ArcelorMittal Indiana Harbor LLC
Central Wastewater Treatment Plant

Outfall 001 Oil Sheen Sampling Study
Preliminary Report

June 2016

Third Party Report Prepared by:

Amendola Engineering, Inc.
Lakewood, OH

NewFields Environmental Forensics
Rockland, MA

Prepared for:

ArcelorMittal Indiana Harbor LLC
East Chicago, IN

ArcelorMittal Indiana Harbor LLC
Central Wastewater Treatment Plant Outfall 001
Oil Sheen Sampling Study Preliminary Report

1. Introduction

As part of ArcelorMittal's comprehensive third-party investigations of oil sheen issues at Indiana Harbor Central Wastewater Treatment Plant (IH CWTP) Outfall 001 and Indiana Harbor West Outfalls 009 and 010, ArcelorMittal commissioned a preliminary oil source characterization assessment of possible discharges of oil to IH CWTP Outfall 001 and the IH CWTP process wastewater treatment system (Outfall 101). IH West Outfall 002 was not included in this assessment because Outfall 002 discharges only non-contact cooling water and storm water. Oil sheens have not been observed on the Outfall 002 discharge.

The oil source characterization assessment for IH CWTP Outfalls 001 and 101 included sampling and analysis of cold rolling solution from the U. S. Steel East Chicago Tin Operations (ECTO), oil in the IH CWTP untreated and treated wastewaters, oil in the South Sewer leading to Outfall 001 from U. S. Steel ECTO and oil sheens collected from behind the steel weir at Outfall 001 to the extent they were observed. In addition, oil sheens observed in the Lake George Canal and the Indiana Harbor Ship Canal (IHSC) were sampled and analyzed. Chemical and biomarker fingerprinting techniques were used to characterize the components of the oils sampled at each location with the objective of determining the source or sources of oil sheens that have been observed at Outfall 001.

Amendola Engineering, Inc. (Lakewood, OH) collaborated with ArcelorMittal and NewFields Environmental Forensics (Rockland, MA) on the study design. Amendola Engineering collected the field samples and prepared this study report. Analytical services were provided by Alpha Analytical, Inc. (Mansfield, MA) under direction from NewFields Environmental Forensics. NewFields Environmental Forensics provided assessments of the analytical results.

As presented in Attachment B (NewFields report), the principal findings from this study are as follows:

- Both oil sheens collected from behind the steel weir at Outfall 001 comprised a comparable type/mix of mineral oil(s), i.e., dearomatized lubricating and/or hydraulic oils.

- Oil collected from the U. S. Steel south sewer was highly comparable to the oils collected from behind the steel weir at Outfall 001.

- Oils collected at the influent to the CWTP and from behind the CTWP clarifier weir were similar to each other, but distinct from the oils collected from behind the Outfall 001 steel weir.

- The U. S. Steel cold rolling solution is composed of a non-petroleum (biological or synthetic) base oil. If it contributed to the oil sheens observed behind the Outfall 001 steel weir, the contribution was too small to be recognized using the methods used for this study.

- The oil sheens collected at Indianapolis Boulevard (Lake George Canal) and W. Columbus Drive (Indiana Harbor Ship Canal) are each comprised of weathered distillate and (non-dearomatized) residual range petroleums (e.g., diesel and residual fuel oils, or perhaps crude oil) that are distinct from the sheens collected behind the Outfall 001 steel weir.

In summary, during the period of this short-term sampling program, the south sewer from U. S. Steel ECTO appeared to be the predominant, and possibly the exclusive source of oily sheens that were observed behind the steel weir at IH CWTP Outfall 001.

2. Sample Collection Activities

U. S. Steel provided a sample of unused cold rolling solution on May 23, 2017 to ArcelorMittal. All other oil samples were collected on May 15 and May 17, 2017 by Amendola Engineering at the following locations:

Samples Collected May 15, 2017

- Oil in south sewer from U.S. Steel ECTO that discharges directly to Outfall 001
- Oil in influent pit to ArcelorMittal IH CWTP (untreated wastewaters)
- Oil sheen behind the clarifier weirs at the effluent from the ArcelorMittal IH CWTP (oil collected within the CWTP near the end of the treatment system)[1]
- Oil sheens behind the steel weir at the ArcelorMittal CWTP Outfall 001 (two samples)

Samples Collected May 17, 2017

- Oil sheen from the Lake George Canal at Indianapolis Boulevard[2]
- Oil sheen from the IHSC at West Columbus Drive

All samples were one-time grab samples using Teflon™ mesh oil samplers, with the exception of the sample of the U. S. Steel cold rolling solution. U. S. Steel provided a sealed glass sample jar of the solution to ArcelorMittal. Samples collected using Teflon™ mesh oil samplers followed the procedures set out at ASTM D4489-95 (Practice B).[3]

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[1] Outfall 101 is the overflow from the CWTP final clarifier. At the time of sampling, no oil or sheens were observed in the overflow channel. The oil sheen sample was collected from the surface of the clarifier behind the clarifier weir.

[2] The sample was collected from the IHSC behind an oil boom at Buckeye Pipeline Outfall 001 (storm water outfall) near the northern bank of the IHSC. Although oil was not observed in the IHSC outside of the oil boom at the time of sampling, oil had been observed on the IHSC at this location a number of times previously.

[3] ASTM 4489-95 (Reapproved 2011). Standard Practice for Sampling Waterborne Oils.

Samples were collected to characterize oil with the objective of identifying the source or sources of oil sheens observed at CWTP Outfall 001. All grab samples were shipped under chain of custody for next day arrival at the analytical laboratory. Aerial photographs of the sample locations are presented in Figure 1 and Attachment A. GPS coordinates of the sample collection locations are included in Table 1 of the NewFields report (see Attachment B).

3. Sample Collection Methods

Pre-cleaned Teflon™ mesh sampler nets were provided to Amendola Engineering by NewFields and were transported to IH CWTP for use in the sampling program. Discrete sample identification numbers and narrative sample identifiers were provided by Amendola Engineering for each sample. Sampling personnel used new disposal latex gloves for each sample collected. The Teflon™ mesh sampler nets were removed from the sample container and affixed to the dedicated sample wand at each sample location. The Teflon™ mesh sampler nets and wands were affixed to a pole sampler for sample collection. Sample times and GPS coordinates for each sample were documented by sampling personnel.

The Teflon™ mesh sampler nets were immersed in the oils present at the south sewer leading to Outfall 001 and for the untreated oil/wastewater mixture at the influent pit to the IH CWTP process wastewater treatment system. Oil sheen samples were collected from the IH CWTP final clarifier and from behind the steel weir at Outfall 001 by moving the Teflon™ mesh sampler nets ten (10) times through the oil films/sheens that were visible at the time of sampling.

A field blank, comprising a Teflon™ mesh sample net and wand, was analyzed as part of the program. The field blank sample was collected at the south bank of the Lake George sampling site at Indianapolis Boulevard (see Attachment A) using dedicated clean sampling gloves by removing the sample net and wand from the sample container momentarily and then placing the net back into the original sample container. The field blank sample container was appropriately labeled, placed into the sample cooler with all other samples and shipped to the laboratory for analysis under chain-of-custody. At each sample location, the used Teflon™ mesh samplers were returned to the sample containers provided by NewFields. The latex gloves and sample wands were discarded in plant trash. All samples were shipped under chain of custody to the analytical laboratory using chain-of-custody forms provided by NewFields.

4. Sample Analysis

Samples were analyzed under the direction of NewFields by Alpha Analytical, Inc. (Mansfield, MA) using the following methods:

- Total Petroleum Hydrocarbons (TPH) quantitation and fingerprinting (modified EPA Method 8015D)
- Polynuclear Aromatic Hydrocarbon (PAH) quantitation and fingerprinting (modified EPA Method 8270)
- Quantitative biomarker fingerprinting, as may be determined necessary (EPA Method 8270)

More complete descriptions of the analytical methods are presented in the NewFields Preliminary Assessment Report (see Attachment B).

5. Project Responsibilities and Reporting

Principal Responsible Person	Contact	Responsibilities
Thomas Barnett Manager, Env. Technology ArcelorMittal Indiana Harbor LLC 3001 Dickey Road East Chicago, IN 46312	Office: 219-399-2380 Mobile: 219-313-1605 Thomas.Barnett@arcelormittal.com	• ArcelorMittal principal contact • Provided site access • Assistance with sampling • Obtained and shipped U. S. Steel cold rolling solution to Alpha Analytical, Inc.
Matthew Oxsalida, P.E. Amendola Engineering, Inc. 15711 Detroit Avenue Lakewood, OH 44107	Office: 216-521-5903 Mobile: 440-223-1671 m.oxsalida@amendola-eng.com	• AEI project manager • Collected and shipped grab samples to Alpha Analytical, Inc. • Prepare oil sheen sampling study report
Scott Stout, Ph.D. NewFields Env. Forensics 300 Ledgewood Place, Suite 305 Rockland, MA 02370	Office: 781-681-5040 x 105 Mobile: 781-264-7080 sstout@newfields.com	• NewFields project manager • Provided Sample Kits • Responsible for arranging for chemical analysis by Alpha Analytical, Inc. and assessment of analytical results

6. Analytical Results and Study Findings

Attachment B is the NewFields Preliminary Assessment Report, which includes the analytical results, a preliminary assessment of the chemical/biomarker fingerprinting study, and conclusions based on the preliminary assessment of the analytical results. Measured concentrations and percentages of TPH and PAH, as well as biomarker-based ratios are presented in Table 2 of the report. Figures 1 to 6 presents comparisons of oils found in the various samples.

FIGURE 1
ArcelorMittal Indiana Harbor LLC
Central Wastewater Treatment Plant Outfall 001
Oil Sheen Sampling Study Preliminary Report
Oil Sampling Locations
CWTP Influent Pit
CWTP
South Sewer Manhole
CWTP Clarifier (Outfall 101)
CWTP Outfall 001
Lake George Canal
Lake George Canal at Indianapolis Blvd.
IHSC at W. Columbus Dr.

ATTACHMENT A

ArcelorMittal Indiana Harbor LLC

Central Wastewater Treatment Plant Outfall 001

Oil Sheen Sampling Study Preliminary Report

Oil Sampling Locations

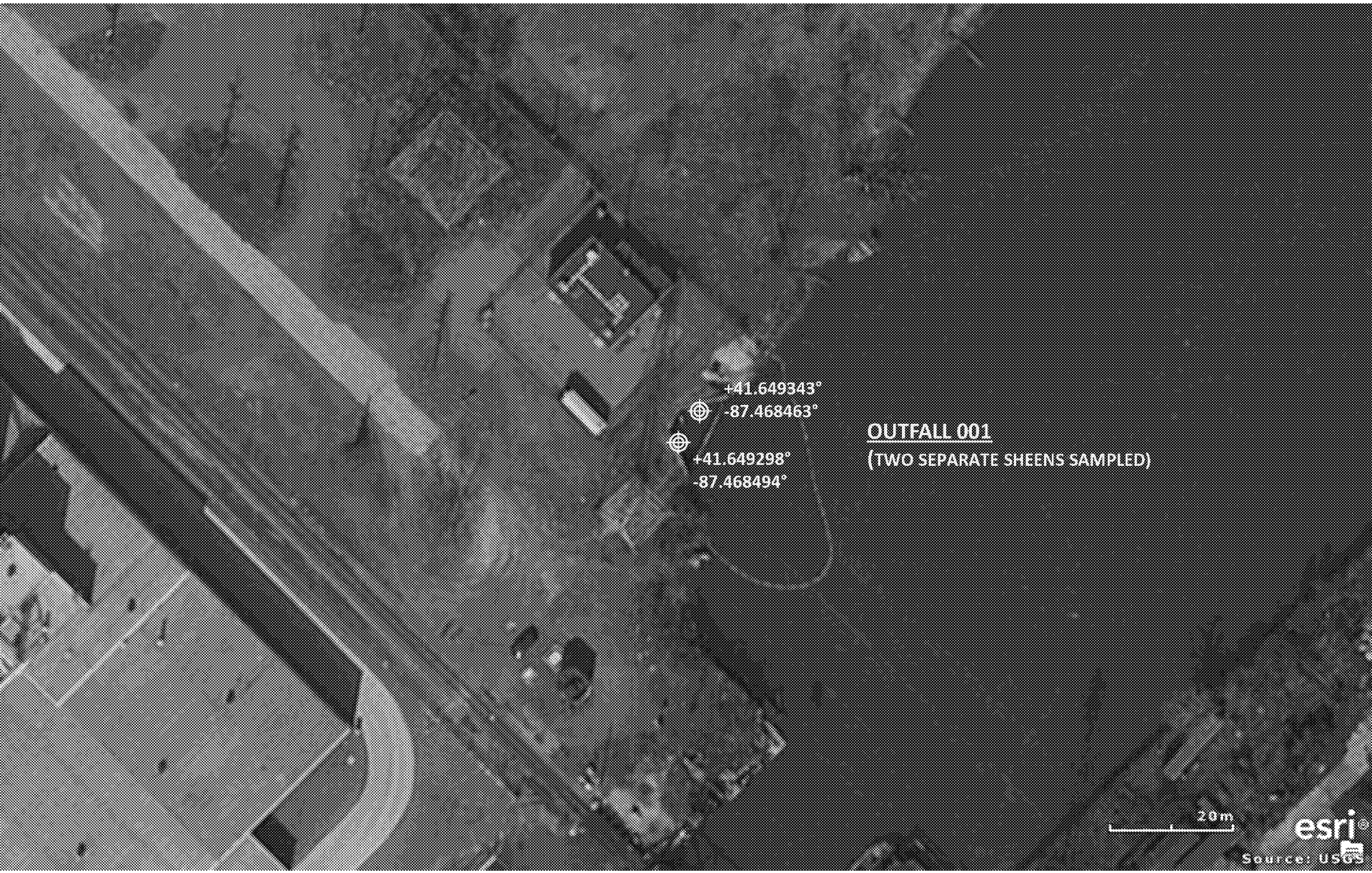
ATTACHMENT A

ArcelorMittal Indiana Harbor LLC

Central Wastewater Treatment Plant Outfall 001

Oil Sheen Sampling Study Preliminary Report

Oil Sampling Locations



ATTACHMENT A

ArcelorMittal Indiana Harbor LLC

Central Wastewater Treatment Plant Outfall 001

Oil Sheen Sampling Study Preliminary Report

Oil Sampling Locations

ATTACHMENT A

ArcelorMittal Indiana Harbor LLC

Central Wastewater Treatment Plant Outfall 001

Oil Sheen Sampling Study Preliminary Report

Oil Sampling Locations

ATTACHMENT B

NewFields

June 23, 2017

Gary A. Amendola, P.E.
Amendola Engineering, Inc.
15711 Detroit Avenue
Lakewood, OH 44107
216.521.5901

Preliminary Study of Outfall 001 Sheens
ArcelorMittal Indiana Harbor West
East Chicago, Indiana

Dear Mr. Amendola,

NewFields Companies, LLC is pleased to provide you with this preliminary assessment of the results of our recent chemical fingerprinting study surrounding the nature and origin of oily sheens collected at Outfall 001 of the ArcelorMittal Indiana Harbor facility in East Chicago, Indiana, which was conducted on behalf of ArcelorMittal, your client.

The objective of this study was to characterize the sheens observed at Outfall 001 in May 2017 and compare these to a few candidate sources within the Outfall 001 "drainage basin", including the influent/effluent from the ArcelorMittal Central Wastewater Treatment Plant (CWTP) and a tributary sewer system that includes effluent from the neighboring U.S. Steel ECTO facility. Additionally, sheens collected upstream within the Indiana Harbor Ship Canal drainage system and a U.S. Steel cold rolling solution were included (Table 1).

Samples and Analyses

The eight sheen samples (Table 1) were collected by personnel from your firm (M. Oxsalida) on May 15 and 17, 2017 using a pre-cleaned Teflon net, as per ASTM D4489.[1] The U.S. Steel rolling solution sample was acquired by ArcelorMittal (T. Barnett) on May 23, 2017. All samples were shipped under chain-of-custody to Alpha Analytical (Mansfield, MA) for chemical analysis at the direction of NewFields. Copies of the chain-of-custody documents are attached.

All samples were analyzed using a (1) modified EPA Method 8015B and (2) modified EPA Method 8270 described in detail elsewhere[2] and summarized as follows:

(1) *Total Petroleum Hydrocarbon Quantification and Fingerprinting*: a modified EPA Method 8015D employing high resolution gas chromatography-flame ionization detection (GC/FID) was used to determine the TPH concentration (C_9-C_{44}) and simultaneously provide a detailed fingerprint of the hydrocarbons present in each sample.

(2) *PAH Quantification and Fingerprinting*: a modified EPA Method 8270D was used to determine the concentrations of 71 semi-volatile compounds or compound groups, included Priority Pollutant PAHs, alkylated PAHs, decalins, and sulfur-containing aromatics. The concentrations of total PAHs are presented in two manners as follows:

[1] ASTM (2006). Standard practices for sampling of waterborne oils. ASTM Int'l., D 4489-2006, W. Conshohocken, PA, 3 p.
[2] Douglas, G.D., Emsbo-Mattingly, S.D., Stout, S.A., Uhler, A.D., and McCarthy, K.J. (2015). Hydrocarbon Fingerprinting Methods. In: *Introduction to Environmental Forensics, 3rd Ed.*, B. Murphy and R. Morrison, Eds., Academic Press, New York, pp. 201-309.

TPAH50 = sum of 50 analytes ranging from naphthalene to benzo-(*ghi*)perylene, exclusive of retene and benzo(*b*)fluorene, and
PPAH16 = sum of 16 Priority Pollutant PAHs.

(3) *Quantitative Biomarker Fingerprinting*: a modified EPA Method 8270D was used to determine the concentration of 55 tri-, tetra- and penta-cyclic triterpanes, regular and rearranged steranes, and aromatic steroids. These highly diagnostic compounds can be used to distinguish different hydrocarbon sources. Numerous biomarker ratios were calculated and normalized to 17α(H),21β(H)-hopane (hopane).

The concentrations of all target compounds in sheens and rolling solution were reported in mg/kg_{oil}, calculated using the gravimetric weight of the extractable material in each sample.

Results
The GC/FID (TPH) chromatographs and tabulated TPH, PAH, and biomarker concentration data are attached to this report. The complete Alpha data package (Batch ID: 1705009) is being maintained by NewFields but can be made available upon request. Selected metrics for the samples studied are presented in Table 2 and selected figures are shown in Figures 1 to 6. Discussion of these results can be provided at a later date if requested.

Conclusions
The data collected show:

(1) Both sheens collected at the Outfall 001 are comprised of a comparable type/mix of mineral oil(s), i.e., dearomatized lubricating and/or hydraulic oils.
(2) Oil collected from the south sewer manhole also is comprised of a mineral oil(s), and based on its boiling distribution and detailed biomarker analysis, is highly comparable to the Outfall 001 sheens.
(3) Influent and 101 clarifier oils collected from the CWTP also are each comprised of comparable type/mix of mineral oil(s), although based on their boiling distributions and detailed biomarker analysis, both are distinct from the Outfall 001 sheens.
(4) The sheens collected at Indianapolis Blvd. and W. Columbus Dr. are each comprised of mixtures of weathered distillate and (non-dearomatized) residual range petroleums (e.g., diesel and residual fuel oils, or perhaps crude oil) that are distinct from the Outfall 001 sheens.
(5) The U.S. Steel cold rolling solution is composed of a non-petroleum (biological or synthetic) base oil. If it contributes to the Outfall 001 sheen, its contribution is too small to recognized using the methods of this study.

Thus, based on the available data, the south sewer system appears to be the predominant-to-exclusive source of oily sheens appearing at Outfall 001 in May 2017.

If you have any questions regarding the data or results presented herein, please do not hesitate to call me at (781) 681-5040.

Sincerely,

Scott A. Stout, Ph.D., P.G.
Sr. Consulting Geochemist

Table 1: Inventory of samples studied.
All samples consisted of Teflon nets except the U.S. Steel rolling solution, which was solid suspension in liquid.

Client ID	Lab ID	Date Collected	Lat	Long	Description
001 Sheen 1	1705009-01	05/15/2017	41.649298	-87.468494	oil/rainbow sheen at Outfall 001 inside the steel weir
001 Sheen 2 (muck)	1705009-02	05/15/2017	41.649343	-87.458463	floating orangish muck at Outfall 001 inside the steel weir
South Sewer MH	1705009-04	05/15/2017	41.654276	-87.473643	oily muck in sewer manhole
101 Clarifier	1705009-03	05/15/2017	41.654156	-87.472512	floating oil on clarifier surface, behind weir (clarifier101)
CWTP Influent	1705009-05	05/15/2017	41.654747	-87.473024	floating oil at CWTP influent wet well
Indianapolis Blvd.	1705009-07	05/17/2017	41.646415	-87.480751	rainbow sheen on River (no boom present)
W. Columbus Dr.	1705009-08	05/17/2017	41.639424	-87.471589	rainbow sheen on River (within boom)
US Steel Rolling Solution*	1705009-09	05/23/2017	na	na	neat rolling solution from U.S. Steel plant
Field Blank	1705009-06	05/17/2017	41.646329	-87.480756	clean sampling net opened at Indianapolis Blvd. sample site

*analyzed in duplicate

Table 2: Selected metrics for the samples studied.

	001 Sheen 1	001 Sheen 2 (muck)	South Sewer MH	101 Clarifier	CWTP Influent	Indiana-polis Blvd.	W. Colum-bus Dr.	US Steel Rolling Solution	US Steel Rolling Solution (dup)	Field Blank
Concentrations/Percentages										
TPH (mg/kg)	466000	52500	61900	856000	192000	670000	776000	24200	26900	41700
TPAH50 (mg/kg)	161	177	150	201	604	8482	12301	2.6	2.1	1.8
PPAH16 (mg/kg)	19	20	8	17	17	1287	1339	1.1	0.9	1.1
%TPH as TPAH50	0.03	0.34	0.24	0.02	0.31	1.27	1.59	0.01	0.01	0.00
%TPAH50 as PPAH16	12	11	5.1	8.5	2.9	15	11	44	43	62
Hopane (mg/kg)	256	270	337	275	454	255	215	nd	nd	nd
Biomarker-Based Ratios										
Ts/Hopane[a]	0.18	0.17	0.16	0.30	0.31	0.25	0.23	ndp	ndp	ndp
Tm/Hopane[b]	0.19	0.19	0.17	0.28	0.29	0.23	0.23	ndp	ndp	ndp
Norhopane/Hopane[c]	0.57	0.58	0.58	0.73	0.76	0.65	0.59	ndp	ndp	ndp
Tricyclics/Hopane[d]	0.21	0.20	0.22	0.40	0.52	0.48	0.59	ndp	ndp	ndp
Oleanane/Hopane[e]	0.10	0.11	0.12	0.07	0.06	0.10	0.08	ndp	ndp	ndp
C27diasteranes/Hopane[f]	0.21	0.21	0.17	0.45	0.54	0.39	0.54	ndp	ndp	ndp
C29diasteranes/Hopane[g]	0.58	0.60	0.59	0.93	1.08	0.91	1.10	ndp	ndp	ndp
ΣTAS/Hopane[h]	0.18	0.24	0.26	0.21	0.28	2.2	3.2	ndp	ndp	ndp
TPAH50/Hopane	0.63	0.66	0.45	0.73	1.3	33	57	ndp	ndp	ndp

[a]T11/T19; [b]T12/T19; [c]T15/T19; [d](T7 to T10)/T19; [e]T18/T19; [f](S4+S5)/T19; [g](S12+S17)T19; [h](total TAS)/T19

greyed cells: relative difference > 14% versus 001 Sheen (average)

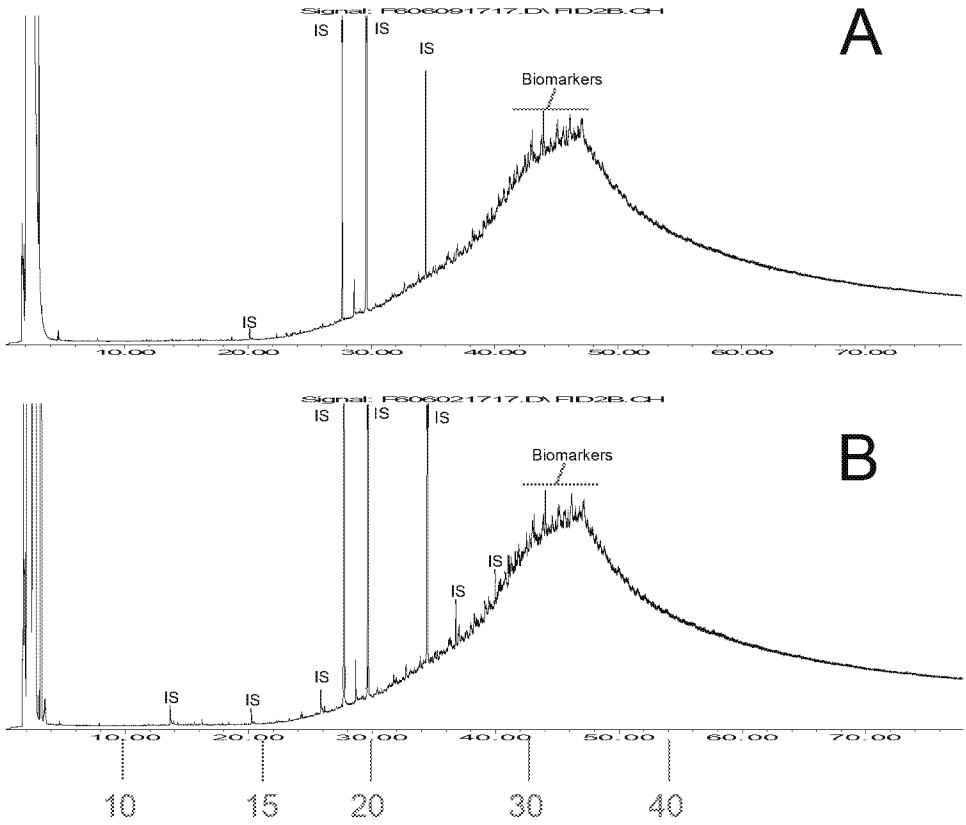


Figure 1: GC/FID chromatograms for the 001 Outfall sheens collected May 15, 2017. (A) 001 Sheen 1 and (B) 001 Sheen 2 (muck). IS: internal standards. Carbon ranges given at bottom of figure. Both sheens are comprised of similar type/mix of mineral oil(s), i.e., dearomatized lubricating and/or hydraulic oils.

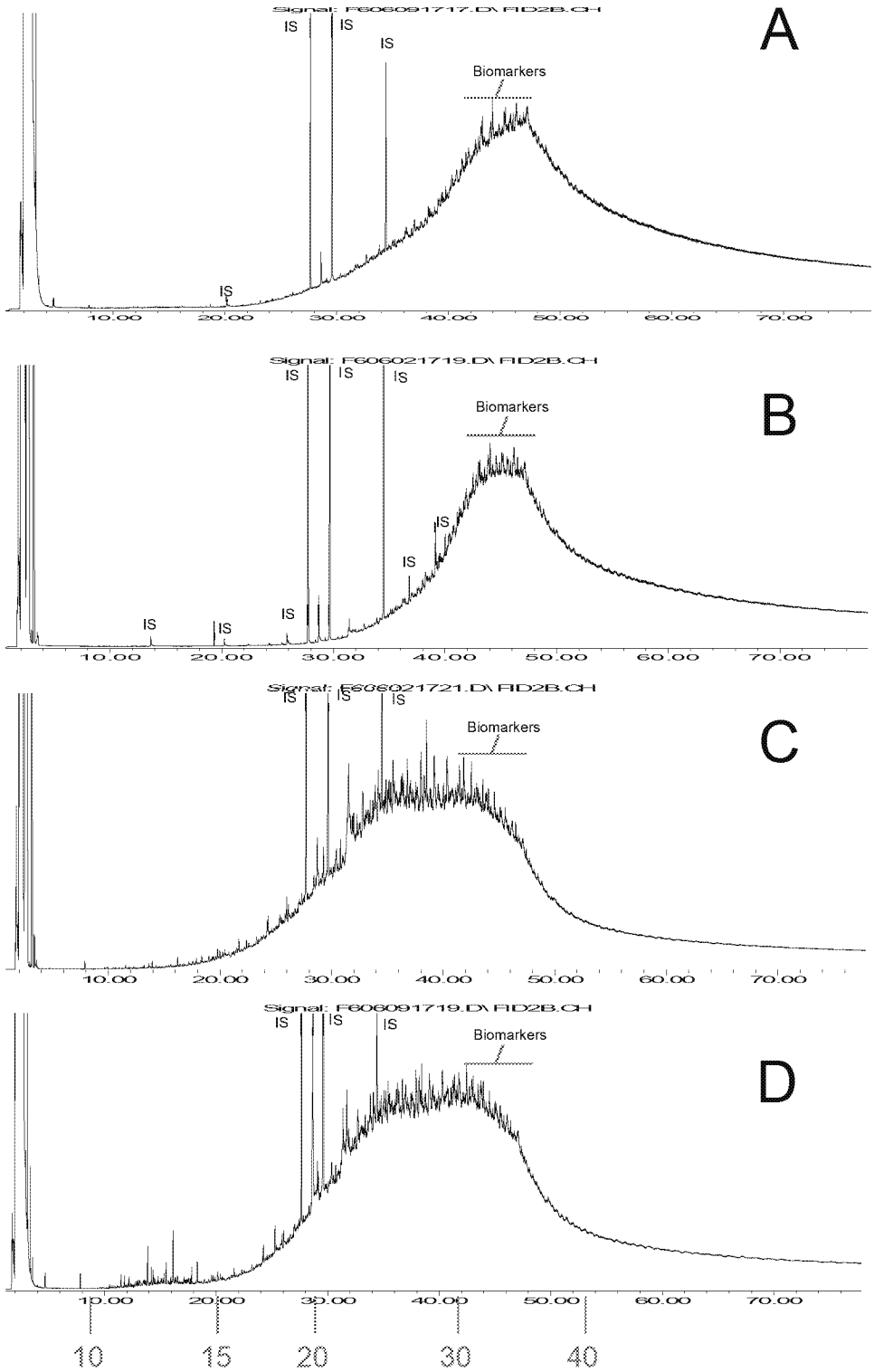


Figure 2: GC/FID chromatograms for (A) 001 Sheen 1, (B) South sewer manhole oil, (C) CWTP influent oil, and (D) 101 clarifier oil. IS: internal standards. Carbon ranges given at bottom of figure. The south sewer manhole oil and two CWTP-related oils are all comprised of mineral oil(s), although the south sewer manhole oil is most similar to the 001 sheen. The CWTP oils are highly comparable to one another but distinct from the Outfall 001 sheens.

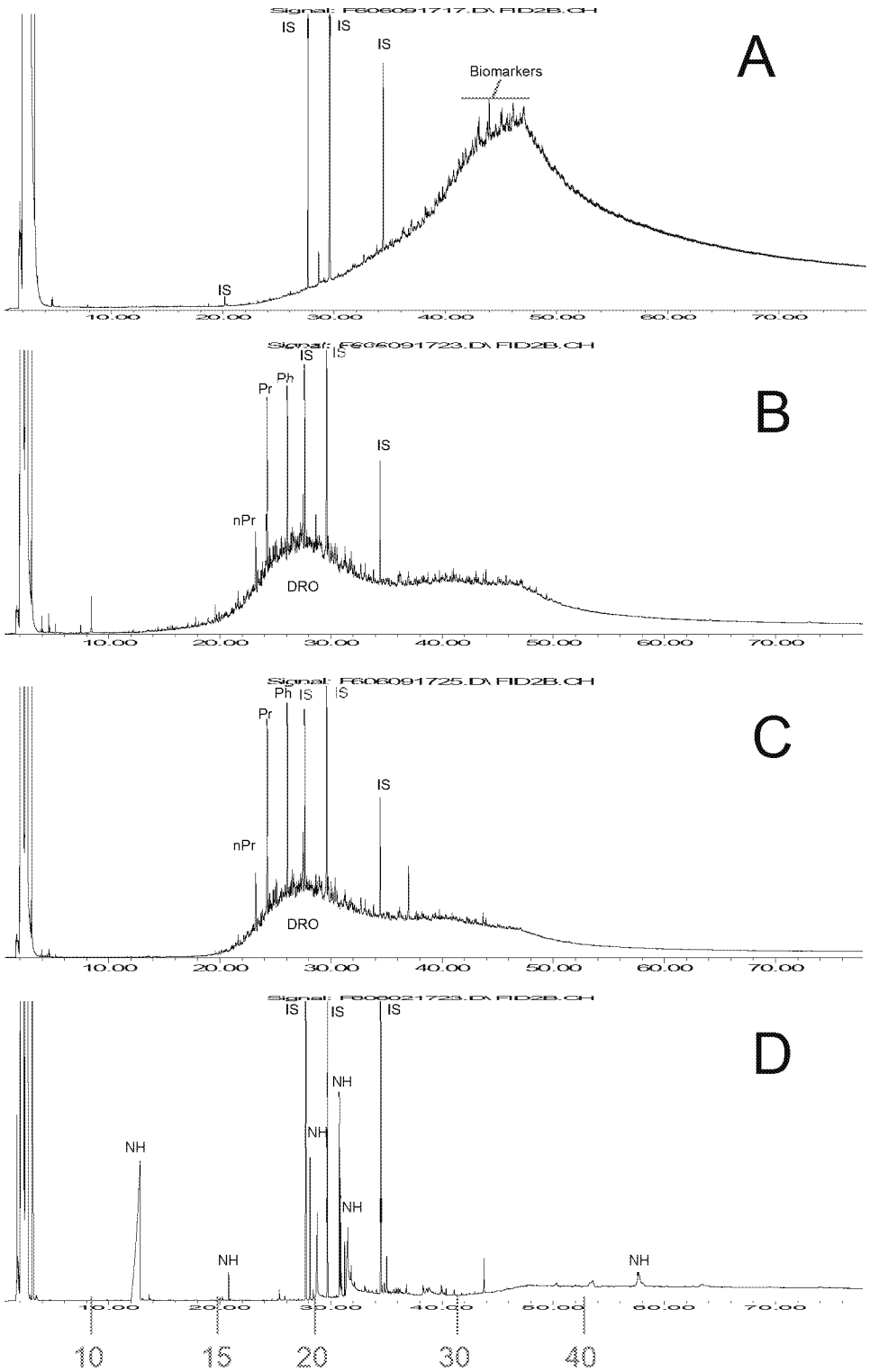


Figure 3: GC/FID chromatograms for (A) 001 Sheen 1, (B) Indianapolis Blvd. sheen, (C) W. Columbus Dr. sheen, and (D) US Steel rolling solution. IS: internal standards; Pr: pristane; Ph: phytane; nPr: norpristane; DRO: diesel range organics; NH: suspected non-hydrocarbons. Carbon ranges given at bottom of figure. The upstream sheens are each comprised of mixtures of weathered distillate and (non-dearomatized) residual range petroleums (e.g., diesel and residual fuel oil or crude oil) that are distinct from the Outfall 001 sheens. The US Steel rolling oil solution is comprised of a non-petroleum (biological or synthetic) base oil.

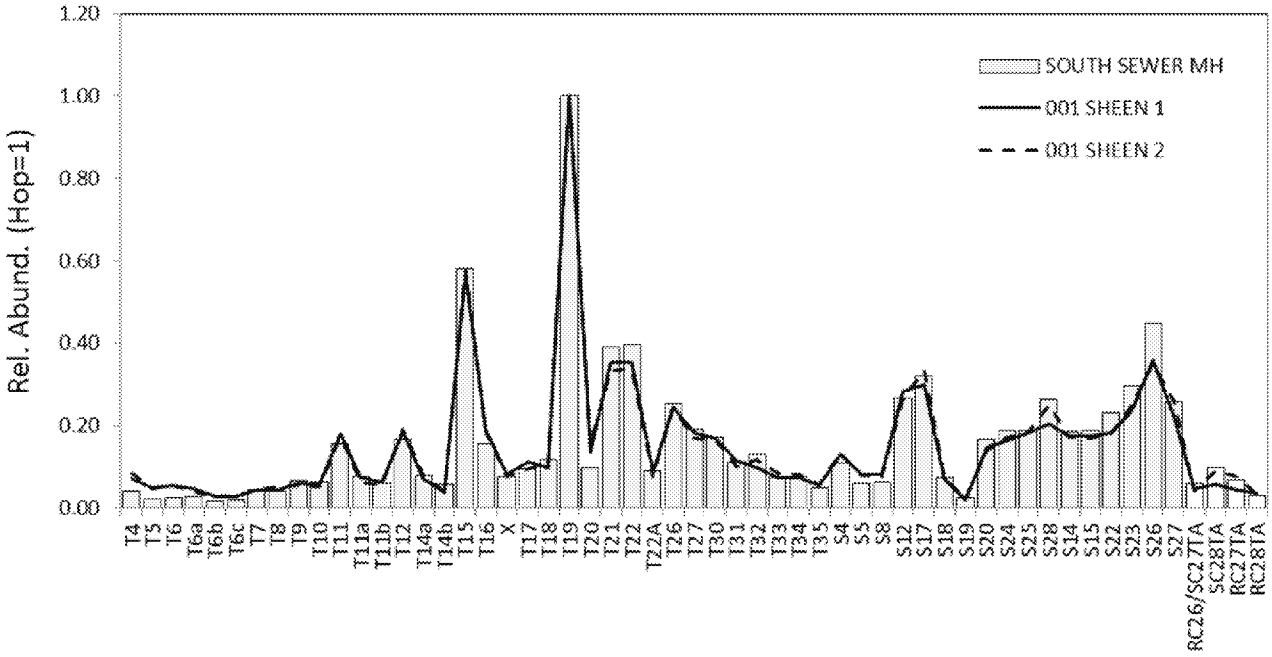


Figure 4: Histogram showing the hopane-normalized distributions of triterpanes (blue), dia- and regular steranes (red), and triaromatic steroids (yellow) in the south sewer manhole oil versus the 001 Outfall sheens. Note the high degree of comparability between the south sewer manhole oil and 001 Outfall sheens. T19=hopane, see attached tables for all other analyte abbreviations.

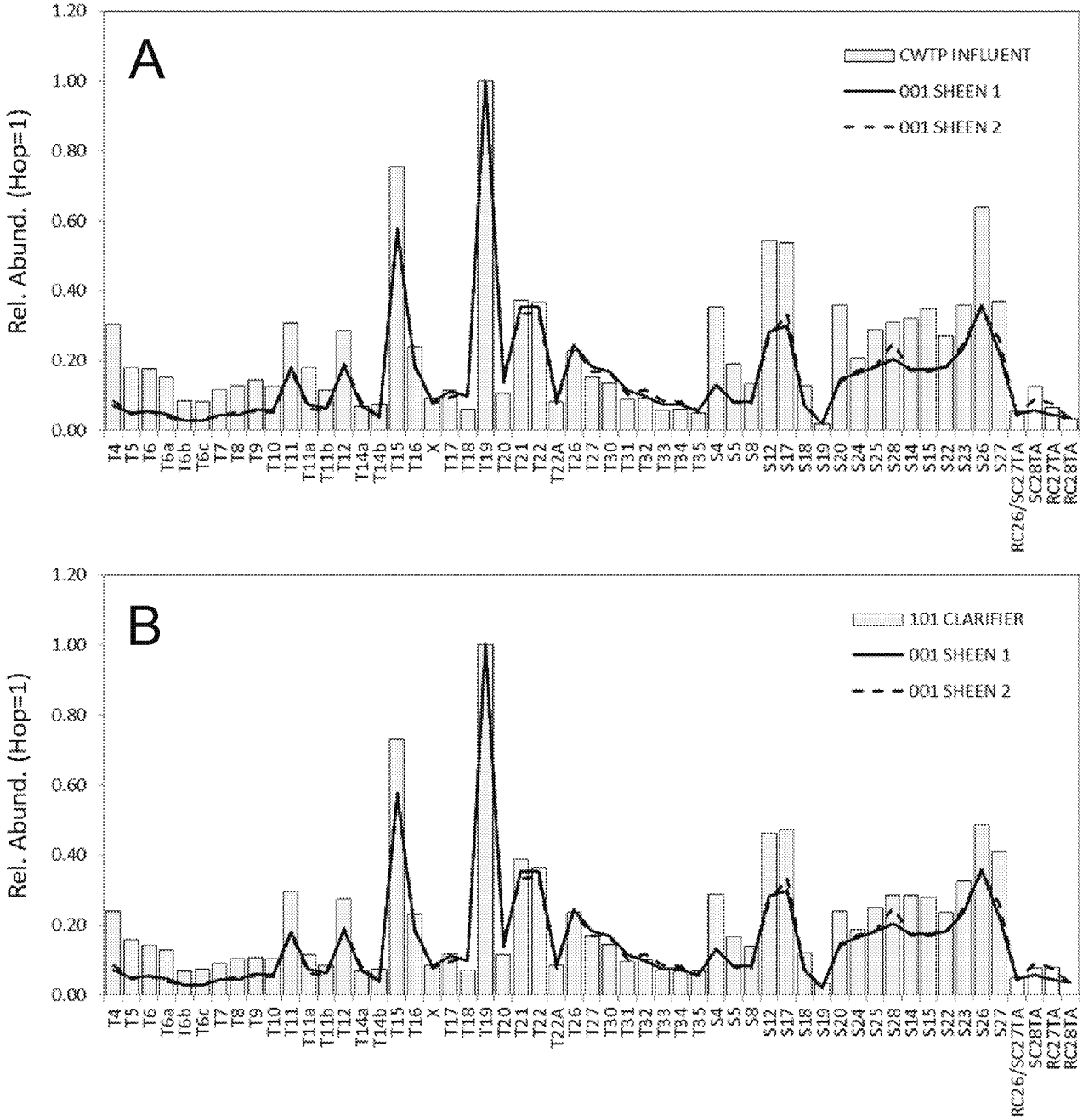


Figure 5: Histograms showing the hopane-normalized distributions of triterpanes (blue), dia- and regular steranes (red), and triaromatic steroids (yellow) in the (A) CWTP influent oil and (B) CWTP 101 clarifier oil versus the 001 Outfall sheens. Note the poor comparability between the CWTP oils and 001 Outfall sheens. T19=hopane, see attached tables for all other analyte abbreviations.

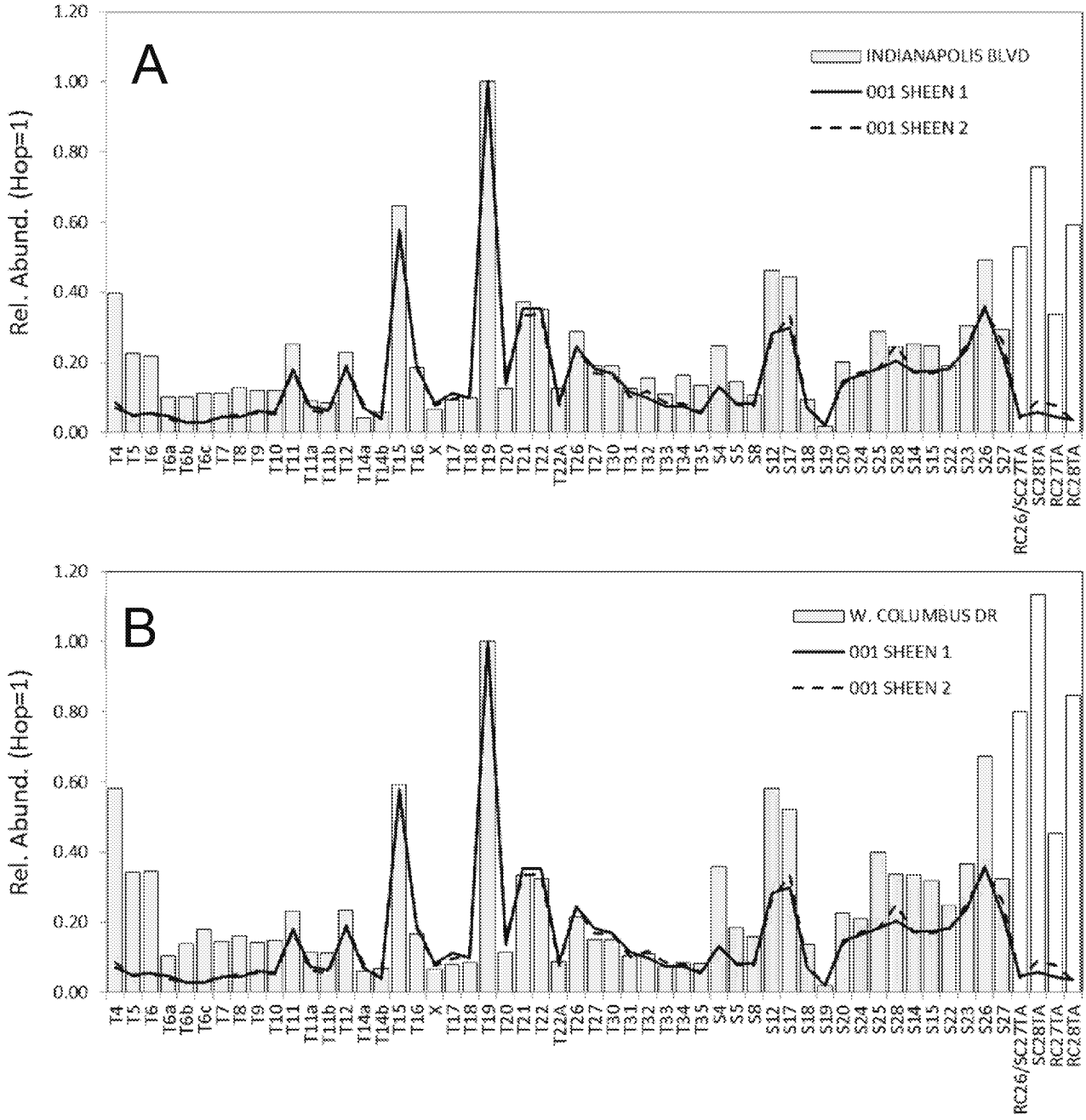


Figure 6: Histograms showing the hopane-normalized distributions of triterpanes (blue), dia- and regular steranes (red), and triaromatic steroids (yellow) in the (A) Indianapolis Blvd. sheen and (B) W. Columbus Dr. sheen versus the 001 Outfall sheens. Note the poor comparability between these upstream sheens and 001 Outfall sheens. T19=hopane, see attached tables for all other analyte abbreviations.

NewFields
Perspective. Vision. Solutions.

Chain of Custody

ETR # 1705009

Environmental Forensics Practice LLC

Proj. No	Proj. Name
N/A	AMINCWTP

SAMPLERS: Signature: MATHEW OXSALDA

ANALYSIS REQUESTED→ "NUMBER OF CONTANIERS"

DATE	TIME	LAB ID	CLIENT ID	SAMPLE DESCRIPTION	MATRIX (* see below)	GC-FID-TPH (C_6+)	GCMS-Alkyl PAH	GCMS-Biomarkers	PIANO - VOA	Organic Lead	METALS	PCB	Pesticides	PRESERVED	Total Number of Containers
5/15/17	1:47pm	1705009.01	001 SHEEN 1		O	ANALYZE PER NEWFIELDS WORK PLAN									1
5/15/17	1:53pm	.02	001 SHEEN 2 (MUCK)		O										1
5/15/17	2:30pm	.03	101 CLARIFIER		O										1
5/15/17	2:43pm	.04	SOUTH SEWER MH		O										1
5/15/17	3:03pm	.05	CWTP INFLUENT		O										1

Relinquished by:	Date/Time	Received by:	Date/Time
MATHEW OXSALDA	5/15/17 3:32 pm	Fedex	
Relinquished by: Fedex	Date/Time	Received by: MAC	Date/Time 5/16/17 10:12
Relinquished by:	Date/Time	Received by:	Date/Time

* O=Oil
SO=Soil
SE=Sediment
T=Tissue
W=Water

Samples to be shipped to: Alpha Laboratory
320 Forbes Blvd.
Mansfield, MA 02048
Tel: (508) 822-4117
Attn: Sue O'Neil

Comments:

NewFields
Perspective. Vision. Solutions.

Chain of Custody

ETR 1705009

Environmental Forensics Practice LLC

Proj. No: N/A

Proj. Name: AMHCWTP

SAMPLERS: Signature: Matt Oxsalida

ANALYSIS REQUESTED→ "NUMBER OF CONTANIERS"

DATE	TIME	LAB ID	CLIENT ID	SAMPLE DESCRIPTION	MATRIX (* see below)	GC-FID-TPH (C_6+)	GCMS-Alkyl PAH	GCMS-Biomarkers	PIANO - VOA	Organic Lead	METALS	PCB	Pesticides	PRESERVED	Total Number of Containers
5/17/17	6:00pm	1705009.06	FIELD BLANK		O	ANALYZE	FOR								1
5/17/17	6:20pm	.07	INDIANAPOLIS BLVD			PERFORMED									
5/17/17	6:35pm	.08	W. COLUMBUS DR					SAMPLING	PLAN						

Relinquished by: Matt Oxsalida — Date/Time: 5/17/17 7:00pm

Received by: FedEx — Date/Time:

Relinquished by: FedEx — Date/Time:

Received by: [signature] — Date/Time: 5/19/17 10:47

Relinquished by: — Date/Time:

Received by: — Date/Time:

* O=Oil
SO=Soil
SE=Sediment
T=Tissue
W=Water

Samples to be shipped to: Alpha Laboratory
320 Forbes Blvd.
Mansfield, MA 02048
Tel: (508) 822-4117
Attn: Sue O'Neil

Comments:

NewFields
Perspective. Vision. Solutions.

Chain of Custody

ETR # 1705009

Environmental Forensics Practice LLC

Proj. No	Proj. Name
—	AMIH CWTP

SAMPLERS: Signature

ANALYSIS REQUESTED→ "NUMBER OF CONTANIERS"

DATE	TIME	LAB ID	CLIENT ID	SAMPLE DESCRIPTION	MATRIX (* see below)	GC-FID-TPH (C_9+)	GCMS-Alkyl PAH	GCMS-Biomarkers	PIANO - VOA	Organic Lead	METALS	PCB	Pesticides	PRESERVED	Total Number of Containers
5/23/17	14:50	1705009-09	US Steel Rolling Solution		O	ANALYZE PER NEWFIELDS STUDY PLAN									1

Relinquished by:	Date/Time	Received by:	Date/Time
Tim Sullivan	5/23/17 15:08	Tom Barnett	5/24/17 15:08
Tom Barnett	5/24/17 11:20am	Peter	
Peter		[illegible] - PAL	5/25/17 10:04

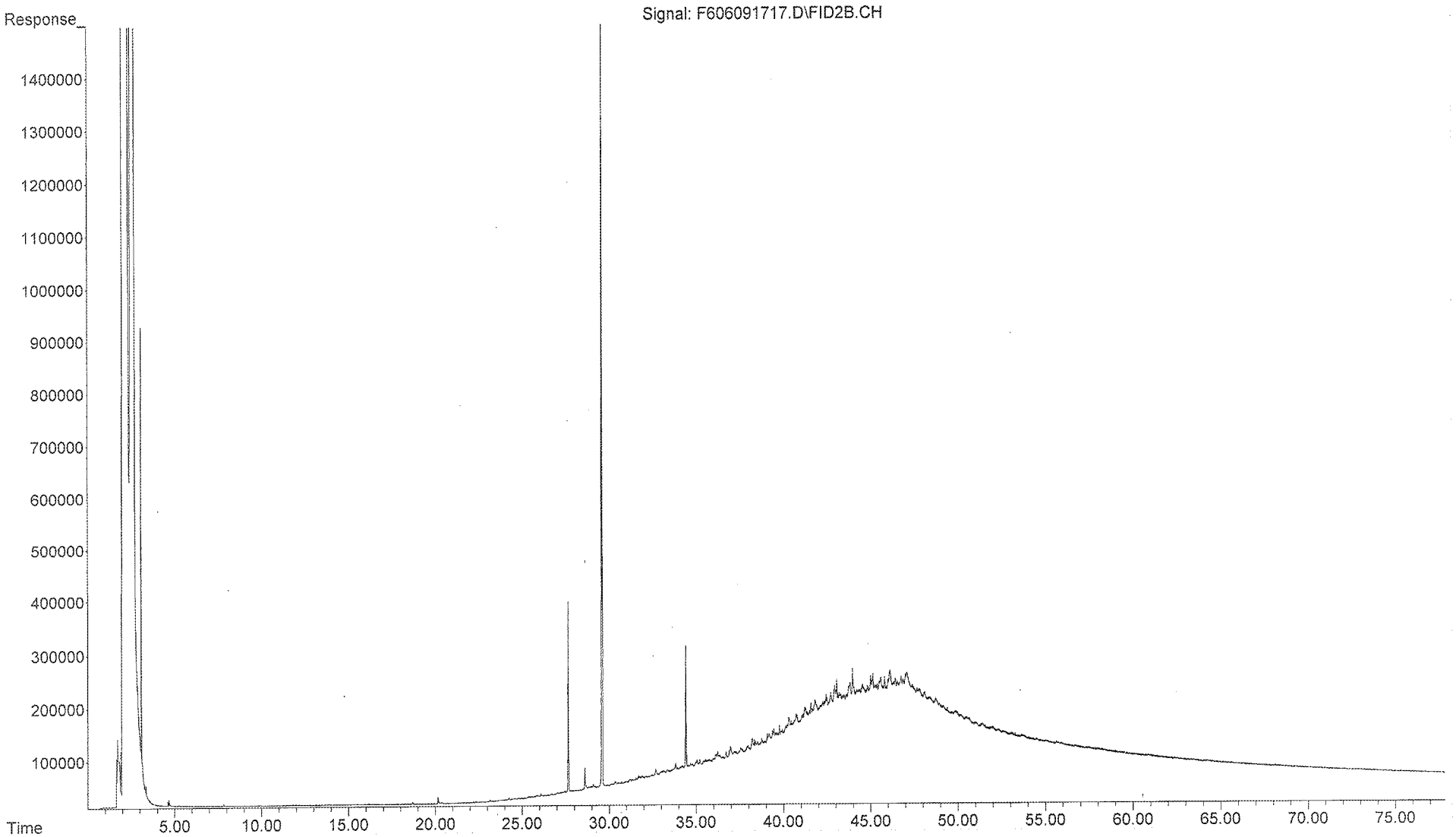
* O=Oil
SO=Soil
SE=Sediment
T=Tissue
W=Water

Samples to be shipped to: Alpha Laboratory
320 Forbes Blvd.
Mansfield, MA 02048
Tel: (508) 822-4117
Attn: Sue O'Neil

Comments:

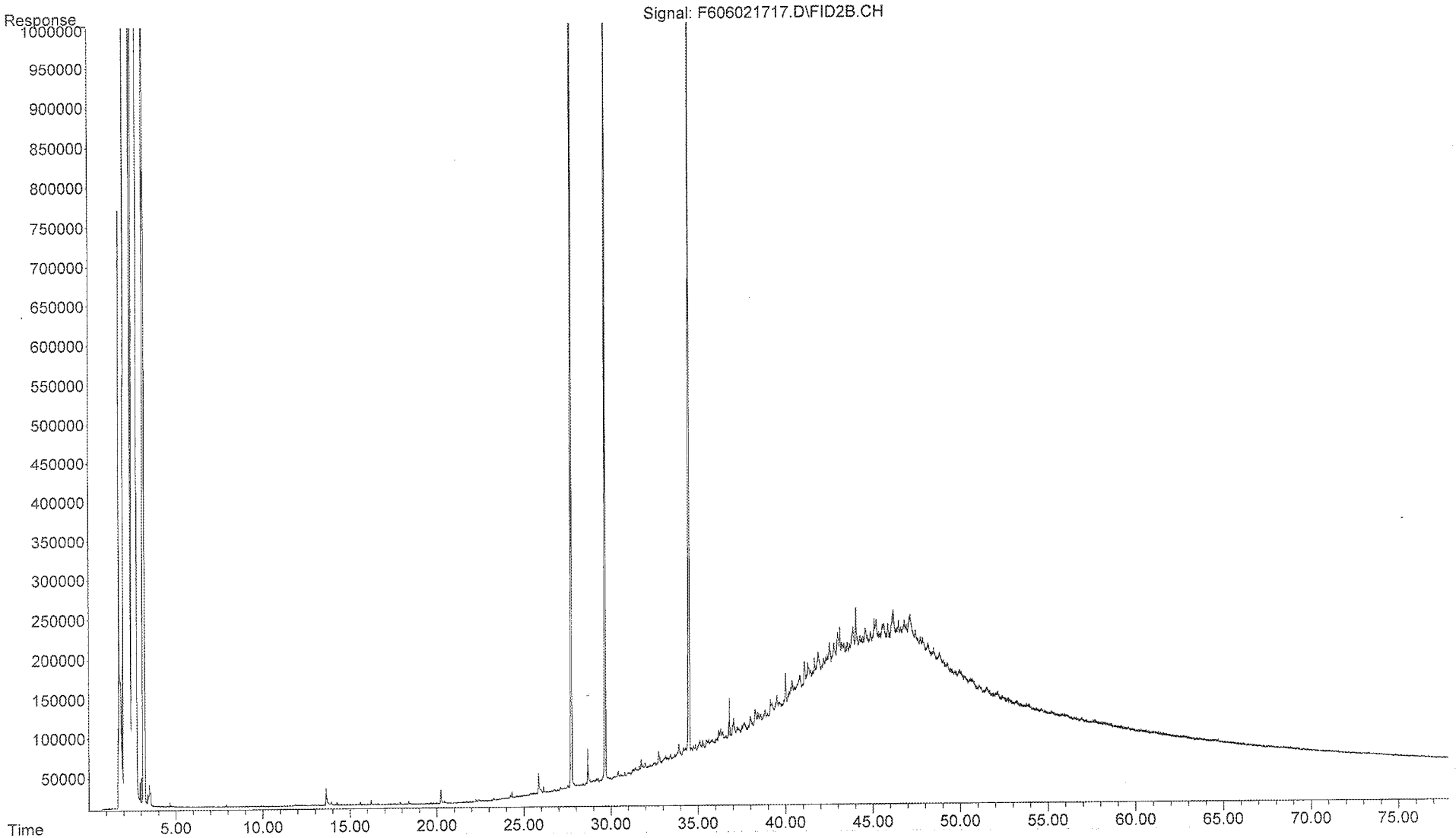
File :U:\2017 AWHL Data\Amendola Engineering\1705009\Draft FID\F60
... 6091717.D
Operator : FID6:WR
Instrument : FID6
Acquired : 09 Jun 2017 9:44 pm using AcqMethod FID6A.M
Sample Name: 1705009-01
Misc Info :

001 SHEEN 1
1705009-01



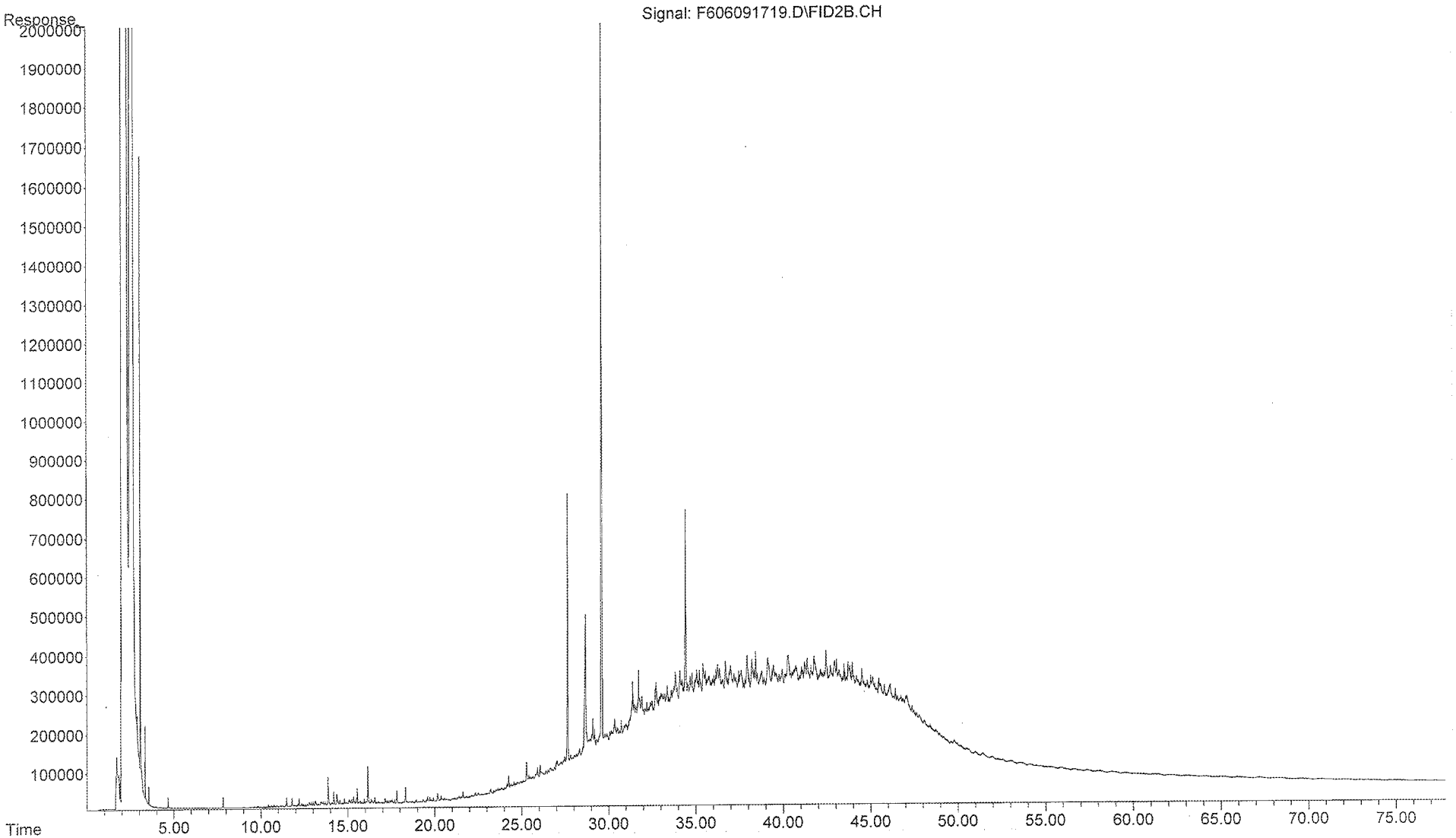
File :U:\2017 AWHL Data\Amendola Engineering\1705009\Draft FID\F60
... 6021717.D
Operator : FID6:WR
Instrument : FID6
Acquired : 02 Jun 2017 8:56 pm using AcqMethod FID6A.M
Sample Name: 1705009-02
Misc Info : 1X

001 SHEEN 2 (MUCK)
1705009-02



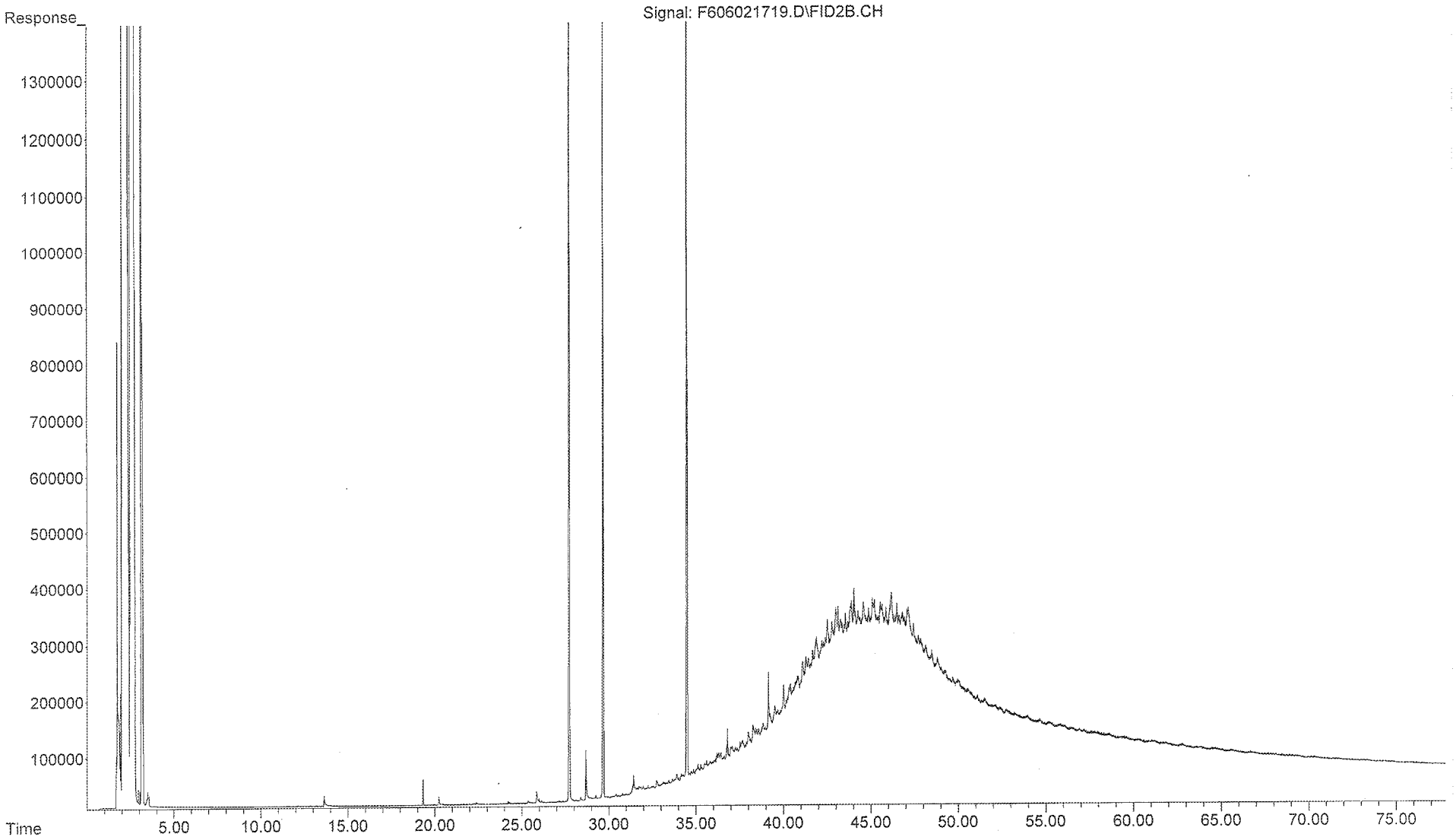
File :U:\2017 AWHL Data\Amendola Engineering\1705009\Draft FID\F60
... 6091719.D
Operator : FID6:WR
Instrument : FID6
Acquired : 09 Jun 2017 11:12 pm using AcqMethod FID6A.M
Sample Name: 1705009-03
Misc Info :

101 CLARIFIER
1705009-03



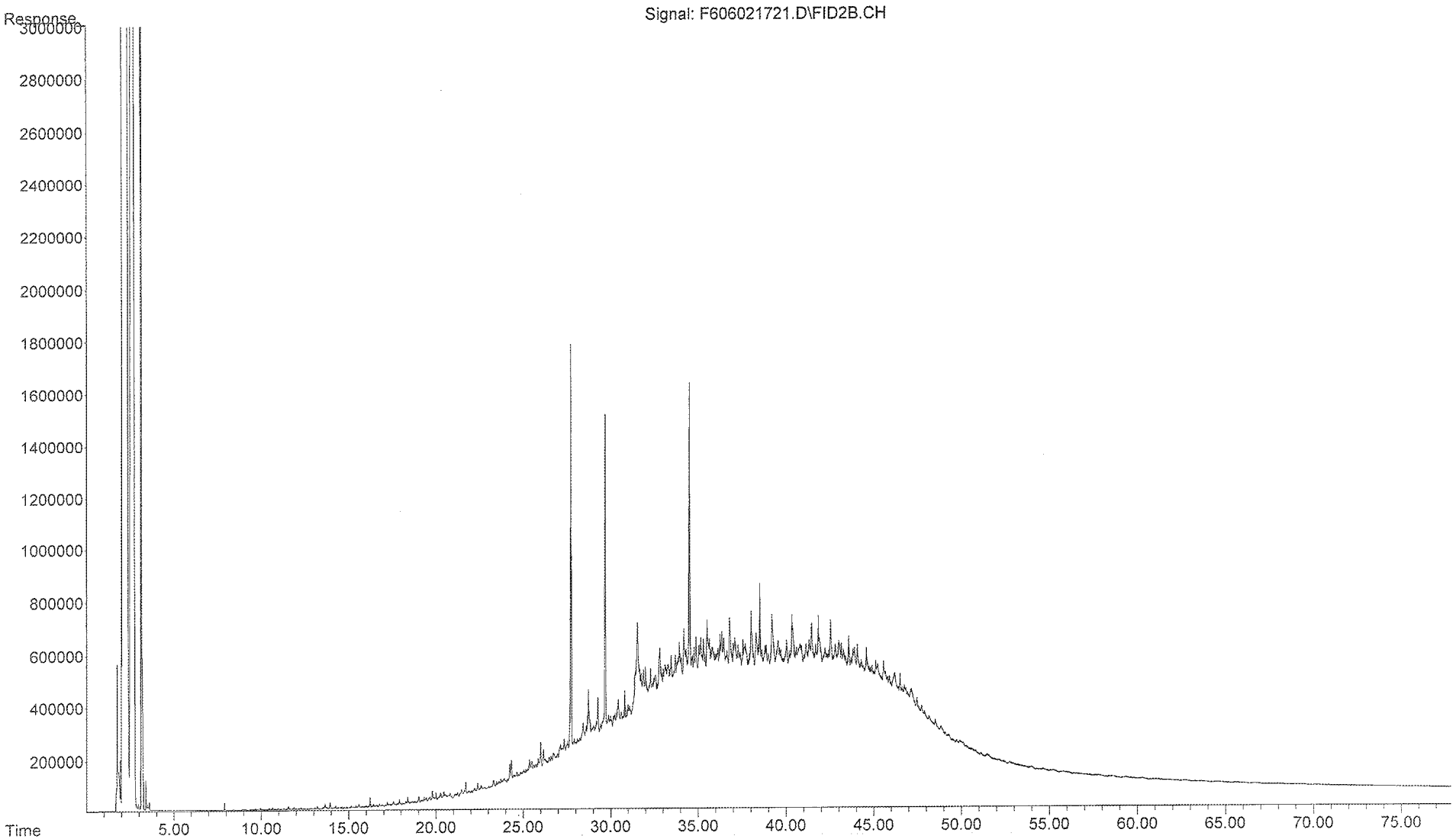
File :U:\2017 AWHL Data\Amendola Engineering\1705009\Draft FID\F60
... 6021719.D
Operator : FID6:WR
Instrument : FID6
Acquired : 02 Jun 2017 10:24 pm using AcqMethod FID6A.M
Sample Name: 1705009-04
Misc Info : 1X

SOUTH SEWER MH
1705009-04



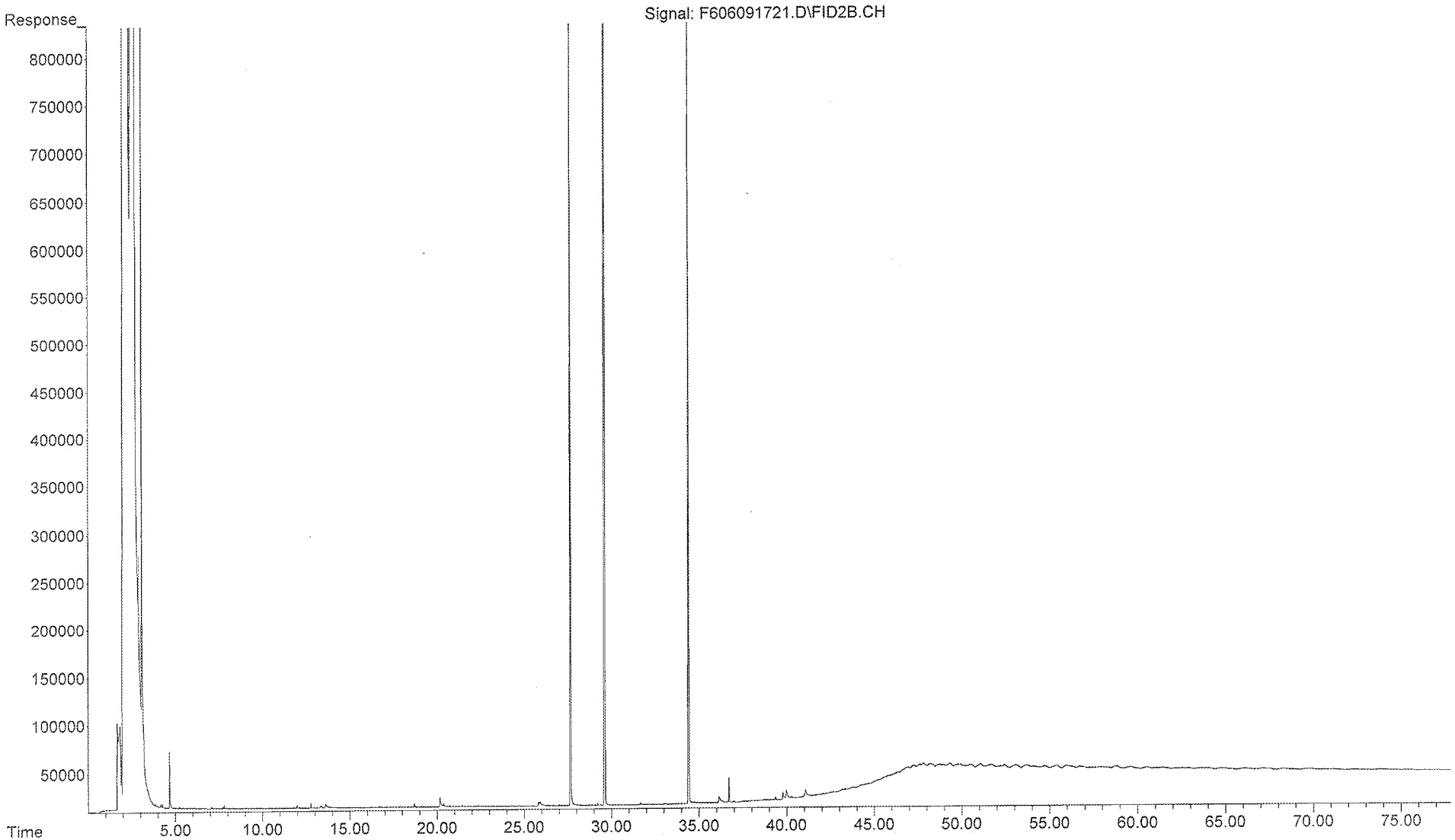
File :U:\2017 AWHL Data\Amendola Engineering\1705009\Draft FID\F60
... 6021721.D
Operator : FID6:WR
Instrument : FID6
Acquired : 02 Jun 2017 11:52 pm using AcqMethod FID6A.M
Sample Name: 1705009-05
Misc Info : 1X

CWTP INFLUENT
1705009-05



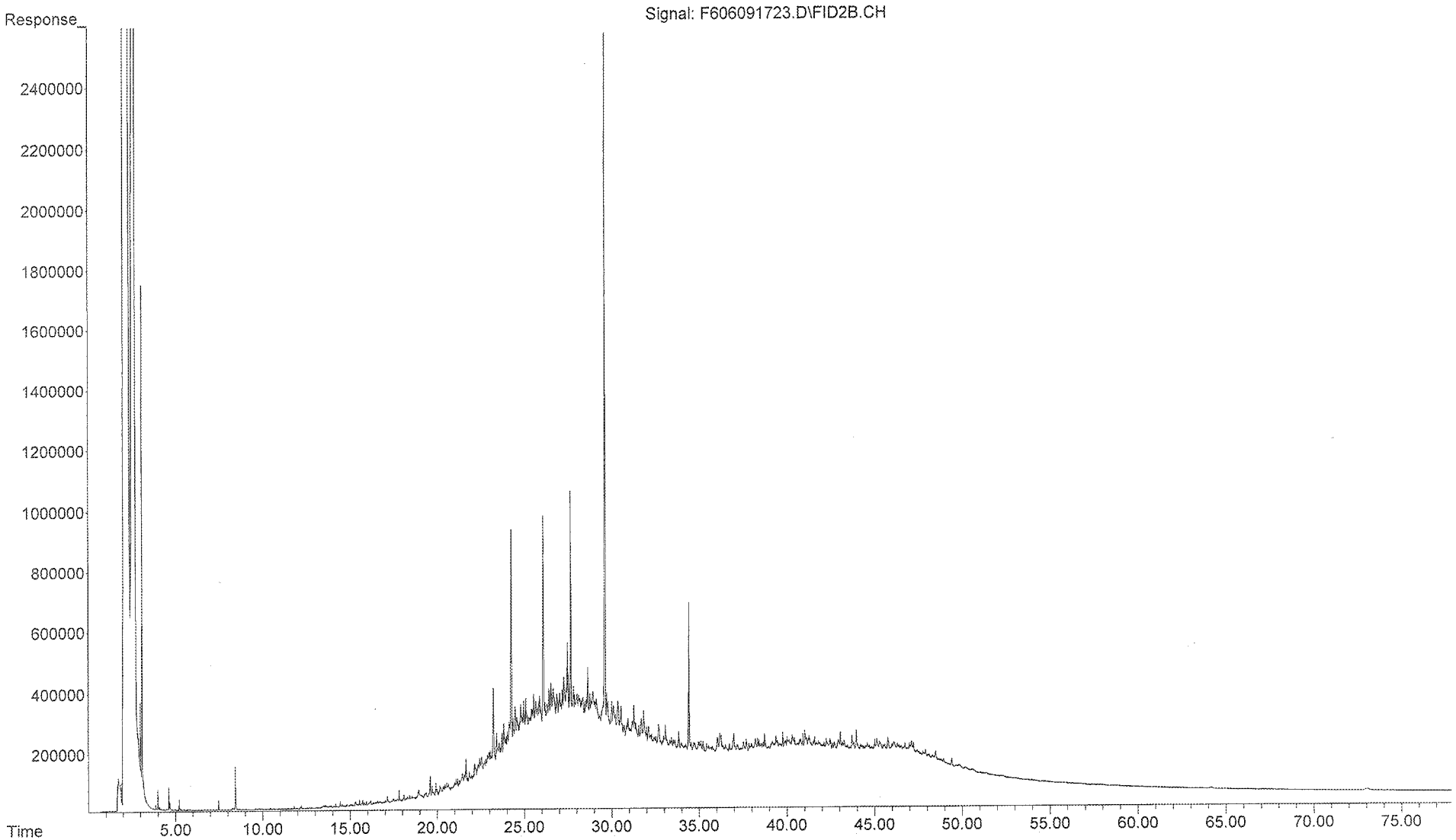
File :U:\2017 AWHL Data\Amendola Engineering\1705009\Draft FID\F60
... 6091721.D
Operator : FID6:WR
Instrument : FID6
Acquired : 10 Jun 2017 12:40 am using AcqMethod FID6A.M
Sample Name: 1705009-06
Misc Info :

FIELD BLANK
1705009-06



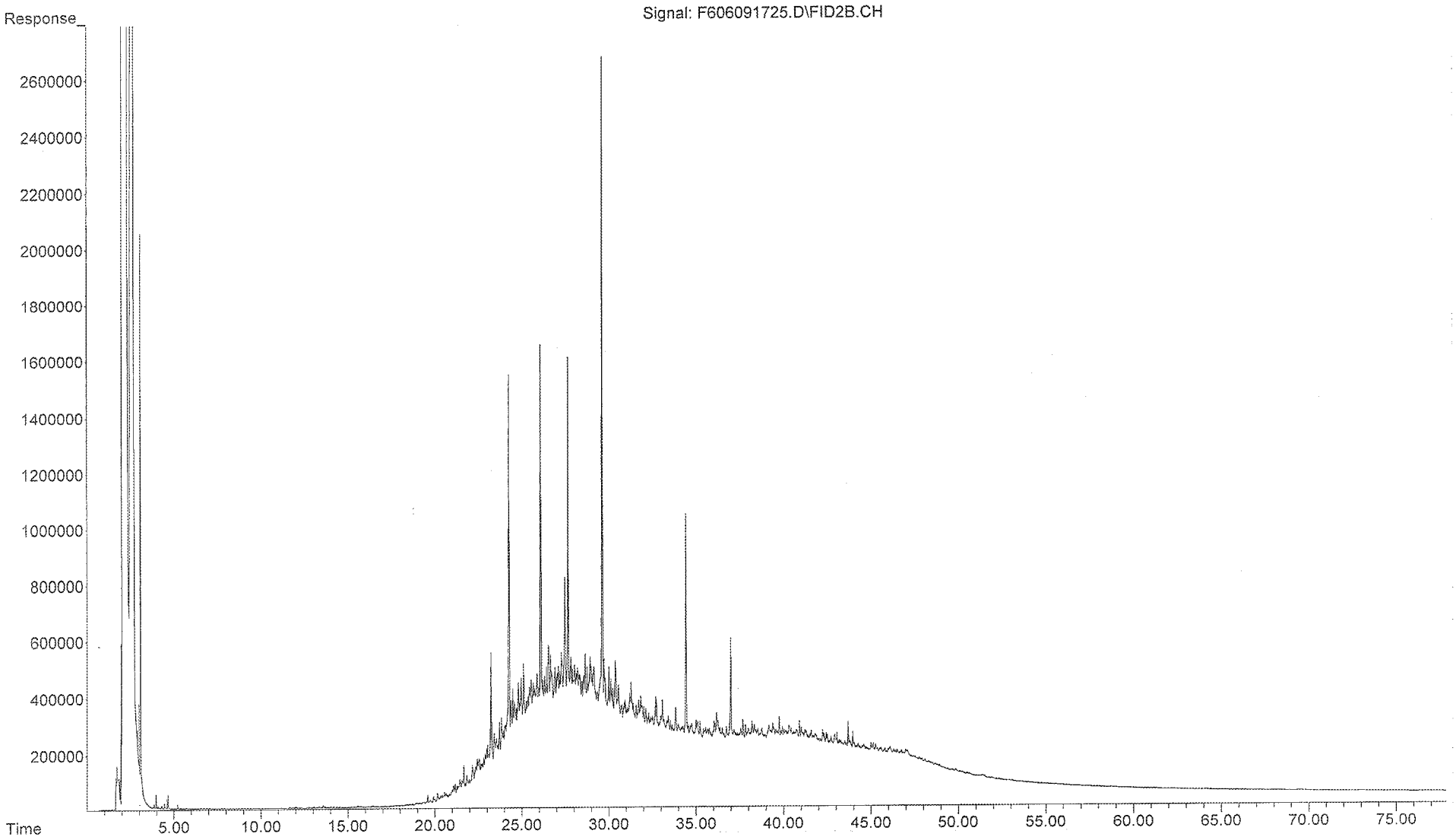
File :U:\2017 AWHL Data\Amendola Engineering\1705009\Draft FID\F60
... 6091723.D
Operator : FID6:WR
Instrument : FID6
Acquired : 10 Jun 2017 2:08 am using AcqMethod FID6A.M
Sample Name: 1715009-07
Misc Info :

INDIANAPOLIS BLVD
1705009-07



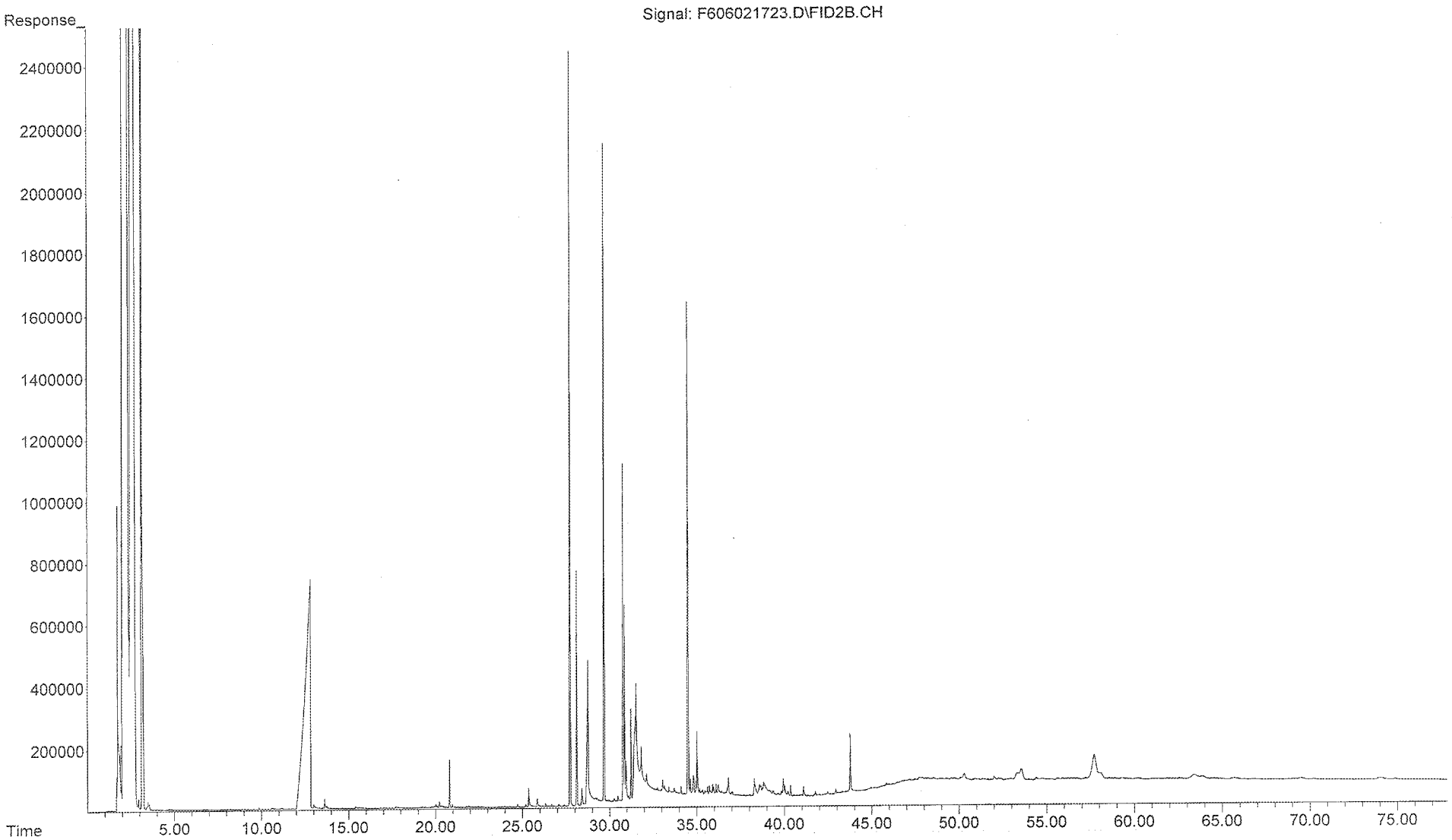
File :U:\2017 AWHL Data\Amendola Engineering\1705009\Draft FID\F60
... 6091725.D
Operator : FID6:WR
Instrument : FID6
Acquired : 10 Jun 2017 3:36 am using AcqMethod FID6A.M
Sample Name: 1705009-08
Misc Info :

W. COLUMBUS DR
1705009-08



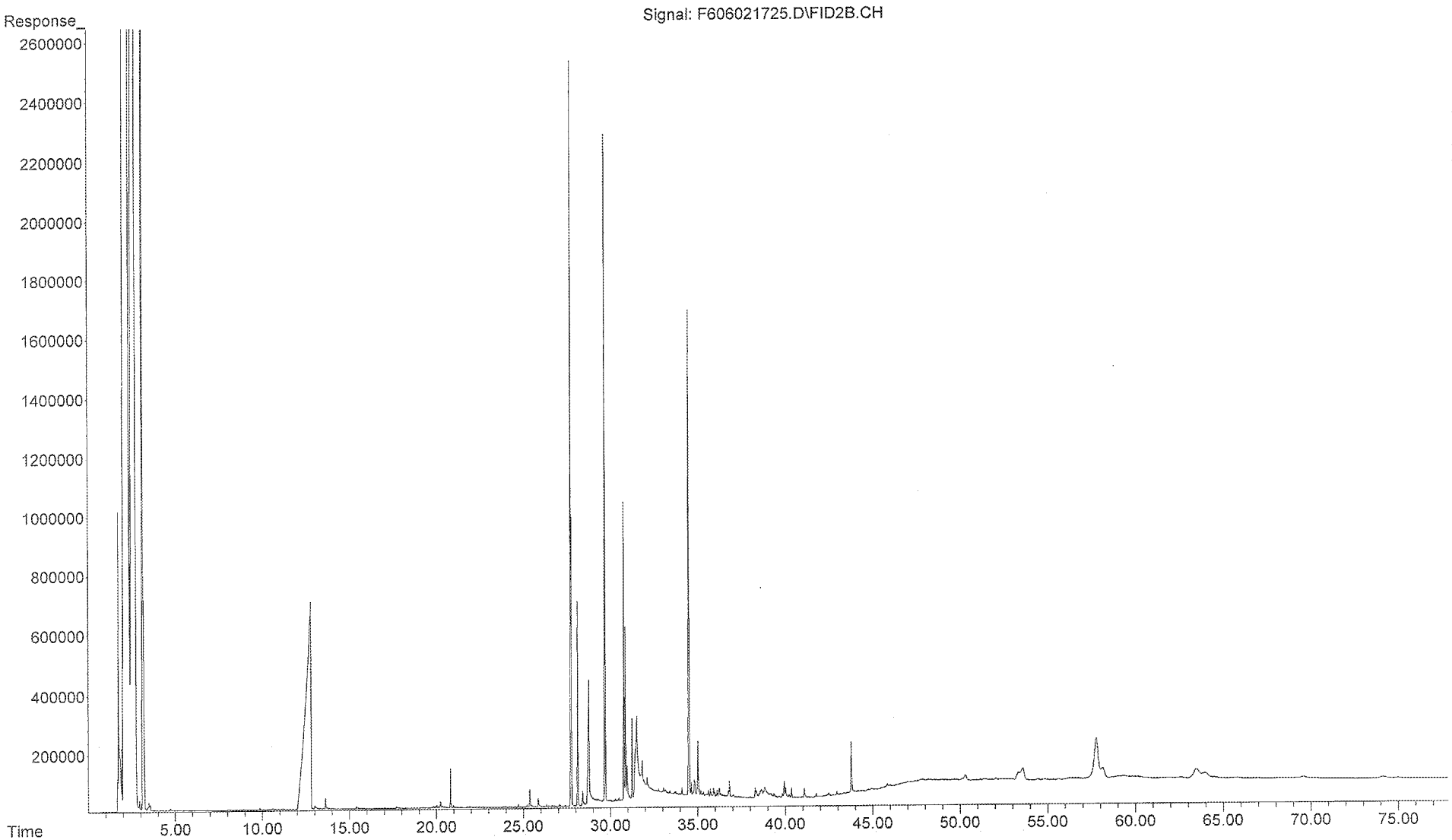
File :U:\2017 AWHL Data\Amendola Engineering\1705009\Draft FID\F60
... 6021723.D
Operator : FID6:WR
Instrument : FID6
Acquired : 03 Jun 2017 1:20 am using AcqMethod FID6A.M
Sample Name: 1705009-09
Misc Info : 1X

US STEEL ROLLING SOLUTION
1705009-09



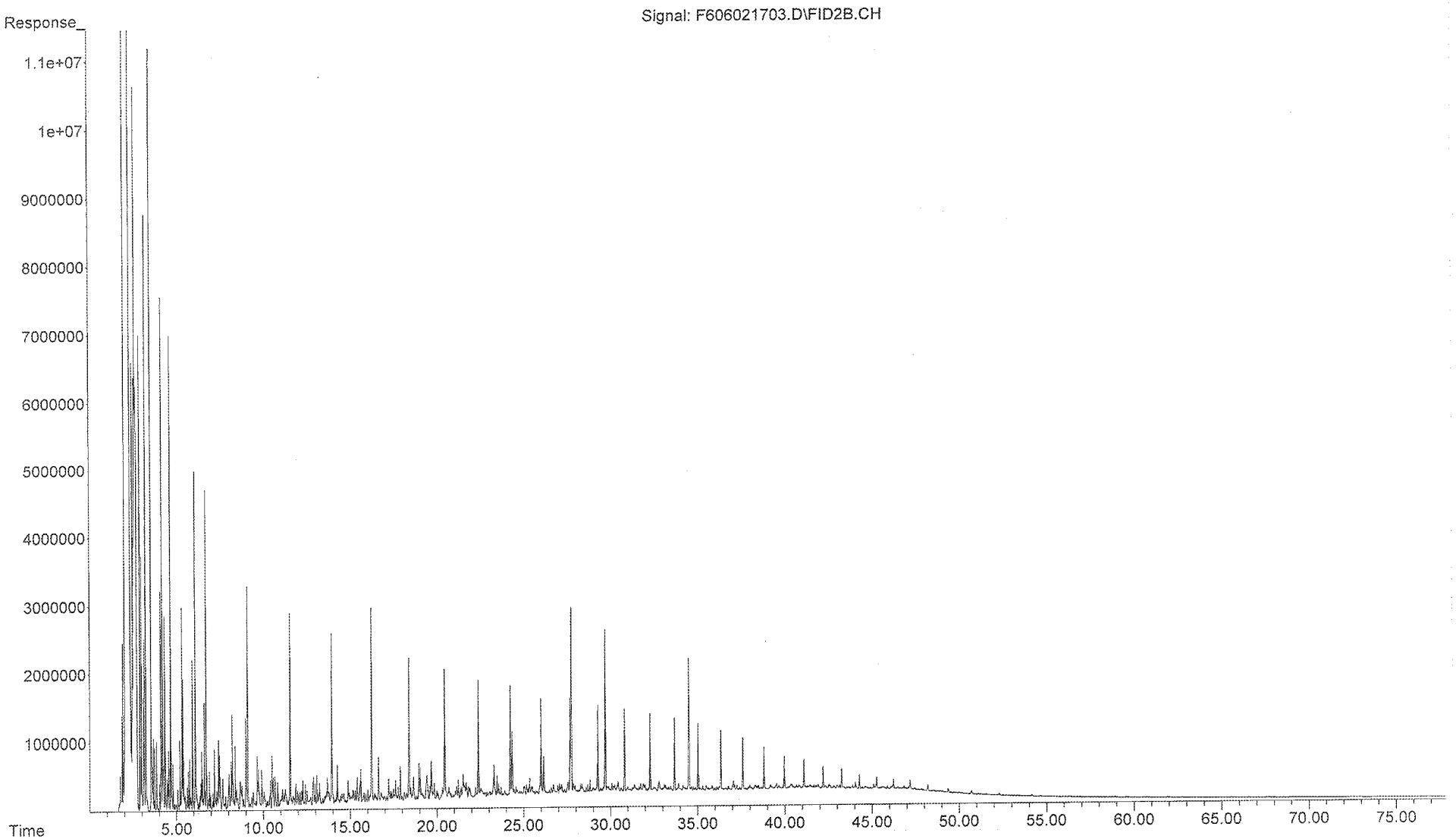
File :U:\2017 AWHL Data\Amendola Engineering\1705009\Draft FID\F60
... 6021725.D
Operator : FID6:WR
Instrument : FID6
Acquired : 03 Jun 2017 2:48 am using AcqMethod FID6A.M
Sample Name: 1705009-09D
Misc Info : 1X

US STEEL ROLLING SOLUTION
1705009-09D



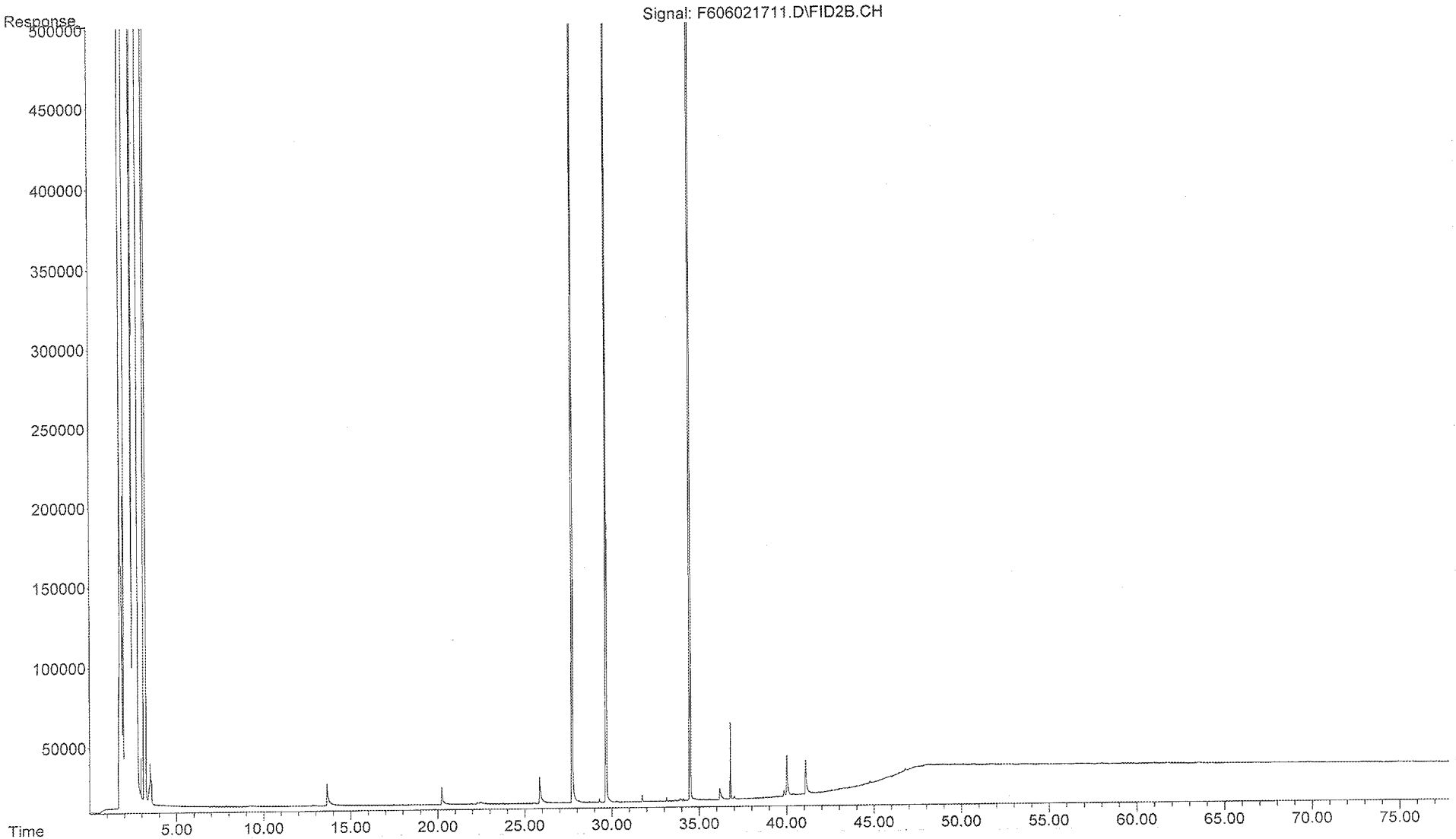
File :U:\2017 AWHL Data\Amendola Engineering\1705009\Draft FID\F60
... 6021703.D
Operator : FID6:WR
Instrument : FID6
Acquired : 02 Jun 2017 10:40 am using AcqMethod FID6A.M
Sample Name: ANS
Misc Info :

North Slope Crude
Reference Standard



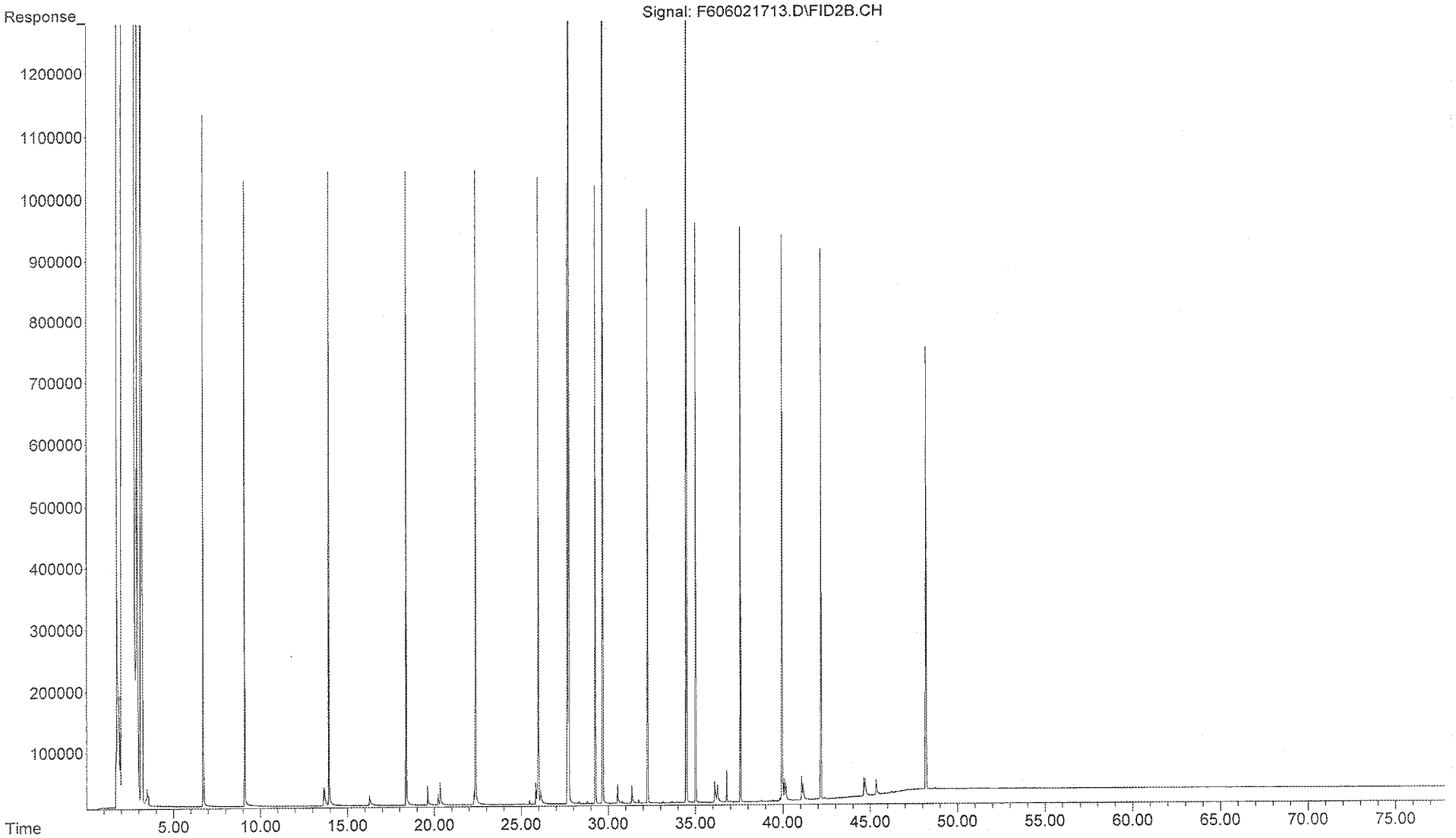
File :U:\2017 AWHL Data\Amendola Engineering\1705009\Draft FID\F60
... 6021711.D
Operator : FID6:WR
Instrument : FID6
Acquired : 02 Jun 2017 4:32 pm using AcqMethod FID6A.M
Sample Name: SS060117B02
Misc Info : 1X

Laboratory Method Blank
SS060117B02



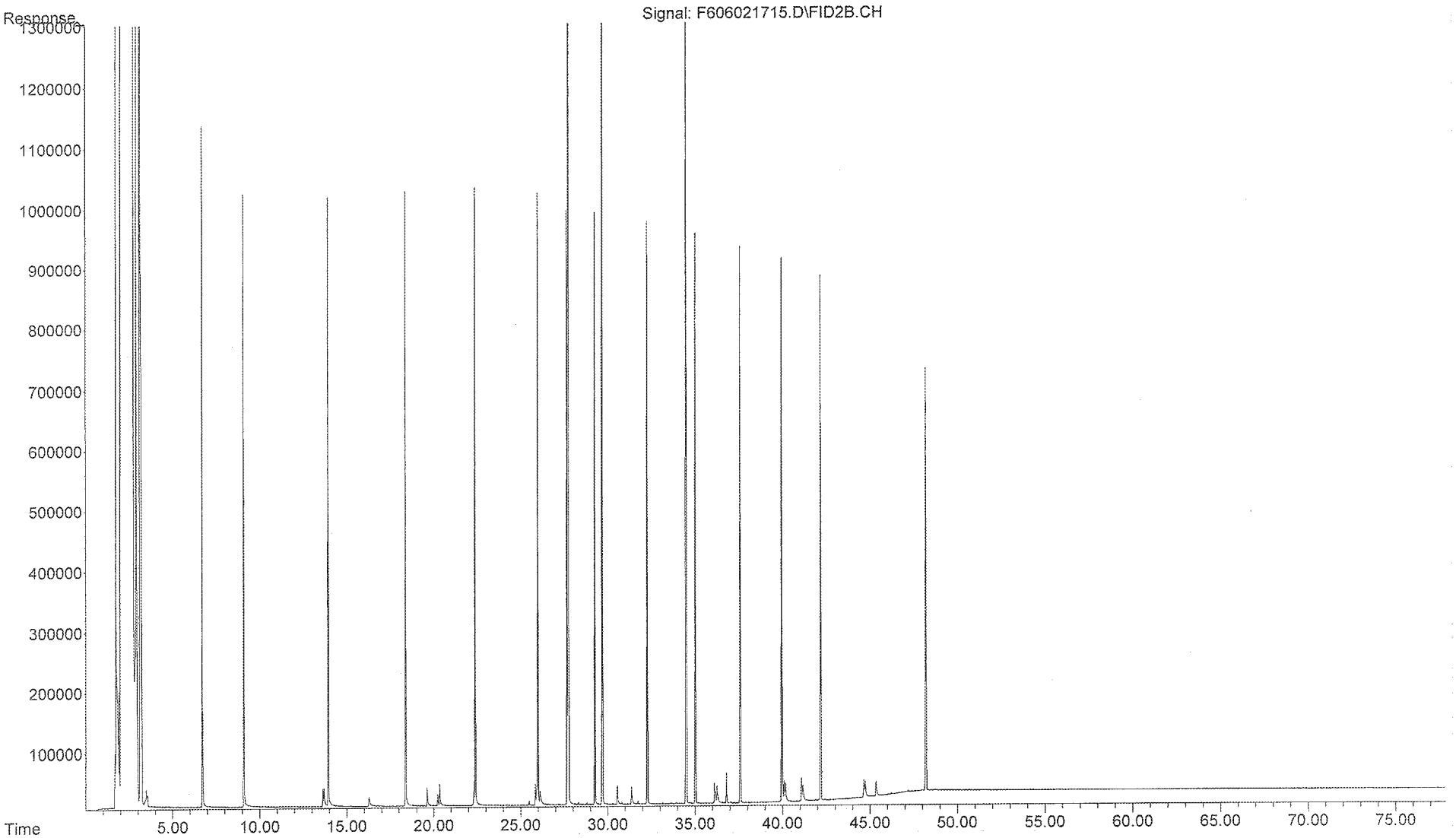
File :U:\2017 AWHL Data\Amendola Engineering\1705009\Draft FID\F60
... 6021713.D
Operator : FID6:WR
Instrument : FID6
Acquired : 02 Jun 2017 6:00 pm using AcqMethod FID6A.M
Sample Name: SS060117LCS02
Misc Info : 1X

Laboratory Control Sample
SS060117LCS02



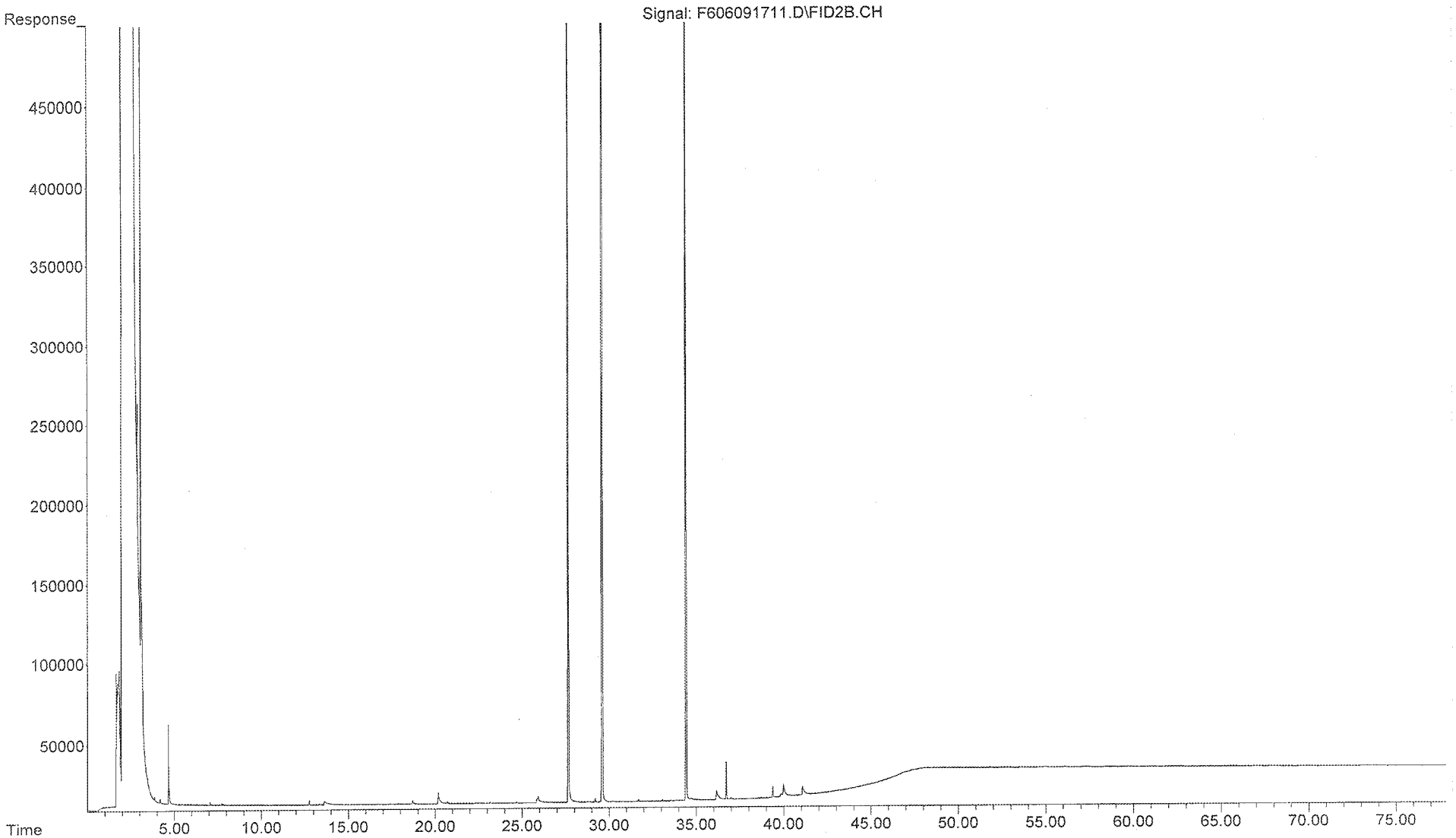
File :U:\2017 AWHL Data\Amendola Engineering\1705009\Draft FID\F60
... 6021715.D
Operator : FID6:WR
Instrument : FID6
Acquired : 02 Jun 2017 7:28 pm using AcqMethod FID6A.M
Sample Name: SS060117LCSD02
Misc Info : 1X

Laboratory Control Sample Duplicate
SS060117LCSD02



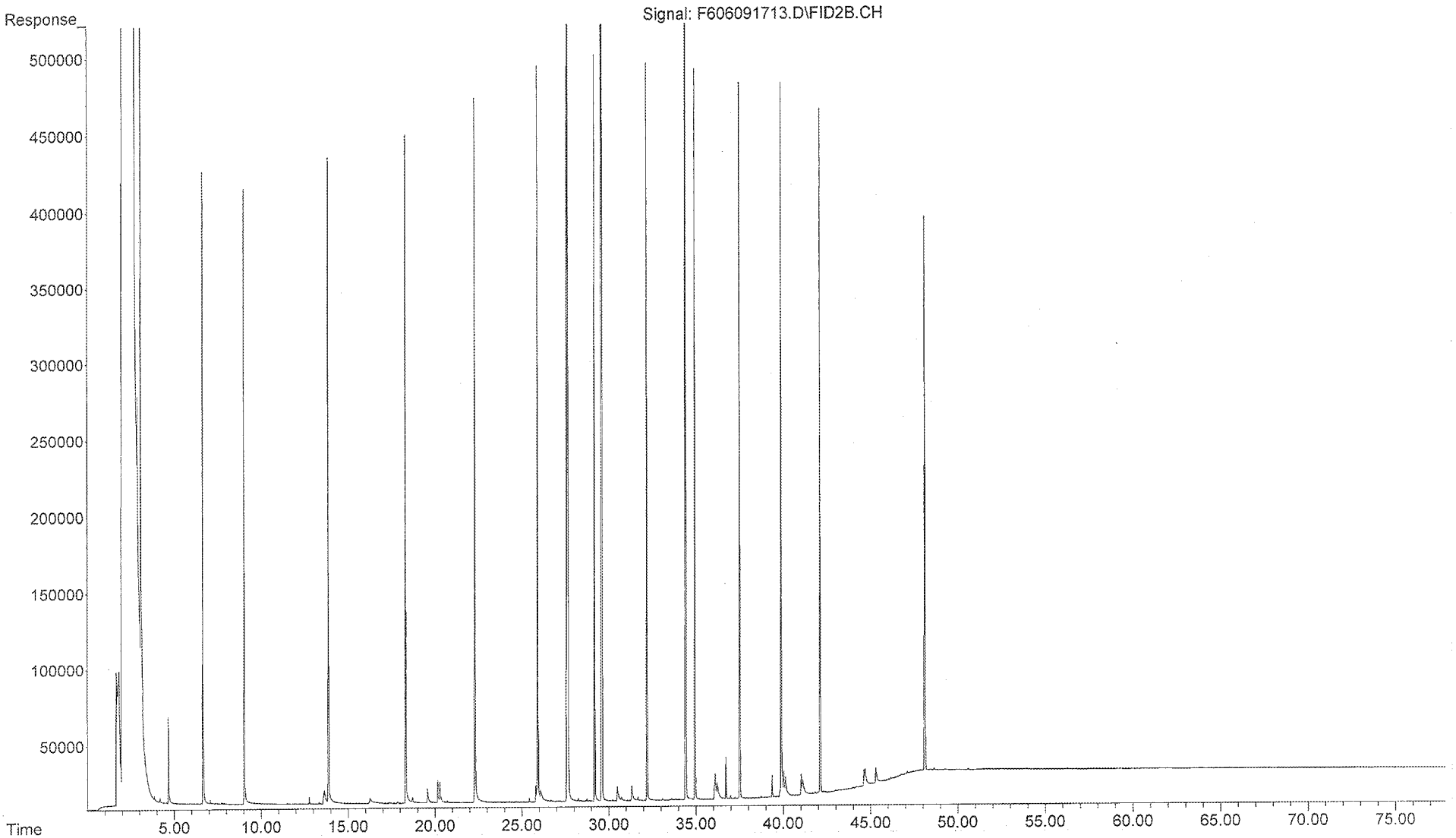
File :U:\2017 AWHL Data\Amendola Engineering\1705009\Draft FID\F60
... 6091711.D
Operator : FID6:WR
Instrument : FID6
Acquired : 09 Jun 2017 5:20 pm using AcqMethod FID6A.M
Sample Name:
Misc Info :

Laboratory Method Blank
SS060117B03



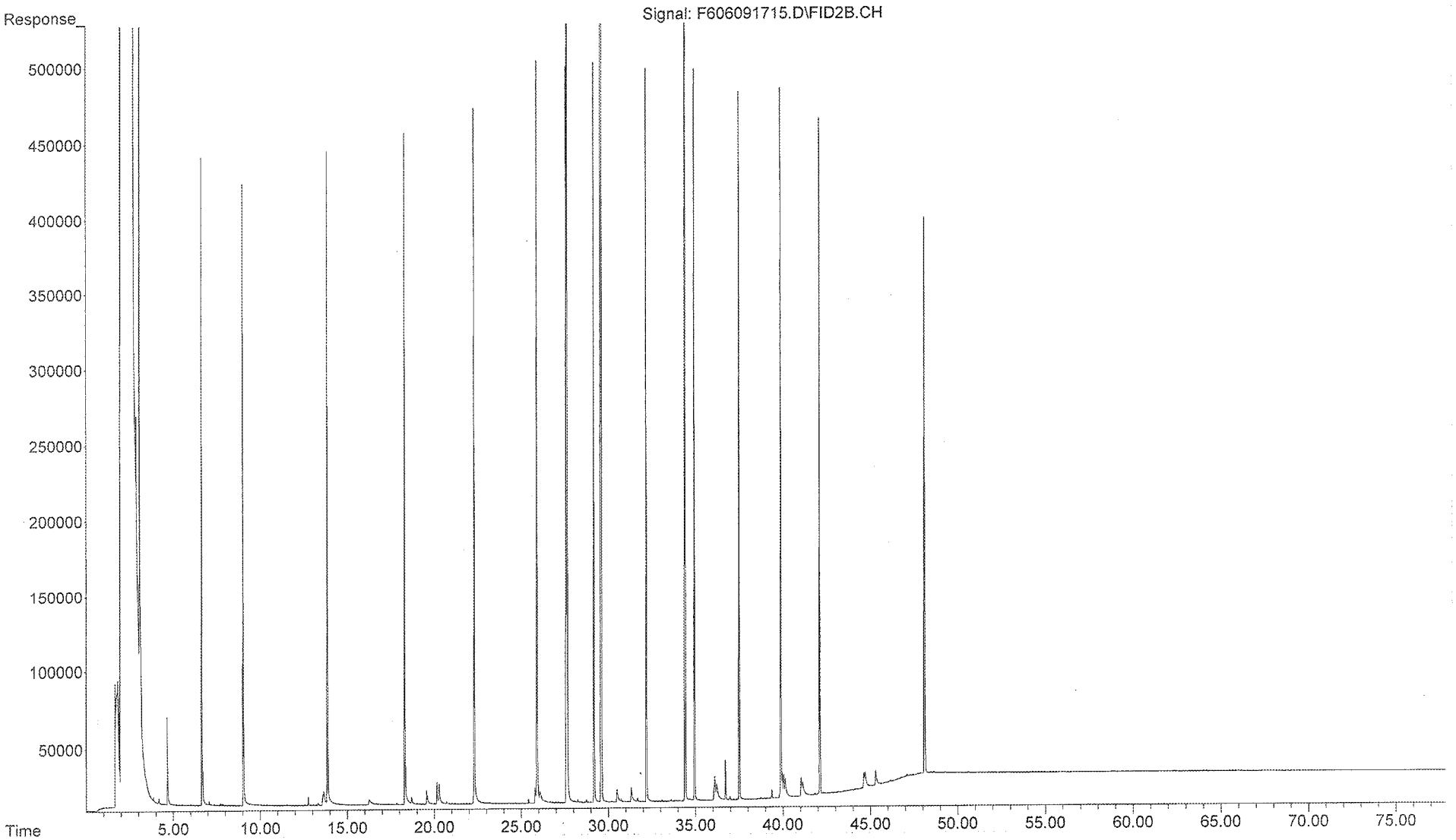
File :U:\2017 AWHL Data\Amendola Engineering\1705009\Draft FID\F60
... 6091713.D
Operator : FID6:WR
Instrument : FID6
Acquired : 09 Jun 2017 6:48 pm using AcqMethod FID6A.M
Sample Name: SS060117LCS03
Misc Info :

Laboratory Control Sample
SS060117LCS03



File :U:\2017 AWHL Data\Amendola Engineering\1705009\Draft FID\F60
... 6091715.D
Operator : FID6:WR
Instrument : FID6
Acquired : 09 Jun 2017 8:16 pm using AcqMethod FID6A.M
Sample Name: SS060117LCSD03
Misc Info :

Laboratory Control Sample Duplicate
SS060117LCSD03



Project Name: Amendola Engineering-Arcelor Mittal
Project Number:

Client ID		Method Blank		Method Blank
Lab ID		SS060117B02		SS060117B03
Matrix		Solid		Solid
Reference Method		SHC		SHC
Batch ID		SS060117B02		SS060117B03
Date Collected		N/A		N/A
Date Received		N/A		N/A
Date Prepped		06/01/2017		06/01/2017
Date Analyzed		06/02/2017		06/09/2017
Sample Size (wet)		0.005		0.02
% Solid		100.00		100.00
File ID		F606021711.D		F606091711.D
Units		mg/Kg		mg/Kg
Final Volume		1		2
Dilution		1		1
Reporting Limit		200		100

Class	Abbrev	Analytes	Result		SSRL	Result		SSRL
SHC	C9	n-Nonane (C9)		U	200		U	100
SHC	C10	n-Decane (C10)		U	200		U	100
SHC	C11	n-Undecane (C11)		U	200		U	100
SHC	C12	n-Dodecane (C12)		U	200		U	100
SHC	C13	n-Tridecane (C13)		U	200		U	100
SHC	1380	2,6,10 Trimethyldodecane (1380)		U	200		U	100
SHC	C14	n-Tetradecane (C14)		U	200		U	100
SHC	1470	2,6,10 Trimethyltridecane (1470)		U	200		U	100
SHC	C15	n-Pentadecane (C15)		U	200		U	100
SHC	C16	n-Hexadecane (C16)	7.20	J	200	1.30	J	100
SHC	1650	Norpristane (1650)		U	200		U	100
SHC	C17	n-Heptadecane (C17)		U	200		U	100
SHC	Pr	Pristane		U	200	0.400	J	100
SHC	C18	n-Octadecane (C18)		U	200	14.3	J	100
SHC	Ph	Phytane		U	200		U	100
SHC	C19	n-Nonadecane (C19)		U	200		U	100
SHC	C20	n-Eicosane (C20)	8.80	J	200	4.20	J	100
SHC	C21	n-Heneicosane (C21)		U	200		U	100
SHC	C22	n-Docosane (C22)		U	200		U	100
SHC	C23	n-Tricosane (C23)		U	200		U	100
SHC	C24	n-Tetracosane (C24)		U	200		U	100
SHC	C25	n-Pentacosane (C25)		U	200		U	100
SHC	C26	n-Hexacosane (C26)		U	200	0.900	J	100
SHC	C27	n-Heptacosane (C27)	1.40	J	200	1.10	J	100
SHC	C28	n-Octacosane (C28)		U	200		U	100
SHC	C29	n-Nonacosane (C29)	191	CJ	200		U	100
SHC	C30	n-Triacontane (C30)		U	200		U	100
SHC	C31	n-Henfriacontane (C31)		U	200		U	100
SHC	C32	n-Dotriacontane (C32)		U	200		U	100
SHC	C33	n-Tritriacontane (C33)		U	200		U	100
SHC	C34	n-Tetratriacontane (C34)		U	200		U	100
SHC	C35	n-Pentatriacontane (C35)		U	200		U	100
SHC	C36	n-Hexatriacontane (C36)		U	200		U	100
SHC	C37	n-Heptatriacontane (C37)		U	200		U	100
SHC	C38	n-Octatriacontane (C38)		U	200		U	100
SHC	C39	n-Nonatriacontane (C39)		U	200		U	100
SHC	C40	n-Tetracontane (C40)		U	200		U	100
SHC	TSH	Total Saturated Hydrocarbons	209		200	22.2	J	100
SHC	TPH	Total Petroleum Hydrocarbons (C9-C44)		U	6600		U	3300

Surrogates (% Recovery)		
ortho-Terphenyl	111	95
d50-Tetracosane	109	93

Project Name: Amendola Engineering-Arcelor Mittal
Project Number:

Client ID	Laboratory Control Sample
Lab ID	SS060117LCS03
Matrix	Solid
Reference Method	SHC
Batch ID	SS060117B03
Date Collected	N/A
Date Received	N/A
Date Prepped	06/01/2017
Date Analyzed	06/09/2017
Sample Size (wet)	0.02
% Solid	100.00
File ID	F606091713.D
Units	mg/Kg
Final Volume	2
Dilution	1
Reporting Limit	100

Class	Abbrev	Analytes	Result		SSRL	% Rec	Spike Conc	Lower Limit	Upper Limit
SHC	C9	n-Nonane (C9)	688	S	100	69	1000	50	130
SHC	C10	n-Decane (C10)	773	S	100	77	1000	50	130
SHC	C12	n-Dodecane (C12)	832	S	100	83	1000	50	130
SHC	C14	n-Tetradecane (C14)	846	S	100	85	1000	50	130
SHC	C16	n-Hexadecane (C16)	946	S	100	95	1000	50	130
SHC	C18	n-Octadecane (C18)	954	S	100	95	1000	50	130
SHC	C19	n-Nonadecane (C19)	902	S	100	90	1000	50	130
SHC	C20	n-Eicosane (C20)	925	S	100	92	1000	50	130
SHC	C22	n-Docosane (C22)	918	S	100	92	1000	50	130
SHC	C24	n-Tetracosane (C24)	921	S	100	92	1000	50	130
SHC	C26	n-Hexacosane (C26)	922	S	100	92	1000	50	130
SHC	C28	n-Octacosane (C28)	920	S	100	92	1000	50	130
SHC	C30	n-Triacontane (C30)	926	S	100	93	1000	50	130
SHC	C36	n-Hexatriacontane (C36)	896	S	100	90	1000	50	130

Surrogates (% Recovery)	
ortho-Terphenyl	99
d50-Tetracosane	98

Project Name: Amendola Engineering-Arcelor Mittal
Project Number:

Client ID	Laboratory Control Sample
Lab ID	SS060117LCS02
Matrix	Solid
Reference Method	SHC
Batch ID	SS060117B02
Date Collected	N/A
Date Received	N/A
Date Prepped	06/01/2017
Date Analyzed	06/02/2017
Sample Size (wet)	0.005
% Solid	100.00
File ID	F606021713.D
Units	mg/Kg
Final Volume	1
Dilution	1
Reporting Limit	200

Class	Abbrev	Analytes	Result		SSRL	% Rec	Spike Conc	Lower Limit	Upper Limit
SHC	C9	n-Nonane (C9)	3810	S	200	95	4000	50	130
SHC	C10	n-Decane (C10)	3900	S	200	97	4000	50	130
SHC	C12	n-Dodecane (C12)	3940	S	200	98	4000	50	130
SHC	C14	n-Tetradecane (C14)	3980	S	200	100	4000	50	130
SHC	C16	n-Hexadecane (C16)	4100	S	200	103	4000	50	130
SHC	C18	n-Octadecane (C18)	4060	S	200	102	4000	50	130
SHC	C19	n-Nonadecane (C19)	3960	S	200	99	4000	50	130
SHC	C20	n-Eicosane (C20)	4010	S	200	100	4000	50	130
SHC	C22	n-Docosane (C22)	3950	S	200	99	4000	50	130
SHC	C24	n-Tetracosane (C24)	3950	S	200	99	4000	50	130
SHC	C26	n-Hexacosane (C26)	3950	S	200	99	4000	50	130
SHC	C28	n-Octacosane (C28)	4080	S	200	102	4000	50	130
SHC	C30	n-Triacontane (C30)	3950	S	200	99	4000	50	130
SHC	C36	n-Hexatriacontane (C36)	3810	S	200	95	4000	50	130

Surrogates (% Recovery)	
ortho-Terphenyl	111
d50-Tetracosane	109

Project Name: Amendola Engineering-Arcelor Mittal
Project Number:

Client ID	Laboratory Control Sample Dup
Lab ID	SS060117LCSD02
Matrix	Solid
Reference Method	SHC
Batch ID	SS060117B02
Date Collected	N/A
Date Received	N/A
Date Prepped	06/01/2017
Date Analyzed	06/02/2017
Sample Size (wet)	0.005
% Solid	100.00
File ID	F606021715.D
Units	mg/Kg
Final Volume	1
Dilution	1
Reporting Limit	200

Class	Abbrev	Analytes	Result		SSRL	% Rec	Spike Conc.	Lower Limit	Upper Limit	RPD	RPD Limit
SHC	C9	n-Nonane (C9)	3780	S	200	95	4000	50	130	1	30
SHC	C10	n-Decane (C10)	3840	S	200	96	4000	50	130	1	30
SHC	C12	n-Dodecane (C12)	3910	S	200	98	4000	50	130	1	30
SHC	C14	n-Tetradecane (C14)	3960	S	200	99	4000	50	130	1	30
SHC	C16	n-Hexadecane (C16)	4100	S	200	102	4000	50	130	0	30
SHC	C18	n-Octadecane (C18)	4070	S	200	102	4000	50	130	0	30
SHC	C19	n-Nonadecane (C19)	3990	S	200	100	4000	50	130	1	30
SHC	C20	n-Eicosane (C20)	4020	S	200	100	4000	50	130	0	30
SHC	C22	n-Docosane (C22)	3970	S	200	99	4000	50	130	0	30
SHC	C24	n-Tetracosane (C24)	3960	S	200	99	4000	50	130	0	30
SHC	C26	n-Hexacosane (C26)	3940	S	200	99	4000	50	130	0	30
SHC	C28	n-Octacosane (C28)	4060	S	200	102	4000	50	130	1	30
SHC	C30	n-Triacontane (C30)	3930	S	200	98	4000	50	130	0	30
SHC	C36	n-Hexatriacontane (C36)	3810	S	200	95	4000	50	130	0	30

Surrogates (% Recovery)	
ortho-Terphenyl	111
d50-Tetracosane	109

Project Name: Amendola Engineering-Arcelor Mittal
Project Number:

Client ID	Laboratory Control Sample Dup
Lab ID	SS060117LCSD03
Matrix	Solid
Reference Method	SHC
Batch ID	SS060117B03
Date Collected	N/A
Date Received	N/A
Date Prepped	06/01/2017
Date Analyzed	06/09/2017
Sample Size (wet)	0.02
% Solid	100.00
File ID	F606091715.D
Units	mg/Kg
Final Volume	2
Dilution	1
Reporting Limit	100

Class	Abbrev	Analytes	Result		SSRL	% Rec	Spike Conc.	Lower Limit	Upper Limit	RPD	RPD Limit
SHC	C9	n-Nonane (C9)	693	S	100	69	1000	50	130	1	30
SHC	C10	n-Decane (C10)	774	S	100	77	1000	50	130	0	30
SHC	C12	n-Dodecane (C12)	826	S	100	83	1000	50	130	1	30
SHC	C14	n-Tetradecane (C14)	847	S	100	85	1000	50	130	0	30
SHC	C16	n-Hexadecane (C16)	928	S	100	93	1000	50	130	2	30
SHC	C18	n-Octadecane (C18)	940	S	100	94	1000	50	130	2	30
SHC	C19	n-Nonadecane (C19)	886	S	100	89	1000	50	130	2	30
SHC	C20	n-Eicosane (C20)	911	S	100	91	1000	50	130	1	30
SHC	C22	n-Docosane (C22)	907	S	100	91	1000	50	130	1	30
SHC	C24	n-Tetracosane (C24)	915	S	100	91	1000	50	130	1	30
SHC	C26	n-Hexacosane (C26)	912	S	100	91	1000	50	130	1	30
SHC	C28	n-Octacosane (C28)	908	S	100	91	1000	50	130	1	30
SHC	C30	n-Triacontane (C30)	914	S	100	91	1000	50	130	1	30
SHC	C36	n-Hexatriacontane (C36)	886	S	100	89	1000	50	130	1	30

Surrogates (% Recovery)	
ortho-Terphenyl	96
d50-Tetracosane	96

Project Name: Amendola Engineering-Arcelor Mittal
Project Number:

Client ID	US STEEL ROLLING SOLUTION			US STEEL ROLLING SOLUTION					
Lab ID	1705009-09			1705009-09D					
Matrix	Solid			Solid					
Reference Method	SHC			SHC					
Batch ID	SS060117B02			SS060117B02					
Date Collected	05/23/2017			05/23/2017					
Date Received	05/25/2017			05/25/2017					
Date Prepped	06/01/2017			06/01/2017					
Date Analyzed	06/03/2017			06/03/2017					
Sample Size (wet)	0.0057			0.00509					
% Solid	100.00			100.00					
File ID	F606021723.D			F606021725.D					
Units	mg/Kg			mg/Kg					
Final Volume	1			1					
Dilution	1			1					
Reporting Limit	175			196					

Class	Abbrev	Analytes	Result		SSRL	Result		SSRL	RPD	RPD Limit	
SHC	C9	n-Nonane (C9)	1.58	J	175	1.77	J	196	11	30	
SHC	C10	n-Decane (C10)	0.877	J	175	1.38	J	196	44	30	¤
SHC	C11	n-Undecane (C11)	4.56	J	175	4.13	J	196	10	30	
SHC	C12	n-Dodecane (C12)	2.81	J	175	3.14	J	196	11	30	
SHC	C13	n-Tridecane (C13)	0.702	J	175	1.18	J	196	51	30	¤
SHC	1380	2,6,10 Trimethyldodecane (1380)		U	175		U	196		30	N/A
SHC	C14	n-Tetradecane (C14)	1.58	J	175	1.96	J	196	22	30	
SHC	1470	2,6,10 Trimethyltridecane (1470)	4.21	J	175	3.73	J	196	12	30	
SHC	C15	n-Pentadecane (C15)	9.65	J	175	7.27	J	196	28	30	
SHC	C16	n-Hexadecane (C16)	3.33	JB	175	2.95	JB	196	12	30	
SHC	1650	Norpristane (1650)		U	175		U	196		30	N/A
SHC	C17	n-Heptadecane (C17)	5.96	J	175	6.29	J	196	5	30	
SHC	Pr	Pristane		U	175		U	196		30	N/A
SHC	C18	n-Octadecane (C18)		U	175		U	196		30	N/A
SHC	Ph	Phytane	11.4	J	175	13.0	J	196	13	30	
SHC	C19	n-Nonadecane (C19)		U	175		U	196		30	N/A
SHC	C20	n-Eicosane (C20)	12.5	JB	175	16.7	JB	196	29	30	
SHC	C21	n-Heneicosane (C21)	4180	G	175	4140	G	196	1	30	
SHC	C22	n-Docosane (C22)		U	175		U	196		30	N/A
SHC	C23	n-Tricosane (C23)	60.2	J	175	32.6	J	196	59	30	¤
SHC	C24	n-Tetracosane (C24)	985	G	175	878	G	196	12	30	
SHC	C25	n-Pentacosane (C25)	36.0	J	175	36.7	J	196	2	30	
SHC	C26	n-Hexacosane (C26)	3.51	J	175	3.73	J	196	6	30	
SHC	C27	n-Heptacosane (C27)		U	175		U	196		30	N/A
SHC	C28	n-Octacosane (C28)	304		175	342		196	11	30	
SHC	C29	n-Nonacosane (C29)	178	B	175	192	JB	196	8	30	
SHC	C30	n-Triacontane (C30)	15.4	J	175	17.1	J	196	10	30	
SHC	C31	n-Hentriacontane (C31)	7.02	J	175	8.45	J	196	18	30	
SHC	C32	n-Dotriacontane (C32)	5.79	J	175	11.6	J	196	67	30	¤
SHC	C33	n-Tritriacontane (C33)		U	175	4.32	J	196		30	X
SHC	C34	n-Tetratriacontane (C34)		U	175		U	196		30	N/A
SHC	C35	n-Pentatriacontane (C35)		U	175		U	196		30	N/A
SHC	C36	n-Hexatriacontane (C36)		U	175		U	196		30	N/A
SHC	C37	n-Heptatriacontane (C37)		U	175		U	196		30	N/A
SHC	C38	n-Octatriacontane (C38)		U	175		U	196		30	N/A
SHC	C39	n-Nonatriacontane (C39)	64.7	J	175		U	196		30	X
SHC	C40	n-Tetracontane (C40)		U	175		U	196		30	N/A
SHC	TSH	Total Saturated Hydrocarbons	5900		175	5730		196	3	30	
SHC	TPH	Total Petroleum Hydrocarbons (C9-C44)	24200		5790	26900		6480	11	30	

Surrogates (% Recovery)		
ortho-Terphenyl	102	102
d50-Tetracosane	98	97

Project Name: Amendola Engineering-Arcelor Mittal
Project Number:

Client ID	Alaska North Slope Crude
Lab ID	TO121116ANC02
Matrix	Oil
Reference Method	SHC
Batch ID	N/A
Date Collected	N/A
Date Received	N/A
Date Prepped	N/A
Date Analyzed	12/07/2016
Sample Size (wet)	0.10056
% Solid	100.00
File ID	F612061629.D
Units	mg/Kg
Final Volume	10
Dilution	1
Reporting Limit	99.4

Class	Abbrev	Analytes	Result	SSRL	% Rec	Spike Conc.	Lower Limit	Upper Limit
SHC	C9	n-Nonane (C9)	6120	99.4	97	6286.00	65	135
SHC	C10	n-Decane (C10)	4970	99.4	99	5047.00	65	135
SHC	C11	n-Undecane (C11)	4620	99.4	98	4703.00	65	135
SHC	C12	n-Dodecane (C12)	4060	99.4	98	4155.00	65	135
SHC	C13	n-Tridecane (C13)	3850	99.4	95	4058.00	65	135
SHC	1380	2,6,10 Trimethyldodecane (1380)	833	99.4	99	845.00	65	135
SHC	C14	n-Tetradecane (C14)	3540	99.4	96	3670.00	65	135
SHC	1470	2,6,10 Trimethyltridecane (1470)	1370	99.4	100	1367.00	65	135
SHC	C15	n-Pentadecane (C15)	3510	99.4	96	3660.00	65	135
SHC	C16	n-Hexadecane (C16)	3180	99.4	95	3330.00	65	135
SHC	1650	Norpristane (1650)	1080	99.4	98	1093.00	65	135
SHC	C17	n-Heptadecane (C17)	2840	99.4	94	3012.00	65	135
SHC	Pr	Pristane	2080	99.4	97	2145.00	65	135
SHC	C18	n-Octadecane (C18)	2600	99.4	96	2700.00	65	135
SHC	Ph	Phytane	1310	99.4	108	1215.00	65	135
SHC	C19	n-Nonadecane (C19)	2280	99.4	99	2305.00	65	135
SHC	C20	n-Eicosane (C20)	2280	99.4	98	2337.00	65	135
SHC	C21	n-Heneicosane (C21)	1930	99.4	95	2044.00	65	135
SHC	C22	n-Docosane (C22)	1910	99.4	97	1972.00	65	135
SHC	C23	n-Tricosane (C23)	1720	99.4	99	1745.00	65	135
SHC	C24	n-Tetracosane (C24)	1600	99.4	98	1641.00	65	135
SHC	C25	n-Pentacosane (C25)	1580	99.4	101	1562.00	65	135
SHC	C26	n-Hexacosane (C26)	1350	99.4	98	1378.00	65	135
SHC	C27	n-Heptacosane (C27)	1100	99.4	101	1083.00	65	135
SHC	C28	n-Octacosane (C28)	743	99.4	96	776.00	65	135
SHC	C29	n-Nonacosane (C29)	718	99.4	98	734.00	65	135
SHC	C30	n-Triacontane (C30)	609	99.4	97	627.00	65	135
SHC	C31	n-Hentriacontane (C31)	464	99.4	90	514.00	65	135
SHC	C32	n-Dotriacontane (C32)	378	99.4	83	458.00	65	135
SHC	C33	n-Tritriacontane (C33)	363	99.4	94	388.00	65	135
SHC	C34	n-Tetratriacontane (C34)	316	99.4	91	347.00	65	135
SHC	C35	n-Pentatriacontane (C35)	247	99.4	89	278.00	65	135
SHC	C36	n-Hexatriacontane (C36)	180	99.4	97	186.00	65	135
SHC	C37	n-Heptatriacontane (C37)	154	99.4	102	152.00	65	135
SHC	C38	n-Octatriacontane (C38)	108	99.4	82	131.00	65	135
SHC	C39	n-Nonatriacontane (C39)	90.0 J	99.4	101	89.00	65	135
SHC	C40	n-Tetracontane (C40)	84.2 J	99.4	92	92.00	65	135
SHC	TSH	Total Saturated Hydrocarbons	66200	99.4	97	68122.00	65	135
SHC	TPH	Total Petroleum Hydrocarbons (C9-C44)	543000	3280	98	554993.00	65	135

Project Name: Amendola Engineering-Arcelor Mittal
Project Number:

Client ID		001 SHEEN 1		001 SHEEN 2 (MUCK)		101 CLARIFIER
Lab ID		1705009-01		1705009-02		1705009-03
Matrix		Solid		Solid		Solid
Reference Method		SHC		SHC		SHC
Batch ID		SS060117B03		SS060117B02		SS060117B03
Date Collected		05/15/2017		05/15/2017		05/15/2017
Date Received		05/16/2017		05/16/2017		05/16/2017
Date Prepped		06/01/2017		06/01/2017		06/01/2017
Date Analyzed		06/09/2017		06/02/2017		06/09/2017
Sample Size (wet)		0.04016		0.00444		0.01816
% Solid		100.00		100.00		100.00
File ID		F606091717.D		F606021717.D		F606091719.D
Units		mg/Kg		mg/Kg		mg/Kg
Final Volume		8		1		4
Dilution		1		1		1
Reporting Limit		199		225		220
Class	Abbrev	Analytes	Result	SSRL	Result	SSRL	Result	SSRL
SHC	C9	n-Nonane (C9)	5.78 J	199	4.50 J	225	1.98 J	220
SHC	C10	n-Decane (C10)	2.99 J	199	1.58 J	225	4.18 J	220
SHC	C11	n-Undecane (C11)	3.59 J	199	7.43 J	225	119 J	220
SHC	C12	n-Dodecane (C12)	8.86 J	199	23.9 J	225	298	220
SHC	C13	n-Tridecane (C13)	12.7 J	199	31.3 J	225	419	220
SHC	1380	2,6,10 Trimethyldodecane (1380)	6.97 J	199	15.3 J	225	132 J	220
SHC	C14	n-Tetradecane (C14)	5.98 J	199	18.7 J	225	181 J	220
SHC	1470	2,6,10 Trimethyltridecane (1470)	2.39 J	199	9.46 J	225	63.9 J	220
SHC	C15	n-Pentadecane (C15)	13.7 J	199	25.2 J	225	55.7 J	220
SHC	C16	n-Hexadecane (C16)	14.7 J	199	15.1 JB	225	49.1 J	220
SHC	1650	Norpristane (1650)	5.78 J	199	25.4 J	225	104 J	220
SHC	C17	n-Heptadecane (C17)	8.96 J	199	21.2 J	225	68.7 J	220
SHC	Pr	Pristane	21.3 J	199	46.6 J	225	191 J	220
SHC	C18	n-Octadecane (C18)	16.9 JB	199	33.3 J	225	142 JB	220
SHC	Ph	Phytane	34.3 J	199	53.2 J	225	218 J	220
SHC	C19	n-Nonadecane (C19)	U	199	U	225	U	220
SHC	C20	n-Eicosane (C20)	15.5 JB	199	25.2 JB	225	171 J	220
SHC	C21	n-Heneicosane (C21)	15.7 J	199	28.4 J	225	164 J	220
SHC	C22	n-Docosane (C22)	U	199	14.9 J	225	75.1 J	220
SHC	C23	n-Tricosane (C23)	U	199	U	225	106 J	220
SHC	C24	n-Tetracosane (C24)	U	199	U	225	U	220
SHC	C25	n-Pentacosane (C25)	U	199	129 J	225	489	220
SHC	C26	n-Hexacosane (C26)	U	199	U	225	U	220
SHC	C27	n-Heptacosane (C27)	46.8 J	199	U	225	U	220
SHC	C28	n-Octacosane (C28)	U	199	U	225	U	220
SHC	C29	n-Nonacosane (C29)	U	199	273 B	225	U	220
SHC	C30	n-Triacontane (C30)	U	199	U	225	U	220
SHC	C31	n-Hentriacontane (C31)	U	199	U	225	U	220
SHC	C32	n-Dotriacontane (C32)	U	199	U	225	U	220
SHC	C33	n-Tritriacontane (C33)	U	199	U	225	U	220
SHC	C34	n-Tetratriacontane (C34)	U	199	U	225	U	220
SHC	C35	n-Pentatriacontane (C35)	U	199	U	225	U	220
SHC	C36	n-Hexatriacontane (C36)	U	199	U	225	U	220
SHC	C37	n-Heptatriacontane (C37)	U	199	U	225	U	220
SHC	C38	n-Octatriacontane (C38)	U	199	U	225	U	220
SHC	C39	n-Nonatriacontane (C39)	U	199	U	225	U	220
SHC	C40	n-Tetracontane (C40)	U	199	U	225	U	220
SHC	TSH	Total Saturated Hydrocarbons	243	199	803 B	225	3050	220
SHC	TPH	Total Petroleum Hydrocarbons (C9-C44)	466000	6570	52500	7430	856000	7270

Surrogates (% Recovery)			
ortho-Terphenyl	100	109	105
d50-Tetracosane	102	107	106

Project Name: Amendola Engineering-Arcelor Mittal
Project Number:

Client ID		SOUTH SEWER MH		CWTP INFLUENT		FIELD BLANK	
Lab ID		1705009-04		1705009-05		1705009-06	
Matrix		Solid		Solid		Solid	
Reference Method		SHC		SHC		SHC	
Batch ID		SS060117B02		SS060117B02		SS060117B03	
Date Collected		05/15/2017		05/15/2017		05/17/2017	
Date Received		05/16/2017		05/16/2017		05/19/2017	
Date Prepped		06/01/2017		06/01/2017		06/01/2017	
Date Analyzed		06/02/2017		06/02/2017		06/10/2017	
Sample Size (wet)		0.00521		0.00643		0.01	
% Solid		100.00		100.00		100.00	
File ID		F606021719.D		F606021721.D		F606091721.D	
Units		mg/Kg		mg/Kg		mg/Kg	
Final Volume		1		1		2	
Dilution		1		1		1	
Reporting Limit		192		156		200	
Class	Abbrev	Analytes	Result	SSRL	Result	SSRL	Result	SSRL
SHC	C9	n-Nonane (C9)	U 192		2.33 J 156		U 200	
SHC	C10	n-Decane (C10)	U 192		2.02 J 156		3.20 J 200	
SHC	C11	n-Undecane (C11)	1.15 J 192		65.8 J 156		U 200	
SHC	C12	n-Dodecane (C12)	7.10 J 192		132 J 156		3.80 J 200	
SHC	C13	n-Tridecane (C13)	3.26 J 192		210 156		2.60 J 200	
SHC	1380	2,6,10 Trimethyldodecane (1380)	2.69 J 192		144 J 156		4.40 J 200	
SHC	C14	n-Tetradecane (C14)	3.65 J 192		193 156		2.60 J 200	
SHC	1470	2,6,10 Trimethyltridecane (1470)	2.11 J 192		85.1 J 156		U 200	
SHC	C15	n-Pentadecane (C15)	13.6 J 192		212 156		18.4 J 200	
SHC	C16	n-Hexadecane (C16)	15.4 JB 192		234 156		6.00 JB 200	
SHC	1650	Norpristane (1650)	6.72 J 192		312 156		U 200	
SHC	C17	n-Heptadecane (C17)	23.0 J 192		474 156		0.800 J 200	
SHC	Pr	Pristane	15.6 J 192		518 156		1.40 JB 200	
SHC	C18	n-Octadecane (C18)	42.8 J 192		639 156		27.6 JB 200	
SHC	Ph	Phytane	27.8 J 192		508 156		10.8 J 200	
SHC	C19	n-Nonadecane (C19)	U 192		770 156		U 200	
SHC	C20	n-Eicosane (C20)	36.3 JB 192		887 156		9.40 JB 200	
SHC	C21	n-Heneicosane (C21)	24.8 J 192		652 156		1.20 J 200	
SHC	C22	n-Docosane (C22)	20.5 J 192		457 156		U 200	
SHC	C23	n-Tricosane (C23)	26.9 J 192		450 156		U 200	
SHC	C24	n-Tetracosane (C24)	U 192		486 156		1.80 J 200	
SHC	C25	n-Pentacosane (C25)	139 J 192		1040 156		U 200	
SHC	C26	n-Hexacosane (C26)	U 192		U 156		2.80 JB 200	
SHC	C27	n-Heptacosane (C27)	U 192		U 156		4.60 JB 200	
SHC	C28	n-Octacosane (C28)	U 192		U 156		U 200	
SHC	C29	n-Nonacosane (C29)	370 B 192		U 156		U 200	
SHC	C30	n-Triacontane (C30)	U 192		U 156		1.80 J 200	
SHC	C31	n-Hentriacontane (C31)	U 192		U 156		U 200	
SHC	C32	n-Dotriacontane (C32)	U 192		U 156		U 200	
SHC	C33	n-Tritriacontane (C33)	U 192		U 156		U 200	
SHC	C34	n-Tetratriacontane (C34)	U 192		U 156		U 200	
SHC	C35	n-Pentatriacontane (C35)	U 192		U 156		U 200	
SHC	C36	n-Hexatriacontane (C36)	U 192		U 156		U 200	
SHC	C37	n-Heptatriacontane (C37)	U 192		U 156		U 200	
SHC	C38	n-Octatriacontane (C38)	U 192		U 156		U 200	
SHC	C39	n-Nonatriacontane (C39)	U 192		U 156		U 200	
SHC	C40	n-Tetracontane (C40)	U 192		U 156		U 200	
SHC	TSH	Total Saturated Hydrocarbons	782 B 192		8480 156		103 JB 200	
SHC	TPH	Total Petroleum Hydrocarbons (C9-C44)	61900 6330		192000 5130		41700 6600	

Surrogates (% Recovery)			
ortho-Terphenyl	112	126	99
d50-Tetracosane	109	119	97

Project Name: Amendola Engineering-Arcelor Mittal
Project Number:

Client ID		INDIANAPOLIS BLVD			W. COLUMBUS DR			US STEEL ROLLING SOLUTION			
Lab ID		1705009-07			1705009-08			1705009-09			
Matrix		Solid			Solid			Solid			
Reference Method		SHC			SHC			SHC			
Batch ID		SS060117B03			SS060117B03			SS060117B02			
Date Collected		05/17/2017			05/17/2017			05/23/2017			
Date Received		05/19/2017			05/19/2017			05/25/2017			
Date Prepped		06/01/2017			06/01/2017			06/01/2017			
Date Analyzed		06/10/2017			06/10/2017			06/03/2017			
Sample Size (wet)		0.02272			0.01384			0.0057			
% Solid		100.00			100.00			100.00			
File ID		F606091723.D			F606091725.D			F606021723.D			
Units		mg/Kg			mg/Kg			mg/Kg			
Final Volume		4			2.5			1			
Dilution		1			1			1			
Reporting Limit		176			181			175			
Class	Abbrev	Analytes	Result		SSRL	Result		SSRL	Result		SSRL
SHC	C9	n-Nonane (C9)	2.99	J	176	4.70	J	181	1.58	J	175
SHC	C10	n-Decane (C10)	2.64	J	176	7.77	J	181	0.877	J	175
SHC	C11	n-Undecane (C11)	8.80	J	176	2.35	J	181	4.56	J	175
SHC	C12	n-Dodecane (C12)	24.3	J	176	2.35	J	181	2.81	J	175
SHC	C13	n-Tridecane (C13)	53.5	J	176	10.1	J	181	0.702	J	175
SHC	1380	2,6,10 Trimethyldodecane (1380)	128	J	176	15.4	J	181		U	175
SHC	C14	n-Tetradecane (C14)	16.0	J	176	30.2	J	181	1.58	J	175
SHC	1470	2,6,10 Trimethyltridecane (1470)	261		176	108	J	181	4.21	J	175
SHC	C15	n-Pentadecane (C15)	123	J	176	31.8	J	181	9.65	J	175
SHC	C16	n-Hexadecane (C16)	112	J	176	113	J	181	3.33	JB	175
SHC	1650	Norpristane (1650)	1280		176	2160		181		U	175
SHC	C17	n-Heptadecane (C17)	185		176	229		181	5.96	J	175
SHC	Pr	Pristane	3160		176	5790		181		U	175
SHC	C18	n-Octadecane (C18)		U	176		U	181		U	175
SHC	Ph	Phytane	3550		176	6500		181	11.4	J	175
SHC	C19	n-Nonadecane (C19)	161	J	176	281		181		U	175
SHC	C20	n-Eicosane (C20)		U	176		U	181	12.5	JB	175
SHC	C21	n-Heneicosane (C21)	108	J	176	138	J	181	4180	G	175
SHC	C22	n-Docosane (C22)	87.2	J	176		U	181		U	175
SHC	C23	n-Tricosane (C23)	94.2	J	176		U	181	60.2	J	175
SHC	C24	n-Tetracosane (C24)	86.3	J	176		U	181	985	G	175
SHC	C25	n-Pentacosane (C25)	184		176		U	181	36.0	J	175
SHC	C26	n-Hexacosane (C26)	69.4	J	176	89.2	J	181	3.51	J	175
SHC	C27	n-Heptacosane (C27)	165	J	176		U	181		U	175
SHC	C28	n-Octacosane (C28)		U	176		U	181	304		175
SHC	C29	n-Nonacosane (C29)	187		176	134	J	181	178	B	175
SHC	C30	n-Triacontane (C30)		U	176		U	181	15.4	J	175
SHC	C31	n-Hentriacontane (C31)	56.7	J	176		U	181	7.02	J	175
SHC	C32	n-Dotriacontane (C32)	43.0	J	176		U	181	5.79	J	175
SHC	C33	n-Tritriacontane (C33)		U	176		U	181		U	175
SHC	C34	n-Tetratriacontane (C34)		U	176		U	181		U	175
SHC	C35	n-Pentatriacontane (C35)	162	J	176		U	181		U	175
SHC	C36	n-Hexatriacontane (C36)		U	176		U	181		U	175
SHC	C37	n-Heptatriacontane (C37)		U	176		U	181		U	175
SHC	C38	n-Octatriacontane (C38)		U	176		U	181		U	175
SHC	C39	n-Nonatriacontane (C39)		U	176		U	181	64.7	J	175
SHC	C40	n-Tetracontane (C40)		U	176		U	181		U	175
SHC	TSH	Total Saturated Hydrocarbons	10300		176	15600		181	5900		175
SHC	TPH	Total Petroleum Hydrocarbons (C9-C44)	670000		5810	776000		5960	24200		5790

Surrogates (% Recovery)			
ortho-Terphenyl	92	96	102
d50-Tetracosane	103	103	98

Project Name: Amendola Engineering-Arcelor Mittal
Project Number:

Client ID		Method Blank		Method Blank
Lab ID		SS060117B02		SS060117B03
Matrix		Solid		Solid
Reference Method		Modified 8270D		Modified 8270D
Batch ID		SS060117B02		SS060117B03
Date Collected		N/A		N/A
Date Received		N/A		N/A
Date Prepped		06/01/2017		06/01/2017
Date Analyzed		06/01/2017		06/07/2017
Sample Size (wet)		0.005		0.02
% Solid		100.00		100.00
File ID		F1405301736.D		F1406071706.D
Units		mg/Kg		mg/Kg
Final Volume		1		2
Dilution		1		1
Reporting Limit		2.00		1.00
Class	Abbrev	Analytes	Result	SSRL	Result	SSRL
2	D0	cis/trans-Decalin	U	2.00	U	1.00
2	D1	C1-Decalins	U	2.00	U	1.00
2	D2	C2-Decalins	U	2.00	U	1.00
2	D3	C3-Decalins	U	2.00	U	1.00
2	D4	C4-Decalins	U	2.00	U	1.00
2	BT0	Benzothiophene	U	2.00	U	1.00
2	BT1	C1-Benzo(b)thiophenes	U	2.00	U	1.00
2	BT2	C2-Benzo(b)thiophenes	U	2.00	U	1.00
2	BT3	C3-Benzo(b)thiophenes	U	2.00	U	1.00
2	BT4	C4-Benzo(b)thiophenes	U	2.00	U	1.00
2	N0	Naphthalene	U	2.00	U	1.00
2	N1	C1-Naphthalenes	U	2.00	U	1.00
2	N2	C2-Naphthalenes	U	2.00	U	1.00
2	N3	C3-Naphthalenes	U	2.00	U	1.00
2	N4	C4-Naphthalenes	U	2.00	U	1.00
2	B	Biphenyl	U	2.00	U	1.00
3	DF	Dibenzofuran	U	2.00	U	1.00
3	AY	Acenaphthylene	U	2.00	U	1.00
3	AE	Acenaphthene	U	2.00	U	1.00
3	F0	Fluorene	U	2.00	U	1.00
3	F1	C1-Fluorenes	U	2.00	U	1.00
3	F2	C2-Fluorenes	U	2.00	U	1.00
3	F3	C3-Fluorenes	U	2.00	U	1.00
3	A0	Anthracene	U	2.00	U	1.00
3	P0	Phenanthrene	U	2.00	U	1.00
3	PA1	C1-Phenanthrenes/Anthracenes	U	2.00	U	1.00
3	PA2	C2-Phenanthrenes/Anthracenes	U	2.00	U	1.00
3	PA3	C3-Phenanthrenes/Anthracenes	U	2.00	U	1.00
3	PA4	C4-Phenanthrenes/Anthracenes	U	2.00	U	1.00
3	RET	Retene	U	2.00	U	1.00
3	DBT0	Dibenzothiophene	0.165 J	2.00	U	1.00
3	DBT1	C1-Dibenzothiophenes	U	2.00	U	1.00
3	DBT2	C2-Dibenzothiophenes	U	2.00	U	1.00
3	DBT3	C3-Dibenzothiophenes	U	2.00	U	1.00
3	DBT4	C4-Dibenzothiophenes	U	2.00	U	1.00
4	BF	Benzo(b)fluorene	U	2.00	U	1.00
4	FL0	Fluoranthene	U	2.00	U	1.00
4	PY0	Pyrene	U	2.00	U	1.00
4	FP1	C1-Fluoranthenes/Pyrenes	U	2.00	U	1.00
4	FP2	C2-Fluoranthenes/Pyrenes	U	2.00	U	1.00
4	FP3	C3-Fluoranthenes/Pyrenes	U	2.00	U	1.00
4	FP4	C4-Fluoranthenes/Pyrenes	U	2.00	U	1.00
4	NBT0	Naphthobenzothiophenes	U	2.00	U	1.00
4	NBT1	C1-Naphthobenzothiophenes	U	2.00	U	1.00
4	NBT2	C2-Naphthobenzothiophenes	U	2.00	U	1.00
4	NBT3	C3-Naphthobenzothiophenes	U	2.00	U	1.00
4	NBT4	C4-Naphthobenzothiophenes	U	2.00	U	1.00
4	BA0	Benz[a]anthracene	U	2.00	U	1.00
4	C0	Chrysene/Triphenylene	U	2.00	U	1.00
4	BC1	C1-Chrysenes	U	2.00	U	1.00
4	BC2	C2-Chrysenes	U	2.00	U	1.00
4	BC3	C3-Chrysenes	U	2.00	U	1.00
4	BC4	C4-Chrysenes	U	2.00	U	1.00
5	BBF	Benzo[b]fluoranthene	U	2.00	U	1.00
5	BJKF	Benzo[j]fluoranthene/Benzo[k]fluoranthene	U	2.00	U	1.00
5	BAF	Benzo[a]fluoranthene	U	2.00	U	1.00
5	BEP	Benzo[e]pyrene	U	2.00	U	1.00
5	BAP	Benzo[a]pyrene	U	2.00	U	1.00
5	PER	Perylene	U	2.00	U	1.00
6	IND	Indeno[1,2,3-cd]pyrene	U	2.00	U	1.00
6	DA	Dibenz[ah]anthracene/Dibenz[ac]anthracene	U	2.00	U	1.00
6	GHI	Benzo[g,h,i]perylene	U	2.00	U	1.00
3	CAR	Carbazole	U	2.00	U	1.00
3	4MDT	4-Methyldibenzothiophene	U	2.00	U	1.00
3	2MDT	2/3-Methyldibenzothiophene	U	2.00	U	1.00
3	1MDT	1-Methyldibenzothiophene	U	2.00	U	1.00
3	3MP	3-Methylphenanthrene	U	2.00	U	1.00
3	2MP	2-Methylphenanthrene	U	2.00	U	1.00
3	2MA	2-Methylanthracene	U	2.00	U	1.00
3	9MP	9/4-Methylphenanthrene	U	2.00	U	1.00
3	1MP	1-Methylphenanthrene	U	2.00	U	1.00

Project Name: Amendola Engineering-Arcelor Mittal
Project Number:

Client ID		Method Blank		Method Blank
Lab ID		SS060117B02		SS060117B03
Matrix		Solid		Solid
Reference Method		Modified 8270D		Modified 8270D
Batch ID		SS060117B02		SS060117B03
Date Collected		N/A		N/A
Date Received		N/A		N/A
Date Prepped		06/01/2017		06/01/2017
Date Analyzed		06/01/2017		06/07/2017
Sample Size (wet)		0.005		0.02
% Solid		100.00		100.00
File ID		F1405301736.D		F1406071706.D
Units		mg/Kg		mg/Kg
Final Volume		1		2
Dilution		1		1
Reporting Limit		2.00		1.00
Class	Abbrev	Analytes	Result SSRL	Result SSRL
t23	T4	C23 Tricyclic Terpane	U 2.00	U 1.00
t24	T5	C24 Tricyclic Terpane	U 2.00	U 1.00
t25	T6	C25 Tricyclic Terpane	U 2.00	U 1.00
te24	T6a	C24 Tetracyclic Terpane	U 2.00	U 1.00
t26S	T6b	C26 Tricyclic Terpane-22S	U 2.00	U 1.00
t26R	T6c	C26 Tricyclic Terpane-22R	U 2.00	U 1.00
t28S	T7	C28 Tricyclic Terpane-22S	U 2.00	U 1.00
t28R	T8	C28 Tricyclic Terpane-22R	U 2.00	U 1.00
t29S	T9	C29 Tricyclic Terpane-22S	U 2.00	U 1.00
t29R	T10	C29 Tricyclic Terpane-22R	U 2.00	U 1.00
Ts	T11	18a-22,29,30-Trisnorneohopane-TS	U 2.00	U 1.00
t30S	T11a	C30 Tricyclic Terpane-22S	U 2.00	U 1.00
t30R	T11b	C30 Tricyclic Terpane-22R	U 2.00	U 1.00
Tm	T12	17a(H)-22,29,30-Trisnorhopane-TM	U 2.00	U 1.00
BNH	T14a	17a/b,21b/a 28,30-Bisnorhopane	U 2.00	U 1.00
25N	T14b	17a(H),21b(H)-25-Norhopane	U 2.00	U 1.00
H29	T15	30-Norhopane	U 2.00	U 1.00
C29Ts	T16	18a(H)-30-Norneohopane-C29Ts	U 2.00	U 1.00
X	X	17a(H)-Diahopane	U 2.00	U 1.00
M29	T17	30-Normoretane	U 2.00	U 1.00
OL	T18	18a(H)&18b(H)-Oleananes	U 2.00	U 1.00
H30	T19	Hopane	U 2.00	U 1.00
M30	T20	Moretane	U 2.00	U 1.00
H31S	T21	30-Homohopane-22S	U 2.00	U 1.00
H31R	T22	30-Homohopane-22R	U 2.00	U 1.00
T22A	T22A	T22a-Gammacerane/C32-diahopane	U 2.00	U 1.00
H32S	T26	30,31-Bishomohopane-22S	U 2.00	U 1.00
H32R	T27	30,31-Bishomohopane-22R	U 2.00	U 1.00
H33S	T30	30,31-Trishomohopane-22S	U 2.00	U 1.00
H33R	T31	30,31-Trishomohopane-22R	U 2.00	U 1.00
H34S	T32	Tetrakishomohopane-22S	U 2.00	U 1.00
H34R	T33	Tetrakishomohopane-22R	U 2.00	U 1.00
H35S	T34	Pentakishomohopane-22S	U 2.00	U 1.00
H35R	T35	Pentakishomohopane-22R	U 2.00	U 1.00
d27S	S4	13b(H),17a(H)-20S-Diacholestane	U 2.00	U 1.00
d27R	S5	13b(H),17a(H)-20R-Diacholestane	U 2.00	U 1.00
d28S	S8	13b,17a-20S-Methyldiacholestane	U 2.00	U 1.00
aa27S	S12	14a(H),17a(H)-20S-Cholestane/13b(H),17a(H)-20S-Ethyldiacholestane (S12)	U 2.00	U 1.00
aa27R	S17	14a(H),17a(H)-20R-Cholestane/13b(H),17a(H)-20R-Ethyldiacholestane (S17)	U 2.00	U 1.00
d29R	S18	Unknown Sterane (S18)	U 2.00	U 1.00
d29S	S19	13a,17b-20S-Ethyldiacholestane	U 2.00	U 1.00
aa28S	S20	14a,17a-20S-Methylcholestane	U 2.00	U 1.00
aa28R	S24	14a,17a-20R-Methylcholestane	U 2.00	U 1.00
aa29S	S25	14a(H),17a(H)-20S-Ethylcholestane	U 2.00	U 1.00
aa29R	S28	14a(H),17a(H)-20R-Ethylcholestane	U 2.00	U 1.00
bb27R	S14	14b(H),17b(H)-20R-Cholestane	U 2.00	U 1.00
bb27S	S15	14b(H),17b(H)-20S-Cholestane	U 2.00	U 1.00
bb28R	S22	14b,17b-20R-Methylcholestane	U 2.00	U 1.00
bb28S	S23	14b,17b-20S-Methylcholestane	U 2.00	U 1.00
bb29R	S26	14b(H),17b(H)-20R-Ethylcholestane	U 2.00	U 1.00
bb29S	S27	14b(H),17b(H)-20S-Ethylcholestane	U 2.00	U 1.00
RC26/SC27TA	RC26/SC27TA	C26,20R- +C27,20S- triaromatic steroid	U 2.00	U 1.00
SC28TA	SC28TA	C28,20S-triaromatic steroid	U 2.00	U 1.00
RC27TA	RC27TA	C27,20R-triaromatic steroid	U 2.00	U 1.00
RC28TA	RC28TA	C28,20R-triaromatic steroid	U 2.00	U 1.00

Surrogates (% Recovery)		
Naphthalene-d8	123	114
Phenanthrene-d10	124	91
Benzo[a]pyrene-d12	118	95
5B(H)Cholane	118	105

Project Name: Amendola Engineering-Arcelor Mittal
Project Number:

Client ID	Laboratory Control Sample
Lab ID	SS060117LCS03
Matrix	Solid
Reference Method	Modified 8270D
Batch ID	SS060117B03
Date Collected	N/A
Date Received	N/A
Date Prepped	06/01/2017
Date Analyzed	06/07/2017
Sample Size (wet)	0.02
% Solid	100.00
File ID	F1406071707.D
Units	mg/Kg
Final Volume	2
Dilution	1
Reporting Limit	1.00

Class	Abbrev	Analytes	Result		SSRL	% Rec	Spike Conc.	Lower Limit	Upper Limit
2	N0	Naphthalene	58.0	S	1.00	116	50.0	50	130
3	AY	Acenaphthylene	51.0	S	1.00	102	50.0	50	130
3	AE	Acenaphthene	49.2	S	1.00	98	50.0	50	130
3	F0	Fluorene	47.7	S	1.00	95	50.0	50	130
3	A0	Anthracene	48.0	S	1.00	96	50.0	50	130
3	P0	Phenanthrene	46.8	S	1.00	94	50.0	50	130
4	FL0	Fluoranthene	51.3	S	1.00	103	50.0	50	130
4	PY0	Pyrene	48.8	S	1.00	98	50.0	50	130
4	BA0	Benz[a]anthracene	49.3	S	1.00	99	50.0	50	130
4	C0	Chrysene/Triphenylene	48.4	S	1.00	97	50.0	50	130
5	BBF	Benzo[b]fluoranthene	47.0	S	1.00	94	50.0	50	130
5	BJKF	Benzo[j]fluoranthene/Benzo[k]fluoranthene	51.6	S	1.00	103	50.0	50	130
5	BAP	Benzo[a]pyrene	50.8	S	1.00	102	50.0	50	130
6	IND	Indeno[1,2,3-cd]pyrene	47.2	S	1.00	94	50.0	50	130
6	DA	Dibenz[ah]anthracene/Dibenz[ac]anthracene	49.3	S	1.00	99	50.0	50	130
6	GHI	Benzo[g,h,i]perylene	47.1	S	1.00	94	50.0	50	130

Surrogates (% Recovery)	
Naphthalene-d8	121
Phenanthrene-d10	102
Benzo[a]pyrene-d12	101
5B(H)Cholane	103

Project Name: Amendola Engineering-Arcelor Mittal
Project Number:

Client ID	Laboratory Control Sample
Lab ID	SS060117LCS02
Matrix	Solid
Reference Method	Modified 8270D
Batch ID	SS060117B02
Date Collected	N/A
Date Received	N/A
Date Prepped	06/01/2017
Date Analyzed	06/01/2017
Sample Size (wet)	0.005
% Solid	100.00
File ID	F1405301737.D
Units	mg/Kg
Final Volume	1
Dilution	1
Reporting Limit	2.00

Class	Abbrev	Analytes	Result		SSRL	% Rec	Spike Conc	Lower Limit	Upper Limit
2	N0	Naphthalene	231	S	2.00	116	200	50	130
3	AY	Acenaphthylene	232	S	2.00	116	200	50	130
3	AE	Acenaphthene	227	S	2.00	113	200	50	130
3	F0	Fluorene	226	S	2.00	113	200	50	130
3	A0	Anthracene	238	S	2.00	119	200	50	130
3	P0	Phenanthrene	229	S	2.00	115	200	50	130
4	FL0	Fluoranthene	247	S	2.00	124	200	50	130
4	PY0	Pyrene	231	S	2.00	115	200	50	130
4	BA0	Benz[a]anthracene	212	S	2.00	106	200	50	130
4	C0	Chrysene/Triphenylene	209	S	2.00	104	200	50	130
5	BBF	Benzo[b]fluoranthene	203	S	2.00	102	200	50	130
5	BJKF	Benzo[j]fluoranthene/Benzo[k]fluoranthene	217	S	2.00	109	200	50	130
5	BAP	Benzo[a]pyrene	224	S	2.00	112	200	50	130
6	IND	Indeno[1,2,3-cd]pyrene	191	S	2.00	96	200	50	130
6	DA	Dibenz[ah]anthracene/Dibenz[ac]anthracene	196	S	2.00	98	200	50	130
6	GHI	Benzo[g,h,i]perylene	188	S	2.00	94	200	50	130

Surrogates (% Recovery)	
Naphthalene-d8	126
Phenanthrene-d10	123
Benzo[a]pyrene-d12	113
5B(H)Cholane	110

Project Name: Amendola Engineering-Arcelor Mittal
Project Number:

Client ID	Laboratory Control Sample Dup
Lab ID	SS060117LCSD02
Matrix	Solid
Reference Method	Modified 8270D
Batch ID	SS060117B02
Date Collected	N/A
Date Received	N/A
Date Prepped	06/01/2017
Date Analyzed	06/01/2017
Sample Size (wet)	0.005
% Solid	100.00
File ID	F1405301738.D
Units	mg/Kg
Final Volume	1
Dilution	1
Reporting Limit	2.00

Class	Abbrev	Analytes	Result		SSRL	% Rec	Spike Conc.	Lower Limit	Upper Limit	RPD	RPD Limit
2	N0	Naphthalene	232	S	2.00	116	200	50	130	0	30
3	AY	Acenaphthylene	235	S	2.00	118	200	50	130	1	30
3	AE	Acenaphthene	227	S	2.00	114	200	50	130	0	30
3	F0	Fluorene	228	S	2.00	114	200	50	130	1	30
3	A0	Anthracene	239	S	2.00	119	200	50	130	1	30
3	P0	Phenanthrene	229	S	2.00	115	200	50	130	0	30
4	FL0	Fluoranthene	248	S	2.00	124	200	50	130	0	30
4	PY0	Pyrene	232	S	2.00	116	200	50	130	1	30
4	BA0	Benz[a]anthracene	213	S	2.00	106	200	50	130	0	30
4	C0	Chrysene/Triphenylene	210	S	2.00	105	200	50	130	0	30
5	BBF	Benzo[b]fluoranthene	204	S	2.00	102	200	50	130	0	30
5	BJKF	Benzo[j]fluoranthene/Benzo[k]fluoranthene	217	S	2.00	108	200	50	130	0	30
5	BAP	Benzo[a]pyrene	224	S	2.00	112	200	50	130	0	30
6	IND	Indeno[1,2,3-cd]pyrene	194	S	2.00	97	200	50	130	1	30
6	DA	Dibenz[ah]anthracene/Dibenz[ac]anthracene	196	S	2.00	98	200	50	130	0	30
6	GHI	Benzo[g,h,i]perylene	188	S	2.00	94	200	50	130	0	30

Surrogates (% Recovery)	
Naphthalene-d8	126
Phenanthrene-d10	123
Benzo[a]pyrene-d12	113
5B(H)Cholane	111

Project Name: Amendola Engineering-Arcelor Mittal
Project Number:

Client ID	Laboratory Control Sample Dup
Lab ID	SS060117LCSD03
Matrix	Solid
Reference Method	Modified 8270D
Batch ID	SS060117B03
Date Collected	N/A
Date Received	N/A
Date Prepped	06/01/2017
Date Analyzed	06/08/2017
Sample Size (wet)	0.02
% Solid	100.00
File ID	F1406071708.D
Units	mg/Kg
Final Volume	2
Dilution	1
Reporting Limit	1.00

Class	Abbrev	Analytes	Result		SSRL	% Rec	Spike Conc.	Lower Limit	Upper Limit	RPD	RPD Limit
2	N0	Naphthalene	57.6	S	1.00	115	50.0	50	130	1	30
3	AY	Acenaphthylene	50.8	S	1.00	102	50.0	50	130	0	30
3	AE	Acenaphthene	49.4	S	1.00	99	50.0	50	130	0	30
3	F0	Fluorene	47.2	S	1.00	94	50.0	50	130	1	30
3	A0	Anthracene	47.7	S	1.00	95	50.0	50	130	1	30
3	P0	Phenanthrene	46.2	S	1.00	92	50.0	50	130	1	30
4	FL0	Fluoranthene	50.1	S	1.00	100	50.0	50	130	2	30
4	PY0	Pyrene	46.6	S	1.00	93	50.0	50	130	5	30
4	BA0	Benz[a]anthracene	48.5	S	1.00	97	50.0	50	130	2	30
4	C0	Chrysene/Triphenylene	47.7	S	1.00	95	50.0	50	130	1	30
5	BBF	Benzo[b]fluoranthene	46.0	S	1.00	92	50.0	50	130	2	30
5	BJKF	Benzo[j]fluoranthene/Benzo[k]fluoranthene	50.8	S	1.00	102	50.0	50	130	2	30
5	BAP	Benzo[a]pyrene	50.0	S	1.00	100	50.0	50	130	1	30
6	IND	Indeno[1,2,3-cd]pyrene	46.6	S	1.00	93	50.0	50	130	1	30
6	DA	Dibenz[ah]anthracene/Dibenz[ac]anthracene	48.4	S	1.00	97	50.0	50	130	2	30
6	GHI	Benzo[g,h,i]perylene	46.4	S	1.00	93	50.0	50	130	2	30

Surrogates (% Recovery)	
Naphthalene-d8	118
Phenanthrene-d10	96
Benzo[a]pyrene-d12	98
5B(H)Cholane	100

Project Name: Amendola Engineering-Arcelor Mittal
Project Number:

Client ID		US STEEL ROLLING SOLUTION			US STEEL ROLLING SOLUTION			
Lab ID		1705009-09			1705009-09D			
Matrix		Solid			Solid			
Reference Method		Modified 8270D			Modified 8270D			
Batch ID		SS060117B02			SS060117B02			
Date Collected		05/23/2017			05/23/2017			
Date Received		05/25/2017			05/25/2017			
Date Prepped		06/01/2017			06/01/2017			
Date Analyzed		06/02/2017			06/02/2017			
Sample Size (wet)		0.0057			0.00509			
% Solid		100.00			100.00			
File ID		F1405301742.D			F1405301743.D			
Units		mg/Kg			mg/Kg			
Final Volume		1			1			
Dilution		1			1			
Reporting Limit		1.75			1.96			
Class	Abbrev	Analytes	Result	SSRL	Result	SSRL	RPD	RPD Limit
2	D0	cis/trans-Decalin	U 1.75		U 1.96			30 N/A
2	D1	C1-Decalins	U 1.75		U 1.96			30 N/A
2	D2	C2-Decalins	U 1.75		U 1.96			30 N/A
2	D3	C3-Decalins	U 1.75		U 1.96			30 N/A
2	D4	C4-Decalins	U 1.75		U 1.96			30 N/A
2	BT0	Benzothiophene	U 1.75		U 1.96			30 N/A
2	BT1	C1-Benzo(b)thiophenes	U 1.75		U 1.96			30 N/A
2	BT2	C2-Benzo(b)thiophenes	U 1.75		U 1.96			30 N/A
2	BT3	C3-Benzo(b)thiophenes	U 1.75		U 1.96			30 N/A
2	BT4	C4-Benzo(b)thiophenes	U 1.75		U 1.96			30 N/A
2	N0	Naphthalene	1.14 J 1.75		0.912 J 1.96		22	30
2	N1	C1-Naphthalenes	U 1.75		U 1.96			30 N/A
2	N2	C2-Naphthalenes	U 1.75		U 1.96			30 N/A
2	N3	C3-Naphthalenes	U 1.75		U 1.96			30 N/A
2	N4	C4-Naphthalenes	U 1.75		U 1.96			30 N/A
2	B	Biphenyl	1.45 J 1.75		1.20 J 1.96		19	30
3	DF	Dibenzofuran	U 1.75		U 1.96			30 N/A
3	AY	Acenaphthylene	U 1.75		U 1.96			30 N/A
3	AE	Acenaphthene	U 1.75		U 1.96			30 N/A
3	F0	Fluorene	U 1.75		U 1.96			30 N/A
3	F1	C1-Fluorenes	U 1.75		U 1.96			30 N/A
3	F2	C2-Fluorenes	U 1.75		U 1.96			30 N/A
3	F3	C3-Fluorenes	U 1.75		U 1.96			30 N/A
3	A0	Anthracene	U 1.75		U 1.96			30 N/A
3	P0	Phenanthrene	U 1.75		U 1.96			30 N/A
3	PA1	C1-Phenanthrenes/Anthracenes	U 1.75		U 1.96			30 N/A
3	PA2	C2-Phenanthrenes/Anthracenes	U 1.75		U 1.96			30 N/A
3	PA3	C3-Phenanthrenes/Anthracenes	U 1.75		U 1.96			30 N/A
3	PA4	C4-Phenanthrenes/Anthracenes	U 1.75		U 1.96			30 N/A
3	RET	Retene	U 1.75		U 1.96			30 N/A
3	DBT0	Dibenzothiophene	U 1.75		U 1.96			30 N/A
3	DBT1	C1-Dibenzothiophenes	U 1.75		U 1.96			30 N/A
3	DBT2	C2-Dibenzothiophenes	U 1.75		U 1.96			30 N/A
3	DBT3	C3-Dibenzothiophenes	U 1.75		U 1.96			30 N/A
3	DBT4	C4-Dibenzothiophenes	U 1.75		U 1.96			30 N/A
4	BF	Benzo(b)fluorene	U 1.75		U 1.96			30 N/A
4	FL0	Fluoranthene	U 1.75		U 1.96			30 N/A
4	PY0	Pyrene	U 1.75		U 1.96			30 N/A
4	FP1	C1-Fluoranthenes/Pyrenes	U 1.75		U 1.96			30 N/A
4	FP2	C2-Fluoranthenes/Pyrenes	U 1.75		U 1.96			30 N/A
4	FP3	C3-Fluoranthenes/Pyrenes	U 1.75		U 1.96			30 N/A
4	FP4	C4-Fluoranthenes/Pyrenes	U 1.75		U 1.96			30 N/A
4	NBT0	Naphthobenzothiophenes	U 1.75		U 1.96			30 N/A
4	NBT1	C1-Naphthobenzothiophenes	U 1.75		U 1.96			30 N/A
4	NBT2	C2-Naphthobenzothiophenes	U 1.75		U 1.96			30 N/A
4	NBT3	C3-Naphthobenzothiophenes	U 1.75		U 1.96			30 N/A
4	NBT4	C4-Naphthobenzothiophenes	U 1.75		U 1.96			30 N/A
4	BA0	Benz[a]anthracene	U 1.75		U 1.96			30 N/A
4	C0	Chrysene/Triphenylene	U 1.75		U 1.96			30 N/A
4	BC1	C1-Chrysenes	U 1.75		U 1.96			30 N/A
4	BC2	C2-Chrysenes	U 1.75		U 1.96			30 N/A
4	BC3	C3-Chrysenes	U 1.75		U 1.96			30 N/A
4	BC4	C4-Chrysenes	U 1.75		U 1.96			30 N/A
5	BBF	Benzo[b]fluoranthene	U 1.75		U 1.96			30 N/A
5	BJKF	Benzo[j]fluoranthene/Benzo[k]fluoranthene	U 1.75		U 1.96			30 N/A
5	BAF	Benzo[a]fluoranthene	U 1.75		U 1.96			30 N/A
5	BEP	Benzo[e]pyrene	U 1.75		U 1.96			30 N/A
5	BAP	Benzo[a]pyrene	U 1.75		U 1.96			30 N/A
5	PER	Perylene	U 1.75		U 1.96			30 N/A
6	IND	Indeno[1,2,3-cd]pyrene	U 1.75		U 1.96			30 N/A
6	DA	Dibenz[ah]anthracene/Dibenz[ac]anthracene	U 1.75		U 1.96			30 N/A
6	GHI	Benzo[g,h,i]perylene	U 1.75		U 1.96			30 N/A
3	CAR	Carbazole	U 1.75		U 1.96			30 N/A
3	4MDT	4-Methyldibenzothiophene	U 1.75		U 1.96			30 N/A
3	2MDT	2/3-Methyldibenzothiophene	U 1.75		U 1.96			30 N/A
3	1MDT	1-Methyldibenzothiophene	U 1.75		U 1.96			30 N/A
3	3MP	3-Methylphenanthrene	U 1.75		U 1.96			30 N/A
3	2MP	2-Methylphenanthrene	U 1.75		U 1.96			30 N/A
3	2MA	2-Methylanthracene	U 1.75		U 1.96			30 N/A
3	9MP	9/4-Methylphenanthrene	U 1.75		U 1.96			30 N/A
3	1MP	1-Methylphenanthrene	U 1.75		U 1.96			30 N/A

Project Name: Amendola Engineering-Arcelor Mittal
Project Number:

Client ID		US STEEL ROLLING SOLUTION		US STEEL ROLLING SOLUTION	
Lab ID		1705009-09		1705009-09D	
Matrix		Solid		Solid	
Reference Method		Modified 8270D		Modified 8270D	
Batch ID		SS060117B02		SS060117B02	
Date Collected		05/23/2017		05/23/2017	
Date Received		05/25/2017		05/25/2017	
Date Prepped		06/01/2017		06/01/2017	
Date Analyzed		06/02/2017		06/02/2017	
Sample Size (wet)		0.0057		0.00509	
% Solid		100.00		100.00	
File ID		F1405301742.D		F1405301743.D	
Units		mg/Kg		mg/Kg	
Final Volume		1		1	
Dilution		1		1	
Reporting Limit		1.75		1.96	

Class	Abbrev	Analytes	Result	SSRL	Result	SSRL	RPD	RPD Limit	
t23	T4	C23 Tricyclic Terpane	U	1.75	U	1.96		30	N/A
t24	T5	C24 Tricyclic Terpane	U	1.75	U	1.96		30	N/A
t25	T6	C25 Tricyclic Terpane	U	1.75	U	1.96		30	N/A
te24	T6a	C24 Tetracyclic Terpane	U	1.75	U	1.96		30	N/A
t26S	T6b	C26 Tricyclic Terpane-22S	U	1.75	U	1.96		30	N/A
t26R	T6c	C26 Tricyclic Terpane-22R	U	1.75	U	1.96		30	N/A
t28S	T7	C28 Tricyclic Terpane-22S	U	1.75	U	1.96		30	N/A
t28R	T8	C28 Tricyclic Terpane-22R	U	1.75	U	1.96		30	N/A
t29S	T9	C29 Tricyclic Terpane-22S	U	1.75	U	1.96		30	N/A
t29R	T10	C29 Tricyclic Terpane-22R	U	1.75	U	1.96		30	N/A
Ts	T11	18a-22,29,30-Trisnorneohopane-TS	U	1.75	U	1.96		30	N/A
t30S	T11a	C30 Tricyclic Terpane-22S	U	1.75	U	1.96		30	N/A
t30R	T11b	C30 Tricyclic Terpane-22R	U	1.75	U	1.96		30	N/A
Tm	T12	17a(H)-22,29,30-Trisnorhopane-TM	U	1.75	U	1.96		30	N/A
BNH	T14a	17a/b,21b/a 28,30-Bisnorhopane	U	1.75	U	1.96		30	N/A
25N	T14b	17a(H),21b(H)-25-Norhopane	10.6	1.75	13.9	1.96	27	30	
H29	T15	30-Norhopane	U	1.75	U	1.96		30	N/A
C29Ts	T16	18a(H)-30-Normoretane-C29Ts	U	1.75	U	1.96		30	N/A
X	X	17a(H)-Diahopane	U	1.75	U	1.96		30	N/A
M29	T17	30-Normoretane	U	1.75	U	1.96		30	N/A
OL	T18	18a(H)&18b(H)-Oleananes	U	1.75	U	1.96		30	N/A
H30	T19	Hopane	U	1.75	U	1.96		30	N/A
M30	T20	Moretane	U	1.75	U	1.96		30	N/A
H31S	T21	30-Homohopane-22S	U	1.75	U	1.96		30	N/A
H31R	T22	30-Homohopane-22R	U	1.75	U	1.96		30	N/A
T22A	T22A	T22a-Gammacerane/C32-diahopane	U	1.75	U	1.96		30	N/A
H32S	T26	30,31-Bishomohopane-22S	U	1.75	U	1.96		30	N/A
H32R	T27	30,31-Bishomohopane-22R	U	1.75	U	1.96		30	N/A
H33S	T30	30,31-Trishomohopane-22S	U	1.75	U	1.96		30	N/A
H33R	T31	30,31-Trishomohopane-22R	U	1.75	U	1.96		30	N/A
H34S	T32	Tetrakishomohopane-22S	U	1.75	U	1.96		30	N/A
H34R	T33	Tetrakishomohopane-22R	U	1.75	U	1.96		30	N/A
H35S	T34	Pentakishomohopane-22S	U	1.75	U	1.96		30	N/A
H35R	T35	Pentakishomohopane-22R	U	1.75	U	1.96		30	N/A
d27S	S4	13b(H),17a(H)-20S-Diacholestane	U	1.75	U	1.96		30	N/A
d27R	S5	13b(H),17a(H)-20R-Diacholestane	U	1.75	U	1.96		30	N/A
d28S	S8	13b,17a-20S-Methyldiacholestane	U	1.75	U	1.96		30	N/A
aa27S	S12	14a(H),17a(H)-20S-Cholestane/13b(H),17a(H)-20S-Ethyldiacholestane (S12)	U	1.75	U	1.96		30	N/A
aa27R	S17	14a(H),17a(H)-20R-Cholestane/13b(H),17a(H)-20R-Ethyldiacholestane (S17)	U	1.75	U	1.96		30	N/A
d29R	S18	Unknown Sterane (S18)	U	1.75	U	1.96		30	N/A
d29S	S19	13a,17b-20S-Ethyldiacholestane	U	1.75	U	1.96		30	N/A
aa28S	S20	14a,17a-20S-Methylcholestane	U	1.75	U	1.96		30	N/A
aa28R	S24	14a,17a-20R-Methylcholestane	U	1.75	U	1.96		30	N/A
aa29S	S25	14a(H),17a(H)-20S-Ethylcholestane	U	1.75	U	1.96		30	N/A
aa29R	S28	14a(H),17a(H)-20R-Ethylcholestane	U	1.75	U	1.96		30	N/A
bb27R	S14	14b(H),17b(H)-20R-Cholestane	U	1.75	U	1.96		30	N/A
bb27S	S15	14b(H),17b(H)-20S-Cholestane	U	1.75	U	1.96		30	N/A
bb28R	S22	14b,17b-20R-Methylcholestane	U	1.75	U	1.96		30	N/A
bb28S	S23	14b,17b-20S-Methylcholestane	U	1.75	U	1.96		30	N/A
bb29R	S26	14b(H),17b(H)-20R-Ethylcholestane	U	1.75	U	1.96		30	N/A
bb29S	S27	14b(H),17b(H)-20S-Ethylcholestane	U	1.75	U	1.96		30	N/A
RC26/SC27TA	RC26/SC27TA	C26,20R- +C27,20S- triaromatic steroid	U	1.75	U	1.96		30	N/A
SC28TA	SC28TA	C28,20S-triaromatic steroid	U	1.75	U	1.96		30	N/A
RC27TA	RC27TA	C27,20R-triaromatic steroid	U	1.75	U	1.96		30	N/A
RC28TA	RC28TA	C28,20R-triaromatic steroid	U	1.75	U	1.96		30	N/A

Surrogates (% Recovery)		
Naphthalene-d8	111	109
Phenanthrene-d10	105	105
Benzo[a]pyrene-d12	100	104
5B(H)Cholane	119	119

Project Name: Amendola Engineering-Arcelor Mittal
Project Number:

Client ID	Alaska North Slope Crude
Lab ID	SO051517ANC01
Matrix	Oil
Reference Method	Modified 8270D
Batch ID	N/A
Date Collected	N/A
Date Received	N/A
Date Prepped	N/A
Date Analyzed	04/19/2017
Sample Size (wet)	0.0549
% Solid	100.00
File ID	F1404181716.D
Units	mg/Kg
Final Volume	10
Dilution	1
Reporting Limit	1.82

Class	Abbrev	Analytes	Result		SSRL	% Rec	Spike Conc.	Lower Limit	Upper Limit
2	D0	cis/trans-Decalin	532		1.82	111	479.20	65	135
2	D1	C1-Decalins	824		1.82	113	728.90	65	135
2	D2	C2-Decalins	704		1.82	111	635.50	65	135
2	D3	C3-Decalins	378		1.82	115	329.80	65	135
2	D4	C4-Decalins	348		1.82	107	326.50	65	135
2	BT0	Benzothiophene	4.28		1.82	79	5.40	65	135
2	BT1	C1-Benzo(b)thiophenes	24.9		1.82	86	28.90	65	135
2	BT2	C2-Benzo(b)thiophenes	41.6		1.82	84	49.60	65	135
2	BT3	C3-Benzo(b)thiophenes	78.4		1.82	79	99.00	65	135
2	BT4	C4-Benzo(b)thiophenes	68.8		1.82	79	87.10	65	135
2	N0	Naphthalene	560		1.82	101	555.80	65	135
2	N1	C1-Naphthalenes	1120		1.82	96	1167.30	65	135
2	N2	C2-Naphthalenes	1300		1.82	93	1408.70	65	135
2	N3	C3-Naphthalenes	882		1.82	85	1035.90	65	135
2	N4	C4-Naphthalenes	469		1.82	84	561.10	65	135
2	B	Biphenyl	146		1.82	100	145.70	65	135
3	DF	Dibenzofuran	47.7		1.82	93	51.20	65	135
3	AY	Acenaphthylene	6.69		1.82	103	6.50	65	135
3	AE	Acenaphthene	17.3		1.82	93	18.70	65	135
3	F0	Fluorene	70.7		1.82	95	74.60	65	135
3	F1	C1-Fluorenes	161		1.82	94	170.20	65	135
3	F2	C2-Fluorenes	215		1.82	84	255.40	65	135
3	F3	C3-Fluorenes	200		1.82	84	238.50	65	135
3	A0	Anthracene		U	1.82				
3	P0	Phenanthrene	191		1.82	90	212.20	65	135
3	PA1	C1-Phenanthrenes/Anthracenes	392		1.82	91	432.70	65	135
3	PA2	C2-Phenanthrenes/Anthracenes	423		1.82	91	465.90	65	135
3	PA3	C3-Phenanthrenes/Anthracenes	291		1.82	92	317.40	65	135
3	PA4	C4-Phenanthrenes/Anthracenes	120		1.82	93	128.00	65	135
3	RET	Retene		U	1.82				
3	DBT0	Dibenzothiophene	117		1.82	84	138.90	65	135
3	DBT1	C1-Dibenzothiophenes	234		1.82	84	278.60	65	135
3	DBT2	C2-Dibenzothiophenes	309		1.82	82	377.50	65	135
3	DBT3	C3-Dibenzothiophenes	273		1.82	80	341.40	65	135
3	DBT4	C4-Dibenzothiophenes	148		1.82	81	183.40	65	135
4	BF	Benzo(b)fluorene	5.93		1.82				
4	FL0	Fluoranthene	2.86		1.82	72	4.00	65	135
4	PY0	Pyrene	10.2		1.82	78	13.00	65	135
4	FP1	C1-Fluoranthenes/Pyrenes	49.8		1.82	79	63.10	65	135
4	FP2	C2-Fluoranthenes/Pyrenes	83.0		1.82	81	102.20	65	135
4	FP3	C3-Fluoranthenes/Pyrenes	93.3		1.82	78	119.60	65	135
4	FP4	C4-Fluoranthenes/Pyrenes	84.0		1.82	81	104.00	65	135
4	NBT0	Naphthobenzothiophenes	33.2		1.82	76	43.80	65	135
4	NBT1	C1-Naphthobenzothiophenes	94.5		1.82	81	117.20	65	135
4	NBT2	C2-Naphthobenzothiophenes	134		1.82	82	163.30	65	135
4	NBT3	C3-Naphthobenzothiophenes	104		1.82	81	128.70	65	135
4	NBT4	C4-Naphthobenzothiophenes	69.9		1.82	79	89.00	65	135
4	BA0	Benz[a]anthracene	2.06		1.82	98	2.10	65	135
4	C0	Chrysene/Triphenylene	35.4		1.82	101	35.20	65	135
4	BC1	C1-Chrysenes	61.9		1.82	99	62.80	65	135
4	BC2	C2-Chrysenes	79.9		1.82	93	86.00	65	135
4	BC3	C3-Chrysenes	91.9		1.82	94	97.60	65	135
4	BC4	C4-Chrysenes	55.8		1.82	94	59.40	65	135
5	BBF	Benzo[b]fluoranthene	4.73		1.82	91	5.20	65	135
5	BJKF	Benzo[j]fluoranthene/Benzo[k]fluoranthene	0.695	J	1.82				
5	BAF	Benzo[a]fluoranthene		U	1.82				
5	BEP	Benzo[e]pyrene	9.52		1.82	97	9.80	65	135
5	BAP	Benzo[a]pyrene	2.18		1.82	115	1.90	65	135
5	PER	Perylene	3.58		1.82	128	2.80	65	135
6	IND	Indeno[1,2,3-cd]pyrene	1.07	J	1.82				
6	DA	Dibenz[ah]anthracene/Dibenz[ac]anthracene	1.33	J	1.82				
6	GHI	Benzo[g,h,i]perylene	3.51		1.82	113	3.10	65	135
3	CAR	Carbazole	5.31		1.82	88	6.00	65	135
3	4MDT	4-Methyldibenzothiophene	114		1.82	86	131.80	65	135
3	2MDT	2/3-Methyldibenzothiophene	86.5		1.82	89	97.50	65	135
3	1MDT	1-Methyldibenzothiophene	34.2		1.82	77	44.20	65	135
3	3MP	3-Methylphenanthrene	79.1		1.82	89	89.40	65	135
3	2MP	2-Methylphenanthrene	88.4		1.82	90	97.70	65	135
3	2MA	2-Methylanthracene	2.94		1.82	92	3.20	65	135
3	9MP	9/4-Methylphenanthrene	132		1.82	94	141.20	65	135
3	1MP	1-Methylphenanthrene	86.0		1.82	88	97.40	65	135

Project Name: Amendola Engineering-Arcelor Mittal
Project Number:

Client ID	Alaska North Slope Crude
Lab ID	SO051517ANC01
Matrix	Oil
Reference Method	Modified 8270D
Batch ID	N/A
Date Collected	N/A
Date Received	N/A
Date Prepped	N/A
Date Analyzed	04/19/2017
Sample Size (wet)	0.0549
% Solid	100.00
File ID	F1404181716.D
Units	mg/Kg
Final Volume	10
Dilution	1
Reporting Limit	1.82

Class	Abbrev	Analytes	Result	SSRL	% Rec	Spike Conc.	Lower Limit	Upper Limit
t23	T4	C23 Tricyclic Terpane	81.6	1.82	121	67.30	65	135
t24	T5	C24 Tricyclic Terpane	48.1	1.82	112	43.00	65	135
t25	T6	C25 Tricyclic Terpane	46.4	1.82	111	42.00	65	135
te24	T6a	C24 Tetracyclic Terpane	15.6	1.82	105	14.80	65	135
t26S	T6b	C26 Tricyclic Terpane-22S	16.7	1.82	94	17.70	65	135
t26R	T6c	C26 Tricyclic Terpane-22R	18.6	1.82	121	15.40	65	135
t28S	T7	C28 Tricyclic Terpane-22S	17.5	1.82	104	16.80	65	135
t28R	T8	C28 Tricyclic Terpane-22R	19.6	1.82	108	18.10	65	135
t29S	T9	C29 Tricyclic Terpane-22S	22.6	1.82	108	20.80	65	135
t29R	T10	C29 Tricyclic Terpane-22R	24.1	1.82	106	22.60	65	135
Ts	T11	18a-22,29,30-Trisnorneohopane-TS	32.8	1.82	105	31.30	65	135
t30S	T11a	C30 Tricyclic Terpane-22S	17.3	1.82	107	16.20	65	135
t30R	T11b	C30 Tricyclic Terpane-22R	15.9	1.82	97	16.40	65	135
Tm	T12	17a(H)-22,29,30-Trisnorhopane-TM	39.6	1.82	105	37.80	65	135
BNH	T14a	17a/b,21b/a 28,30-Bisnorhopane	7.74	1.82	111	7.00	65	135
25N	T14b	17a(H),21b(H)-25-Norhopane	8.53	1.82	98	8.70	65	135
H29	T15	30-Norhopane	107	1.82	107	99.70	65	135
C29Ts	T16	18a(H)-30-Norneohopane-C29Ts	25.3	1.82	100	25.20	65	135
X	X	17a(H)-Diahopane	13.7	1.82	96	14.20	65	135
M29	T17	30-Normoretane	11.9	1.82	102	11.60	65	135
OL	T18	18a(H)&18b(H)-Oleananes	U	1.82				
H30	T19	Hopane	193	1.82	111	173.60	65	135
M30	T20	Moretane	20.1	1.82	115	17.50	65	135
H31S	T21	30-Homohopane-22S	78.2	1.82	104	75.10	65	135
H31R	T22	30-Homohopane-22R	66.8	1.82	104	64.10	65	135
T22A	T22A	T22a-Gammacerane/C32-diahopane	13.0	1.82				
H32S	T26	30,31-Bishomohopane-22S	56.1	1.82	105	53.60	65	135
H32R	T27	30,31-Bishomohopane-22R	41.6	1.82	105	39.60	65	135
H33S	T30	30,31-Trishomohopane-22S	42.8	1.82	102	41.80	65	135
H33R	T31	30,31-Trishomohopane-22R	29.3	1.82	108	27.20	65	135
H34S	T32	Tetrakishomohopane-22S	31.6	1.82	106	29.80	65	135
H34R	T33	Tetrakishomohopane-22R	21.4	1.82	101	21.20	65	135
H35S	T34	Pentakishomohopane-22S	30.6	1.82	101	30.20	65	135
H35R	T35	Pentakishomohopane-22R	23.3	1.82	99	23.50	65	135
d27S	S4	13b(H),17a(H)-20S-Diacholestane	50.5	1.82	101	50.00	65	135
d27R	S5	13b(H),17a(H)-20R-Diacholestane	26.0	1.82	99	26.30	65	135
d28S	S8	13b,17a-20S-Methyldiacholestane	23.1	1.82	90	25.70	65	135
aa27S	S12	14a(H),17a(H)-20S-Cholestane/13b(H),17a(H)-20S-Ethyldiacholestane (S12)	63.4	1.82	97	65.00	65	135
aa27R	S17	14a(H),17a(H)-20R-Cholestane/13b(H),17a(H)-20R-Ethyldiacholestane (S17)	73.6	1.82	97	75.80	65	135
d29R	S18	Unknown Sterane (S18)	18.8	1.82	88	21.30	65	135
d29S	S19	13a,17b-20S-Ethyldiacholestane	2.60	1.82	67	3.90	65	135
aa28S	S20	14a,17a-20S-Methylcholestane	36.6	1.82	98	37.30	65	135
aa28R	S24	14a,17a-20R-Methylcholestane	33.8	1.82	98	34.50	65	135
aa29S	S25	14a(H),17a(H)-20S-Ethylcholestane	56.5	1.82	111	51.00	65	135
aa29R	S28	14a(H),17a(H)-20R-Ethylcholestane	41.6	1.82	105	39.50	65	135
bb27R	S14	14b(H),17b(H)-20R-Cholestane	44.9	1.82	108	41.50	65	135
bb27S	S15	14b(H),17b(H)-20S-Cholestane	46.4	1.82	109	42.50	65	135
bb28R	S22	14b,17b-20R-Methylcholestane	48.6	1.82	108	44.80	65	135
bb28S	S23	14b,17b-20S-Methylcholestane	55.4	1.82	100	55.40	65	135
bb29R	S26	14b(H),17b(H)-20R-Ethylcholestane	68.8	1.82	113	60.90	65	135
bb29S	S27	14b(H),17b(H)-20S-Ethylcholestane	41.4	1.82	103	40.30	65	135
RC26/SC27TA	RC26/SC27TA	C26,20R- +C27,20S- triaromatic steroid	345	1.82	117	293.90	65	135
SC28TA	SC28TA	C28,20S-triaromatic steroid	203	1.82	108	187.60	65	135
RC27TA	RC27TA	C27,20R-triaromatic steroid	201	1.82	112	180.20	65	135
RC28TA	RC28TA	C28,20R-triaromatic steroid	171	1.82	114	150.50	65	135

Project Name: Amendola Engineering-Arcelor Mittal
Project Number:

Client ID		001 SHEEN 1		001 SHEEN 2 (MUCK)		101 CLARIFIER	
Lab ID		1705009-01		1705009-02		1705009-03	
Matrix		Solid		Solid		Solid	
Reference Method		Modified 8270D		Modified 8270D		Modified 8270D	
Batch ID		SS060117B03		SS060117B02		SS060117B03	
Date Collected		05/15/2017		05/15/2017		05/15/2017	
Date Received		05/16/2017		05/16/2017		05/16/2017	
Date Prepped		06/01/2017		06/01/2017		06/01/2017	
Date Analyzed		06/08/2017		06/01/2017		06/08/2017	
Sample Size (wet)		0.04016		0.00444		0.01816	
% Solid		100.00		100.00		100.00	
File ID		F1406071709.D		F1405301739.D		F1406071710.D	
Units		mg/Kg		mg/Kg		mg/Kg	
Final Volume		8		1		4	
Dilution		1		1		1	
Reporting Limit		1.99		2.25		2.20	
Class	Abbrev	Analytes	Result SSRL	Result SSRL		Result SSRL	
2	D0	cis/trans-Decalin	U 1.99	U 2.25		22.3 2.20	
2	D1	C1-Decalins	12.7 1.99	9.18 2.25		160 2.20	
2	D2	C2-Decalins	25.6 1.99	17.5 2.25		242 2.20	
2	D3	C3-Decalins	U 1.99	U 2.25		89.6 2.20	
2	D4	C4-Decalins	U 1.99	U 2.25		66.5 2.20	
2	BT0	Benzothiophene	U 1.99	U 2.25		U 2.20	
2	BT1	C1-Benzo(b)thiophenes	U 1.99	U 2.25		U 2.20	
2	BT2	C2-Benzo(b)thiophenes	U 1.99	U 2.25		U 2.20	
2	BT3	C3-Benzo(b)thiophenes	U 1.99	U 2.25		U 2.20	
2	BT4	C4-Benzo(b)thiophenes	U 1.99	U 2.25		U 2.20	
2	N0	Naphthalene	0.592 J 1.99	U 2.25		0.619 J 2.20	
2	N1	C1-Naphthalenes	0.667 J 1.99	U 2.25		1.10 J 2.20	
2	N2	C2-Naphthalenes	U 1.99	U 2.25		2.55 2.20	
2	N3	C3-Naphthalenes	2.41 1.99	2.96 2.25		4.27 2.20	
2	N4	C4-Naphthalenes	6.57 1.99	7.60 G 2.25		U 2.20	
2	B	Biphenyl	U 1.99	U 2.25		0.899 J 2.20	
3	DF	Dibenzofuran	0.346 J 1.99	0.318 J 2.25		0.636 J 2.20	
3	AY	Acenaphthylene	U 1.99	U 2.25		0.504 J 2.20	
3	AE	Acenaphthene	U 1.99	U 2.25		U 2.20	
3	F0	Fluorene	0.430 J 1.99	U 2.25		0.715 J 2.20	
3	F1	C1-Fluorenes	1.79 J 1.99	1.62 J 2.25		4.76 2.20	
3	F2	C2-Fluorenes	7.48 1.99	9.41 2.25		21.7 2.20	
3	F3	C3-Fluorenes	13.4 1.99	17.2 2.25		39.1 2.20	
3	A0	Anthracene	U 1.99	U 2.25		0.846 J 2.20	
3	P0	Phenanthrene	2.43 1.99	2.73 2.25		2.86 2.20	
3	PA1	C1-Phenanthrenes/Anthracenes	6.78 1.99	8.75 2.25		6.90 2.20	
3	PA2	C2-Phenanthrenes/Anthracenes	14.4 1.99	15.3 2.25		19.3 2.20	
3	PA3	C3-Phenanthrenes/Anthracenes	12.8 1.99	15.1 2.25		15.1 2.20	
3	PA4	C4-Phenanthrenes/Anthracenes	8.77 1.99	8.29 2.25		U 2.20	
3	RET	Retene	U 1.99	U 2.25		U 2.20	
3	DBT0	Dibenzothiophene	0.350 J 1.99	0.451 JB 2.25		U 2.20	
3	DBT1	C1-Dibenzothiophenes	1.86 J 1.99	2.46 2.25		U 2.20	
3	DBT2	C2-Dibenzothiophenes	8.05 1.99	9.14 2.25		19.0 2.20	
3	DBT3	C3-Dibenzothiophenes	8.41 1.99	9.90 2.25		19.1 2.20	
3	DBT4	C4-Dibenzothiophenes	7.11 1.99	6.76 2.25		14.9 2.20	
4	BF	Benzo(b)fluorene	U 1.99	U 2.25		U 2.20	
4	FL0	Fluoranthene	3.25 1.99	3.33 2.25		2.96 2.20	
4	PY0	Pyrene	3.01 1.99	3.21 2.25		2.51 2.20	
4	FP1	C1-Fluoranthenes/Pyrenes	5.82 1.99	6.19 2.25		6.62 2.20	
4	FP2	C2-Fluoranthenes/Pyrenes	5.64 1.99	7.38 2.25		6.29 2.20	
4	FP3	C3-Fluoranthenes/Pyrenes	6.15 1.99	8.54 2.25		U 2.20	
4	FP4	C4-Fluoranthenes/Pyrenes	U 1.99	U 2.25		U 2.20	
4	NBT0	Naphthobenzothiophenes	0.915 J 1.99	0.755 J 2.25		U 2.20	
4	NBT1	C1-Naphthobenzothiophenes	3.38 1.99	U 2.25		U 2.20	
4	NBT2	C2-Naphthobenzothiophenes	6.03 1.99	6.62 2.25		U 2.20	
4	NBT3	C3-Naphthobenzothiophenes	U 1.99	U 2.25		U 2.20	
4	NBT4	C4-Naphthobenzothiophenes	U 1.99	U 2.25		U 2.20	
4	BA0	Benz[a]anthracene	1.13 J 1.99	0.995 J 2.25		0.779 J 2.20	
4	C0	Chrysene/Triphenylene	3.46 1.99	3.41 2.25		1.98 J 2.20	
4	BC1	C1-Chrysenes	4.86 1.99	4.93 2.25		U 2.20	
4	BC2	C2-Chrysenes	5.76 1.99	5.89 2.25		U 2.20	
4	BC3	C3-Chrysenes	U 1.99	U 2.25		U 2.20	
4	BC4	C4-Chrysenes	U 1.99	U 2.25		U 2.20	
5	BBF	Benzo[b]fluoranthene	1.29 J 1.99	1.28 J 2.25		U 2.20	
5	BJKF	Benzo[j]fluoranthene/Benzo[k]fluoranthene	1.07 J 1.99	1.22 J 2.25		U 2.20	
5	BAF	Benzo[a]fluoranthene	U 1.99	U 2.25		U 2.20	
5	BEP	Benzo[e]pyrene	1.61 J 1.99	1.53 J 2.25		1.55 J 2.20	
5	BAP	Benzo[a]pyrene	U 1.99	1.28 J 2.25		2.04 J 2.20	
5	PER	Perylene	U 1.99	U 2.25		U 2.20	
6	IND	Indeno[1,2,3-cd]pyrene	0.815 J 1.99	0.594 J 2.25		U 2.20	
6	DA	Dibenz[ah]anthracene/Dibenz[ac]anthracene	U 1.99	U 2.25		U 2.20	
6	GHI	Benzo[g,h,i]perylene	1.68 J 1.99	1.88 J 2.25		1.20 J 2.20	
3	CAR	Carbazole	U 1.99	U 2.25		U 2.20	
3	4MDT	4-Methyldibenzothiophene	0.963 J 1.99	1.03 J 2.25		U 2.20	
3	2MDT	2/3-Methyldibenzothiophene	U 1.99	U 2.25		U 2.20	
3	1MDT	1-Methyldibenzothiophene	0.325 J 1.99	0.320 J 2.25		U 2.20	
3	3MP	3-Methylphenanthrene	1.48 J 1.99	2.10 J 2.25		1.08 J 2.20	
3	2MP	2-Methylphenanthrene	2.00 1.99	2.45 2.25		0.796 J 2.20	
3	2MA	2-Methylanthracene	U 1.99	U 2.25		0.634 J 2.20	
3	9MP	9/4-Methylphenanthrene	1.30 J 1.99	1.77 J 2.25		1.16 J 2.20	
3	1MP	1-Methylphenanthrene	1.21 J 1.99	1.44 J 2.25		0.804 J 2.20	

Project Name: Amendola Engineering-Arcelor Mittal
Project Number:

		Client ID	001 SHEEN 1		001 SHEEN 2 (MUCK)		101 CLARIFIER
		Lab ID	1705009-01		1705009-02		1705009-03
		Matrix	Solid		Solid		Solid
		Reference Method	Modified 8270D		Modified 8270D		Modified 8270D
		Batch ID	SS060117B03		SS060117B02		SS060117B03
		Date Collected	05/15/2017		05/15/2017		05/15/2017
		Date Received	05/16/2017		05/16/2017		05/16/2017
		Date Prepped	06/01/2017		06/01/2017		06/01/2017
		Date Analyzed	06/08/2017		06/01/2017		06/08/2017
		Sample Size (wet)	0.04016		0.00444		0.01816
		% Solid	100.00		100.00		100.00
		File ID	F1406071709.D		F1405301739.D		F1406071710.D
		Units	mg/Kg		mg/Kg		mg/Kg
		Final Volume	8		1		4
		Dilution	1		1		1
		Reporting Limit	1.99		2.25		2.20
Class	Abbrev	Analytes	Result	SSRL	Result	SSRL	Result	SSRL
t23	T4	C23 Tricyclic Terpane	18.3	1.99	23.2	2.25	65.7	2.20
t24	T5	C24 Tricyclic Terpane	12.9	1.99	12.8	2.25	43.3	2.20
t25	T6	C25 Tricyclic Terpane	14.1	1.99	14.5	2.25	38.9	2.20
te24	T6a	C24 Tetracyclic Terpane	12.3	1.99	10.8	2.25	35.4	2.20
t26S	T6b	C26 Tricyclic Terpane-22S	7.25	1.99	7.79	2.25	18.7	2.20
t26R	T6c	C26 Tricyclic Terpane-22R	7.45	1.99	8.36	2.25	20.2	2.20
t28S	T7	C28 Tricyclic Terpane-22S	11.4	1.99	12.0	2.25	25.1	2.20
t28R	T8	C28 Tricyclic Terpane-22R	11.6	1.99	14.0	2.25	28.2	2.20
t29S	T9	C29 Tricyclic Terpane-22S	15.5	1.99	15.0	2.25	29.5	2.20
t29R	T10	C29 Tricyclic Terpane-22R	15.1	1.99	14.3	2.25	28.4	2.20
Ts	T11	18a-22,29,30-Trisnorneohopane-TS	46.1	1.99	47.1	2.25	81.8	2.20
t30S	T11a	C30 Tricyclic Terpane-22S	19.0	1.99	17.0	2.25	31.2	2.20
t30R	T11b	C30 Tricyclic Terpane-22R	16.0	1.99	14.9	2.25	23.6	2.20
Tm	T12	17a(H)-22,29,30-Trisnorhopane-TM	47.5	1.99	51.2	2.25	75.7	2.20
BNH	T14a	17a/b,21b/a 28,30-Bisnorhopane	18.5	1.99	22.5	2.25	18.6	2.20
25N	T14b	17a(H),21b(H)-25-Norhopane	10.2	1.99	10.4	2.25	20.2	2.20
H29	T15	30-Norhopane	146	1.99	156	2.25	201	2.20
C29Ts	T16	18a(H)-30-Normoretane-C29Ts	49.0	1.99	50.0	2.25	63.4	2.20
X	X	17a(H)-Diahopane	20.8	1.99	20.8	2.25	23.1	2.20
M29	T17	30-Normoretane	29.0	1.99	25.6	2.25	32.5	2.20
OL	T18	18a(H)&18b(H)-Oleananes	25.5	1.99	28.9	2.25	19.9	2.20
H30	T19	Hopane	256	1.99	270	2.25	275	2.20
M30	T20	Moretane	35.0	1.99	42.2	2.25	31.4	2.20
H31S	T21	30-Homohopane-22S	90.5	1.99	90.5	2.25	107	2.20
H31R	T22	30-Homohopane-22R	90.6	1.99	91.0	2.25	99.9	2.20
T22A	T22A	T22a-Gammacerane/C32-diahopane	22.6	1.99	20.4	2.25	23.6	2.20
H32S	T26	30,31-Bishomohopane-22S	62.4	1.99	65.5	2.25	65.2	2.20
H32R	T27	30,31-Bishomohopane-22R	46.9	1.99	45.4	2.25	46.3	2.20
H33S	T30	30,31-Trishomohopane-22S	43.1	1.99	44.8	2.25	40.1	2.20
H33R	T31	30,31-Trishomohopane-22R	29.5	1.99	27.4	2.25	26.4	2.20
H34S	T32	Tetrakishomohopane-22S	25.5	1.99	31.9	2.25	27.5	2.20
H34R	T33	Tetrakishomohopane-22R	19.0	1.99	22.8	2.25	19.3	2.20
H35S	T34	Pentakishomohopane-22S	18.9	1.99	22.2	2.25	18.6	2.20
H35R	T35	Pentakishomohopane-22R	14.0	1.99	15.9	2.25	19.0	2.20
d27S	S4	13b(H),17a(H)-20S-Diacholestane	33.3	1.99	35.8	2.25	78.9	2.20
d27R	S5	13b(H),17a(H)-20R-Diacholestane	21.0	1.99	21.6	2.25	46.0	2.20
d28S	S8	13b,17a-20S-Methyldiacholestane	21.2	1.99	20.5	2.25	38.3	2.20
aa27S	S12	14a(H),17a(H)-20S-Cholestane/13b(H),17a(H)-20S-Ethyldiacholestane (S12)	72.6	1.99	71.9	2.25	127	2.20
aa27R	S17	14a(H),17a(H)-20R-Cholestane/13b(H),17a(H)-20R-Ethyldiacholestane (S17)	76.4	1.99	90.2	2.25	130	2.20
d29R	S18	Unknown Sterane (S18)	18.0	1.99	20.3	2.25	33.1	2.20
d29S	S19	13a,17b-20S-Ethyldiacholestane	5.14	1.99	6.22	2.25	8.81	2.20
aa28S	S20	14a,17a-20S-Methylcholestane	38.0	1.99	37.3	2.25	66.0	2.20
aa28R	S24	14a,17a-20R-Methylcholestane	41.6	1.99	46.4	2.25	51.3	2.20
aa29S	S25	14a(H),17a(H)-20S-Ethylcholestane	46.6	1.99	49.4	2.25	68.8	2.20
aa29R	S28	14a(H),17a(H)-20R-Ethylcholestane	52.5	1.99	67.6	2.25	78.4	2.20
bb27R	S14	14b(H),17b(H)-20R-Cholestane	44.5	1.99	46.6	2.25	78.5	2.20
bb27S	S15	14b(H),17b(H)-20S-Cholestane	44.6	1.99	45.5	2.25	76.9	2.20
bb28R	S22	14b,17b-20R-Methylcholestane	46.6	1.99	49.4	2.25	64.9	2.20
bb28S	S23	14b,17b-20S-Methylcholestane	60.9	1.99	67.6	2.25	89.8	2.20
bb29R	S26	14b(H),17b(H)-20R-Ethylcholestane	91.5	1.99	94.8	2.25	134	2.20
bb29S	S27	14b(H),17b(H)-20S-Ethylcholestane	56.1	1.99	69.5	2.25	113	2.20
RC26/SC27TA	RC26/SC27TA	C26,20R- +C27,20S- triaromatic steroid	11.7	1.99	11.5	2.25	13.9	2.20
SC28TA	SC28TA	C28,20S-triaromatic steroid	14.5	1.99	24.2	2.25	21.3	2.20
RC27TA	RC27TA	C27,20R-triaromatic steroid	11.2	1.99	20.5	2.25	21.5 G	2.20
RC28TA	RC28TA	C28,20R-triaromatic steroid	9.08	1.99	9.22	2.25	U	2.20
		Surrogates (% Recovery)						
		Naphthalene-d8	119		118		119	
		Phenanthrene-d10	102		119		96	
		Benzo[a]pyrene-d12	95		116		102	
		5B(H)Cholane	119		119		118	

Project Name: Amendola Engineering-Arcelor Mittal
Project Number:

Client ID		SOUTH SEWER MH				CWTP INFLUENT				FIELD BLANK			
Lab ID		1705009-04				1705009-05				1705009-06			
Matrix		Solid				Solid				Solid			
Reference Method		Modified 8270D				Modified 8270D				Modified 8270D			
Batch ID		SS060117B02				SS060117B02				SS060117B03			
Date Collected		05/15/2017				05/15/2017				05/17/2017			
Date Received		05/16/2017				05/16/2017				05/19/2017			
Date Prepped		06/01/2017				06/01/2017				06/01/2017			
Date Analyzed		06/01/2017				06/02/2017				06/08/2017			
Sample Size (wet)		0.00521				0.00643				0.01			
% Solid		100.00				100.00				100.00			
File ID		F1405301740.D				F1405301741.D				F1406071711.D			
Units		mg/Kg				mg/Kg				mg/Kg			
Final Volume		1				1				2			
Dilution		1				1				1			
Reporting Limit		1.92				1.56				2.00			
Class	Abbrev	Analytes	Result		SSRL	Result		SSRL	Result		SSRL		
2	D0	cis/trans-Decalin		U	1.92	16.4		1.56		U	2.00		
2	D1	C1-Decalins		U	1.92	47.9		1.56		U	2.00		
2	D2	C2-Decalins		U	1.92	131		1.56		U	2.00		
2	D3	C3-Decalins		U	1.92	124		1.56		U	2.00		
2	D4	C4-Decalins		U	1.92	250		1.56		U	2.00		
2	BT0	Benzothiophene		U	1.92		U	1.56		U	2.00		
2	BT1	C1-Benzo(b)thiophenes		U	1.92		U	1.56		U	2.00		
2	BT2	C2-Benzo(b)thiophenes		U	1.92	3.52		1.56		U	2.00		
2	BT3	C3-Benzo(b)thiophenes		U	1.92		U	1.56		U	2.00		
2	BT4	C4-Benzo(b)thiophenes		U	1.92		U	1.56		U	2.00		
2	N0	Naphthalene		U	1.92	0.929	J	1.56	0.835	J	2.00		
2	N1	C1-Naphthalenes		U	1.92	3.83		1.56	0.683	J	2.00		
2	N2	C2-Naphthalenes		U	1.92	7.70		1.56		U	2.00		
2	N3	C3-Naphthalenes	2.38		1.92	13.2		1.56		U	2.00		
2	N4	C4-Naphthalenes	4.22	G	1.92	39.4		1.56		U	2.00		
2	B	Biphenyl		U	1.92	2.62		1.56		U	2.00		
3	DF	Dibenzofuran		U	1.92	1.78		1.56		U	2.00		
3	AY	Acenaphthylene		U	1.92	1.82		1.56		U	2.00		
3	AE	Acenaphthene		U	1.92		U	1.56		U	2.00		
3	F0	Fluorene		U	1.92	2.41		1.56		U	2.00		
3	F1	C1-Fluorenes		U	1.92	13.9		1.56		U	2.00		
3	F2	C2-Fluorenes	3.87		1.92	60.9		1.56		U	2.00		
3	F3	C3-Fluorenes	13.7		1.92	103		1.56		U	2.00		
3	A0	Anthracene		U	1.92	1.52	J	1.56		U	2.00		
3	P0	Phenanthrene	0.254	J	1.92	2.39		1.56	0.275	J	2.00		
3	PA1	C1-Phenanthrenes/Anthracenes	2.28		1.92	18.3		1.56		U	2.00		
3	PA2	C2-Phenanthrenes/Anthracenes	5.29		1.92	44.6		1.56		U	2.00		
3	PA3	C3-Phenanthrenes/Anthracenes	7.48		1.92	31.1		1.56		U	2.00		
3	PA4	C4-Phenanthrenes/Anthracenes	8.28		1.92	40.8		1.56		U	2.00		
3	RET	Retene		U	1.92		U	1.56		U	2.00		
3	DBT0	Dibenzothiophene		U	1.92	0.764	JB	1.56		U	2.00		
3	DBT1	C1-Dibenzothiophenes		U	1.92	9.02		1.56		U	2.00		
3	DBT2	C2-Dibenzothiophenes	2.43		1.92	43.6		1.56		U	2.00		
3	DBT3	C3-Dibenzothiophenes	5.13		1.92	44.0		1.56		U	2.00		
3	DBT4	C4-Dibenzothiophenes	4.70		1.92	37.3		1.56		U	2.00		
4	BF	Benzo(b)fluorene		U	1.92		U	1.56		U	2.00		
4	FL0	Fluoranthene	0.406	J	1.92	1.72		1.56		U	2.00		
4	PY0	Pyrene	1.97		1.92	2.07		1.56		U	2.00		
4	FP1	C1-Fluoranthenes/Pyrenes	6.68		1.92	14.9		1.56		U	2.00		
4	FP2	C2-Fluoranthenes/Pyrenes	8.35		1.92	14.5		1.56		U	2.00		
4	FP3	C3-Fluoranthenes/Pyrenes	9.82		1.92	13.7		1.56		U	2.00		
4	FP4	C4-Fluoranthenes/Pyrenes	10.7		1.92	17.6		1.56		U	2.00		
4	NBT0	Naphthobenzothiophenes		U	1.92		U	1.56		U	2.00		
4	NBT1	C1-Naphthobenzothiophenes		U	1.92		U	1.56		U	2.00		
4	NBT2	C2-Naphthobenzothiophenes		U	1.92	10.5		1.56		U	2.00		
4	NBT3	C3-Naphthobenzothiophenes		U	1.92		U	1.56		U	2.00		
4	NBT4	C4-Naphthobenzothiophenes		U	1.92		U	1.56		U	2.00		
4	BA0	Benz[a]anthracene		U	1.92		U	1.56		U	2.00		
4	C0	Chrysene/Triphenylene	0.617	J	1.92		U	1.56		U	2.00		
4	BC1	C1-Chrysenes	3.84		1.92		U	1.56		U	2.00		
4	BC2	C2-Chrysenes	9.72		1.92		U	1.56		U	2.00		
4	BC3	C3-Chrysenes	32.0		1.92		U	1.56		U	2.00		
4	BC4	C4-Chrysenes		U	1.92		U	1.56		U	2.00		
5	BBF	Benzo[b]fluoranthene		U	1.92		U	1.56		U	2.00		
5	BJKF	Benzo[j]fluoranthene/Benzo[k]fluoranthene		U	1.92		U	1.56		U	2.00		
5	BAF	Benzo[a]fluoranthene		U	1.92		U	1.56		U	2.00		
5	BEP	Benzo[e]pyrene	1.54	J	1.92		U	1.56		U	2.00		
5	BAP	Benzo[a]pyrene	2.26		1.92	2.77		1.56		U	2.00		
5	PER	Perylene		U	1.92		U	1.56		U	2.00		
6	IND	Indeno[1,2,3-cd]pyrene		U	1.92		U	1.56		U	2.00		
6	DA	Dibenz[ah]anthracene/Dibenz[ac]anthracene		U	1.92		U	1.56		U	2.00		
6	GHI	Benzo[g,h,i]perylene	2.13		1.92	1.70		1.56		U	2.00		
3	CAR	Carbazole		U	1.92		U	1.56	0.161	J	2.00		
3	4MDT	4-Methyldibenzothiophene		U	1.92	1.66		1.56		U	2.00		
3	2MDT	2/3-Methyldibenzothiophene		U	1.92		U	1.56		U	2.00		
3	1MDT	1-Methyldibenzothiophene		U	1.92	0.876	J	1.56		U	2.00		
3	3MP	3-Methylphenanthrene	0.300	J	1.92	3.44		1.56		U	2.00		
3	2MP	2-Methylphenanthrene	0.481	J	1.92	2.01		1.56		U	2.00		
3	2MA	2-Methylanthracene		U	1.92	1.33	J	1.56		U	2.00		
3	9MP	9/4-Methylphenanthrene	0.490	J	1.92	3.12		1.56		U	2.00		
3	1MP	1-Methylphenanthrene	0.465	J	1.92	3.02		1.56		U	2.00		

Project Name: Amendola Engineering-Arcelor Mittal
Project Number:

Client ID		SOUTH SEWER MH		CWTP INFLUENT		FIELD BLANK	
Lab ID		1705009-04		1705009-05		1705009-06	
Matrix		Solid		Solid		Solid	
Reference Method		Modified 8270D		Modified 8270D		Modified 8270D	
Batch ID		SS060117B02		SS060117B02		SS060117B03	
Date Collected		05/15/2017		05/15/2017		05/17/2017	
Date Received		05/16/2017		05/16/2017		05/19/2017	
Date Prepped		06/01/2017		06/01/2017		06/01/2017	
Date Analyzed		06/01/2017		06/02/2017		06/08/2017	
Sample Size (wet)		0.00521		0.00643		0.01	
% Solid		100.00		100.00		100.00	
File ID		F1405301740.D		F1405301741.D		F1406071711.D	
Units		mg/Kg		mg/Kg		mg/Kg	
Final Volume		1		1		2	
Dilution		1		1		1	
Reporting Limit		1.92		1.56		2.00	
Class	Abbrev	Analytes	Result	SSRL	Result	SSRL	Result	SSRL
t23	T4	C23 Tricyclic Terpane	13.6	1.92	138	1.56	U	2.00
t24	T5	C24 Tricyclic Terpane	7.30	1.92	81.1	1.56	U	2.00
t25	T6	C25 Tricyclic Terpane	8.51	1.92	80.4	1.56	U	2.00
te24	T6a	C24 Tetracyclic Terpane	9.25	1.92	68.8	1.56	U	2.00
t26S	T6b	C26 Tricyclic Terpane-22S	6.12	1.92	38.8	1.56	U	2.00
t26R	T6c	C26 Tricyclic Terpane-22R	6.84	1.92	37.6	1.56	U	2.00
t28S	T7	C28 Tricyclic Terpane-22S	14.9	1.92	53.8	1.56	U	2.00
t28R	T8	C28 Tricyclic Terpane-22R	14.4	1.92	58.7	1.56	U	2.00
t29S	T9	C29 Tricyclic Terpane-22S	22.2	1.92	65.6	1.56	U	2.00
t29R	T10	C29 Tricyclic Terpane-22R	21.0	1.92	57.0	1.56	U	2.00
Ts	T11	18a-22,29,30-Trisnorneohopane-TS	52.7	1.92	140	1.56	U	2.00
t30S	T11a	C30 Tricyclic Terpane-22S	26.3	1.92	81.3	1.56	U	2.00
t30R	T11b	C30 Tricyclic Terpane-22R	20.1	1.92	51.8	1.56	U	2.00
Tm	T12	17a(H)-22,29,30-Trisnorhopane-TM	55.9	1.92	130	1.56	U	2.00
BNH	T14a	17a/b,21b/a 28,30-Bisnorhopane	26.6	1.92	31.6	1.56	U	2.00
25N	T14b	17a(H),21b(H)-25-Norhopane	19.6	1.92	33.2	1.56	U	2.00
H29	T15	30-Norhopane	196	1.92	343	1.56	U	2.00
C29Ts	T16	18a(H)-30-Normoretane-C29Ts	52.8	1.92	109	1.56	U	2.00
X	X	17a(H)-Diahopane	25.4	1.92	42.5	1.56	U	2.00
M29	T17	30-Normoretane	32.3	1.92	51.9	1.56	U	2.00
OL	T18	18a(H)&18b(H)-Oleananes	40.0	1.92	26.9	1.56	U	2.00
H30	T19	Hopane	337	1.92	454	1.56	U	2.00
M30	T20	Moretane	32.8	1.92	48.9	1.56	U	2.00
H31S	T21	30-Homohopane-22S	132	1.92	169	1.56	U	2.00
H31R	T22	30-Homohopane-22R	134	1.92	167	1.56	U	2.00
T22A	T22A	T22a-Gammacerane/C32-diahopane	30.8	1.92	37.5	1.56	U	2.00
H32S	T26	30,31-Bishomohopane-22S	85.2	1.92	104	1.56	U	2.00
H32R	T27	30,31-Bishomohopane-22R	64.0	1.92	69.4	1.56	U	2.00
H33S	T30	30,31-Trishomohopane-22S	58.2	1.92	62.1	1.56	U	2.00
H33R	T31	30,31-Trishomohopane-22R	37.5	1.92	41.0	1.56	U	2.00
H34S	T32	Tetrakishomohopane-22S	44.2	1.92	42.5	1.56	U	2.00
H34R	T33	Tetrakishomohopane-22R	24.8	1.92	26.8	1.56	U	2.00
H35S	T34	Pentakishomohopane-22S	25.4	1.92	27.8	1.56	U	2.00
H35R	T35	Pentakishomohopane-22R	17.1	1.92	22.3	1.56	U	2.00
d27S	S4	13b(H),17a(H)-20S-Diacholestane	36.4	1.92	160	1.56	U	2.00
d27R	S5	13b(H),17a(H)-20R-Diacholestane	20.7	1.92	86.4	1.56	U	2.00
d28S	S8	13b,17a-20S-Methyldiacholestane	21.2	1.92	60.4	1.56	U	2.00
aa27S	S12	14a(H),17a(H)-20S-Cholestane/13b(H),17a(H)-20S-Ethyldiacholestane (S12)	80.1	1.92	247	1.56	U	2.00
aa27R	S17	14a(H),17a(H)-20R-Cholestane/13b(H),17a(H)-20R-Ethyldiacholestane (S17)	108	1.92	244	1.56	U	2.00
d29R	S18	Unknown Sterane (S18)	25.3	1.92	58.6	1.56	U	2.00
d29S	S19	13a,17b-20S-Ethyldiacholestane	8.72	1.92	8.72	1.56	U	2.00
aa28S	S20	14a,17a-20S-Methylcholestane	56.0	1.92	163	1.56	U	2.00
aa28R	S24	14a,17a-20R-Methylcholestane	63.6	1.92	94.1	1.56	U	2.00
aa29S	S25	14a(H),17a(H)-20S-Ethylcholestane	63.7	1.92	131	1.56	U	2.00
aa29R	S28	14a(H),17a(H)-20R-Ethylcholestane	89.3	1.92	141	1.56	U	2.00
bb27R	S14	14b(H),17b(H)-20R-Cholestane	62.7	1.92	146	1.56	U	2.00
bb27S	S15	14b(H),17b(H)-20S-Cholestane	63.2	1.92	158	1.56	U	2.00
bb28R	S22	14b,17b-20R-Methylcholestane	78.1	1.92	123	1.56	U	2.00
bb28S	S23	14b,17b-20S-Methylcholestane	100	1.92	163	1.56	U	2.00
bb29R	S26	14b(H),17b(H)-20R-Ethylcholestane	151	1.92	280	1.56	U	2.00
bb29S	S27	14b(H),17b(H)-20S-Ethylcholestane	87.1	1.92	168	1.56	U	2.00
RC26/SC27TA	RC26/SC27TA	C26,20R- +C27,20S- triaromatic steroid	20.3	1.92	25.1	1.56	U	2.00
SC28TA	SC28TA	C28,20S-triaromatic steroid	33.2	1.92	56.8 G	1.56	U	2.00
RC27TA	RC27TA	C27,20R-triaromatic steroid	22.9	1.92	29.8 G	1.56	U	2.00
RC28TA	RC28TA	C28,20R-triaromatic steroid	10.2	1.92	14.9	1.56	U	2.00

Surrogates (% Recovery)			
Naphthalene-d8	122	114	116
Phenanthrene-d10	122	108	93
Benzo[a]pyrene-d12	124	116	95
5B(H)Cholane	119	129	108

Project Name: Amendola Engineering-Arcelor Mittal
Project Number:

Client ID	INDIANAPOLIS BLVD	W. COLUMBUS DR	US STEEL ROLLING SOLUTION
Lab ID	1705009-07	1705009-08	1705009-09
Matrix	Solid	Solid	Solid
Reference Method	Modified 8270D	Modified 8270D	Modified 8270D
Batch ID	SS060117B03	SS060117B03	SS060117B02
Date Collected	05/17/2017	05/17/2017	05/23/2017
Date Received	05/19/2017	05/19/2017	05/25/2017
Date Prepped	06/01/2017	06/01/2017	06/01/2017
Date Analyzed	06/08/2017	06/08/2017	06/02/2017
Sample Size (wet)	0.02272	0.01384	0.0057
% Solid	100.00	100.00	100.00
File ID	F1406071712.D	F1406071713.D	F1405301742.D
Units	mg/Kg	mg/Kg	mg/Kg
Final Volume	4	2.5	1
Dilution	1	1	1
Reporting Limit	1.76	1.81	1.75

Class	Abbrev	Analytes	Result	SSRL	Result	SSRL	Result	SSRL
2	D0	cis/trans-Decalin	15.5	1.76	U	1.81	U	1.75
2	D1	C1-Decalins	54.4	1.76	U	1.81	U	1.75
2	D2	C2-Decalins	108	1.76	U	1.81	U	1.75
2	D3	C3-Decalins	94.1	1.76	U	1.81	U	1.75
2	D4	C4-Decalins	136	1.76	32.4	1.81	U	1.75
2	BT0	Benzothiophene	0.468 J	1.76	U	1.81	U	1.75
2	BT1	C1-Benzo(b)thiophenes	3.40	1.76	0.908 J	1.81	U	1.75
2	BT2	C2-Benzo(b)thiophenes	6.13	1.76	3.04	1.81	U	1.75
2	BT3	C3-Benzo(b)thiophenes	17.9	1.76	24.2	1.81	U	1.75
2	BT4	C4-Benzo(b)thiophenes	49.8	1.76	93.8	1.81	U	1.75
2	N0	Naphthalene	7.39	1.76	1.19 J	1.81	1.14 J	1.75
2	N1	C1-Naphthalenes	5.24	1.76	1.14 J	1.81	U	1.75
2	N2	C2-Naphthalenes	40.2	1.76	16.4	1.81	U	1.75
2	N3	C3-Naphthalenes	164	1.76	219	1.81	U	1.75
2	N4	C4-Naphthalenes	544	1.76	661	1.81	U	1.75
2	B	Biphenyl	1.72 J	1.76	0.426 J	1.81	1.45 J	1.75
3	DF	Dibenzofuran	5.20	1.76	1.89	1.81	U	1.75
3	AY	Acenaphthylene	12.1	1.76	7.83	1.81	U	1.75
3	AE	Acenaphthene	4.64	1.76	1.45 J	1.81	U	1.75
3	F0	Fluorene	6.32	1.76	4.41	1.81	U	1.75
3	F1	C1-Fluorenes	65.1	1.76	116	1.81	U	1.75
3	F2	C2-Fluorenes	382	1.76	632	1.81	U	1.75
3	F3	C3-Fluorenes	654	1.76	730	1.81	U	1.75
3	A0	Anthracene	32.4	1.76	37.0	1.81	U	1.75
3	P0	Phenanthrene	36.7	1.76	40.5	1.81	U	1.75
3	PA1	C1-Phenanthrenes/Anthracenes	213	1.76	443	1.81	U	1.75
3	PA2	C2-Phenanthrenes/Anthracenes	822	1.76	1340	1.81	U	1.75
3	PA3	C3-Phenanthrenes/Anthracenes	756	1.76	780	1.81	U	1.75
3	PA4	C4-Phenanthrenes/Anthracenes	288	1.76	355	1.81	U	1.75
3	RET	Retene	U	1.76	U	1.81	U	1.75
3	DBT0	Dibenzothiophene	16.3	1.76	15.3	1.81	U	1.75
3	DBT1	C1-Dibenzothiophenes	108	1.76	287	1.81	U	1.75
3	DBT2	C2-Dibenzothiophenes	401	1.76	787	1.81	U	1.75
3	DBT3	C3-Dibenzothiophenes	513	1.76	615	1.81	U	1.75
3	DBT4	C4-Dibenzothiophenes	233	1.76	287	1.81	U	1.75
4	BF	Benzo(b)fluorene	40.1	1.76	50.3	1.81	U	1.75
4	FL0	Fluoranthene	84.8	1.76	129	1.81	U	1.75
4	PY0	Pyrene	261	1.76	312	1.81	U	1.75
4	FP1	C1-Fluoranthenes/Pyrenes	309	1.76	443	1.81	U	1.75
4	FP2	C2-Fluoranthenes/Pyrenes	214	1.76	351	1.81	U	1.75
4	FP3	C3-Fluoranthenes/Pyrenes	136	1.76	285	1.81	U	1.75
4	FP4	C4-Fluoranthenes/Pyrenes	96.6	1.76	211	1.81	U	1.75
4	NBT0	Naphthobenzothiophenes	86.1	1.76	132	1.81	U	1.75
4	NBT1	C1-Naphthobenzothiophenes	139	1.76	245	1.81	U	1.75
4	NBT2	C2-Naphthobenzothiophenes	127	1.76	252	1.81	U	1.75
4	NBT3	C3-Naphthobenzothiophenes	78.3	1.76	162	1.81	U	1.75
4	NBT4	C4-Naphthobenzothiophenes	54.6	1.76	101	1.81	U	1.75
4	BA0	Benz[a]anthracene	108	1.76	127	1.81	U	1.75
4	C0	Chrysene/Triphenylene	232	1.76	302	1.81	U	1.75
4	BC1	C1-Chrysenes	237	1.76	438	1.81	U	1.75
4	BC2	C2-Chrysenes	152	1.76	395	1.81	U	1.75
4	BC3	C3-Chrysenes	102	1.76	286	1.81	U	1.75
4	BC4	C4-Chrysenes	63.6	1.76	167	1.81	U	1.75
5	BBF	Benzo[b]fluoranthene	143	1.76	108	1.81	U	1.75
5	BJKF	Benzo[j]fluoranthene/Benzo[k]fluoranthene	92.8	1.76	43.8	1.81	U	1.75
5	BAF	Benzo[a]fluoranthene	10.0	1.76	4.73	1.81	U	1.75
5	BEP	Benzo[e]pyrene	162	1.76	197	1.81	U	1.75
5	BAP	Benzo[a]pyrene	81.0	1.76	73.4	1.81	U	1.75
5	PER	Perylene	15.5	1.76	4.58	1.81	U	1.75
6	IND	Indeno[1,2,3-cd]pyrene	73.7	1.76	45.0	1.81	U	1.75
6	DA	Dibenz[ah]anthracene/Dibenz[ac]anthracene	27.4	1.76	31.1	1.81	U	1.75
6	GHI	Benzo[g,h,i]perylene	84.0	1.76	75.6	1.81	U	1.75
3	CAR	Carbazole	U	1.76	U	1.81	U	1.75
3	4MDT	4-Methyldibenzothiophene	47.6	1.76	142	1.81	U	1.75
3	2MDT	2/3-Methyldibenzothiophene	39.7	1.76	95.7	1.81	U	1.75
3	1MDT	1-Methyldibenzothiophene	9.86	1.76	36.0	1.81	U	1.75
3	3MP	3-Methylphenanthrene	39.9	1.76	57.5	1.81	U	1.75
3	2MP	2-Methylphenanthrene	56.4	1.76	95.2	1.81	U	1.75
3	2MA	2-Methylanthracene	22.0	1.76	27.1	1.81	U	1.75
3	9MP	9/4-Methylphenanthrene	55.4	1.76	169	1.81	U	1.75
3	1MP	1-Methylphenanthrene	28.9	1.76	93.2	1.81	U	1.75

Project Name: Amendola Engineering-Arcelor Mittal
Project Number:

		Client ID	INDIANAPOLIS BLVD	W. COLUMBUS DR	US STEEL ROLLING SOLUTION	
		Lab ID	1705009-07	1705009-08	1705009-09	
		Matrix	Solid	Solid	Solid	
		Reference Method	Modified 8270D	Modified 8270D	Modified 8270D	
		Batch ID	SS060117B03	SS060117B03	SS060117B02	
		Date Collected	05/17/2017	05/17/2017	05/23/2017	
		Date Received	05/19/2017	05/19/2017	05/25/2017	
		Date Prepped	06/01/2017	06/01/2017	06/01/2017	
		Date Analyzed	06/08/2017	06/08/2017	06/02/2017	
		Sample Size (wet)	0.02272	0.01384	0.0057	
		% Solid	100.00	100.00	100.00	
		File ID	F1406071712.D	F1406071713.D	F1405301742.D	
		Units	mg/Kg	mg/Kg	mg/Kg	
		Final Volume	4	2.5	1	
		Dilution	1	1	1	
		Reporting Limit	1.76	1.81	1.75	
Class	Abbrev	Analytes	Result SSRL	Result SSRL	Result	SSRL
t23	T4	C23 Tricyclic Terpane	101 1.76	125 1.81	U	1.75
t24	T5	C24 Tricyclic Terpane	57.8 1.76	73.6 1.81	U	1.75
t25	T6	C25 Tricyclic Terpane	55.8 1.76	74.4 1.81	U	1.75
te24	T6a	C24 Tetracyclic Terpane	25.7 1.76	22.3 1.81	U	1.75
t26S	T6b	C26 Tricyclic Terpane-22S	26.0 1.76	29.7 1.81	U	1.75
t26R	T6c	C26 Tricyclic Terpane-22R	28.8 1.76	38.4 1.81	U	1.75
t28S	T7	C28 Tricyclic Terpane-22S	28.5 1.76	30.9 1.81	U	1.75
t28R	T8	C28 Tricyclic Terpane-22R	32.7 1.76	34.3 1.81	U	1.75
t29S	T9	C29 Tricyclic Terpane-22S	30.3 1.76	30.3 1.81	U	1.75
t29R	T10	C29 Tricyclic Terpane-22R	30.3 1.76	31.7 1.81	U	1.75
Ts	T11	18a-22,29,30-Trisnorneohopane-TS	64.3 1.76	49.7 1.81	U	1.75
t30S	T11a	C30 Tricyclic Terpane-22S	22.7 1.76	24.7 1.81	U	1.75
t30R	T11b	C30 Tricyclic Terpane-22R	21.8 1.76	23.9 1.81	U	1.75
Tm	T12	17a(H)-22,29,30-Trisnorhopane-TM	58.1 1.76	50.3 1.81	U	1.75
BNH	T14a	17a/b,21b/a 28,30-Bisnorhopane	10.8 1.76	12.9 1.81	U	1.75
25N	T14b	17a(H),21b(H)-25-Norhopane	14.8 1.76	14.6 1.81	10.6	1.75
H29	T15	30-Norhopane	165 1.76	127 1.81	U	1.75
C29Ts	T16	18a(H)-30-Normoretane-C29Ts	47.0 1.76	35.7 1.81	U	1.75
X	X	17a(H)-Diahopane	16.9 1.76	14.2 1.81	U	1.75
M29	T17	30-Normoretane	23.7 1.76	17.3 1.81	U	1.75
OL	T18	18a(H)&18b(H)-Oleananes	24.9 1.76	18.0 1.81	U	1.75
H30	T19	Hopane	255 1.76	215 1.81	U	1.75
M30	T20	Moretane	32.0 1.76	24.6 1.81	U	1.75
H31S	T21	30-Homohopane-22S	95.1 1.76	72.0 1.81	U	1.75
H31R	T22	30-Homohopane-22R	89.5 1.76	69.3 1.81	U	1.75
T22A	T22A	T22a-Gammacerane/C32-diahopane	31.9 1.76	19.1 1.81	U	1.75
H32S	T26	30,31-Bishomohopane-22S	73.2 1.76	46.2 1.81	U	1.75
H32R	T27	30,31-Bishomohopane-22R	48.5 1.76	32.3 1.81	U	1.75
H33S	T30	30,31-Trishomohopane-22S	48.5 1.76	32.3 1.81	U	1.75
H33R	T31	30,31-Trishomohopane-22R	32.1 1.76	22.6 1.81	U	1.75
H34S	T32	Tetrakishomohopane-22S	39.4 1.76	23.4 1.81	U	1.75
H34R	T33	Tetrakishomohopane-22R	28.2 1.76	16.2 1.81	U	1.75
H35S	T34	Pentakishomohopane-22S	42.0 1.76	18.2 1.81	U	1.75
H35R	T35	Pentakishomohopane-22R	33.9 1.76	17.4 1.81	U	1.75
d27S	S4	13b(H),17a(H)-20S-Diacholestane	63.2 1.76	77.4 1.81	U	1.75
d27R	S5	13b(H),17a(H)-20R-Diacholestane	37.0 1.76	39.6 1.81	U	1.75
d28S	S8	13b,17a-20S-Methyldiacholestane	27.1 1.76	33.7 1.81	U	1.75
aa27S	S12	14a(H),17a(H)-20S-Cholestane/13b(H),17a(H)-20S-Ethyldiacholestane (S12)	118 1.76	125 1.81	U	1.75
aa27R	S17	14a(H),17a(H)-20R-Cholestane/13b(H),17a(H)-20R-Ethyldiacholestane (S17)	113 1.76	112 1.81	U	1.75
d29R	S18	Unknown Sterane (S18)	23.5 1.76	29.5 1.81	U	1.75
d29S	S19	13a,17b-20S-Ethyldiacholestane	4.47 1.76	4.23 1.81	U	1.75
aa28S	S20	14a,17a-20S-Methylcholestane	51.5 1.76	48.6 1.81	U	1.75
aa28R	S24	14a,17a-20R-Methylcholestane	40.9 1.76	45.1 1.81	U	1.75
aa29S	S25	14a(H),17a(H)-20S-Ethylcholestane	73.3 1.76	85.7 1.81	U	1.75
aa29R	S28	14a(H),17a(H)-20R-Ethylcholestane	62.5 1.76	72.2 1.81	U	1.75
bb27R	S14	14b(H),17b(H)-20R-Cholestane	64.6 1.76	71.6 1.81	U	1.75
bb27S	S15	14b(H),17b(H)-20S-Cholestane	63.1 1.76	68.5 1.81	U	1.75
bb28R	S22	14b,17b-20R-Methylcholestane	48.3 1.76	53.1 1.81	U	1.75
bb28S	S23	14b,17b-20S-Methylcholestane	77.5 1.76	78.9 1.81	U	1.75
bb29R	S26	14b(H),17b(H)-20R-Ethylcholestane	125 1.76	145 1.81	U	1.75
bb29S	S27	14b(H),17b(H)-20S-Ethylcholestane	75.0 1.76	69.6 1.81	U	1.75
RC26/SC27TA	RC26/SC27TA	C26,20R- +C27,20S- triaromatic steroid	135 1.76	172 1.81	U	1.75
SC28TA	SC28TA	C28,20S-triaromatic steroid	193 1.76	244 1.81	U	1.75
RC27TA	RC27TA	C27,20R-triaromatic steroid	85.9 1.76	97.7 1.81	U	1.75
RC28TA	RC28TA	C28,20R-triaromatic steroid	151 1.76	182 1.81	U	1.75

Surrogates (% Recovery)			
Naphthalene-d8	109	113	111
Phenanthrene-d10	103	109	105
Benzo[a]pyrene-d12	100	103	100
5B(H)Cholane	129	126	119

U: The analyte was analyzed for but not detected at the sample specific level reported.
B: Found in associated blank as well as sample.
J: Estimated value, below quantitation limit.
E: Estimated value, exceeds the upper limit of calibration.
NA: Not Applicable
D: Secondary Dilution Performed
D1: Tertiary Dilution Performed
*: Value outside of QC Limits.
§: Surrogate value outside of acceptable range.
X: It is not possible to calculate RPD, one result is below the detection limit, the other is above reporting limit.
G: Matrix Interference.
P: Greater than 40% RPD between the two columns, the higher value is reported according to the method.
I: Due to interference, the lower value is reported.
N: Spike recovery outside control limits.
E: Estimated due to interference. (Metals)
*: Duplicate outside control limits.
P: Spike compound. (Metals)
J: Below CRDL, Project DL, or RL but greater than or equal to MDL
C: Sample concentration is > 4 times the spike level, recovery limits do not apply. (Metals)
S: Spike Compound. (Organics)
§: RPD criteria not applicable to results less than 5 times the reporting limit. (Metals)
T: Tentatively identified corexit compound.
C: Co-elution.
Z: Result not surrogate corrected.
DL: Surrogate result diluted out of sample.
W: Matrix interference may be present based on chemical reasonableness evaluation.