

ANALYTICAL RESULTS

Prepared by:

Eurofins Lancaster Laboratories Environmental
2425 New Holland Pike
Lancaster, PA 17601

Prepared for:

USACE, Baltimore District
ATTN: CENAB-EN-HT
P.O. Box 1715
Baltimore MD 21203-1715

Report Date: November 30, 2016

Project: North Penn

Submittal Date: 11/17/2016

Group Number: 1734470

SDG: NPP01

PO Number: PFC

State of Sample Origin: PA

Client Sample Description

	Lancaster Labs (LL) #
Field Blank Grab Water	8702044
NP-GW-MW1 Grab Groundwater	8702045
NP-GW-MW2 Grab Groundwater	8702046
NP-GW-MW2 MS Grab Groundwater	8702047
NP-GW-MW2 MSD Grab Groundwater	8702048
NP-GW-MW3 Grab Groundwater	8702049
NP-GW-MW4 Grab Groundwater	8702050
NP-GW-MW5 Grab Groundwater	8702051
NP-GW-MW36 Grab Groundwater	8702052

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

Regulatory agencies do not accredit laboratories for all methods, analytes, and matrices. Our current scopes of accreditation can be viewed at <http://www.eurofinsus.com/environment-testing/laboratories/eurofins-lancaster-laboratories-environmental/resources/certifications/>. To request copies of prior scopes of accreditation, contact your project manager.

Electronic Copy To USACE, Baltimore District

Attn: (b) (6)

Respectfully Submitted,

(b) (6)



Project Name: North Penn
LL Group #: 1734470

General Comments:

All analyses have been performed in accordance with DOD QSM Version 5.0 unless otherwise noted below.

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:**EPA 537 Rev. 1.1 modified, Misc. Organics**

Batch #: 16326007 (Sample number(s): 8702044-8702052 UNSPK: 8702046)

The recovery(ies) for the following analyte(s) in the MS and/or MSD was outside the acceptance window: NMeFOSAA

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Sample Description: Field Blank Grab Water
North Penn

LL Sample # WW 8702044
LL Group # 1734470
Account # 07587

Project Name: North Penn

Collected: 11/16/2016 19:00 by [redacted] USACE, Baltimore District
Submitted: 11/17/2016 09:30 ATTN: CENAB-EN-HT
Reported: 11/30/2016 13:36 P.O. Box 1715
Baltimore MD 21203-1715

USAFB SDG#: NPP01-01FB

CAT No.	Analysis Name	CAS Number	Result	Detection Limit*	Limit of Detection	Limit of Quantitation	DF
Misc. Organics			EPA 537 Rev. 1.1 modified	ng/l	ng/l	ng/l	ng/l
10954	Perfluorooctanoic acid	335-67-1	2	U	1	2	1
10954	Perfluorononanoic acid	375-95-1	2	U	1	2	1
10954	Perfluorodecanoic acid	335-76-2	2	U	1	2	1
10954	Perfluoroundecanoic acid	2058-94-8	4	U	2	4	1
10954	Perfluorododecanoic acid	307-55-1	5	U	3	5	1
10954	Perfluorotridecanoic acid	72629-94-8	4	U	2	4	1
10954	Perfluorotetradecanoic acid	376-06-7	5	U	3	5	1
10954	Perfluorohexanoic acid	307-24-4	2	U	1	2	1
10954	Perfluoroheptanoic acid	375-85-9	2	U	1	2	1
10954	Perfluorobutanesulfonate	375-73-5	10	U	4	10	1
10954	Perfluorohexanesulfonate	355-46-4	10	U	4	10	1
10954	Perfluoro-octanesulfonate	1763-23-1	10	U	5	10	1
10954	NETFOSAA	2991-50-6	8	U	5	8	1
NETFOSAA is the acronym for N-ethyl perfluorooctanesulfonamidoacetic Acid.							
10954	NMeFOSAA	2355-31-9	8	U Q4	4	8	1
NMeFOSAA is the acronym for N-methyl perfluorooctanesulfonamidoacetic Acid.							

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

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
10954	PFCs in Water by EPA 537	EPA 537 Rev. 1.1 modified	1	16326007	11/28/2016 22:49	(b) (6)	1
14091	PFAA Water Prep	EPA 537 Rev. 1.1 modified	1	16326007	11/22/2016 14:20	(b) (6)	1

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

Sample Description: NP-GW-MW1 Grab Groundwater
North Penn

LL Sample # WW 8702045
LL Group # 1734470
Account # 07587

Project Name: North Penn

Collected: 11/16/2016 15:55 by [redacted] USACE, Baltimore District
Submitted: 11/17/2016 09:30 ATTN: CENAB-EN-HT
Reported: 11/30/2016 13:36 P.O. Box 1715
Baltimore MD 21203-1715

USA01 SDG#: NPP01-02

CAT No.	Analysis Name	CAS Number	Result	Detection Limit*	Limit of Detection	Limit of Quantitation	DF
Misc. Organics		EPA 537 Rev. 1.1 modified	ng/l	ng/l	ng/l	ng/l	
10954	Perfluorooctanoic acid	335-67-1	11	1	2	2	1
10954	Perfluorononanoic acid	375-95-1	3	1	2	2	1
10954	Perfluorodecanoic acid	335-76-2	2	U 1	2	2	1
10954	Perfluoroundecanoic acid	2058-94-8	4	U 2	4	4	1
10954	Perfluorododecanoic acid	307-55-1	5	U 3	5	5	1
10954	Perfluorotridecanoic acid	72629-94-8	4	U 2	4	4	1
10954	Perfluorotetradecanoic acid	376-06-7	5	U 3	5	5	1
10954	Perfluorohexanoic acid	307-24-4	16	1	2	2	1
10954	Perfluoroheptanoic acid	375-85-9	8	1	2	2	1
10954	Perfluorobutanesulfonate	375-73-5	14	4	10	10	1
10954	Perfluorohexanesulfonate	355-46-4	95	4	10	10	1
10954	Perfluoro-octanesulfonate	1763-23-1	68	5	10	10	1
10954	NETFOSAA	2991-50-6	8	U 5	8	8	1
NETFOSAA is the acronym for N-ethyl perfluorooctanesulfonamidoacetic Acid.							
10954	NMeFOSAA	2355-31-9	8	U Q4 4	8	8	1
NMeFOSAA is the acronym for N-methyl perfluorooctanesulfonamidoacetic Acid.							

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.
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
10954	PFCs in Water by EPA 537	EPA 537 Rev. 1.1 modified	1	16326007	11/28/2016 23:05	(b) (6)	1
14091	PFAA Water Prep	EPA 537 Rev. 1.1 modified	1	16326007	11/22/2016 14:20	(b) (6)	1

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

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Sample Description: NP-GW-MW2 Grab Groundwater
North Penn

LL Sample # WW 8702046
LL Group # 1734470
Account # 07587

Project Name: North Penn

Collected: 11/16/2016 15:55 by [REDACTED] USACE, Baltimore District
Submitted: 11/17/2016 09:30 ATTN: CENAB-EN-HT
Reported: 11/30/2016 13:36 P.O. Box 1715
Baltimore MD 21203-1715

USA02 SDG#: NPP01-03BKG

CAT No.	Analysis Name	CAS Number	Result	Detection Limit*	Limit of Detection	Limit of Quantitation	DF
Misc. Organics		EPA 537 Rev. 1.1 modified	ng/l	ng/l	ng/l	ng/l	
10954	Perfluorooctanoic acid	335-67-1	6	1	2	2	1
10954	Perfluorononanoic acid	375-95-1	1	J 1	2	2	1
10954	Perfluorodecanoic acid	335-76-2	2	U 1	2	2	1
10954	Perfluoroundecanoic acid	2058-94-8	4	U 2	4	4	1
10954	Perfluorododecanoic acid	307-55-1	5	U 3	5	5	1
10954	Perfluorotridecanoic acid	72629-94-8	4	U 2	4	4	1
10954	Perfluorotetradecanoic acid	376-06-7	5	U 3	5	5	1
10954	Perfluorohexanoic acid	307-24-4	8	1	2	2	1
10954	Perfluoroheptanoic acid	375-85-9	2	1	2	2	1
10954	Perfluorobutanesulfonate	375-73-5	6	J 4	10	10	1
10954	Perfluorohexanesulfonate	355-46-4	140	4	10	10	1
10954	Perfluoro-octanesulfonate	1763-23-1	64	5	10	10	1
10954	NETFOSAA	2991-50-6	8	U 5	8	8	1
NETFOSAA is the acronym for N-ethyl perfluorooctanesulfonamidoacetic Acid.							
10954	NMeFOSAA	2355-31-9	8	U Q4 4	8	8	1
NMeFOSAA is the acronym for N-methyl perfluorooctanesulfonamidoacetic Acid.							

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

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
10954	PFCs in Water by EPA 537	EPA 537 Rev. 1.1 modified	1	16326007	11/28/2016 20:38	(b) (6)	1
14091	PFAA Water Prep	EPA 537 Rev. 1.1 modified	1	16326007	11/22/2016 14:20	(b) (6)	1

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

Sample Description: NP-GW-MW2 MS Grab Groundwater
North Penn

LL Sample # WW 8702047
LL Group # 1734470
Account # 07587

Project Name: North Penn

Collected: 11/16/2016 15:55 by [REDACTED] USACE, Baltimore District
Submitted: 11/17/2016 09:30 ATTN: CENAB-EN-HT
Reported: 11/30/2016 13:36 P.O. Box 1715
Baltimore MD 21203-1715

USA02 SDG#: NPP01-03MS

CAT No.	Analysis Name	CAS Number	Result	Detection Limit*	Limit of Detection	Limit of Quantitation	DF
Misc. Organics			EPA 537 Rev. 1.1 modified	ng/l	ng/l	ng/l	ng/l
10954	Perfluorooctanoic acid	335-67-1	180	1	2	2	1
10954	Perfluorononanoic acid	375-95-1	170	1	2	2	1
10954	Perfluorodecanoic acid	335-76-2	180	1	2	2	1
10954	Perfluoroundecanoic acid	2058-94-8	190	2	4	4	1
10954	Perfluorododecanoic acid	307-55-1	180	3	5	5	1
10954	Perfluorotridecanoic acid	72629-94-8	190	2	4	4	1
10954	Perfluorotetradecanoic acid	376-06-7	160	3	5	5	1
10954	Perfluorohexanoic acid	307-24-4	200	1	2	2	1
10954	Perfluoroheptanoic acid	375-85-9	180	1	2	2	1
10954	Perfluorobutanesulfonate	375-73-5	180	4	10	10	1
10954	Perfluorohexanesulfonate	355-46-4	310	4	10	10	1
10954	Perfluoro-octanesulfonate	1763-23-1	230	5	10	10	1
10954	NETFOSAA	2991-50-6	190	5	8	8	1
NETFOSAA is the acronym for N-ethyl perfluorooctanesulfonamidoacetic Acid.							
10954	NMeFOSAA	2355-31-9	260 Q4	4	8	8	1
NMeFOSAA is the acronym for N-methyl perfluorooctanesulfonamidoacetic Acid.							

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

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
10954	PFCs in Water by EPA 537	EPA 537 Rev. 1.1 modified	1	16326007	11/28/2016 20:54	(b) (6)	1
14091	PFAA Water Prep	EPA 537 Rev. 1.1 modified	1	16326007	11/22/2016 14:20	(b) (6)	1

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

Sample Description: NP-GW-MW2 MSD Grab Groundwater
North Penn

LL Sample # WW 8702048
LL Group # 1734470
Account # 07587

Project Name: North Penn

Collected: 11/16/2016 15:55 by [redacted] USACE, Baltimore District
Submitted: 11/17/2016 09:30 ATTN: CENAB-EN-HT
Reported: 11/30/2016 13:36 P.O. Box 1715
Baltimore MD 21203-1715

USA02 SDG#: NPP01-03MSD

CAT No.	Analysis Name	CAS Number	Result	Detection Limit*	Limit of Detection	Limit of Quantitation	DF
Misc. Organics			EPA 537 Rev. 1.1 modified	ng/l	ng/l	ng/l	
10954	Perfluorooctanoic acid	335-67-1	180	1	2	2	1
10954	Perfluorononanoic acid	375-95-1	170	1	2	2	1
10954	Perfluorodecanoic acid	335-76-2	170	1	2	2	1
10954	Perfluoroundecanoic acid	2058-94-8	200	2	4	4	1
10954	Perfluorododecanoic acid	307-55-1	190	3	5	5	1
10954	Perfluorotridecanoic acid	72629-94-8	190	2	4	4	1
10954	Perfluorotetradecanoic acid	376-06-7	170	3	5	5	1
10954	Perfluorohexanoic acid	307-24-4	220	1	2	2	1
10954	Perfluoroheptanoic acid	375-85-9	180	1	2	2	1
10954	Perfluorobutanesulfonate	375-73-5	190	4	10	10	1
10954	Perfluorohexanesulfonate	355-46-4	330	4	10	10	1
10954	Perfluoro-octanesulfonate	1763-23-1	240	5	10	10	1
10954	NETFOSAA	2991-50-6	200	5	8	8	1
NETFOSAA is the acronym for N-ethyl perfluorooctanesulfonamidoacetic Acid.							
10954	NMeFOSAA	2355-31-9	290 Q4	4	8	8	1
NMeFOSAA is the acronym for N-methyl perfluorooctanesulfonamidoacetic Acid.							

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.
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
10954	PFCs in Water by EPA 537	EPA 537 Rev. 1.1 modified	1	16326007	11/28/2016 21:10	(b) (6)	1
14091	PFAA Water Prep	EPA 537 Rev. 1.1 modified	1	16326007	11/22/2016 14:20	(b) (6)	1

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

Sample Description: NP-GW-MW3 Grab Groundwater
North Penn

LL Sample # WW 8702049
LL Group # 1734470
Account # 07587

Project Name: North Penn

Collected: 11/16/2016 17:55 by [redacted] USACE, Baltimore District
Submitted: 11/17/2016 09:30 ATTN: CENAB-EN-HT
Reported: 11/30/2016 13:36 P.O. Box 1715
Baltimore MD 21203-1715

USA03 SDG#: NPP01-04

CAT No.	Analysis Name	CAS Number	Result	Detection Limit*	Limit of Detection	Limit of Quantitation	DF
Misc. Organics EPA 537 Rev. 1.1 modified							
10954	Perfluorooctanoic acid	335-67-1	11	ng/l	ng/l	ng/l	1
10954	Perfluorononanoic acid	375-95-1	2	ng/l	ng/l	ng/l	1
10954	Perfluorodecanoic acid	335-76-2	4	ng/l	ng/l	ng/l	1
10954	Perfluoroundecanoic acid	2058-94-8	4	U	4	4	1
10954	Perfluorododecanoic acid	307-55-1	5	U	5	5	1
10954	Perfluorotridecanoic acid	72629-94-8	4	U	4	4	1
10954	Perfluorotetradecanoic acid	376-06-7	5	U	5	5	1
10954	Perfluorohexanoic acid	307-24-4	11	ng/l	ng/l	ng/l	1
10954	Perfluoroheptanoic acid	375-85-9	4	ng/l	ng/l	ng/l	1
10954	Perfluorobutanesulfonate	375-73-5	10	U	10	10	1
10954	Perfluorohexanesulfonate	355-46-4	8	J	10	10	1
10954	Perfluoro-octanesulfonate	1763-23-1	10	J	10	10	1
10954	NETFOSAA	2991-50-6	8	U	8	8	1
NETFOSAA is the acronym for N-ethyl perfluorooctanesulfonamidoacetic Acid.							
10954	NMeFOSAA	2355-31-9	8	U Q4	8	8	1
NMeFOSAA is the acronym for N-methyl perfluorooctanesulfonamidoacetic Acid.							

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

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
10954	PFCs in Water by EPA 537	EPA 537 Rev. 1.1 modified	1	16326007	11/28/2016 23:22	(b) (6)	1
14091	PFAA Water Prep	EPA 537 Rev. 1.1 modified	1	16326007	11/22/2016 14:20	(b) (6)	1

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

Sample Description: NP-GW-MW4 Grab Groundwater
North Penn

LL Sample # WW 8702050
LL Group # 1734470
Account # 07587

Project Name: North Penn

Collected: 11/16/2016 18:48 by [redacted] USACE, Baltimore District
Submitted: 11/17/2016 09:30 ATTN: CENAB-EN-HT
Reported: 11/30/2016 13:36 P.O. Box 1715
Baltimore MD 21203-1715

USA04 SDG#: NPP01-05

CAT No.	Analysis Name	CAS Number	Result	Detection Limit*	Limit of Detection	Limit of Quantitation	DF
Misc. Organics EPA 537 Rev. 1.1 modified							
10954	Perfluorooctanoic acid	335-67-1	26	1	2	2	1
10954	Perfluorononanoic acid	375-95-1	6	1	2	2	1
10954	Perfluorodecanoic acid	335-76-2	3	1	2	2	1
10954	Perfluoroundecanoic acid	2058-94-8	4 U	2	4	4	1
10954	Perfluorododecanoic acid	307-55-1	5 U	3	5	5	1
10954	Perfluorotridecanoic acid	72629-94-8	4 U	2	4	4	1
10954	Perfluorotetradecanoic acid	376-06-7	5 U	3	5	5	1
10954	Perfluorohexanoic acid	307-24-4	51	1	2	2	1
10954	Perfluoroheptanoic acid	375-85-9	20	1	2	2	1
10954	Perfluorobutanesulfonate	375-73-5	27	4	10	10	1
10954	Perfluorohexanesulfonate	355-46-4	440	4	10	10	1
10954	Perfluoro-octanesulfonate	1763-23-1	250	5	10	10	1
10954	NETFOSAA	2991-50-6	8 U	5	8	8	1
NETFOSAA is the acronym for N-ethyl perfluorooctanesulfonamidoacetic Acid.							
10954	NMeFOSAA	2355-31-9	8 U Q4	4	8	8	1
NMeFOSAA is the acronym for N-methyl perfluorooctanesulfonamidoacetic Acid.							

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

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
10954	PFCs in Water by EPA 537	EPA 537 Rev. 1.1 modified	1	16326007	11/28/2016 23:38	(b) (6)	1
14091	PFAA Water Prep	EPA 537 Rev. 1.1 modified	1	16326007	11/22/2016 14:20	(b) (6)	1

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

Sample Description: NP-GW-MW5 Grab Groundwater
North Penn

LL Sample # WW 8702051
LL Group # 1734470
Account # 07587

Project Name: North Penn

Collected: 11/16/2016 13:20 by [redacted] USACE, Baltimore District
Submitted: 11/17/2016 09:30 ATTN: CENAB-EN-HT
Reported: 11/30/2016 13:36 P.O. Box 1715
Baltimore MD 21203-1715

USA05 SDG#: NPP01-06

CAT No.	Analysis Name	CAS Number	Result	Detection Limit*	Limit of Detection	Limit of Quantitation	DF
Misc. Organics EPA 537 Rev. 1.1 modified							
10954	Perfluorooctanoic acid	335-67-1	15	ng/l	ng/l	ng/l	1
10954	Perfluorononanoic acid	375-95-1	3	ng/l	ng/l	ng/l	1
10954	Perfluorodecanoic acid	335-76-2	2	U	2	2	1
10954	Perfluoroundecanoic acid	2058-94-8	4	U	4	4	1
10954	Perfluorododecanoic acid	307-55-1	5	U	5	5	1
10954	Perfluorotridecanoic acid	72629-94-8	4	U	4	4	1
10954	Perfluorotetradecanoic acid	376-06-7	5	U	5	5	1
10954	Perfluorohexanoic acid	307-24-4	44	1	2	2	1
10954	Perfluoroheptanoic acid	375-85-9	17	1	2	2	1
10954	Perfluorobutanesulfonate	375-73-5	14	4	10	10	1
10954	Perfluorohexanesulfonate	355-46-4	370	4	10	10	1
10954	Perfluoro-octanesulfonate	1763-23-1	180	5	10	10	1
10954	NETFOSAA	2991-50-6	8	U	8	8	1
NETFOSAA is the acronym for N-ethyl perfluorooctanesulfonamidoacetic Acid.							
10954	NMeFOSAA	2355-31-9	8	U Q4	8	8	1
NMeFOSAA is the acronym for N-methyl perfluorooctanesulfonamidoacetic Acid.							

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.
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
10954	PFCs in Water by EPA 537	EPA 537 Rev. 1.1 modified	1	16326007	11/28/2016 23:54	(b) (6)	1
14091	PFAA Water Prep	EPA 537 Rev. 1.1 modified	1	16326007	11/22/2016 14:20	(b) (6)	1

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

Sample Description: NP-GW-MW36 Grab Groundwater
North Penn

LL Sample # WW 8702052
LL Group # 1734470
Account # 07587

Project Name: North Penn

Collected: 11/16/2016 16:20 by [redacted] USACE, Baltimore District
Submitted: 11/17/2016 09:30 ATTN: CENAB-EN-HT
Reported: 11/30/2016 13:36 P.O. Box 1715
Baltimore MD 21203-1715

USA36 SDG#: NPP01-07

CAT No.	Analysis Name	CAS Number	Result	Detection Limit*	Limit of Detection	Limit of Quantitation	DF
Misc. Organics EPA 537 Rev. 1.1 modified							
10954	Perfluorooctanoic acid	335-67-1	11	ng/l	ng/l	ng/l	1
10954	Perfluorononanoic acid	375-95-1	2	ng/l	ng/l	ng/l	1
10954	Perfluorodecanoic acid	335-76-2	2	U	1	2	1
10954	Perfluoroundecanoic acid	2058-94-8	4	U	2	4	1
10954	Perfluorododecanoic acid	307-55-1	5	U	3	5	1
10954	Perfluorotridecanoic acid	72629-94-8	4	U	2	4	1
10954	Perfluorotetradecanoic acid	376-06-7	5	U	3	5	1
10954	Perfluorohexanoic acid	307-24-4	17	1	2	2	1
10954	Perfluoroheptanoic acid	375-85-9	8	1	2	2	1
10954	Perfluorobutanesulfonate	375-73-5	14	4	10	10	1
10954	Perfluorohexanesulfonate	355-46-4	90	4	10	10	1
10954	Perfluoro-octanesulfonate	1763-23-1	66	5	10	10	1
10954	NETFOSAA	2991-50-6	8	U	5	8	1
NETFOSAA is the acronym for N-ethyl perfluorooctanesulfonamidoacetic Acid.							
10954	NMeFOSAA	2355-31-9	8	U Q4	4	8	1
NMeFOSAA is the acronym for N-methyl perfluorooctanesulfonamidoacetic Acid.							

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.
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
10954	PFCs in Water by EPA 537	EPA 537 Rev. 1.1 modified	1	16326007	11/29/2016 00:11	(b) (6)	1
14091	PFAA Water Prep	EPA 537 Rev. 1.1 modified	1	16326007	11/22/2016 14:20	(b) (6)	1

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

Quality Control Summary

Client Name: USACE, Baltimore District
Reported: 11/30/2016 13:36

Group Number: 1734470

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.

Method Blank

Analysis Name	Result	DL**	LOD	LOQ
	ng/l	ng/l	ng/l	ng/l
Batch number: 16326007	Sample number(s): 8702044-8702052			
Perfluorooctanoic acid	2 U	1	2	2
Perfluorononanoic acid	2 U	1	2	2
Perfluorodecanoic acid	2 U	1	2	2
Perfluoroundecanoic acid	4 U	2	4	4
Perfluorododecanoic acid	5 U	3	5	5
Perfluorotridecanoic acid	4 U	2	4	4
Perfluorotetradecanoic acid	5 U	3	5	5
Perfluorohexanoic acid	2 U	1	2	2
Perfluoroheptanoic acid	2 U	1	2	2
Perfluorobutanesulfonate	10 U	4	10	10
Perfluorohexanesulfonate	10 U	4	10	10
Perfluoro-octanesulfonate	10 U	5	10	10
NEtFOSAA	8 U	5	8	8
NMeFOSAA	8 U	4	8	8

LCS/LCSD

Analysis Name	LCS Spike Added	LCS Conc	LCSD Spike Added	LCSD Conc	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
	ng/l	ng/l	ng/l	ng/l					
Batch number: 16326007	Sample number(s): 8702044-8702052								
Perfluorooctanoic acid	200	171.45			86		70-130		
Perfluorononanoic acid	200	157.32			79		70-130		
Perfluorodecanoic acid	200	164.92			82		70-130		
Perfluoroundecanoic acid	200	174.39			87		70-130		
Perfluorododecanoic acid	200	185.68			93		70-130		
Perfluorotridecanoic acid	200	188.61			94		70-130		
Perfluorotetradecanoic acid	200	168.85			84		70-130		
Perfluorohexanoic acid	200	210.23			105		70-130		
Perfluoroheptanoic acid	200	171.63			86		70-130		
Perfluorobutanesulfonate	176.8	150.8			85		70-130		
Perfluorohexanesulfonate	189.2	175.88			93		70-130		
Perfluoro-octanesulfonate	191.2	178.56			93		70-130		
NEtFOSAA	200	189.23			95		70-130		
NMeFOSAA	200	252.82			126		70-130		

*- 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.

(3) The surrogate spike amount was less than the LOD.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: USACE, Baltimore District
Reported: 11/30/2016 13:36

Group Number: 1734470

MS/MSD

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

Analysis Name	Unspiked Conc ng/l	MS Spike Added ng/l	MS Conc ng/l	MSD Spike Added ng/l	MSD Conc ng/l	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
Batch number: 16326007	Sample number(s): 8702044-8702052 UNSPK: 8702046									
Perfluorooctanoic acid	6.18	200.46	176.5	200.66	181.06	85	87	70-130	3	30
Perfluorononanoic acid	1.09	200.46	170.62	200.66	168.45	85	83	70-130	1	30
Perfluorodecanoic acid	2 U	200.46	178.13	200.66	173.13	89	86	70-130	3	30
Perfluoroundecanoic acid	4 U	200.46	192.81	200.66	201.55	96	100	70-130	4	30
Perfluorododecanoic acid	5 U	200.46	178.08	200.66	192.5	89	96	70-130	8	30
Perfluorotridecanoic acid	4 U	200.46	187.47	200.66	193.55	94	96	70-130	3	30
Perfluorotetradecanoic acid	5 U	200.46	163.13	200.66	170.39	81	85	70-130	4	30
Perfluorohexanoic acid	8.40	200.46	200.84	200.66	216.2	96	104	70-130	7	30
Perfluoroheptanoic acid	2.23	200.46	177.53	200.66	184.76	87	91	70-130	4	30
Perfluorobutanesulfonate	6.09	177.21	175.35	177.39	188.04	96	103	70-130	7	30
Perfluorohexanesulfonate	140.96	189.64	308.39	189.83	327.85	88	98	70-130	6	30
Perfluoro-octanesulfonate	63.68	191.64	232.52	191.83	243.2	88	94	70-130	4	30
NEtFOSAA	8 U	200.46	187.31	200.66	199.03	93	99	70-130	6	30
NMeFOSAA	8 U	200.46	259.01	200.66	288.72	129	144*	70-130	11	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.

(3) The surrogate spike amount was less than the LOD.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Environmental Analysis Request/Chain of Custody



Lancaster Laboratories Environmental

For Eurofins Lancaster Laboratories Environmental use only

Acct. # 7587 Group # 1731470 Sample # 8702044-52

COC # 513878

Client Information				Matrix				Analysis Requested				For Lab Use Only	
Client: <u>USACE</u>		Acct. #:		<input type="checkbox"/> Tissue <input type="checkbox"/> Ground <input type="checkbox"/> Surface <input type="checkbox"/> Potable <input checked="" type="checkbox"/> NPDES <input type="checkbox"/> Other:		Preservation Codes H=HCl T=Thiosulfate N=HNO ₃ B=NaOH S=H ₂ SO ₄ O=Other				FSC:		Remarks	
Project Name/ #: <u>NORTH PENN</u>		PWSID #:								SCR#: <u>196615</u>			
Project Manager: <u>(b) (6)</u>		P.O. #:											
Sampler: <u>(b) (6)</u>		Quote #:											
State where samples were collected: <u>PA</u>		For Compliance: Yes <input type="checkbox"/> No <input type="checkbox"/>		Soil <input type="checkbox"/> Sediment <input type="checkbox"/> Water		Total # of Containers: <u>PFOA/PFO5</u>							
Sample Identification		Collected		Grab	Composite	Soil	Water	Other:	Total # of Containers	Analysis Requested			
		Date	Time										
<u>FIELD BLANK</u>		<u>16 NOV 1900</u>		<u>1</u>					<u>2</u>				
<u>NP-GW-MW1</u>		<u>1555</u>		<u>1</u>			<u>GW</u>		<u>2</u>				
<u>NP-GW-MW2</u>		<u>1555</u>		<u>1</u>			<u>GW</u>		<u>2</u>				
<u>NP-GW-MW3</u>		<u>1755</u>		<u>1</u>			<u>GW</u>		<u>2</u>				
<u>NP-GW-MW4</u>		<u>1844</u>		<u>1</u>			<u>GW</u>		<u>2</u>				
<u>NP-GW-MW5</u>		<u>1325</u>		<u>1</u>			<u>GW</u>		<u>2</u>				
<u>NP-GW-MW2 MS/MSD</u>		<u>1555</u>		<u>1</u>			<u>GW</u>		<u>4</u>				
<u>NP-GW-MW36</u>		<u>1620</u>		<u>1</u>			<u>GW</u>		<u>2</u>				

Turnaround Time (TAT) Requested (please circle) Standard Rush (Rush TAT is subject to laboratory approval and surcharge.)				Relinquished by <u>(b) (6)</u>	Date <u>10/21/16</u>	Time <u>1325</u>	Received by	Date	Time
Date results are needed: _____				Relinquished by <u>(b) (6)</u>	Date <u>11/16/16</u>	Time <u>2145</u>	Received by <u>FedEx</u>	Date <u>11/16/16</u>	Time <u>2115</u>
E-mail address: _____				Relinquished by <u>//</u>	Date	Time	Received by	Date	Time
Data Package Options (circle if required) Type I (EPA Level 3 Equivalent/non-CLP) Type VI (Raw Data Only) Type III (Reduced non-CLP) NJ DKQP TX TRRP-13 NYSDEC Category A or B MA MCP CT RCP				Relinquished by	Date	Time	Received by	Date	Time
				Relinquished by <u>(b) (6)</u>	Date	Time	Received by	Date <u>11-17-16</u>	Time <u>930</u>
EDD Required? Yes No If yes, format: _____				Relinquished by Commercial Carrier: UPS _____ FedEx _____ Other _____					
Site-Specific QC (MS/MSD/Dup)? Yes No (If yes, indicate QC sample and submit triplicate sample volume.)				Temperature upon receipt <u>1-7</u> °C					

Client: USACE

Delivery and Receipt Information

Delivery Method:	<u>Fed Ex</u>	Arrival Timestamp:	<u>11/17/2016 9:30</u>
Number of Packages:	<u>1</u>	Number of Projects:	<u>1</u>
State/Province of Origin:	<u>PA</u>		

Arrival Condition Summary

Shipping Container Sealed:	Yes	Sample IDs on COC match Containers:	Yes
Custody Seal Present:	Yes	Sample Date/Times match COC:	Yes
Custody Seal Intact:	Yes	VOA Vial Headspace \geq 6mm:	N/A
Samples Chilled:	Yes	Total Trip Blank Qty:	0
Paperwork Enclosed:	Yes	Air Quality Samples Present:	No
Samples Intact:	Yes		
Missing Samples:	No		
Extra Samples:	No		
Discrepancy in Container Qty on COC:	No		

Unpacked by (b) (6) at 15:45 on 11/17/2016

Samples Chilled Details

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	Elevated Temp?
1.	DT146	1.7	DT	Wet	Y	Loose/Bag	N

Explanation of Symbols and Abbreviations

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

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

Laboratory Data Qualifiers:

- B - Analyte detected in the blank
- C - Result confirmed by reanalysis
- E - Concentration exceeds the calibration range
- J (or G, I, X) - estimated value \geq the Method Detection Limit (MDL or DL) and $<$ the Limit of Quantitation (LOQ or RL)
- P - Concentration difference between the primary and confirmation column $>40\%$. The lower result is reported.
- U - Analyte was not detected at the value indicated
- V - Concentration difference between the primary and confirmation column $>100\%$. The reporting limit is raised due to this disparity and evident interference...
- W - The dissolved oxygen uptake for the unseeded blank is greater than 0.20 mg/L.

Additional Organic and Inorganic CLP qualifiers may be used with Form 1 reports as defined by the CLP methods. Qualifiers specific to Dioxin/Furans and PCB Congeners are detailed on the individual Analysis Report.

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) 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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Additional Data Qualifiers

Qualifier	Definition
B	Detection in the Blank
Q0	LCS/LCSD Low
Q1	LCS/LCSD High
Q4	MS/MSD Out of Range
Q7	LCS/LCSD RPD
Q8	DUP RPD
Q9	MS/MSD RPD