

ANALYTICAL RESULTS

Prepared by:

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2425 New Holland Pike
Lancaster, PA 17601

Prepared for:

ExxonMobil
PO Box 4592
Houston TX 77210-4592

May 28, 2014

Project: Mayflower, AR Pipeline Incident

Submittal Date: 05/16/2014
Group Number: 1474954
SDG: PEN01
PO Number: 4410181435
Release Number: SIXSMITH
State of Sample Origin: AR

<u>Client Sample Description</u>	<u>Lancaster Labs (LL) #</u>
WS-007(0.5-1.0)051514 Grab Surface Water	7466597
WS-009(Surface)051514 Grab Surface Water	7466598
WS-001(0.5-1.0)051514 Grab Surface Water	7466599
WS-021(Surface)051514 Grab Surface Water	7466600
WS-004(0.5-1.0)051514 Grab Surface Water	7466601
WS-004(0.5-1.0)051514MS Grab Surface Water	7466602
WS-004(0.5-1.0)051514MSD Grab Surface Water	7466603
DUP-WS-131-051514 Grab Surface Water	7466604

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

ELECTRONIC COPY TO	ARCADIS	Attn: Stephen Barrick
ELECTRONIC COPY TO	ARCADIS	Attn: Lyndi Mott
ELECTRONIC COPY TO	ExxonMobil	Attn: Michael J. Firth
ELECTRONIC COPY TO	ARCADIS	Attn: Emily Leamer
ELECTRONIC COPY TO	ARCADIS	Attn: Rhiannon Parmalee
ELECTRONIC COPY TO	ExxonMobil	Attn: Michael L Sixsmith
ELECTRONIC COPY TO	ExxonMobil	Attn: Julie Foster
ELECTRONIC COPY TO	ARCADIS	Attn: Kim Abbott

COPY TO

Respectfully Submitted,



Katherine A. Klinefelter
Principal Specialist

(717) 556-7256

Project Name: Mayflower, AR Pipeline Incident
LLI Group #: 1474954

General Comments:

See the Laboratory Sample Analysis Record section of the Analysis Report for the method references.

All QC met criteria unless otherwise noted in an Analysis Specific Comment below. Refer to the QC Summary for specific values and acceptance criteria.

Project specific QC samples are included in this data set

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

Surrogate recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in an Analysis Specific Comment below.

The samples were received at the appropriate temperature and in accordance with the chain of custody unless otherwise noted.

Analysis Specific Comments:**SW-846 8270C SIM, GC/MS Semivolatiles**

Sample #s: 7466598, 7466599, 7466601, 7466602, 7466603

The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC Standards. The following analytes are accepted based on this allowance:
dibenz(a,h)anthracene

Sample #s: 7466597, 7466600, 7466604

The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC Standards. The following analytes are accepted based on this allowance:
dibenz(a,h)anthracene
The recovery for the sample surrogate(s) is outside the QC acceptance limits as noted on the QC Summary. The client was contacted and the data reported.

Batch #: 14140WAC026 (Sample number(s): 7466597-7466604 UNSPK: 7466601)

The recovery(ies) for the following analyte(s) in the LCS were below the acceptance window: Dibenz(a,h)anthracene

The recovery(ies) for the following analyte(s) in the MS and/or MSD was outside the acceptance window: 1-Methylnaphthalene, Acenaphthylene, Fluorene, Phenanthrene, Anthracene, Fluoranthene, Chrysene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Indeno(1,2,3-cd)pyrene, Dibenz(a,h)anthracene, Benzo(g,h,i)perylene

The relative percent difference(s) for the following analyte(s) in the MS/MSD were outside outside acceptance windows: 1-Methylnaphthalene, 2-Methylnaphthalene, Acenaphthylene, Acenaphthene, Fluorene, Phenanthrene, Anthracene, Fluoranthene, Pyrene, Benzo(a)anthracene, Chrysene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Indeno(1,2,3-cd)pyrene, Dibenz(a,h)anthracene, Benzo(g,h,i)perylene

The recovery(ies) for one or more surrogates were outside of the QC window for sample(s) 7466597, 7466600, 7466602, 7466603, 7466604, MS, MSD

Sample Description: WS-007(0.5-1.0)051514 Grab Surface Water
S20135565 Mayflower, AR
Pipeline Incident

LL Sample # WW 7466597
LL Group # 1474954
Account # 14739

Project Name: Mayflower, AR Pipeline Incident

Collected: 05/15/2014 13:30 by TDF ExxonMobil
PO Box 4592
Houston TX 77210-4592
Submitted: 05/16/2014 09:25
Reported: 05/28/2014 11:04

51507 SDG#: PEN01-01

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 8270C SIM	ug/l	ug/l	ug/l	
08357	Acenaphthene	83-32-9	N.D.	0.010	0.050	1
08357	Acenaphthylene	208-96-8	N.D.	0.010	0.050	1
08357	Anthracene	120-12-7	N.D.	0.010	0.050	1
08357	Benzo(a)anthracene	56-55-3	N.D.	0.010	0.050	1
08357	Benzo(a)pyrene	50-32-8	N.D.	0.010	0.050	1
08357	Benzo(b)fluoranthene	205-99-2	N.D.	0.010	0.050	1
08357	Benzo(g,h,i)perylene	191-24-2	N.D.	0.010	0.050	1
08357	Benzo(k)fluoranthene	207-08-9	N.D.	0.010	0.050	1
08357	Chrysene	218-01-9	N.D.	0.010	0.050	1
08357	Dibenz(a,h)anthracene	53-70-3	N.D.	0.010	0.050	1
08357	Fluoranthene	206-44-0	0.013 J	0.010	0.050	1
08357	Fluorene	86-73-7	N.D.	0.010	0.050	1
08357	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.010	0.050	1
08357	1-Methylnaphthalene	90-12-0	N.D.	0.010	0.050	1
08357	2-Methylnaphthalene	91-57-6	N.D.	0.010	0.050	1
08357	Naphthalene	91-20-3	N.D.	0.030	0.050	1
08357	Phenanthrene	85-01-8	N.D.	0.030	0.050	1
08357	Pyrene	129-00-0	N.D.	0.010	0.050	1

The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC Standards. The following analytes are accepted based on this allowance:
dibenz(a,h)anthracene

The recovery for the sample surrogate(s) is outside the QC acceptance limits as noted on the QC Summary. The client was contacted and the data reported.

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
08357	PAHs in waters by SIM	SW-846 8270C SIM	1	14140WAC026	05/24/2014 09:43	Brian K Graham	1
10470	BNA Water Extraction (SIM)	SW-846 3510C	1	14140WAC026	05/20/2014 19:00	Nicholas W Shroyer	1

*=This limit was used in the evaluation of the final result

Sample Description: WS-009 (Surface) 051514 Grab Surface Water
S20135565 Mayflower, AR
Pipeline Incident

LL Sample # WW 7466598
LL Group # 1474954
Account # 14739

Project Name: Mayflower, AR Pipeline Incident

Collected: 05/15/2014 13:35 by TDF ExxonMobil
PO Box 4592
Submitted: 05/16/2014 09:25 Houston TX 77210-4592
Reported: 05/28/2014 11:04

51509 SDG#: PEN01-02

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 8270C SIM	ug/l	ug/l	ug/l	
08357	Acenaphthene	83-32-9	N.D.	0.010	0.052	1
08357	Acenaphthylene	208-96-8	N.D.	0.010	0.052	1
08357	Anthracene	120-12-7	N.D.	0.010	0.052	1
08357	Benzo(a)anthracene	56-55-3	N.D.	0.010	0.052	1
08357	Benzo(a)pyrene	50-32-8	N.D.	0.010	0.052	1
08357	Benzo(b)fluoranthene	205-99-2	0.028 J	0.010	0.052	1
08357	Benzo(g,h,i)perylene	191-24-2	0.035 J	0.010	0.052	1
08357	Benzo(k)fluoranthene	207-08-9	0.021 J	0.010	0.052	1
08357	Chrysene	218-01-9	0.013 J	0.010	0.052	1
08357	Dibenz(a,h)anthracene	53-70-3	0.022 J	0.010	0.052	1
08357	Fluoranthene	206-44-0	N.D.	0.010	0.052	1
08357	Fluorene	86-73-7	N.D.	0.010	0.052	1
08357	Indeno(1,2,3-cd)pyrene	193-39-5	0.034 J	0.010	0.052	1
08357	1-Methylnaphthalene	90-12-0	N.D.	0.010	0.052	1
08357	2-Methylnaphthalene	91-57-6	N.D.	0.010	0.052	1
08357	Naphthalene	91-20-3	N.D.	0.031	0.052	1
08357	Phenanthrene	85-01-8	N.D.	0.031	0.052	1
08357	Pyrene	129-00-0	N.D.	0.010	0.052	1

The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC Standards. The following analytes are accepted based on this allowance:
dibenz(a,h)anthracene

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
08357	PAHs in waters by SIM	SW-846 8270C SIM	1	14140WAC026	05/24/2014 10:12	Brian K Graham	1
10470	BNA Water Extraction (SIM)	SW-846 3510C	1	14140WAC026	05/20/2014 19:00	Nicholas W Shroyer	1

*=This limit was used in the evaluation of the final result

Sample Description: WS-001(0.5-1.0)051514 Grab Surface Water
S20135565 Mayflower, AR
Pipeline Incident

LL Sample # WW 7466599
LL Group # 1474954
Account # 14739

Project Name: Mayflower, AR Pipeline Incident

Collected: 05/15/2014 13:40 by TDF ExxonMobil
PO Box 4592
Houston TX 77210-4592
Submitted: 05/16/2014 09:25
Reported: 05/28/2014 11:04

51501 SDG#: PEN01-03

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 8270C SIM	ug/l	ug/l	ug/l	
08357	Acenaphthene	83-32-9	N.D.	0.012	0.058	1
08357	Acenaphthylene	208-96-8	N.D.	0.012	0.058	1
08357	Anthracene	120-12-7	N.D.	0.012	0.058	1
08357	Benzo(a)anthracene	56-55-3	N.D.	0.012	0.058	1
08357	Benzo(a)pyrene	50-32-8	N.D.	0.012	0.058	1
08357	Benzo(b)fluoranthene	205-99-2	N.D.	0.012	0.058	1
08357	Benzo(g,h,i)perylene	191-24-2	N.D.	0.012	0.058	1
08357	Benzo(k)fluoranthene	207-08-9	N.D.	0.012	0.058	1
08357	Chrysene	218-01-9	N.D.	0.012	0.058	1
08357	Dibenz(a,h)anthracene	53-70-3	N.D.	0.012	0.058	1
08357	Fluoranthene	206-44-0	N.D.	0.012	0.058	1
08357	Fluorene	86-73-7	N.D.	0.012	0.058	1
08357	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.012	0.058	1
08357	1-Methylnaphthalene	90-12-0	N.D.	0.012	0.058	1
08357	2-Methylnaphthalene	91-57-6	N.D.	0.012	0.058	1
08357	Naphthalene	91-20-3	N.D.	0.035	0.058	1
08357	Phenanthrene	85-01-8	N.D.	0.035	0.058	1
08357	Pyrene	129-00-0	N.D.	0.012	0.058	1

The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC Standards. The following analytes are accepted based on this allowance:
dibenz(a,h)anthracene

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
08357	PAHs in waters by SIM	SW-846 8270C SIM	1	14140WAC026	05/24/2014 10:41	Brian K Graham	1
10470	BNA Water Extraction (SIM)	SW-846 3510C	1	14140WAC026	05/20/2014 19:00	Nicholas W Shroyer	1

*=This limit was used in the evaluation of the final result

Sample Description: WS-021(Surface)051514 Grab Surface Water
S20135565 Mayflower, AR
Pipeline Incident

LL Sample # WW 7466600
LL Group # 1474954
Account # 14739

Project Name: Mayflower, AR Pipeline Incident

Collected: 05/15/2014 13:45 by TDF ExxonMobil
PO Box 4592
Houston TX 77210-4592
Submitted: 05/16/2014 09:25
Reported: 05/28/2014 11:04

51521 SDG#: PEN01-04

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 8270C SIM	ug/l	ug/l	ug/l	
08357	Acenaphthene	83-32-9	N.D.	0.010	0.050	1
08357	Acenaphthylene	208-96-8	N.D.	0.010	0.050	1
08357	Anthracene	120-12-7	N.D.	0.010	0.050	1
08357	Benzo(a)anthracene	56-55-3	N.D.	0.010	0.050	1
08357	Benzo(a)pyrene	50-32-8	N.D.	0.010	0.050	1
08357	Benzo(b)fluoranthene	205-99-2	N.D.	0.010	0.050	1
08357	Benzo(g,h,i)perylene	191-24-2	N.D.	0.010	0.050	1
08357	Benzo(k)fluoranthene	207-08-9	N.D.	0.010	0.050	1
08357	Chrysene	218-01-9	N.D.	0.010	0.050	1
08357	Dibenz(a,h)anthracene	53-70-3	N.D.	0.010	0.050	1
08357	Fluoranthene	206-44-0	N.D.	0.010	0.050	1
08357	Fluorene	86-73-7	N.D.	0.010	0.050	1
08357	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.010	0.050	1
08357	1-Methylnaphthalene	90-12-0	N.D.	0.010	0.050	1
08357	2-Methylnaphthalene	91-57-6	N.D.	0.010	0.050	1
08357	Naphthalene	91-20-3	N.D.	0.030	0.050	1
08357	Phenanthrene	85-01-8	N.D.	0.030	0.050	1
08357	Pyrene	129-00-0	N.D.	0.010	0.050	1

The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC Standards. The following analytes are accepted based on this allowance:
dibenz(a,h)anthracene

The recovery for the sample surrogate(s) is outside the QC acceptance limits as noted on the QC Summary. The client was contacted and the data reported.

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
08357	PAHs in waters by SIM	SW-846 8270C SIM	1	14140WAC026	05/24/2014 11:11	Brian K Graham	1
10470	BNA Water Extraction (SIM)	SW-846 3510C	1	14140WAC026	05/20/2014 19:00	Nicholas W Shroyer	1

*=This limit was used in the evaluation of the final result

Sample Description: WS-004(0.5-1.0)051514 Grab Surface Water
S20135565 Mayflower, AR
Pipeline Incident

LL Sample # WW 7466601
LL Group # 1474954
Account # 14739

Project Name: Mayflower, AR Pipeline Incident

Collected: 05/15/2014 13:50 by TDF ExxonMobil
PO Box 4592
Submitted: 05/16/2014 09:25 Houston TX 77210-4592
Reported: 05/28/2014 11:04

51504 SDG#: PEN01-05BKG

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 8270C SIM	ug/l	ug/l	ug/l	
08357	Acenaphthene	83-32-9	N.D.	0.011	0.057	1
08357	Acenaphthylene	208-96-8	N.D.	0.011	0.057	1
08357	Anthracene	120-12-7	N.D.	0.011	0.057	1
08357	Benzo(a)anthracene	56-55-3	N.D.	0.011	0.057	1
08357	Benzo(a)pyrene	50-32-8	N.D.	0.011	0.057	1
08357	Benzo(b)fluoranthene	205-99-2	N.D.	0.011	0.057	1
08357	Benzo(g,h,i)perylene	191-24-2	N.D.	0.011	0.057	1
08357	Benzo(k)fluoranthene	207-08-9	N.D.	0.011	0.057	1
08357	Chrysene	218-01-9	N.D.	0.011	0.057	1
08357	Dibenz(a,h)anthracene	53-70-3	N.D.	0.011	0.057	1
08357	Fluoranthene	206-44-0	0.019 J	0.011	0.057	1
08357	Fluorene	86-73-7	N.D.	0.011	0.057	1
08357	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.011	0.057	1
08357	1-Methylnaphthalene	90-12-0	N.D.	0.011	0.057	1
08357	2-Methylnaphthalene	91-57-6	N.D.	0.011	0.057	1
08357	Naphthalene	91-20-3	N.D.	0.034	0.057	1
08357	Phenanthrene	85-01-8	N.D.	0.034	0.057	1
08357	Pyrene	129-00-0	0.013 J	0.011	0.057	1

The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC Standards. The following analytes are accepted based on this allowance:
dibenz(a,h)anthracene

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
08357	PAHs in waters by SIM	SW-846 8270C SIM	1	14140WAC026	05/24/2014 08:15	Brian K Graham	1
10470	BNA Water Extraction (SIM)	SW-846 3510C	1	14140WAC026	05/20/2014 19:00	Nicholas W Shroyer	1

*=This limit was used in the evaluation of the final result

Sample Description: WS-004(0.5-1.0)051514MS Grab Surface Water
S20135565 Mayflower, AR
Pipeline Incident

LL Sample # WW 7466602
LL Group # 1474954
Account # 14739

Project Name: Mayflower, AR Pipeline Incident

Collected: 05/15/2014 13:50 by TDF ExxonMobil
PO Box 4592
Houston TX 77210-4592
Submitted: 05/16/2014 09:25
Reported: 05/28/2014 11:04

51504 SDG#: PEN01-05MS

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 8270C SIM	ug/l	ug/l	ug/l	
08357	Acenaphthene	83-32-9	1.2	0.013	0.063	1
08357	Acenaphthylene	208-96-8	1.1	0.013	0.063	1
08357	Anthracene	120-12-7	1.1	0.013	0.063	1
08357	Benzo(a)anthracene	56-55-3	0.83	0.013	0.063	1
08357	Benzo(a)pyrene	50-32-8	0.59	0.013	0.063	1
08357	Benzo(b)fluoranthene	205-99-2	0.67	0.013	0.063	1
08357	Benzo(g,h,i)perylene	191-24-2	0.45	0.013	0.063	1
08357	Benzo(k)fluoranthene	207-08-9	0.61	0.013	0.063	1
08357	Chrysene	218-01-9	0.73	0.013	0.063	1
08357	Dibenz(a,h)anthracene	53-70-3	0.43	0.013	0.063	1
08357	Fluoranthene	206-44-0	1.0	0.013	0.063	1
08357	Fluorene	86-73-7	1.1	0.013	0.063	1
08357	Indeno(1,2,3-cd)pyrene	193-39-5	0.47	0.013	0.063	1
08357	1-Methylnaphthalene	90-12-0	1.1	0.013	0.063	1
08357	2-Methylnaphthalene	91-57-6	1.1	0.013	0.063	1
08357	Naphthalene	91-20-3	1.1	0.038	0.063	1
08357	Phenanthrene	85-01-8	1.0	0.038	0.063	1
08357	Pyrene	129-00-0	0.89	0.013	0.063	1

The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC Standards. The following analytes are accepted based on this allowance:
dibenz(a,h)anthracene

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
08357	PAHs in waters by SIM	SW-846 8270C SIM	1	14140WAC026	05/24/2014 08:45	Brian K Graham	1
10470	BNA Water Extraction (SIM)	SW-846 3510C	1	14140WAC026	05/20/2014 19:00	Nicholas W Shroyer	1

*=This limit was used in the evaluation of the final result

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: WS-004(0.5-1.0)051514MSD Grab Surface Water
S20135565 Mayflower, AR
Pipeline Incident

LL Sample # WW 7466603
LL Group # 1474954
Account # 14739

Project Name: Mayflower, AR Pipeline Incident

Collected: 05/15/2014 13:50 by TDF ExxonMobil
PO Box 4592
Houston TX 77210-4592
Submitted: 05/16/2014 09:25
Reported: 05/28/2014 11:04

51504 SDG#: PEN01-05MSD

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 8270C SIM	ug/l	ug/l	ug/l	
08357	Acenaphthene	83-32-9	0.81	0.011	0.053	1
08357	Acenaphthylene	208-96-8	0.74	0.011	0.053	1
08357	Anthracene	120-12-7	0.72	0.011	0.053	1
08357	Benzo(a)anthracene	56-55-3	0.45	0.011	0.053	1
08357	Benzo(a)pyrene	50-32-8	0.24	0.011	0.053	1
08357	Benzo(b)fluoranthene	205-99-2	0.29	0.011	0.053	1
08357	Benzo(g,h,i)perylene	191-24-2	0.16	0.011	0.053	1
08357	Benzo(k)fluoranthene	207-08-9	0.25	0.011	0.053	1
08357	Chrysene	218-01-9	0.38	0.011	0.053	1
08357	Dibenz(a,h)anthracene	53-70-3	0.15	0.011	0.053	1
08357	Fluoranthene	206-44-0	0.65	0.011	0.053	1
08357	Fluorene	86-73-7	0.75	0.011	0.053	1
08357	Indeno(1,2,3-cd)pyrene	193-39-5	0.16	0.011	0.053	1
08357	1-Methylnaphthalene	90-12-0	0.79	0.011	0.053	1
08357	2-Methylnaphthalene	91-57-6	0.78	0.011	0.053	1
08357	Naphthalene	91-20-3	0.80	0.032	0.053	1
08357	Phenanthrene	85-01-8	0.72	0.032	0.053	1
08357	Pyrene	129-00-0	0.60	0.011	0.053	1

The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC Standards. The following analytes are accepted based on this allowance:
dibenz(a,h)anthracene

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
08357	PAHs in waters by SIM	SW-846 8270C SIM	1	14140WAC026	05/24/2014 09:14	Brian K Graham	1
10470	BNA Water Extraction (SIM)	SW-846 3510C	1	14140WAC026	05/20/2014 19:00	Nicholas W Shroyer	1

*=This limit was used in the evaluation of the final result

Sample Description: DUP-WS-131-051514 Grab Surface Water
S20135565 Mayflower, AR
Pipeline Incident

LL Sample # WW 7466604
LL Group # 1474954
Account # 14739

Project Name: Mayflower, AR Pipeline Incident

Collected: 05/15/2014 by TDF

ExxonMobil

PO Box 4592

Submitted: 05/16/2014 09:25

Houston TX 77210-4592

Reported: 05/28/2014 11:04

515DP SDG#: PEN01-06FD*

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 8270C SIM	ug/l	ug/l	ug/l	
08357	Acenaphthene	83-32-9	N.D.	0.010	0.051	1
08357	Acenaphthylene	208-96-8	N.D.	0.010	0.051	1
08357	Anthracene	120-12-7	N.D.	0.010	0.051	1
08357	Benzo(a)anthracene	56-55-3	N.D.	0.010	0.051	1
08357	Benzo(a)pyrene	50-32-8	N.D.	0.010	0.051	1
08357	Benzo(b)fluoranthene	205-99-2	N.D.	0.010	0.051	1
08357	Benzo(g,h,i)perylene	191-24-2	N.D.	0.010	0.051	1
08357	Benzo(k)fluoranthene	207-08-9	N.D.	0.010	0.051	1
08357	Chrysene	218-01-9	N.D.	0.010	0.051	1
08357	Dibenz(a,h)anthracene	53-70-3	N.D.	0.010	0.051	1
08357	Fluoranthene	206-44-0	N.D.	0.010	0.051	1
08357	Fluorene	86-73-7	N.D.	0.010	0.051	1
08357	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.010	0.051	1
08357	1-Methylnaphthalene	90-12-0	N.D.	0.010	0.051	1
08357	2-Methylnaphthalene	91-57-6	N.D.	0.010	0.051	1
08357	Naphthalene	91-20-3	N.D.	0.030	0.051	1
08357	Phenanthrene	85-01-8	N.D.	0.030	0.051	1
08357	Pyrene	129-00-0	N.D.	0.010	0.051	1

The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the NELAC Standards. The following analytes are accepted based on this allowance:
dibenz(a,h)anthracene

The recovery for the sample surrogate(s) is outside the QC acceptance limits as noted on the QC Summary. The client was contacted and the data reported.

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
08357	PAHs in waters by SIM	SW-846 8270C SIM	1	14140WAC026	05/24/2014 11:40	Brian K Graham	1
10470	BNA Water Extraction (SIM)	SW-846 3510C	1	14140WAC026	05/20/2014 19:00	Nicholas W Shroyer	1

*=This limit was used in the evaluation of the final result

Quality Control Summary

Client Name: ExxonMobil
Reported: 05/28/14 at 11:04 AM

Group Number: 1474954

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Laboratory Compliance Quality Control

<u>Analysis Name</u>	<u>Blank Result</u>	<u>Blank MDL**</u>	<u>Blank LOQ</u>	<u>Report Units</u>	<u>LCS %REC</u>	<u>LCSD %REC</u>	<u>LCS/LCSD Limits</u>	<u>RPD</u>	<u>RPD Max</u>
Batch number: 14140WAC026	Sample number(s): 7466597-7466604								
Acenaphthene	N.D.	0.010	0.050	ug/l	113		83-119		
Acenaphthylene	N.D.	0.010	0.050	ug/l	103		81-130		
Anthracene	N.D.	0.010	0.050	ug/l	107		83-125		
Benzo(a)anthracene	N.D.	0.010	0.050	ug/l	106		79-122		
Benzo(a)pyrene	N.D.	0.010	0.050	ug/l	106		80-121		
Benzo(b)fluoranthene	N.D.	0.010	0.050	ug/l	115		79-136		
Benzo(g,h,i)perylene	N.D.	0.010	0.050	ug/l	79		72-132		
Benzo(k)fluoranthene	N.D.	0.010	0.050	ug/l	107		81-131		
Chrysene	N.D.	0.010	0.050	ug/l	106		84-118		
Dibenz(a,h)anthracene	N.D.	0.010	0.050	ug/l	61*		66-133		
Fluoranthene	N.D.	0.010	0.050	ug/l	107		84-124		
Fluorene	N.D.	0.010	0.050	ug/l	107		82-119		
Indeno(1,2,3-cd)pyrene	N.D.	0.010	0.050	ug/l	73		68-132		
1-Methylnaphthalene	N.D.	0.010	0.050	ug/l	106		86-130		
2-Methylnaphthalene	N.D.	0.010	0.050	ug/l	103		81-131		
Naphthalene	N.D.	0.030	0.050	ug/l	104		82-122		
Phenanthrene	N.D.	0.030	0.050	ug/l	105		83-116		
Pyrene	N.D.	0.010	0.050	ug/l	98		78-125		

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

<u>Analysis Name</u>	<u>MS %REC</u>	<u>MSD %REC</u>	<u>MS/MSD Limits</u>	<u>RPD</u>	<u>RPD MAX</u>	<u>BKG Conc</u>	<u>DUP Conc</u>	<u>DUP RPD</u>	<u>Dup RPD Max</u>
Batch number: 14140WAC026	Sample number(s): 7466597-7466604 UNSPK: 7466601								
Acenaphthene	91	77	60-130	35*	30				
Acenaphthylene	83	71*	75-132	34*	30				
Anthracene	84	68*	69-119	39*	30				
Benzo(a)anthracene	65	43	37-135	59*	30				
Benzo(a)pyrene	46*	23*	64-123	85*	30				
Benzo(b)fluoranthene	52	27*	41-137	79*	30				
Benzo(g,h,i)perylene	36	15*	21-127	94*	30				
Benzo(k)fluoranthene	48	24*	38-130	83*	30				
Chrysene	57*	36*	58-117	63*	30				
Dibenz(a,h)anthracene	34	14*	17-134	96*	30				
Fluoranthene	78	60*	63-129	43*	30				
Fluorene	85	71*	74-127	37*	30				
Indeno(1,2,3-cd)pyrene	37	16*	26-130	96*	30				

*- Outside of specification

** - This limit was used in the evaluation of the final result for the blank

- (1) The result for one or both determinations was less than five times the LOQ.
- (2) The unspiked result was more than four times the spike added.

Quality Control Summary

Client Name: ExxonMobil

Group Number: 1474954

Reported: 05/28/14 at 11:04 AM

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

<u>Analysis Name</u>	<u>MS</u> <u>%REC</u>	<u>MSD</u> <u>%REC</u>	<u>MS/MSD</u> <u>Limits</u>	<u>RPD</u> <u>RPD</u>	<u>RPD</u> <u>MAX</u>	<u>BKG</u> <u>Conc</u>	<u>DUP</u> <u>Conc</u>	<u>DUP</u> <u>RPD</u>	<u>Dup</u> <u>RPD</u> <u>Max</u>
1-Methylnaphthalene	85	75*	82-133	31*	30				
2-Methylnaphthalene	84	73	73-138	31*	30				
Naphthalene	86	76	58-131	30	30				
Phenanthrene	81	68*	72-126	36*	30				
Pyrene	69	56	36-142	39*	30				

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: PAHs in waters by SIM

Batch number: 14140WAC026

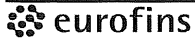
	Fluoranthene-d10	Benzo(a)pyrene-d12	1-Methylnaphthalene-d10
7466597	66	22*	76
7466598	98	70	94
7466599	101	68	100
7466600	78	29*	86
7466601	93	64	90
7466602	87	54*	88
7466603	68	25*	78
7466604	62	22*	71
Blank	108	124	104
LCS	117	128	112
MS	87	54*	88
MSD	68	25*	78
Limits:	59-128	62-141	70-134

*- Outside of specification

** - This limit was used in the evaluation of the final result for the blank

- (1) The result for one or both determinations was less than five times the LOQ.
- (2) The unspiked result was more than four times the spike added.

ExxonMobil Analysis Request/Chain of Custody



Lancaster Laboratories Environmental

Acct. # 14739

For Eurofins Lancaster Laboratories Environmental use only

Group # 1474954 Sample # 7466597-604

Instructions on reverse side correspond with circled numbers.

1 of 1

1 Client Information Facility #/SID: <u>Mayflower Pipeline Incident</u> Site Address: <u>Mayflower AR</u> ExxonMobil PM: <u>Mike Sixsmith</u> Cost Center/AFE: _____ Consultant/Office: <u>Arcadis</u> Consultant PM: <u>Steve Bernick</u> Consultant Phone #: <u>919 302 6799</u> Sampler: <u>Timothy Daniel Fitzgerald (TDF) / Matt Murby (LMM)</u>				4 Matrix Sediment <input type="checkbox"/> Potable <input type="checkbox"/> Ground <input type="checkbox"/> Surface <input checked="" type="checkbox"/> NPDES <input type="checkbox"/> Air <input type="checkbox"/> Oil <input type="checkbox"/>		5 Analyses Requested Preservation Code: _____ Total # of Containers: <u>PAH 8870 SIM</u>										SCR#: _____ Preservation Codes H = HCl T = Thiosulfate N = HNO ₃ B = NaOH S = H ₂ SO ₄ O = Other																																																																											
2 Sample Identification Collected Date Time Grab Composite				6 Remarks <u>tracking #</u> <u>1Z 75Y 02X Y0</u> <u>4127 4969</u>																																																																																							
<table border="1"> <thead> <tr> <th>Sample ID</th> <th>Date</th> <th>Time</th> <th>Grab</th> <th>Composite</th> <th>Soil</th> <th>Water</th> <th>Oil</th> <th>Total # of Containers</th> </tr> </thead> <tbody> <tr> <td>WS-007 (0.5-1.0)</td> <td>5/15/14</td> <td>1300</td> <td>X</td> <td></td> <td></td> <td>X</td> <td></td> <td>2 X</td> </tr> <tr> <td>WS-009 (surface)</td> <td>5/15/14</td> <td>1335</td> <td>X</td> <td></td> <td></td> <td>X</td> <td></td> <td>2 X</td> </tr> <tr> <td>WS-001 (0.5-1.0)</td> <td>5/15/14</td> <td>1340</td> <td>X</td> <td></td> <td></td> <td>X</td> <td></td> <td>2 X</td> </tr> <tr> <td>WS-021 (surface)</td> <td>5/15/14</td> <td>1346</td> <td>X</td> <td></td> <td></td> <td>X</td> <td></td> <td>2 X</td> </tr> <tr> <td>WS-004 (0.5-1.0)</td> <td>5/15/14</td> <td>1350</td> <td>X</td> <td></td> <td></td> <td>X</td> <td></td> <td>2 X</td> </tr> <tr> <td>DUP-WS-131 -0515H</td> <td>5/15/14</td> <td></td> <td>X</td> <td></td> <td></td> <td>X</td> <td></td> <td>2 X</td> </tr> <tr> <td>WS-007 (0.5-1.0) MS/MSD</td> <td>5/15/14</td> <td>1350</td> <td>X</td> <td></td> <td></td> <td>X</td> <td></td> <td>4 X</td> </tr> </tbody> </table>				Sample ID	Date	Time	Grab	Composite	Soil	Water	Oil	Total # of Containers	WS-007 (0.5-1.0)	5/15/14	1300	X			X		2 X	WS-009 (surface)	5/15/14	1335	X			X		2 X	WS-001 (0.5-1.0)	5/15/14	1340	X			X		2 X	WS-021 (surface)	5/15/14	1346	X			X		2 X	WS-004 (0.5-1.0)	5/15/14	1350	X			X		2 X	DUP-WS-131 -0515H	5/15/14		X			X		2 X	WS-007 (0.5-1.0) MS/MSD	5/15/14	1350	X			X		4 X																
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7 Turnaround Time Requested (TAT) (please circle) Standard 5 day 4 day 72 hour 48 hour 24 hour				Relinquished by: <u>[Signature]</u> Date: <u>5/15/14</u> Time: <u>1600</u> Relinquished by: _____ Date: _____ Time: _____ Relinquished by: _____ Date: _____ Time: _____			Received by: <u>UPS</u> Date: _____ Time: _____ (9) Received by: _____ Date: _____ Time: _____ Received by: _____ Date: _____ Time: _____																																																																																				
8 Data Package (circle if required) Type I - Full Type VI (Raw Data) NJ Reduced Other _____				EDD (circle if required) Locus EIM (default) Other _____			Relinquished by Commercial Carrier: UPS <input checked="" type="checkbox"/> FedEx _____ Other _____ Received by: <u>[Signature]</u> Date: <u>5/16/14</u> Time: <u>0925</u> Temperature Upon Receipt: <u>0.4</u> °C			Custody Seals Intact? <u>(Yes)</u> No																																																																																	

Client: EXXON

MAYFLOWER PIPELINE

Delivery and Receipt Information

Delivery Method:	<u>UPS</u>	Arrival Timestamp:	<u>05/16/2014 9:25</u>
Number of Packages:	<u>1</u>	Number of Projects:	<u>1</u>
State/Province of Origin:	<u>AR</u>		

Arrival Condition Summary

Shipping Container Sealed:	<u>Yes</u>	Total Trip Blank Qty:	<u>0</u>
Custody Seal Present:	<u>Yes</u>	Trip Blank Type:	<u>N/A</u>
Custody Seal Intact:	<u>Yes</u>	Air Quality Samples Present:	<u>No</u>
Samples Chilled:	<u>Yes</u>	Air Quality Flow Controllers Present:	<u>N/A</u>
Paperwork Enclosed:	<u>Yes</u>	Flow Controller Quantity:	<u>0</u>
Samples Intact:	<u>Yes</u>	Air Quality Returns:	<u>N/A</u>
Missing Samples:	<u>No</u>		
Extra Samples:	<u>No</u>		
Discrepancy in Container Qty on COC:	<u>No</u>		
Sample IDs on COC match Containers:	<u>Yes</u>		
Sample Date/Times match COC:	<u>Yes</u>		
VOA Vial Headspace \geq 6mm:	<u>N/A</u>		
VOA IDs (\geq 6mm):	<u>N/A</u>		

Unpacked by Corey Eshleman (3647) at 13:00 on 05/16/2014

Samples Chilled Details: MAYFLOWER PIPELINE

Thermometer Types: DT = Digital (Temp. Bottle) IR = Infrared (Surface Temp) All Temperatures in °C.

Cooler #	Thermometer ID	Corrected Temp	Therm. Type	Ice Type	Ice Present?	Ice Container	<u>Samples Collected Same Day as Receipt?</u>	<u>Elevated Temp?</u>
1	DT121	0.4	DT	Wet	Y	Bagged	N	N

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

RL	Reporting Limit	BMQL	Below Minimum Quantitation Level
N.D.	none detected	MPN	Most Probable Number
TNTC	Too Numerous To Count	CP Units	cobalt-chloroplatinate units
IU	International Units	NTU	nephelometric turbidity units
umhos/cm	micromhos/cm	ng	nanogram(s)
C	degrees Celsius	F	degrees Fahrenheit
meq	milliequivalents	lb.	pound(s)
g	gram(s)	kg	kilogram(s)
µg	microgram(s)	mg	milligram(s)
mL	milliliter(s)	L	liter(s)
m³	cubic meter(s)	µL	microliter(s)
		pg/L	picogram/liter

< less than - The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

Data Qualifiers:

C – result confirmed by reanalysis.

J - estimated value – The result is \geq the Method Detection Limit (MDL) and $<$ the Limit of Quantitation (LOQ).

U.S. EPA CLP Data Qualifiers:

Organic Qualifiers

- A** TIC is a possible aldol-condensation product
- B** Analyte was also detected in the blank
- C** Pesticide result confirmed by GC/MS
- D** Compound quantitated on a diluted sample
- E** Concentration exceeds the calibration range of the instrument
- N** Presumptive evidence of a compound (TICs only)
- P** Concentration difference between primary and confirmation columns $>25\%$
- U** Compound was not detected
- X,Y,Z** Defined in case narrative

Inorganic Qualifiers

- B** Value is $<$ CRDL, but \geq IDL
- E** Estimated due to interference
- M** Duplicate injection precision not met
- N** Spike sample not within control limits
- S** Method of standard additions (MSA) used for calculation
- U** Compound was not detected
- W** Post digestion spike out of control limits
- *** Duplicate analysis not within control limits
- +** Correlation coefficient for MSA <0.995

Analytical test results meet all requirements of NELAC unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR part 136 Table II as “analyze immediately” are not performed within 15 minutes.

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