

Cobrain, Dave, NMENV

From: VanHorn, Kristen, NMENV
Sent: Monday, May 13, 2019 8:37 AM
To: Cobrain, Dave, NMENV
Subject: FW: SPH Analytical Results
Attachments: Summary Table of Field Measurements of SPH.pdf; NMED Comments Requesting SPH Analyses.pdf; SPH Analyses.pdf

From: Moore, Brian <BMoore1@Marathonpetroleum.com>
Sent: Monday, May 13, 2019 7:53 AM
To: VanHorn, Kristen, NMENV <Kristen.VanHorn@state.nm.us>; carl.chavez@state.nm.us; Kieling, John, NMENV <john.kieling@state.nm.us>; Suzuki, Michiya, NMENV <Michiya.Suzuki@state.nm.us>
Cc: Scott Crouch <scrouch@disorboconsult.com>; Tracy Payne <tpayne@disorboconsult.com>; Moore, John <JMoore5@Marathonpetroleum.com>
Subject: [EXT] SPH Analytical Results

Pursuant to recent requests from NMED and OCD, which are provided in the attached file, NMED Comments Requesting SPH Analyses, with the relevant sections underlined, Marathon recently collected samples of separate phase hydrocarbon (SPH) that was present in monitoring wells located in the tank farm or to the west near the former Aeration Basin. This included GMW-1, NAPIS-1, RW-1, RW-5, RW-6, OW-61, and OW-65 and a sample of SPH was collected from the discharge from the French drain at the STP-1. In addition, SPH was bailed from available wells (GWM-1 and NAPIS-1) and recovery measured for up to 45 hours. High wind conditions prevented the bailing of SPH from wells OW-61 and OW-65. New pumps have been installed in recovery wells RW-1, RW-5 and RW-6 and Marathon plans to use these pumps to conduct the requested yield tests upon approval by NMED and OCD to initiate recovery with the new pumps.

You will find attached the laboratory analyses of the SPH samples with chromatograms. The laboratory also provided chromatograms for gasoline and diesel for comparison. A similar product (gasoline, which appears pretty fresh) is shown to be present at NAPIS-1, the French drain sample, RW-5, RW-6, and RW-1. A slightly different material (gasoline with some diesel) is represented by the samples collected at OW-61 and OW-65, which were both installed in the central portion of the Tank Farm when the SPH was first detected in the discharge from the French drain. A notably different material (diesel to motor oil range) was found to be present in GWM-1. A summary of the field measurements of depth to SPH, depth to water, and recovery volumes of both SPH and water for the bail tests at GWM-1 and NAPIS-1 is provided in the attached table. In addition to the field measurements collected during the April 2019 field event, measurements of the depth to SPH and water are also provided for 2018 where available. A brief summary of the recovery data for NAPIS-1 and GWM-1 is provided below.

NAPIS-1

While the measured thickness of SPH was as high as 1.95 feet in 2018, 0.26 feet was present when the well was gauged on April 8, 2019. After gauging the fluid levels, 1.25 gallons of water and approximately 0.25 gallon of SPH was bailed from the well. After 20 minutes the water level recovered within 0.31 feet of the initial elevation with no SPH observed in the well. After approximately 3.5 hours 0.1 feet of SPH was measured in the well. The well was checked again the next morning after approximately 16 hours and the same measurement of 0.1 feet of SPH was recorded. The well was bailed of approximately 0.75 gallons of water and less than 0.1 gallon of SPH. The well was checked in 10 minutes and no SPH had reentered the well. After four hours the well was rechecked and 0.06 feet of SPH was present. The measured thickness of 0.06 feet of SPH remained constant through the next morning after approximately 25.5 hours.

GWM-1

The maximum measured thickness of SPH in 2018 was 0.4 feet, recorded on April 26th. This is in comparison to 0.32 feet of SPH measured on April 8, 2019. After gauging the fluid levels, 1.0 gallon of water and less than 0.1 gallon of SPH was bailed from the well. After 25 minutes the water level was still depressed by approximately 2.5 feet and no SPH was observed in the well. The well was checked again the next morning after approximately 16 hours and the water level was still depressed by approximately 1.64 feet and no SPH was recorded. The well was checked again in approximately four hours and while there was little change in the depth to water, 0.01 feet of SPH was measured in the well. After another period of approximately four hours the well was rechecked and 0.01 of SPH was recorded again. The well was checked the following morning after approximately another 18 hours and the SPH thickness had increased to 0.06 feet.

Brian Moore : Gallup Refinery

(o) 505-726-9745



**Marathon
Petroleum Company**

NMED Comments on 2017 Annual Groundwater Monitoring Report (dated March 21, 2019) Gallup has not yet responded to this comment letter

NMED Comment 5

In the Executive Summary, page 3, and Section 6.2.2, *Groundwater Monitoring Wells, NAPIS-1, NAPIS-2, NAPIS-3, and KA-3*, page 29, the Permittee states, "[s]eparate phase hydrocarbon [SPH] was detected in NAPIS-1 in the third and fourth quarters." This is the first time SPH was detected in well NAPIS-1. NMED considers the discovery of SPH in well NAPIS-1 to be a discovery of a release and subject to RCRA Permit Section II.C.2.c. The Permittee should have notified NMED when it was discovered. In the future, if a monitoring well is discovered to contain SPH for the first time, the Permittee must notify NMED and OCD within 24 hours. The thickness of the SPH column in NAPIS-1 during the third and fourth quarters of 2017 is reported as 0.86 and 0.65 feet, respectively. SPH was not detected in either of the New API Separator Leak Detection Units (LDUs) or wells NAPIS-2, NAPIS-3, and KA-3. The source of the SPH is not clear; however, SPH in wells RW-5 and RW-6 may have migrated to well NAPIS-1. If SPH is present in 2018, purge the well completely, and check the well regularly and report to NMED and OCD by email whether SPH returns to the well and if SPH is present, then report the length of time it takes for the SPH to return. Also, check the downgradient wells for the presence of SPH. Report through email regarding the SPH in well NAPIS-1. Furthermore, collect SPH from wells RW-5, RW-6 and NAPIS-1 and compare to see if the SPH originates from the same source.

NMED Comment 11

In the Executive Summary, *Group C- Wells*, page 6, and Section 6.3.3, *Recovery Wells, RW-1, RW-2, RW-5, and RW-6*, page 38, the Permittee states, "[n]o samples were collected from RW-5 and RW-6 during the second, third and fourth quarters of 2017 due to the detection of SPH in the wells." The discovery of SPH in wells RW-5 and RW-6 is subject to RCRA Permit Section II.C.2.c. The Permittee should have notified NMED when SPH was discovered. In the future, if a monitoring well is discovered to contain SPH after being absent for more than one year or for the first time, the Permittee must notify NMED and OCD within 24 hours. The column thickness of SPH in well RW-5 ranged from 6.19 to 9.25 feet and RW-6 from 5.08 to 9.02 feet in 2017. According to Appendix A, *Separate Phase Hydrocarbon Recovery Logs*, the recorded SPH column thickness in 2017 is significantly more compared to the previously recorded thicknesses in the wells. The previous maximum SPH thicknesses were recorded as 1.78 feet in RW-5 in 2006 and 1.38 feet in RW-6 in 2005. In addition, SPH has not been measured in well RW-5 since February 2009 and in RW-6 since November 2011. A sudden decrease in groundwater levels between the first and second quarter of 2017 may have contributed to the resurgence of SPH. However, the significant increase in the current SPH thicknesses in comparison to the previous measurements is not explained by the decrease in groundwater levels alone since historic groundwater levels were recorded at elevations lower than the current levels prior to 2010. The detection of SPH in wells RW-5 and RW-6 suggests a new release. Collect SPH samples from wells RW-5 and RW-6 for hydrocarbon fingerprint analysis to compare to SPH in NAPIS-1, purge the wells completely, and after purging the wells, check the wells regularly and report the rate at which SPH returns to the wells. The Permittee must report the length of time it took for the SPH to return. In addition, in Section 2. 7, *Remediation Activities*, page 20, the Permittee states that the change in conditions was evaluated in 2018 and the [recovery] effort will be discussed in the *2018 Annual Ground Water Monitoring Report* as the activities did not occur during the 2017 reporting period. However, since SPH appeared in 2017, the discussion regarding the evaluation of the site conditions and recovery effort is relevant and must be included in the Report. Revise the Report accordingly.

**NMED Comments on OW-58 Twin Well Investigation Work Plan (dated October 19, 2018)
Gallup response submitted March 28, 2019**

NMED Comment No. 3

In the Section 2, *Background*, page 2-2, the Permittee states, "[a] possible leak from a seam in an unidentified storage tank located adjacent to Tank 569 was reported to have been repaired in 1995 (Giant, 1997). It is likely that this leaking tank resulted in the observed presence of [separate phase hydrocarbons] SPH instead of the burial of leaded tank bottoms." Currently, Tanks 568, 570, 571, 572, 581, 582, and 716 are located adjacent to Tank 569. Provide information indicating whether the "unidentified storage tank" is one of these tanks; otherwise, provide a figure showing the location of the unidentified storage tank and discuss the current status of the tank in the revised Work Plan. In addition, provide a basis for stating the probable source of SPH is the unidentified storage tank, rather than the burial of leaded tank bottoms in the revised Work Plan. It should be noted that there are multiple potential SPH sources in the source area. Tables previously provided by the Permittee indicate that Tanks 569, 570, 571, 572, 581, and 582 contain gasoline or gasoline-range hydrocarbons. If hydrocarbon fingerprint analysis was previously conducted for SPH collected from wells in the vicinity of the source area (e.g., RW-1 or RW-2), provide the results of the analysis or reference the submittals where the results were included. Otherwise, propose to collect SPH from all wells in the source area where detected for hydrocarbon fingerprint analysis in the revised Work Plan.

Gallup Response:

The "unidentified" tank was in fact not identified in the subject document, it merely referred to an adjacent tank. We have attempted to find any additional information to identify the correct adjacent tank, but have not been able to determine to which tank the discussion was referring. While this work plan is focused only the installation of the twin well for OW-58, you will find additional discussion in the Investigation Report for the OW-14 Source Area.

We have reviewed the earlier RFI sampling reports and based on the findings related to the burial of leaded tank bottoms believe the volume of separate-phase hydrocarbon (SPH) that has been recovered from RW-1 is not likely to have been sourced from only the leaded tank bottoms. Additional discussion has been added to the first paragraph of page 2-2.

Regarding the request to conduct hydrocarbon fingerprint analyses of SPH samples from existing wells in the vicinity, NMED made a similar request in comments no. 5 and 11 in the March 21, 2019 Disapproval of the 2017 Annual Groundwater Monitoring Report. These comments focused on wells NAPIS-1, RW-5, and RW-6, which are in the western portion of the tank farm. However, to provide better coverage in response to the initial request, Western is already planning to collect SPH samples from all existing wells within the tank farm where SPH is present for fingerprint analysis. **This information will be provided in the email response that is due May 7, 2019 pursuant to the aforementioned comments no. 5 and 11.**

Separate Phase Hydrocarbon Thickness Measurements and Recovery Data

April 2019

Marathon Petroleum Company - Gallup Refinery

Well ID	Date	Time	Depth to SPH	Depth to Water	Measured SPH Thickness	Corrected Water Elevation	SPH recovered	Water recovered	Screen Intervals	Notes
			ft-btoc	ft-btoc	ft	ft-msl	gallons	gallons	ft-btoc	
NAPIS-1	02/12/18		6.15	8.10	1.95	6907.32			3.94 - 13.94	
	04/25/18		6.58	7.82	1.24	6907.03				
	08/15/18 ¹		NM	NM						
	11/08/18 ¹		NM	NM						
	4/8/2019	12:40	7.95	8.21	0.26	6905.86	0.25	1.25		SPH sample collected
		13:00	ND	8.51	0	6905.35				
		16:35	7.99	8.09	0.1	6905.85				
	4/9/2019	8:30	7.99	8.09	0.1	6905.85	<0.1	0.75		
		8:40	ND	8.48	0	6905.38				
		12:30	7.99	8.05	0.06	6905.86				
	16:23	7.96	8.02	0.06	6905.89					
4/10/2019	10:00	7.96	8.02	0.06	6905.89					
GWM-1	02/12/18		21.83	22.20	0.37	6891.96			19.89 - 25.89	
	04/26/18		21.85	22.25	0.4	6891.93				
	08/15/18		21.50	21.54	0.04	6892.35				
	11/19/18		21.42	21.55	0.13	6892.41				
	4/8/2019	15:35	21.52	21.84	0.32	6892.28	<0.1	1		SPH sample collected
		16:00	ND	24.05	0	6889.81				
	4/9/2019	8:25	ND	23.22	0	6890.64				
		12:15	23.17	23.18	0.01	6890.69				
		16:30	23.09	23.10	0.01	6890.77				
4/10/2019	10:05	23.00	23.06	0.06	6890.85					
OW-61	03/21/18		16.71	16.80	0.09	6897.13			11.18 - 31.18*	
	04/24/18		17.22	18.04	0.82	6896.48				
	08/16/18		17.40	22.10	4.7	6895.52				
	11/29/18		17.95	22.00	4.05	6895.10				
	4/9/2019		17.51	21.25	3.74	6895.60				too windy to bail

Separate Phase Hydrocarbon Thickness Measurements and Recovery Data
April 2019

Marathon Petroleum Company - Gallup Refinery

Well ID	Date	Time	Depth to SPH	Depth to Water	Measured SPH Thickness	Corrected Water Elevation	SPH recovered	Water recovered	Screen Intervals	Notes
			ft-btoc	ft-btoc	ft	ft-msl	gallons	gallons	ft-btoc	
OW-64	03/21/18		ND	7.72	0	6906.14			7.12 - 27.12*	
	04/24/18		ND	7.85	0	6906.01				
	08/16/18		ND	7.51	0	6906.35				
	11/29/18		8.06	8.11	0.05	6905.79				
	4/9/2019		ND	6.80	0	6907.06				No SPH present
OW-65	03/21/18		23.40	23.60	0.2	6890.42			21.16 - 41.16*	
	04/24/18		23.61	26.35	2.74	6889.70				
	08/16/18		24.96	26.64	1.68	6888.56				
	11/29/18		24.05	31.80	7.75	6888.26				
	4/9/2019		23.56	30.92	7.36	6888.83				too windy to bail
RW-1	02/13/18		26.94	27.22	0.28	6886.86			28.2 - 43.2	
	04/25/18		26.94	27.21	0.27	6886.87				
	08/16/18		27.44	27.70	0.26	6886.37				
	11/07/18 ²		NM	NM	NM					
	4/9/2019		28.80	29.48	0.68	6884.92				pump in well, could not bail, but SPH sample collected
RW-5	02/09/18		25.50	33.60	8.1	6886.74			31.54 - 41.54	
	04/25/18		26.62	32.34	5.72	6886.10				
	08/16/18		27.20	32.58	5.38	6885.58				
	11/07/18 ²		NM	NM	NM					
	4/10/2019		28.81	33.66	4.85	6884.08				pump in well, could not bail, but SPH sample collected

Separate Phase Hydrocarbon Thickness Measurements and Recovery Data
April 2019

Marathon Petroleum Company - Gallup Refinery

Well ID	Date	Time	Depth to SPH	Depth to Water	Measured SPH Thickness	Corrected Water Elevation	SPH recovered	Water recovered	Screen Intervals	Notes
			ft-btoc	ft-btoc	ft	ft-msl	gallons	gallons	ft-btoc	
RW-6	02/09/18		25.65	33.05	7.4	6886.73			30.55 - 40.55	
	04/25/18		26.93	31.69	4.76	6885.98				
	08/16/18		27.43	31.78	4.35	6885.56				
	11/07/18 ²		NM	NM	NM					
	4/10/2019		28.06	32.64	4.58	6884.88				pump in well, could not bail, but SPH sample collected

ft - feet

NM - not measured

ND - not detected

btoc - below top of casing

SPH - separate phase hydrocarbon

1. Was not able to gauge or sample wells around the NAPIS Unit due to high H2S readings.

2. Did not gauge or sample wells due to recovery apparatus installed on all the RW wells.

* - length of stickup estimated pending completion of well survey



Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Brian Moore
Marathon
92 Giant Crossing Rd
Gallup, NM 87301
TEL: (505) 722-3833
FAX:

RE: SPH Investigation

OrderNo.: 1904580

Dear Brian Moore:

Hall Environmental Analysis Laboratory received 2 sample(s) on 4/10/2019 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy Freeman', is written over a white background.

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109



Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Case Narrative

WO#: 1904580

Date:

CLIENT: Marathon

Project: SPH Investigation

Hall Environmental has analyzed NAPIS-1 and GMW-1 for hydrocarbons using EPA Method 8015D. Our interpretation of the type of hydrocarbons present in each sample is detailed below. Copies of the chromatograms for each sample and standards are provided after this narrative.

NAPIS-1 - This product sample appears to be fairly fresh gasoline.

GMW-1 - This product sample does not contain gasoline range hydrocarbons. The sample appears to be mostly diesel range and lower amount of motor oil range hydrocarbons.

Chain-of-Custody Record

Client: **Marathon Petroleum Company**

Gallup Refinery

Mailing Address: **92 Giant Crossing Road**

Gallup, NM 87301

Phone #: **505-726-9745**

email or Fax#: **BMoore1@Marathonpetroleum.com**

QA/QC Package:

Standard

Other _____

EDD (Type) EXCEL

Turn-Around Time:

Standard Rush _____

Project Name:

SPH Investigation

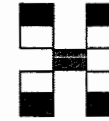
Project #:

Project Manager: **Brian Moore**

Sampler: **Tracy Payne**

On Ice: Yes No 2 coolers

Sample Temperature: 0.4°C, 0.5°C



HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.	BTEX+MTBE	BTEX+MTBE+TPH(Gas only)	TPH 8015B (Fingerprint Analysis)	TPH (Method 418.1)	EDB & EDC (Method 8011)	PAH (8310 or 8270SIMS)	RCRA 8 Metals	Anions (F, Cl, NO ₃ , NO ₂ , PO ₄ , SO ₄)	8081 Pesticides / 8082 PCB's	8260B	8270 (Semi-VOA)	WQCC Metals (Total & Dissolved)	Major Cations/Anions*	Air Bubbles (Y or N)
4/8/19	1245	HC	NAPIS - 1	1 40 mL VOA	—	1904580 -001			X											
4/8/19	1550	HC	GMW - 1	1 40 mL VOA	—	-002			X											

Date: 4/9/19 Time: 0745 Relinquished by: [Signature]

Received by: [Signature] Date: 4/10/19 Time: 1007

Remarks:

Date: _____ Time: _____ Relinquished by: _____

Received by: _____ Date: _____ Time: _____

Remarks:

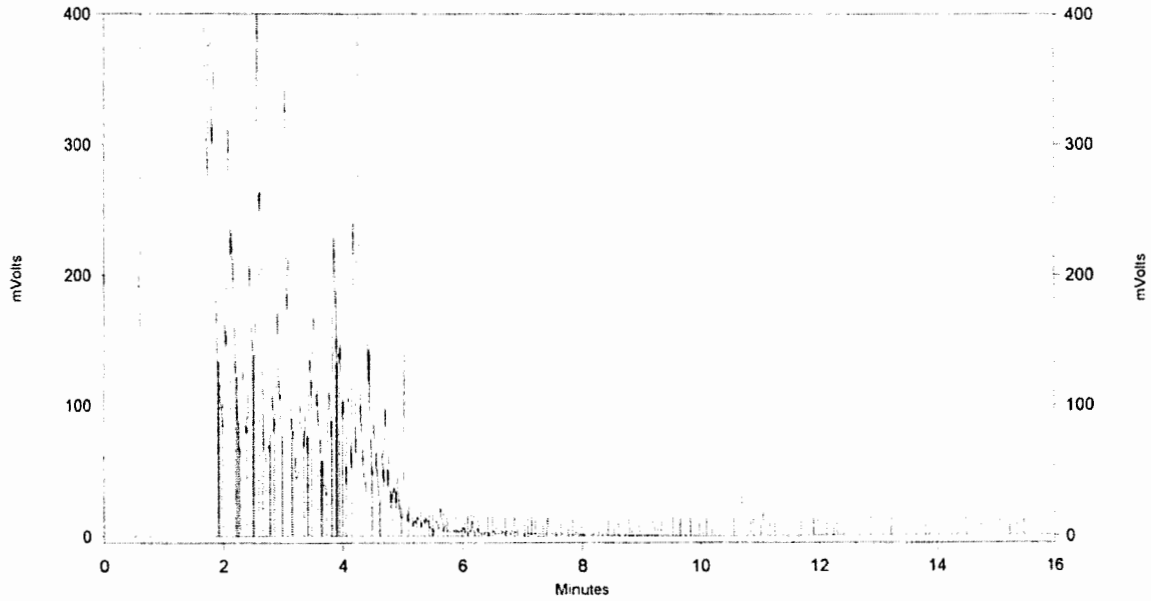
NAPIS-1

Instrument: **SmaugFID (Offline)**
Sample ID: **1904580-001A**

Vial #: **27**
Data Description: **PRODUCT X10**

User: **System**

Method: H:\EZsemi\8015dro\DATA\Smaug\Methods\032719.met
File: H:\EZsemi\8015dro\DATA\Smaug\Data\2019\APRIL 2019\041519\PROD RE-INT's\1904580-001A
X10 4-15-2019 7-26-40 PM.dat
Aquired: 4/15/2019 7:32:51 PM



FID-2010 Plus Results

Name	Retention Time	Area	ug/ml
DNOP	11.056	25724	0.874
DRO		2818833	93.142
MRO		1837	16.244

Analyst _____

Reviewed By _____

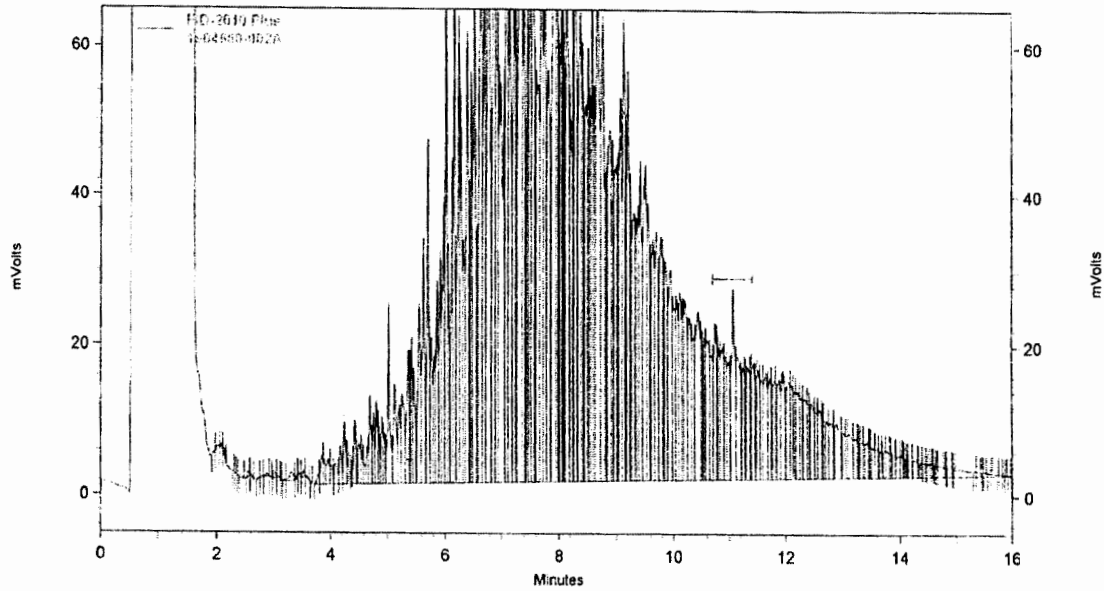
GWM-1

Instrument: **SmaugFID (Offline)**
Sample ID: **1904580-002A**

Vial #: **28**
Data Description: **PRODUCT X20**

User: **System**

Method: H:\EZsemi\8015dro\DATA\Smaug\Methods\032719.met
File: H:\EZsemi\8015dro\DATA\Smaug\Data\1904580-002A X20 4-15-2019 8-33-35 PM.dat
Acquired: 4/15/2019 8:39:52 PM



FID-2010 Plus Results

Name	Retention Time	Area	ug/ml
DNOP	11.061	106224	3.938
DRO		12611601	404.713
MRO		1660723	73.257

Analyst Tom

Reviewed By [Signature]

Surrogate not recovered due to dilution

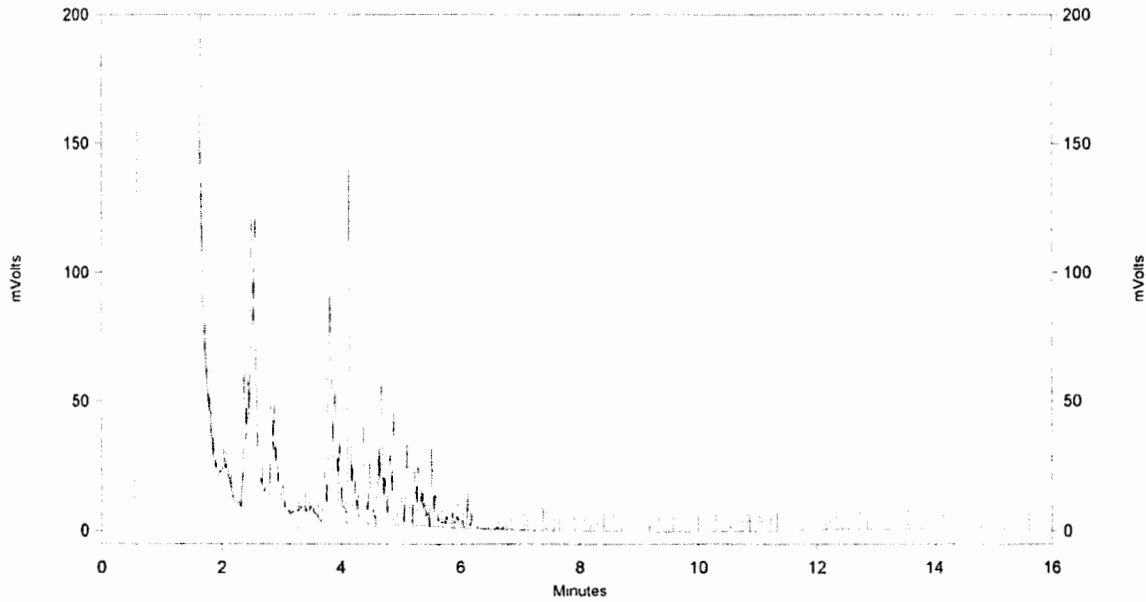
500 ppm Gasoline Standard

Instrument: **SmaugFID (Offline)**
Sample ID: **CONDITIONER**

Vial #: **23**
Data Description: **~500 ppm Gasoline**

User: **System**

Method: H:\EZsemi\8015dro\DATA\Smaug\Methods\032719.met
File: H:\EZsemi\8015dro\DATA\Smaug\Data\CONDITIONER 4-25-2019 10-53-34 AM.dat
Acquired: 4/25/2019 10:58:57 AM



FID-2010 Plus Results

Name	Retention Time	Area	ug/ml
DNOP	10.997	182	0.000
DRO		1058065	35.142
MRO		2753	16.275

Analyst _____

Reviewed By _____

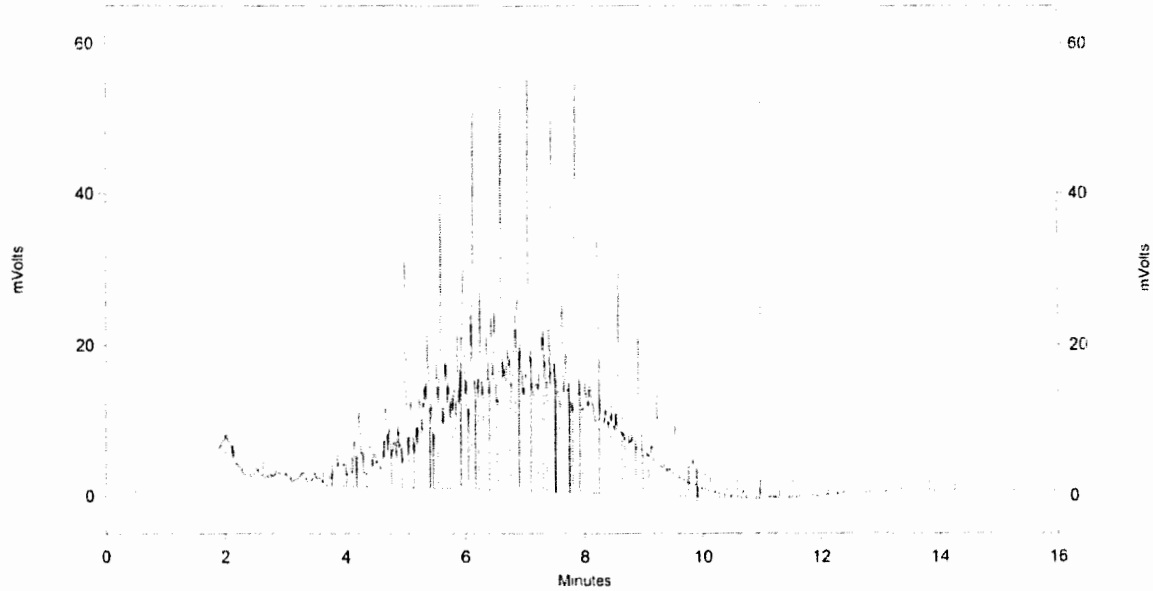
100 ppm Diesel Standard

Instrument: **SmaugFID (Offline)**
Sample ID: **100 PPM DRO CCV**

Vial #: **3**
Data Description: **SV195-3268**

User: **System**

Method: H:\EZsemi\8015dro\DATA\Smaug\Methods\032719.met
File: H:\EZsemi\8015dro\DATA\Smaug\Data\042519\100 PPM DRO CCV 4-25-2019 7-32-54 AM.dat
Acquired: 4/25/2019 7:38:35 AM



FID-2010 Plus Results

Name	Retention Time	Area	ug/ml
DNOP	10.992	288719	10.819
DRO		3552010	117.115
MRO		11316	16.570

Analyst _____

Reviewed By _____