphenol(m&p Cresol)	**0.77 U**	mg/kg	0.77	0.33	1	03/31/15 15:45	04/01/15 17:31		
4-Nitrophenol	**0.39 U**	mg/kg	0.39	0.22	1	03/31/15 15:45	04/01/15 17:31	100-02-7	
Phenol	**0.39 U**	mg/kg	0.39	0.12	1	03/31/15 15:45	04/01/15 17:31	108-95-2	
Pyridine	**0.97 U**	mg/kg	0.97	0.11	1	03/31/15 15:45	04/01/15 17:31	110-86-1	
Surrogates									
Nitrobenzene-d5 (S)	86	%	40-117		1	03/31/15 15:45	04/01/15 17:31	4165-60-0	
2-Fluorobiphenyl (S)	88	%	50-112		1	03/31/15 15:45	04/01/15 17:31	321-60-8	
Terphenyl-d14 (S)	100	%	52-130		1	03/31/15 15:45	04/01/15 17:31	1718-51-0	

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ANALYTICAL RESULTS

Project: Marcus Hook AOI-4
Pace Project No.: 30143544

Sample: AOI4_MW-504_4-6_03202015 **Lab ID: 30143544022** Collected: 03/20/15 12:30 Received: 03/21/15 09:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV FULL LIST MICROWAVE	Analytical Method: EPA 8270C Preparation Method: EPA 3546								
Surrogates									
Phenol-d6 (S)	95	%	53-115		1	03/31/15 15:45	04/01/15 17:31	13127-88-3	
2-Fluorophenol (S)	93	%	38-124		1	03/31/15 15:45	04/01/15 17:31	367-12-4	
2,4,6-Tribromophenol (S)	97	%	21-133		1	03/31/15 15:45	04/01/15 17:31	118-79-6	
8260 MSV 5030 Low Level	Analytical Method: EPA 8260B								
Benzene	**0.00072J**	mg/kg	0.0045	0.00070	1		03/31/15 17:49	71-43-2	
sec-Butylbenzene	**0.030**	mg/kg	0.0045	0.0013	1		03/31/15 17:49	135-98-8	
tert-Butylbenzene	**0.0045 U**	mg/kg	0.0045	0.0018	1		03/31/15 17:49	98-06-6	
Cyclohexane	**0.0090 U**	mg/kg	0.0090	0.0011	1		03/31/15 17:49	110-82-7	
1,2-Dibromoethane (EDB)	ND	mg/kg	0.0027	0.0024	1		03/31/15 17:49	106-93-4	
1,2-Dichloroethane	**0.0045 U**	mg/kg	0.0045	0.00082	1		03/31/15 17:49	107-06-2	
Ethylbenzene	**0.0045 U**	mg/kg	0.0045	0.0023	1		03/31/15 17:49	100-41-4	
Hexane	**0.0090 U**	mg/kg	0.0090	0.0090	1		03/31/15 17:49		
Isopropylbenzene (Cumene)	**0.0045 U**	mg/kg	0.0045	0.00096	1		03/31/15 17:49	98-82-8	
Methyl-tert-butyl ether	**0.0039J**	mg/kg	0.0045	0.00064	1		03/31/15 17:49	1634-04-4	
Toluene	**0.0041J**	mg/kg	0.0045	0.00058	1		03/31/15 17:49	108-88-3	
1,2,4-Trimethylbenzene	**0.0045 U**	mg/kg	0.0045	0.0010	1		03/31/15 17:49	95-63-6	
1,3,5-Trimethylbenzene	**0.0045 U**	mg/kg	0.0045	0.0012	1		03/31/15 17:49	108-67-8	
Xylene (Total)	**0.014 U**	mg/kg	0.014	0.0028	1		03/31/15 17:49	1330-20-7	
Surrogates									
Toluene-d8 (S)	122	%	73-124		1		03/31/15 17:49	2037-26-5	
4-Bromofluorobenzene (S)	103	%	71-124		1		03/31/15 17:49	460-00-4	
1,2-Dichloroethane-d4 (S)	109	%	83-138		1		03/31/15 17:49	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**14.7**	%	0.10	0.10	1		04/03/15 10:45		

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QUALITY CONTROL DATA

Project: Marcus Hook AOI-4
Pace Project No.: 30143544

QC Batch: MPRP/15157 — Analysis Method: EPA 6010B
QC Batch Method: EPA 3050B — Analysis Description: 6010 MET
Associated Lab Samples: 30143544001, 30143544002, 30143544003, 30143544004, 30143544005, 30143544006, 30143544007, 30143544008, 30143544009, 30143544010, 30143544011, 30143544012, 30143544013, 30143544014, 30143544015, 30143544016, 30143544017, 30143544018, 30143544019, 30143544020

METHOD BLANK: 868865 — Matrix: Solid
Associated Lab Samples: 30143544001, 30143544002, 30143544003, 30143544004, 30143544005, 30143544006, 30143544007, 30143544008, 30143544009, 30143544010, 30143544011, 30143544012, 30143544013, 30143544014, 30143544015, 30143544016, 30143544017, 30143544018, 30143544019, 30143544020

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cobalt	mg/kg	1.0 U	1.0	03/25/15 15:37	
Lead	mg/kg	0.50 U	0.50	03/25/15 15:37	
Nickel	mg/kg	2.0 U	2.0	03/25/15 15:37	
Vanadium	mg/kg	1.0 U	1.0	03/25/15 15:37	
Zinc	mg/kg	1.0 U	1.0	03/25/15 15:37	

LABORATORY CONTROL SAMPLE: 868866

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cobalt	mg/kg	50	53.1	106	80-120	
Lead	mg/kg	50	51.4	103	80-120	
Nickel	mg/kg	50	53.4	107	80-120	
Vanadium	mg/kg	50	53.4	107	80-120	
Zinc	mg/kg	50	53.3	107	80-120	

MATRIX SPIKE SAMPLE: 868868

Parameter	Units	30143544001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Cobalt	mg/kg	9.3	48.1	61.3	108	75-125	
Lead	mg/kg	23.8	48.1	71.6	99	75-125	
Nickel	mg/kg	23.3	48.1	136	235	75-125	M1
Vanadium	mg/kg	35.5	48.1	180	300	75-125	M1
Zinc	mg/kg	66.6	48.1	109	88	75-125	

SAMPLE DUPLICATE: 868867

Parameter	Units	30143544001 Result	Dup Result	RPD	Max RPD	Qualifiers
Cobalt	mg/kg	9.3	7.5	22	20	D6
Lead	mg/kg	23.8	18.8	24	20	D6
Nickel	mg/kg	23.3	21.5	8	20	
Vanadium	mg/kg	35.5	37.8	6	20	
Zinc	mg/kg	66.6	63.4	5	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Marcus Hook AOI-4
Pace Project No.: 30143544

QC Batch: MPRP/15158 | Analysis Method: EPA 6010B
QC Batch Method: EPA 3050B | Analysis Description: 6010 MET
Associated Lab Samples: 30143544021, 30143544022

METHOD BLANK: 868869 | Matrix: Solid
Associated Lab Samples: 30143544021, 30143544022

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cobalt	mg/kg	1.0 U	1.0	03/26/15 14:31	
Lead	mg/kg	0.50 U	0.50	03/26/15 14:31	
Nickel	mg/kg	2.0 U	2.0	03/26/15 14:31	
Vanadium	mg/kg	1.0 U	1.0	03/26/15 14:31	
Zinc	mg/kg	1.0 U	1.0	03/26/15 14:31	

LABORATORY CONTROL SAMPLE: 868870

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cobalt	mg/kg	50	48.7	97	80-120	
Lead	mg/kg	50	45.3	91	80-120	
Nickel	mg/kg	50	49.4	99	80-120	
Vanadium	mg/kg	50	50.4	101	80-120	
Zinc	mg/kg	50	47.9	96	80-120	

MATRIX SPIKE SAMPLE: 868872

Parameter	Units	30143544021 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Cobalt	mg/kg	7.8	45.3	53.4	101	75-125	
Lead	mg/kg	48.0	45.3	91.3	96	75-125	
Nickel	mg/kg	8.3	45.3	45.4	82	75-125	
Vanadium	mg/kg	42.2	45.3	74.3	71	75-125	M1
Zinc	mg/kg	49.8	45.3	85.5	79	75-125	

SAMPLE DUPLICATE: 868871

Parameter	Units	30143544021 Result	Dup Result	RPD	Max RPD	Qualifiers
Cobalt	mg/kg	7.8	7.0	11	20	
Lead	mg/kg	48.0	66.8	33	20	D6
Nickel	mg/kg	8.3	7.8	6	20	
Vanadium	mg/kg	42.2	37.4	12	20	
Zinc	mg/kg	49.8	52.5	5	20	

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QUALITY CONTROL DATA

Project: Marcus Hook AOI-4
Pace Project No.: 30143544

QC Batch: MSV/22932 | Analysis Method: EPA 8260B
QC Batch Method: EPA 8260B | Analysis Description: 8260 MSV 5035 Low
Associated Lab Samples: 30143544011, 30143544012, 30143544013, 30143544014, 30143544015, 30143544016, 30143544017, 30143544018, 30143544019, 30143544020, 30143544021, 30143544022

METHOD BLANK: 872925 | Matrix: Solid
Associated Lab Samples: 30143544011, 30143544012, 30143544013, 30143544014, 30143544015, 30143544016, 30143544017, 30143544018, 30143544019, 30143544020, 30143544021, 30143544022

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	mg/kg	0.0050 U	0.0050	03/31/15 11:46	
1,2-Dibromoethane (EDB)	mg/kg	0.0050 U	0.0050	03/31/15 11:46	
1,2-Dichloroethane	mg/kg	0.0050 U	0.0050	03/31/15 11:46	
1,3,5-Trimethylbenzene	mg/kg	0.0050 U	0.0050	03/31/15 11:46	
Benzene	mg/kg	0.0050 U	0.0050	03/31/15 11:46	
Cyclohexane	mg/kg	0.010 U	0.010	03/31/15 11:46	
Ethylbenzene	mg/kg	0.0050 U	0.0050	03/31/15 11:46	
Hexane	mg/kg	0.010 U	0.010	03/31/15 11:46	
Isopropylbenzene (Cumene)	mg/kg	0.0050 U	0.0050	03/31/15 11:46	
Methyl-tert-butyl ether	mg/kg	0.0050 U	0.0050	03/31/15 11:46	
sec-Butylbenzene	mg/kg	0.0050 U	0.0050	03/31/15 11:46	
tert-Butylbenzene	mg/kg	0.0050 U	0.0050	03/31/15 11:46	
Toluene	mg/kg	0.0050 U	0.0050	03/31/15 11:46	
Xylene (Total)	mg/kg	0.015 U	0.015	03/31/15 11:46	
1,2-Dichloroethane-d4 (S)	%	100	83-138	03/31/15 11:46	
4-Bromofluorobenzene (S)	%	100	71-124	03/31/15 11:46	
Toluene-d8 (S)	%	100	73-124	03/31/15 11:46	

LABORATORY CONTROL SAMPLE: 872926

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	mg/kg	.02	0.020	102	54-131	
1,2-Dibromoethane (EDB)	mg/kg	.02	0.018	89	57-110	
1,2-Dichloroethane	mg/kg	.02	0.019	93	52-121	
1,3,5-Trimethylbenzene	mg/kg	.02	0.020	102	54-131	
Benzene	mg/kg	.02	0.021	104	52-126	
Cyclohexane	mg/kg	.02	0.021	107	50-132	
Ethylbenzene	mg/kg	.02	0.020	98	54-128	
Hexane	mg/kg		0.019			
Isopropylbenzene (Cumene)	mg/kg	.02	0.022	110	58-144	
Methyl-tert-butyl ether	mg/kg	.02	0.021	105	57-129	
sec-Butylbenzene	mg/kg	.02	0.022	108	51-145	
tert-Butylbenzene	mg/kg	.02	0.024	120	54-139	
Toluene	mg/kg	.02	0.020	98	53-127	
Xylene (Total)	mg/kg	.06	0.058	97	53-127	
1,2-Dichloroethane-d4 (S)	%			108	83-138	
4-Bromofluorobenzene (S)	%			104	71-124	
Toluene-d8 (S)	%			99	73-124	

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QUALITY CONTROL DATA

Project: Marcus Hook AOI-4
Pace Project No.: 30143544

QC Batch: MSV/22931 — Analysis Method: EPA 8260B
QC Batch Method: EPA 8260B — Analysis Description: 8260 MSV UST-SOIL
Associated Lab Samples: 30143544001, 30143544002, 30143544003, 30143544004, 30143544005, 30143544006, 30143544007, 30143544008, 30143544009, 30143544010

METHOD BLANK: 872917 — Matrix: Solid
Associated Lab Samples: 30143544001, 30143544002, 30143544003, 30143544004, 30143544005, 30143544006, 30143544007, 30143544008, 30143544009, 30143544010

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	mg/kg	0.0050 U	0.0050	03/31/15 12:00	
1,2-Dibromoethane (EDB)	mg/kg	0.0050 U	0.0050	03/31/15 12:00	
1,2-Dichloroethane	mg/kg	0.0050 U	0.0050	03/31/15 12:00	
1,3,5-Trimethylbenzene	mg/kg	0.0050 U	0.0050	03/31/15 12:00	
Benzene	mg/kg	0.0050 U	0.0050	03/31/15 12:00	
Ethylbenzene	mg/kg	0.0050 U	0.0050	03/31/15 12:00	
Isopropylbenzene (Cumene)	mg/kg	0.0050 U	0.0050	03/31/15 12:00	
Methyl-tert-butyl ether	mg/kg	0.0050 U	0.0050	03/31/15 12:00	
Toluene	mg/kg	0.0050 U	0.0050	03/31/15 12:00	
Xylene (Total)	mg/kg	0.015 U	0.015	03/31/15 12:00	
1,2-Dichloroethane-d4 (S)	%	101	83-138	03/31/15 12:00	
4-Bromofluorobenzene (S)	%	89	71-124	03/31/15 12:00	
Toluene-d8 (S)	%	96	73-124	03/31/15 12:00	

LABORATORY CONTROL SAMPLE: 872918

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	mg/kg	.02	0.020	100	54-131	
1,2-Dibromoethane (EDB)	mg/kg	.02	0.018	90	57-110	
1,2-Dichloroethane	mg/kg	.02	0.018	88	52-121	
1,3,5-Trimethylbenzene	mg/kg	.02	0.020	98	54-131	
Benzene	mg/kg	.02	0.020	100	52-126	
Ethylbenzene	mg/kg	.02	0.019	96	54-128	
Isopropylbenzene (Cumene)	mg/kg	.02	0.020	99	58-144	
Methyl-tert-butyl ether	mg/kg	.02	0.020	99	57-129	
Toluene	mg/kg	.02	0.020	98	53-127	
Xylene (Total)	mg/kg	.06	0.058	96	53-127	
1,2-Dichloroethane-d4 (S)	%			103	83-138	
4-Bromofluorobenzene (S)	%			97	71-124	
Toluene-d8 (S)	%			97	73-124	

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QUALITY CONTROL DATA

Project: Marcus Hook AOI-4
Pace Project No.: 30143544

QC Batch: OEXT/23061 | Analysis Method: EPA 8270C by SIM
QC Batch Method: EPA 3546 | Analysis Description: 8270/3546 MSSV PAH by SIM
Associated Lab Samples: 30143544001, 30143544002, 30143544003, 30143544004, 30143544005, 30143544006, 30143544007, 30143544008, 30143544009, 30143544010

METHOD BLANK: 871230 | Matrix: Solid
Associated Lab Samples: 30143544001, 30143544002, 30143544003, 30143544004, 30143544005, 30143544006, 30143544007, 30143544008, 30143544009, 30143544010

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Anthracene	mg/kg	0.0067 U	0.0067	03/30/15 22:04	
Benzo(a)anthracene	mg/kg	0.0067 U	0.0067	03/30/15 22:04	
Benzo(a)pyrene	mg/kg	0.0067 U	0.0067	03/30/15 22:04	
Benzo(b)fluoranthene	mg/kg	0.0067 U	0.0067	03/30/15 22:04	
Benzo(g,h,i)perylene	mg/kg	0.0067 U	0.0067	03/30/15 22:04	
Chrysene	mg/kg	0.0067 U	0.0067	03/30/15 22:04	
Fluorene	mg/kg	0.0067 U	0.0067	03/30/15 22:04	
Naphthalene	mg/kg	0.0067 U	0.0067	03/30/15 22:04	
Phenanthrene	mg/kg	0.0067 U	0.0067	03/30/15 22:04	
Pyrene	mg/kg	0.0067 U	0.0067	03/30/15 22:04	
2-Fluorobiphenyl (S)	%	93	35-141	03/30/15 22:04	
Terphenyl-d14 (S)	%	105	64-141	03/30/15 22:04	

LABORATORY CONTROL SAMPLE: 871231

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Anthracene	mg/kg	.13	0.12	86	59-115	
Benzo(a)anthracene	mg/kg	.13	0.12	93	62-122	
Benzo(a)pyrene	mg/kg	.13	0.11	80	56-113	
Benzo(b)fluoranthene	mg/kg	.13	0.13	100	43-138	
Benzo(g,h,i)perylene	mg/kg	.13	0.11	80	47-143	
Chrysene	mg/kg	.13	0.12	91	64-119	
Fluorene	mg/kg	.13	0.11	83	46-114	
Naphthalene	mg/kg	.13	0.10	78	47-108	
Phenanthrene	mg/kg	.13	0.11	83	42-122	
Pyrene	mg/kg	.13	0.12	88	64-117	
2-Fluorobiphenyl (S)	%			84	35-141	
Terphenyl-d14 (S)	%			100	64-141	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 871232 871233

Parameter	Units	30143195008 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Anthracene	mg/kg	ND	.18	.18	0.21	0.16J	116	87	59-115		20	M6
Benzo(a)anthracene	mg/kg	206 ug/kg	.18	.18	0.36	0.25	84	21	62-122	37	20	M6,R1
Benzo(a)pyrene	mg/kg	ND	.18	.18	0.31	0.24	69	33	56-113	24	20	M6,R1
Benzo(b)fluoranthene	mg/kg	415 ug/kg	.18	.18	0.45	0.38	22	-18	43-138	17	20	M6

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QUALITY CONTROL DATA

Project: Marcus Hook AOI-4
Pace Project No.: 30143544

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 871232 871233

Parameter	Units	30143195008 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Benzo(g,h,i)perylene	mg/kg	ND	.18	.18	0.13J	0.12J	74	69	47-143		20	
Chrysene	mg/kg	213 ug/kg	.18	.18	0.39	0.25	100	22	64-119	43	20	M6,R1
Fluorene	mg/kg	ND	.18	.18	0.16J	0.16J	89	87	46-114		20	
Naphthalene	mg/kg	ND	.18	.18	0.16J	0.19	90	102	47-108		20	
Phenanthrene	mg/kg	ND	.18	.18	0.39	0.21	215	114	42-122	61	20	M6,R1
Pyrene	mg/kg	266 ug/kg	.18	.18	0.50	0.27	132	0	64-117	62	20	M6,R1
2-Fluorobiphenyl (S)	%						76	78	35-141			
Terphenyl-d14 (S)	%						97	93	64-141			

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QUALITY CONTROL DATA

Project: Marcus Hook AOI-4
Pace Project No.: 30143544

QC Batch: OEXT/23090 | Analysis Method: EPA 8270C by SIM
QC Batch Method: EPA 3546 | Analysis Description: 8270/3546 MSSV PAH by SIM
Associated Lab Samples: 30143544011, 30143544012, 30143544013, 30143544014, 30143544015, 30143544016, 30143544017, 30143544018, 30143544019, 30143544020, 30143544021, 30143544022

METHOD BLANK: 872463 | Matrix: Solid
Associated Lab Samples: 30143544011, 30143544012, 30143544013, 30143544014, 30143544015, 30143544016, 30143544017, 30143544018, 30143544019, 30143544020, 30143544021, 30143544022

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Acenaphthene	mg/kg	0.0067 U	0.0067	04/03/15 12:40	
Anthracene	mg/kg	0.0067 U	0.0067	04/03/15 12:40	
Benzo(a)anthracene	mg/kg	0.0067 U	0.0067	04/03/15 12:40	
Benzo(a)pyrene	mg/kg	0.0067 U	0.0067	04/03/15 12:40	
Benzo(b)fluoranthene	mg/kg	0.0067 U	0.0067	04/03/15 12:40	
Benzo(g,h,i)perylene	mg/kg	0.0067 U	0.0067	04/03/15 12:40	
Benzo(k)fluoranthene	mg/kg	0.0067 U	0.0067	04/03/15 12:40	
Chrysene	mg/kg	0.0067 U	0.0067	04/03/15 12:40	
Dibenz(a,h)anthracene	mg/kg	0.0067 U	0.0067	04/03/15 12:40	
Fluoranthene	mg/kg	0.0067 U	0.0067	04/03/15 12:40	
Fluorene	mg/kg	0.0067 U	0.0067	04/03/15 12:40	
Indeno(1,2,3-cd)pyrene	mg/kg	0.0067 U	0.0067	04/03/15 12:40	
Naphthalene	mg/kg	0.0067 U	0.0067	04/03/15 12:40	
Phenanthrene	mg/kg	0.0067 U	0.0067	04/03/15 12:40	
Pyrene	mg/kg	0.0067 U	0.0067	04/03/15 12:40	
Quinoline	mg/kg	0.0067 U	0.0067	04/03/15 12:40	
2-Fluorobiphenyl (S)	%	91	35-141	04/03/15 12:40	
Terphenyl-d14 (S)	%	91	64-141	04/03/15 12:40	

LABORATORY CONTROL SAMPLE: 872464

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Acenaphthene	mg/kg	.13	0.11	86	43-113	
Anthracene	mg/kg	.13	0.12	88	59-115	
Benzo(a)anthracene	mg/kg	.13	0.12	92	62-122	
Benzo(a)pyrene	mg/kg	.13	0.11	82	56-113	
Benzo(b)fluoranthene	mg/kg	.13	0.11	83	43-138	
Benzo(g,h,i)perylene	mg/kg	.13	0.12	93	47-143	
Benzo(k)fluoranthene	mg/kg	.13	0.13	96	52-138	
Chrysene	mg/kg	.13	0.13	94	64-119	
Dibenz(a,h)anthracene	mg/kg	.13	0.13	98	59-133	
Fluoranthene	mg/kg	.13	0.11	85	64-122	
Fluorene	mg/kg	.13	0.12	89	46-114	
Indeno(1,2,3-cd)pyrene	mg/kg	.13	0.13	96	59-132	
Naphthalene	mg/kg	.13	0.11	82	47-108	
Phenanthrene	mg/kg	.13	0.11	79	42-122	
Pyrene	mg/kg	.13	0.11	85	64-117	
Quinoline	mg/kg	.13	0.11	80	45-124	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Marcus Hook AOI-4
Pace Project No.: 30143544

LABORATORY CONTROL SAMPLE: 872464

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2-Fluorobiphenyl (S)	%			88	35-141	
Terphenyl-d14 (S)	%			87	64-141	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 872465 872466

Parameter	Units	30143922003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Acenaphthene	mg/kg	0.13	.13	.13	0.24	0.24	77	79	43-113	1	20	
Anthracene	mg/kg	0.042J	.13	.13	0.19	0.20	111	116	59-115	4	20	M6
Benzo(a)anthracene	mg/kg	0.045J	.13	.13	0.18	0.18	101	104	62-122	2	20	
Benzo(a)pyrene	mg/kg	0.031J	.13	.13	0.13J	0.14	76	81	56-113		20	
Benzo(b)fluoranthene	mg/kg	0.096J	.13	.13	0.16	0.16	52	52	43-138	0	20	
Benzo(g,h,i)perylene	mg/kg	0.066J	.13	.13	0.17	0.18	82	87	47-143	4	20	
Benzo(k)fluoranthene	mg/kg	0.081J	.13	.13	0.15	0.15	50	54	52-138	4	20	M6
Chrysene	mg/kg	0.074J	.13	.13	0.18	0.18	81	82	64-119	1	20	
Dibenz(a,h)anthracene	mg/kg	0.13 U	.13	.13	0.13J	0.13	98	102	59-133		20	
Fluoranthene	mg/kg	0.099J	.13	.13	0.22	0.23	91	96	64-122	3	20	
Fluorene	mg/kg	0.088J	.13	.13	0.23	0.23	107	105	46-114	1	20	
Indeno(1,2,3-cd)pyrene	mg/kg	0.13 U	.13	.13	0.15	0.15	113	113	59-132	1	20	
Naphthalene	mg/kg	11.0	.13	.13	10.7	10.7	-217	-238	47-108	0	20	M6
Phenanthrene	mg/kg	0.19	.13	.13	0.35	0.30	116	78	42-122	16	20	
Pyrene	mg/kg	0.16	.13	.13	0.27	0.29	86	94	64-117	4	20	
Quinoline	mg/kg	0.76	.13	.13	1.1	0.87	239	76	45-124	22	20	M1,R1
2-Fluorobiphenyl (S)	%						98	99	35-141			
Terphenyl-d14 (S)	%						101	102	64-141			

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QUALITY CONTROL DATA

Project: Marcus Hook AOI-4
Pace Project No.: 30143544

QC Batch: OEXT/23107 | Analysis Method: EPA 8270C
QC Batch Method: EPA 3546 | Analysis Description: 8270 Solid MSSV Microwave
Associated Lab Samples: 30143544011, 30143544012, 30143544013, 30143544014, 30143544015, 30143544016, 30143544017, 30143544018, 30143544019, 30143544020, 30143544021, 30143544022

METHOD BLANK: 873041 | Matrix: Solid
Associated Lab Samples: 30143544011, 30143544012, 30143544013, 30143544014, 30143544015, 30143544016, 30143544017, 30143544018, 30143544019, 30143544020, 30143544021, 30143544022

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
2,4-Dimethylphenol	mg/kg	0.33 U	0.33	04/01/15 19:28	
2,4-Dinitrophenol	mg/kg	0.83 U	0.83	04/01/15 19:28	
2-Methylnaphthalene	mg/kg	0.33 U	0.33	04/01/15 19:28	
2-Methylphenol(o-Cresol)	mg/kg	0.33 U	0.33	04/01/15 19:28	
3&4-Methylphenol(m&p Cresol)	mg/kg	0.67 U	0.67	04/01/15 19:28	
4-Nitrophenol	mg/kg	0.33 U	0.33	04/01/15 19:28	
Biphenyl (Diphenyl)	mg/kg	0.33 U	0.33	04/01/15 19:28	
bis(2-Ethylhexyl)phthalate	mg/kg	0.33 U	0.33	04/01/15 19:28	
Di-n-butylphthalate	mg/kg	0.33 U	0.33	04/01/15 19:28	
Diethylphthalate	mg/kg	0.33 U	0.33	04/01/15 19:28	
Phenol	mg/kg	0.33 U	0.33	04/01/15 19:28	
Pyridine	mg/kg	0.83 U	0.83	04/01/15 19:28	
2,4,6-Tribromophenol (S)	%	105	21-133	04/01/15 19:28	
2-Fluorobiphenyl (S)	%	101	50-112	04/01/15 19:28	
2-Fluorophenol (S)	%	114	38-124	04/01/15 19:28	
Nitrobenzene-d5 (S)	%	107	40-117	04/01/15 19:28	
Phenol-d6 (S)	%	112	53-115	04/01/15 19:28	
Terphenyl-d14 (S)	%	117	52-130	04/01/15 19:28	

LABORATORY CONTROL SAMPLE: 873042

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2,4-Dimethylphenol	mg/kg	3.3	2.5	74	33-137	
2,4-Dinitrophenol	mg/kg	3.3	3.4	102	10-160	
2-Methylnaphthalene	mg/kg	3.3	2.3	70	55-111	
2-Methylphenol(o-Cresol)	mg/kg	3.3	3.4	103	61-129	
3&4-Methylphenol(m&p Cresol)	mg/kg	3.3	3.2	95	49-142	
4-Nitrophenol	mg/kg	3.3	2.4	72	56-145	
Biphenyl (Diphenyl)	mg/kg		0.33 U			
bis(2-Ethylhexyl)phthalate	mg/kg	3.3	3.1	93	68-145	
Di-n-butylphthalate	mg/kg	3.3	3.1	92	73-127	
Diethylphthalate	mg/kg	3.3	3.2	95	70-128	
Phenol	mg/kg	3.3	2.9	86	68-111	
Pyridine	mg/kg	3.3	3.1	92	10-144	
2,4,6-Tribromophenol (S)	%			102	21-133	
2-Fluorobiphenyl (S)	%			93	50-112	
2-Fluorophenol (S)	%			88	38-124	
Nitrobenzene-d5 (S)	%			70	40-117	

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QUALITY CONTROL DATA

Project: Marcus Hook AOI-4
Pace Project No.: 30143544

LABORATORY CONTROL SAMPLE: 873042

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Phenol-d6 (S)	%			91	53-115	
Terphenyl-d14 (S)	%			97	52-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 873043 873044

Parameter	Units	30144101006 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
2,4-Dimethylphenol	mg/kg	0.33 U	3.2	3.3	2.6	2.4	81	73	33-137	8	25	
2,4-Dinitrophenol	mg/kg	0.82 U	3.2	3.3	0.81 U	0.83 U	0	0	10-160		25	M1
2-Methylnaphthalene	mg/kg	69.9	3.2	3.3	90.4	59.0	632	-330	55-111	42	25	M6,R1
2-Methylphenol(o-Cresol)	mg/kg	0.33 U	3.2	3.3	3.7	3.7	113	112	61-129	1	25	
3&4-Methylphenol(m&p Cresol)	mg/kg	0.65 U	3.2	3.3	3.3	3.4	103	104	49-142	3	25	
4-Nitrophenol	mg/kg	0.33 U	3.2	3.3	2.0	2.6	62	79	56-145	27	25	R1
Biphenyl (Diphenyl)	mg/kg	1.8			2.2	1.5				38	25	R1
bis(2-Ethylhexyl)phthalate	mg/kg	0.33 U	3.2	3.3	3.0	3.0	93	91	68-145	0	25	
Di-n-butylphthalate	mg/kg	0.33 U	3.2	3.3	2.9	2.8	89	85	73-127	2	25	
Diethylphthalate	mg/kg	0.33 U	3.2	3.3	2.2	2.5	68	76	70-128	13	25	M1
Phenol	mg/kg	0.33 U	3.2	3.3	3.2	3.0	100	91	68-111	7	25	
Pyridine	mg/kg	0.82 U	3.2	3.3	2.8	2.6	87	78	10-144	8	25	
2,4,6-Tribromophenol (S)	%						87	85	21-133			
2-Fluorobiphenyl (S)	%						66	71	50-112			
2-Fluorophenol (S)	%						92	89	38-124			
Nitrobenzene-d5 (S)	%						97	73	40-117			
Phenol-d6 (S)	%						94	89	53-115			
Terphenyl-d14 (S)	%						98	94	52-130			

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QUALITY CONTROL DATA

Project: Marcus Hook AOI-4
Pace Project No.: 30143544

QC Batch: PMST/5212 | Analysis Method: ASTM D2974-87
QC Batch Method: ASTM D2974-87 | Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 30143544001, 30143544002, 30143544003, 30143544004, 30143544005, 30143544006, 30143544007, 30143544008, 30143544009, 30143544010, 30143544011, 30143544012, 30143544013

SAMPLE DUPLICATE: 874686

Parameter	Units	30143544001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	17.5	16.4	6	20	

SAMPLE DUPLICATE: 874687

Parameter	Units	30143544002 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	13.6	13.4	2	20	

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QUALITY CONTROL DATA

Project: Marcus Hook AOI-4
Pace Project No.: 30143544

QC Batch: PMST/5213 | Analysis Method: ASTM D2974-87
QC Batch Method: ASTM D2974-87 | Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 30143544014, 30143544015, 30143544016, 30143544017, 30143544018, 30143544019, 30143544020, 30143544021, 30143544022

SAMPLE DUPLICATE: 874688

Parameter	Units	30143544014 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	18.7	18.8	0	20	

SAMPLE DUPLICATE: 874689

Parameter	Units	30143544015 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	14.7	16.2	10	20	

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QUALIFIERS

Project: Marcus Hook AOI-4
Pace Project No.: 30143544

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

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TNI - The NELAC Institute.

LABORATORIES

PASI-PA	Pace Analytical Services - Greensburg

ANALYTE QUALIFIERS

1c	Benzo(b)fluoranthene and benzo(k)fluoranthene were separated in the check standard but did not meet the resolution criteria in SW846 Method 8270C. Whereas sample results included are reported as individual isomers, the lab and the customer must recognize them as an isomeric pair.
D6	The relative percent difference (RPD) between the sample and sample duplicate exceeded laboratory control limits.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
M6	Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.
R1	RPD value was outside control limits.
S4	Surrogate recovery not evaluated against control limits due to sample dilution.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Marcus Hook AOI-4
Pace Project No.: 30143544

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
30143544001	**AOI4_MW-510_0-2_03192015**	EPA 3050B	MPRP/15157	EPA 6010B	ICP/14349
30143544002	**AOI4_MW-510_4-6_03192015**	EPA 3050B	MPRP/15157	EPA 6010B	ICP/14349
30143544003	**AOI4_MW-507_0-2_03192015**	EPA 3050B	MPRP/15157	EPA 6010B	ICP/14349
30143544004	**AOI4_MW-507_6-8_03192015**	EPA 3050B	MPRP/15157	EPA 6010B	ICP/14349
30143544005	**AOI4_MW-508_0-2_03192015**	EPA 3050B	MPRP/15157	EPA 6010B	ICP/14349
30143544006	**AOI4_MW-508_4-6_03192015**	EPA 3050B	MPRP/15157	EPA 6010B	ICP/14349
30143544007	**AOI4_BH-15-40_0-2_03192015**	EPA 3050B	MPRP/15157	EPA 6010B	ICP/14349
30143544008	**AOI4_BH-15-40_4-6_03192015**	EPA 3050B	MPRP/15157	EPA 6010B	ICP/14349
30143544009	**AOI4_BH-15-39_0-2_03192015**	EPA 3050B	MPRP/15157	EPA 6010B	ICP/14349
30143544010	**AOI4_BH-15-39_4-6_03192015**	EPA 3050B	MPRP/15157	EPA 6010B	ICP/14349
30143544011	**AOI4_BH-15-46_0-2_03192015**	EPA 3050B	MPRP/15157	EPA 6010B	ICP/14349
30143544012	**AOI4_BH-15-46_4-6_03192015**	EPA 3050B	MPRP/15157	EPA 6010B	ICP/14349
30143544013	**AOI4_BH-15-47_0-2_03202015**	EPA 3050B	MPRP/15157	EPA 6010B	ICP/14349
30143544014	**AOI4_BH-15-47_4-6_03202015**	EPA 3050B	MPRP/15157	EPA 6010B	ICP/14349
30143544015	**AOI4_BH-15-48_0-2_03202015**	EPA 3050B	MPRP/15157	EPA 6010B	ICP/14349
30143544016	**AOI4_BH-15-48_6-8_03202015**	EPA 3050B	MPRP/15157	EPA 6010B	ICP/14349
30143544017	**AOI4_MW-505_0-2_03202015**	EPA 3050B	MPRP/15157	EPA 6010B	ICP/14349
30143544018	**AOI4_MW-505_6-8_03202015**	EPA 3050B	MPRP/15157	EPA 6010B	ICP/14349
30143544019	**AOI4_MW-506_0-2_03202015**	EPA 3050B	MPRP/15157	EPA 6010B	ICP/14349
30143544020	**AOI4_MW-506_4-6_03202015**	EPA 3050B	MPRP/15157	EPA 6010B	ICP/14349
30143544021	**AOI4_MW-504_0-2_03202015**	EPA 3050B	MPRP/15158	EPA 6010B	ICP/14350
30143544022	**AOI4_MW-504_4-6_03202015**	EPA 3050B	MPRP/15158	EPA 6010B	ICP/14350
30143544001	**AOI4_MW-510_0-2_03192015**	EPA 3546	OEXT/23061	EPA 8270C by SIM	MSSV/7414
30143544002	**AOI4_MW-510_4-6_03192015**	EPA 3546	OEXT/23061	EPA 8270C by SIM	MSSV/7414
30143544003	**AOI4_MW-507_0-2_03192015**	EPA 3546	OEXT/23061	EPA 8270C by SIM	MSSV/7414
30143544004	**AOI4_MW-507_6-8_03192015**	EPA 3546	OEXT/23061	EPA 8270C by SIM	MSSV/7414
30143544005	**AOI4_MW-508_0-2_03192015**	EPA 3546	OEXT/23061	EPA 8270C by SIM	MSSV/7414
30143544006	**AOI4_MW-508_4-6_03192015**	EPA 3546	OEXT/23061	EPA 8270C by SIM	MSSV/7414
30143544007	**AOI4_BH-15-40_0-2_03192015**	EPA 3546	OEXT/23061	EPA 8270C by SIM	MSSV/7414
30143544008	**AOI4_BH-15-40_4-6_03192015**	EPA 3546	OEXT/23061	EPA 8270C by SIM	MSSV/7414
30143544009	**AOI4_BH-15-39_0-2_03192015**	EPA 3546	OEXT/23061	EPA 8270C by SIM	MSSV/7414
30143544010	**AOI4_BH-15-39_4-6_03192015**	EPA 3546	OEXT/23061	EPA 8270C by SIM	MSSV/7414
30143544011	**AOI4_BH-15-46_0-2_03192015**	EPA 3546	OEXT/23090	EPA 8270C by SIM	MSSV/7427
30143544012	**AOI4_BH-15-46_4-6_03192015**	EPA 3546	OEXT/23090	EPA 8270C by SIM	MSSV/7427
30143544013	**AOI4_BH-15-47_0-2_03202015**	EPA 3546	OEXT/23090	EPA 8270C by SIM	MSSV/7427
30143544014	**AOI4_BH-15-47_4-6_03202015**	EPA 3546	OEXT/23090	EPA 8270C by SIM	MSSV/7427
30143544015	**AOI4_BH-15-48_0-2_03202015**	EPA 3546	OEXT/23090	EPA 8270C by SIM	MSSV/7427
30143544016	**AOI4_BH-15-48_6-8_03202015**	EPA 3546	OEXT/23090	EPA 8270C by SIM	MSSV/7427
30143544017	**AOI4_MW-505_0-2_03202015**	EPA 3546	OEXT/23090	EPA 8270C by SIM	MSSV/7427
30143544018	**AOI4_MW-505_6-8_03202015**	EPA 3546	OEXT/23090	EPA 8270C by SIM	MSSV/7427
30143544019	**AOI4_MW-506_0-2_03202015**	EPA 3546	OEXT/23090	EPA 8270C by SIM	MSSV/7427
30143544020	**AOI4_MW-506_4-6_03202015**	EPA 3546	OEXT/23090	EPA 8270C by SIM	MSSV/7427
30143544021	**AOI4_MW-504_0-2_03202015**	EPA 3546	OEXT/23090	EPA 8270C by SIM	MSSV/7427
30143544022	**AOI4_MW-504_4-6_03202015**	EPA 3546	OEXT/23090	EPA 8270C by SIM	MSSV/7427
30143544011	**AOI4_BH-15-46_0-2_03192015**	EPA 3546	OEXT/23107	EPA 8270C	MSSV/7424
30143544012	**AOI4_BH-15-46_4-6_03192015**	EPA 3546	OEXT/23107	EPA 8270C	MSSV/7424
30143544013	**AOI4_BH-15-47_0-2_03202015**	EPA 3546	OEXT/23107	EPA 8270C	MSSV/7424

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Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Marcus Hook AOI-4
Pace Project No.: 30143544

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
30143544014	**AOI4_BH-15-47_4-6_03202015**	EPA 3546	OEXT/23107	EPA 8270C	MSSV/7424
30143544015	**AOI4_BH-15-48_0-2_03202015**	EPA 3546	OEXT/23107	EPA 8270C	MSSV/7424
30143544016	**AOI4_BH-15-48_6-8_03202015**	EPA 3546	OEXT/23107	EPA 8270C	MSSV/7424
30143544017	**AOI4_MW-505_0-2_03202015**	EPA 3546	OEXT/23107	EPA 8270C	MSSV/7424
30143544018	**AOI4_MW-505_6-8_03202015**	EPA 3546	OEXT/23107	EPA 8270C	MSSV/7424
30143544019	**AOI4_MW-506_0-2_03202015**	EPA 3546	OEXT/23107	EPA 8270C	MSSV/7424
30143544020	**AOI4_MW-506_4-6_03202015**	EPA 3546	OEXT/23107	EPA 8270C	MSSV/7424
30143544021	**AOI4_MW-504_0-2_03202015**	EPA 3546	OEXT/23107	EPA 8270C	MSSV/7424
30143544022	**AOI4_MW-504_4-6_03202015**	EPA 3546	OEXT/23107	EPA 8270C	MSSV/7424
30143544011	**AOI4_BH-15-46_0-2_03192015**	EPA 8260B	MSV/22932		
30143544012	**AOI4_BH-15-46_4-6_03192015**	EPA 8260B	MSV/22932		
30143544013	**AOI4_BH-15-47_0-2_03202015**	EPA 8260B	MSV/22932		
30143544014	**AOI4_BH-15-47_4-6_03202015**	EPA 8260B	MSV/22932		
30143544015	**AOI4_BH-15-48_0-2_03202015**	EPA 8260B	MSV/22932		
30143544016	**AOI4_BH-15-48_6-8_03202015**	EPA 8260B	MSV/22932		
30143544017	**AOI4_MW-505_0-2_03202015**	EPA 8260B	MSV/22932		
30143544018	**AOI4_MW-505_6-8_03202015**	EPA 8260B	MSV/22932		
30143544019	**AOI4_MW-506_0-2_03202015**	EPA 8260B	MSV/22932		
30143544020	**AOI4_MW-506_4-6_03202015**	EPA 8260B	MSV/22932		
30143544021	**AOI4_MW-504_0-2_03202015**	EPA 8260B	MSV/22932		
30143544022	**AOI4_MW-504_4-6_03202015**	EPA 8260B	MSV/22932		
30143544001	**AOI4_MW-510_0-2_03192015**	EPA 8260B	MSV/22931		
30143544002	**AOI4_MW-510_4-6_03192015**	EPA 8260B	MSV/22931		
30143544003	**AOI4_MW-507_0-2_03192015**	EPA 8260B	MSV/22931		
30143544004	**AOI4_MW-507_6-8_03192015**	EPA 8260B	MSV/22931		
30143544005	**AOI4_MW-508_0-2_03192015**	EPA 8260B	MSV/22931		
30143544006	**AOI4_MW-508_4-6_03192015**	EPA 8260B	MSV/22931		
30143544007	**AOI4_BH-15-40_0-2_03192015**	EPA 8260B	MSV/22931		
30143544008	**AOI4_BH-15-40_4-6_03192015**	EPA 8260B	MSV/22931		
30143544009	**AOI4_BH-15-39_0-2_03192015**	EPA 8260B	MSV/22931		
30143544010	**AOI4_BH-15-39_4-6_03192015**	EPA 8260B	MSV/22931		
30143544001	**AOI4_MW-510_0-2_03192015**	ASTM D2974-87	PMST/5212		
30143544002	**AOI4_MW-510_4-6_03192015**	ASTM D2974-87	PMST/5212		
30143544003	**AOI4_MW-507_0-2_03192015**	ASTM D2974-87	PMST/5212		
30143544004	**AOI4_MW-507_6-8_03192015**	ASTM D2974-87	PMST/5212		
30143544005	**AOI4_MW-508_0-2_03192015**	ASTM D2974-87	PMST/5212		
30143544006	**AOI4_MW-508_4-6_03192015**	ASTM D2974-87	PMST/5212		
30143544007	**AOI4_BH-15-40_0-2_03192015**	ASTM D2974-87	PMST/5212		
30143544008	**AOI4_BH-15-40_4-6_03192015**	ASTM D2974-87	PMST/5212		
30143544009	**AOI4_BH-15-39_0-2_03192015**	ASTM D2974-87	PMST/5212		
30143544010	**AOI4_BH-15-39_4-6_03192015**	ASTM D2974-87	PMST/5212		
30143544011	**AOI4_BH-15-46_0-2_03192015**	ASTM D2974-87	PMST/5212		
30143544012	**AOI4_BH-15-46_4-6_03192015**	ASTM D2974-87	PMST/5212		
30143544013	**AOI4_BH-15-47_0-2_03202015**	ASTM D2974-87	PMST/5212		
30143544014	**AOI4_BH-15-47_4-6_03202015**	ASTM D2974-87	PMST/5213		
30143544015	**AOI4_BH-15-48_0-2_03202015**	ASTM D2974-87	PMST/5213		
30143544016	**AOI4_BH-15-48_6-8_03202015**	ASTM D2974-87	PMST/5213		

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Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Marcus Hook AOI-4
Pace Project No.: 30143544

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
30143544017	**AOI4_MW-505_0-2_03202015**	ASTM D2974-87	PMST/5213		
30143544018	**AOI4_MW-505_6-8_03202015**	ASTM D2974-87	PMST/5213		
30143544019	**AOI4_MW-506_0-2_03202015**	ASTM D2974-87	PMST/5213		
30143544020	**AOI4_MW-506_4-6_03202015**	ASTM D2974-87	PMST/5213		
30143544021	**AOI4_MW-504_0-2_03202015**	ASTM D2974-87	PMST/5213		
30143544022	**AOI4_MW-504_4-6_03202015**	ASTM D2974-87	PMST/5213		

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: of

1829849

Section A Required Client Information:

Company: Aquaterra
Address: 122 S. Church St West Chester
Email To: TD@aquaterra-tech.com
Phone: Fax:
Requested Due Date/TAT:

Section B Required Project Information:

Report To:
Copy To:
Purchase Order No.:
Project Name: Marcus Hook AOI-4
Project Number:

Section C Invoice Information:

Attention:
Company Name:
Address:
Pace Quote Reference:
Pace Project Manager:
Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: PA

Section D Required Client Information

Matrix Codes MATRIX / CODE: Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Tissue TS; Other OT

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED Composite Start DATE	COLLECTED Composite Start TIME	COLLECTED Composite End/Grab DATE	COLLECTED Composite End/Grab TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N)	8260 Ref Short List	8270 Ref Short List	Pb	8260 Ref Ext List	8270 Ref Ext List	Co, Ni, Pb, V, ZN	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	AOI4_MW-510_0-2_03192015						0800		5	2					2	1			X	X	X					0143544-001
2	AOI4_MW-510_4-6_03192015						0815		5	2					2	1			X	X	X					002
3	AOI4_MW-507_0-2_03192015						1015		5	2					2	1			X	X	X					003
4	AOI4_MW-507_6-8_03192015						1030		5	2					2	1			X	X	X					004
5	AOI4_MW-508_0-2_03192015						1115		5	2					2	1			X	X	X					005
6	AOI4_MW-508_4-6_03192015						1130		5	2					2	1			X	X	X					006
7	AOI4_BH-15-40_0-2_03192015						1200		5	2					2	1			X	X	X					007
8	AOI4_BH-15-40_4-6_03192015						1215		5	2					2	1			X	X	X					008
9	AOI4_BH-15-39_0-2_03192015						1245		5	2					2	1			X	X	X					009
10	AOI4_BH-15-39_4-6_03192015						1300		5	2					2	1			X	X	X					010
11	AOI4_BH-15-46_0-2_03192015						1330		5	2					2	1						X	X	X		011
12	AOI4_BH-15-46_4-6_03192015						1345		5	2					2	1						X	X	X		012

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
	[signature]	3/20/15	1500	[signature]	3/20/15	1430				
	[signature]	3/20	1930	Alyna R. Muchmore/Pace	3/21/15	0950	SUN	Y	N	Y

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Noelle Strunk

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 03/20/15

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-May-2007

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CHAIN-OF-CUSTODY / Analytical Request Document

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Page: of

1829850

Section A Required Client Information:

Company: Aquaterra
Address: 122 S. Church St West Chester
Email To: JD@aquaterra-tech.com
Phone: Fax:
Requested Due Date/TAT:

Section B Required Project Information:

Report To:
Copy To:
Purchase Order No.:
Project Name: Marcus Hook AOI-4
Project Number:

Section C Invoice Information:

Attention:
Company Name:
Address:
Pace Quote Reference:
Pace Project Manager:
Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: PA

Section D Required Client Information

Matrix Codes (MATRIX / CODE): Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Tissue TS; Other OT

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED Composite Start DATE	COLLECTED Composite Start TIME	COLLECTED Composite End/Grab DATE	COLLECTED Composite End/Grab TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N): 8260 Ref Ext List	8270 Ref Ext List	Co, Ni, Pb, V, Zn	8260 Ref Short List	8270 Ref Short List	Pb	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D. 30143544
1	AOI4_BH-15-47_0-2_03202015					3/20/15	0800		5	2					2	1		X	X	X					013
2	AOI4_BH-15-47_4-6_03202015					3/20/15	0815		5	2					2	1		X	X	X					014
3	AOI4_BH-15-48_0-2_03202015					3/20/15	0845		5	2					2	1		X	X	X					015
4	AOI4_BH-15-48_6-8_03202015					3/20/15	0900		5	2					2	1		X	X	X					016
5	AOI4_MW-505_0-2_03202015					3/20/15	0930		5	2					2	1		X	X	X					017
6	AOI4_MW-505_6-8_03202015					3/20/15	0945		5	2					2	1		X	X	X					018
7	AOI4_MW-506_0-2_03202015					3/20/15	1015		5	2					2	1		X	X	X					019
8	AOI4_MW-506_4-6_03202015					3/20/15	1030		5	2					2	1		X	X	X					020
9	AOI4_MW-504_0-2_03202015					3/20/15	1200		5	2					2	1		X	X	X					021
10	AOI4_MW-504_4-6_03202015					3/20/15	1230		5	2					2	1		X	X	X					022
11																									
12																									

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
	Luke [illegible]	3/20/15	1500	[illegible]	3/20	1430				
	[illegible]	3/20	1930	Alyna R. Muchonay/Pace	3/21	0950	SLUSH	Y	N	Y

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Noelle Stroik

SIGNATURE of SAMPLER: Noelle Stroik

DATE Signed (MM/DD/YY): 03/20/15

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-May-2007

Sample Condition Upon Receipt

Pace Analytical

Client Name: Aquatera

Project # 30143544

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Tracking #: 8040758 0032

Custody Seal on Cooler/Box Present: ☐ yes ☑ no Seals intact: ☐ yes ☐ no Biological Tissue is Frozen: Yes No

Packing Material: Bubble Wrap ✓ Bubble Bags ___ None ___ Other foam

Thermometer Used 7 Type of Ice: (Wet) Blue None ☑ Samples on ice, cooling process has begun

Cooler Temp.: Observed Temp.: 4.1 5.3 3.9 °C Correction Factor: -0.1 °C Final Temp: 4.0 5.2 3.8 °C

Temp should be above freezing to 6°C

Comments:

Date and initials of person examining contents: ARM 3/21/15

Chain of Custody Present:	☑Yes	☐No	☐N/A	1.
Chain of Custody Filled Out:	☑Yes	☐No	☐N/A	2.
Chain of Custody Relinquished:	☑Yes	☐No	☐N/A	3.
Sampler Name & Signature on COC:	☑Yes	☐No	☐N/A	4.
Samples Arrived within Hold Time:	☑Yes	☐No	☐N/A	5.
Short Hold Time Analysis (<72hr):	☐Yes	☑No	☐N/A	6.
Rush Turn Around Time Requested:	☐Yes	☑No	☐N/A	7.
Sufficient Volume:	☑Yes	☐No	☐N/A	8.
Correct Containers Used:	☑Yes	☐No	☐N/A	9.
-Pace Containers Used:	☑Yes	☐No	☐N/A	
Containers Intact:	☑Yes	☐No	☐N/A	10.
Filtered volume received for Dissolved tests	☐Yes	☐No	☑N/A	11. No dates on COC for samples 001-012
Sample Labels match COC: -Includes date/time/ID/Analysis Matrix: SL ARM 3/21/15	☑Yes	☐No	☐N/A	12. samples 001-012 dates are 3/19/15. samples 013-022 dates are 3/20/15
All containers needing preservation have been checked.	☐Yes	☐No	☑N/A	13. -Dates are part of sample ID and are present. QDC 3/23/15
All containers needing preservation are found to be in compliance with EPA recommendation.	☐Yes	☐No	☑N/A	
exceptions: VOA, coliform, TOC, O&G, Phenols	☐Yes	☑No		Initial when completed ARM / Lot # of added preservative
Samples checked for dechlorination:	☐Yes	☐No	☑N/A	14.
Headspace in VOA Vials (>6mm):	☐Yes	☐No	☑N/A	15.
Trip Blank Present:	☐Yes	☐No	☑N/A	16.
Trip Blank Custody Seals Present	☐Yes	☐No	☑N/A	
Pace Trip Blank Lot # (if purchased):				

Field Data Required? Y / N

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: Rachel Schmeltzer **Date:** 3/23/15

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Pace Analytical

Project Number: 30143544

Client Name: Aquaterra

Item No.	Matrix Code	Glass Jar (120 / 250 / 500 / 1L)	Soil kit (2 SB, 1M, soil jar)	Chemistry (250 / 500 / 1L)	Organics (1L)	Nutrient (250 / 500)	Phenolics (250 ml)	TOC (40 ml / 250 ml)	TOX (250 ml)	Total Metals	Dissolved Metals preserved Y N	O & G (1L)	TPH (1L)	VOA (40 ml 30 ml)	Cyanide (250 ml)	Sulfide (500 ml)	Bacteria (120 ml)	Wipes / swipe/ smear/ filter	Radchem Nalgene (125 / 250 / 500 / 1L)	Radchem Nalgene (1/2 gal. / 1 gal.L)	Cubitainer (500 ml / 4L)	Ziploc	Other	Other
001	SL	1	4																					
↓ 022	↓ SL	↓ 1	↓ 4																					

Amber

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