1299 HARRISBURG PIKE | PO BOX 4425 | LANCASTER, PA 17604
PHONE: 717-397-9968 | FAX: 717-397-9973
www.lcswma.org

January 3, 2018

Charlene Sauls PG; Licensed Professional Geologist
Pennsylvania Department of Environmental Protection
Bureau of Waste Management
909 Elmerton Avenue
Harrisburg, PA 17110-8200

RE: Frey Farm Landfill (BWM Permit #101389)
Groundwater Monitoring; Forms 19 Submittal

Dear Ms. Sauls:

In accordance with the Municipal Waste Management Regulations, the Lancaster County Solid Waste Management Authority (LCSWMA) continues the above-referenced monitoring program. Attached are the Forms 19, lab reports, and excel csv file for your LandLinks Access database. I have attached per your request:

1. USEPA MCL's exceedance report; Samples 2, 2S, 3, 16, 25, 27 & 28 exceeded the primary standard for nitrate, samples are consistent with historic data the cause is attributed to agricultural impacts (as well 2 our up gradient well shows our highest concentrations). No other MCL's were exceeded.

2. USEPA SMCL's exceedance report; Samples 2, 2S, 2D, 3, 4, 16, 17, 18, 26, 30, 31, 32, 33) exceeded the secondary standard for manganese, Samples 31, 32 & 33 exceeded the secondary standard for iron, Samples 2S, 4, 13, 17, 26, & 30 exceeded the secondary standard for total dissolved solids, and Samples 2S, 4, 17 & 30 exceeded the secondary standard for chlorides all samples are consistent with historic levels and exceedances are attributed to soil parent material, geologic conditions and historic land use. No other SMCL's were exceeded.

3. A copy of the field sampling data sheets for all locations.

4. FFMP033W Form 8

Other than mentioned above ground water monitoring concentrations where consistent with historic data no significant deviations were observed.

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Please do not hesitate in contacting me if you have any questions or concerns at MREIDER@LCSWMA.ORG.

Respectfully Submitted,

Mark D. Reider
Director of Environmental Compliance

Enclosures:
cc: Bob Zorbaugh, Dan Brown, Bob Eshbach
Ed Rawski, Randy Weiss (PADEP)

2540-FM-BWM0041 Rev. 6/2005

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

Date Prepared/Revised
12/29/2017
DEP USE ONLY
Date Received

FORM 19

MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

This form must be fully and accurately completed. All required information must be typed or legibly printed in the spaces provided. If additional space is necessary, identify each attached sheet as Form 19, reference the item number and identify the date prepared. The "date prepared/revised" on any attached sheets needs to match the "date prepared/revised" on this page.

General Reference: Section 273.284
Federal Regulations, Subtitle D: 258.54 and Appendix I to Part 258.

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Frey Farm Landfill

Facitlity ID (as issued by DEP): 101389

SECTION B. FACILITY INFORMATION

Monitoring Wells must be designed and constructed in accordance with Department Standards. INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (D° MM' SS.S")

Monitoring Point Number: FFMP015W — X Well ___ Spring ___ Stream ___ Other

___ Upgradient/Upstream X Downgradient/Downstream

Location (County): Lancaster County — Municipality: Manor Township

Sampling Point: Latitude: 39 ° 57 ' 36.43 " — Longitude: 76 ° 27 ' 10.82 "

Depth to Water Level: 62.41 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: 1.90 ft — Elevation of Water Level: 513.99 ft./MSL

Sampling Depth: 135 ft — Volume of Water Column: 127.02 gal

Total Well Depth: 148.9 ft — Sampling Method: X Pumped ___ Bailed ___ Grab

Well Purged: X Yes ___ No — Well Volumes Purged: 1.2

Sample Field Filtered (must be 0.45 micron)?: ___ Yes X No

Spring Flow Rate: ___ gpm

Sample Date (mm/dd/yy): 11/20/2017 — Sample Collection Time: 10:16

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS Environmental

Laboratory(ies) Performing Analysis: ALS Environmental

Were any holding times exceeded?: ___ Yes X No If yes, please explain in comments field.

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 2277805001 — Final Lab Analysis CompletionDate: 12/5/2017

Name/Affiliation of Person who Filled Out Form: Mark D. Reider

Comments:

I.D. No	101389
Monitoring Point No.	FFMP015W
Sample Date	11/20/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

1-Q. Inorganics (Enter all data in mg/l except as noted)

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	D6919-09
BICARBONATE ALKALINITY	22	SM20-2320B
CALCIUM, TOTAL	10.5	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	7 ND	EPA 410.4
CHLORIDE	8.4	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	67 ND	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	7	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	7.1	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	7	EPA 300
pH-FIELD (SU)	5.24	FIELD
pH-LAB (SU)	6.9	SM20-4500HB
POTASSIUM, TOTAL	1.2	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	9.4	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	197	FIELD
SPEC. COND., LAB (umhos/cm)	159	SW846 9050A
SULFATE	26.6	EPA 300
ALKALINITY	22	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	107	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	0.68	SW846 9060A
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.34	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.
T Please indicate detection limit if analyte is not detected.
** Total and dissolved analysis required only in conjunction with additional annual metals sampling (see page 4). Remaining quarterly samples only require total metals analysis.

I.D. No	101389
Monitoring Point No.	FFMP015W
Sample Date	11/20/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

2-Q. Organics (Enter all data in ug/l)

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHENE	1 ND	SW846 8260B
1,2-DICHLOROETHANE	1 ND	SW846 8260B
CIS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
TRANS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
ETHYLBENZENE	1 ND	SW846 8260B
METHYLENE CHLORIDE	1 ND	SW846 8260B
TETRACHLOROETHENE	1 ND	SW846 8260B
TOLUENE	1 ND	SW846 8260B
1,1,1-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROETHENE	1 ND	SW846 8260B
VINYL CHLORIDE	1 ND	SW846 8260B
XYLENES (TOTAL)	3 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

2540-FM-BWM0041 Rev. 6/2005

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

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General Reference: Section 273.284
Federal Regulations, Subtitle D: 258.54 and Appendix I to Part 258.

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Frey Farm Landfill

Facitlity ID (as issued by DEP): 101389

SECTION B. FACILITY INFORMATION

Monitoring Wells must be designed and constructed in accordance with Department Standards. INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (D° MM' SS.S")

Monitoring Point Number: FFMP30RW — X Well ___ Spring ___ Stream ___ Other

___ Upgradient/Upstream X Downgradient/Downstream

Location (County): Lancaster County — Municipality: Manor Township

Sampling Point: Latitude: 39 ° 57 ' 15.52 " — Longitude: 76 ° 27 ' 26.8 "

Depth to Water Level: 37.53 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: 2.20 ft — Elevation of Water Level: 524.77 ft./MSL

Sampling Depth: 85 ft — Volume of Water Column: 77.06 gal

Total Well Depth: 90 ft — Sampling Method: X Pumped ___ Bailed ___ Grab

Well Purged: X Yes ___ No — Well Volumes Purged: 1.6

Sample Field Filtered (must be 0.45 micron)?: ___ Yes X No

Spring Flow Rate: ___ gpm

Sample Date (mm/dd/yy): 11/20/2017 — Sample Collection Time: 12:48

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS Environmental

Laboratory(ies) Performing Analysis: ALS Environmental

Were any holding times exceeded?: ___ Yes X No If yes, please explain in comments field.

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 2277805002 — Final Lab Analysis CompletionDate: 12/5/2017

Name/Affiliation of Person who Filled Out Form: Mark D. Reider

Comments:

I.D. No	101389
Monitoring Point No.	FFMP30RW
Sample Date	11/20/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

1-Q. Inorganics (Enter all data in mg/l except as noted)

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	D6919-09
BICARBONATE ALKALINITY	43	SM20-2320B
CALCIUM, TOTAL	54.7	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	7 ND	EPA 410.4
CHLORIDE	323	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	130	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	18.8	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	3700	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	5.2	EPA 300
pH-FIELD (SU)	5.4	FIELD
pH-LAB (SU)	6.88	SM20-4500HB
POTASSIUM, TOTAL	7.9	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	133	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	1251	FIELD
SPEC. COND., LAB (umhos/cm)	1240	SW846 9050A
SULFATE	41.4	EPA 300
ALKALINITY	43	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	677	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	0.88	SW846 9060A
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	2.67	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.
T Please indicate detection limit if analyte is not detected.
** Total and dissolved analysis required only in conjunction with additional annual metals sampling (see page 4). Remaining quarterly samples only require total metals analysis.

I.D. No	101389
Monitoring Point No.	FFMP30RW
Sample Date	11/20/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

2-Q. Organics (Enter all data in ug/l)

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHENE	1 ND	SW846 8260B
1,2-DICHLOROETHANE	1 ND	SW846 8260B
CIS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
TRANS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
ETHYLBENZENE	1 ND	SW846 8260B
METHYLENE CHLORIDE	1 ND	SW846 8260B
TETRACHLOROETHENE	1 ND	SW846 8260B
TOLUENE	1 ND	SW846 8260B
1,1,1-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROETHENE	1 ND	SW846 8260B
VINYL CHLORIDE	1 ND	SW846 8260B
XYLENES (TOTAL)	3 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

2540-FM-BWM0041 Rev. 6/2005

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

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FORM 19

MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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General Reference: Section 273.284
Federal Regulations, Subtitle D: 258.54 and Appendix I to Part 258.

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Frey Farm Landfill

Facitlity ID (as issued by DEP): 101389

SECTION B. FACILITY INFORMATION

Monitoring Wells must be designed and constructed in accordance with Department Standards. INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (D° MM' SS.S")

Monitoring Point Number: FFMP04AW — X Well ___ Spring ___ Stream ___ Other

___ Upgradient/Upstream X Downgradient/Downstream

Location (County): Lancaster County — Municipality: Manor Township

Sampling Point: Latitude: 39 ° 57 ' 15.4 " — Longitude: 76 ° 27 ' 26.58 "

Depth to Water Level: 38.91 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: 2.52 ft — Elevation of Water Level: 521.81 ft./MSL

Sampling Depth: 146 ft — Volume of Water Column: 385.68 gal

Total Well Depth: 301.52 ft — Sampling Method: X Pumped ___ Bailed ___ Grab

Well Purged: X Yes ___ No — Well Volumes Purged: 0.7

Sample Field Filtered (must be 0.45 micron)?: ___ Yes X No

Spring Flow Rate: ___ gpm

Sample Date (mm/dd/yy): 11/20/2017 — Sample Collection Time: 13:56

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS Environmental

Laboratory(ies) Performing Analysis: ALS Environmental

Were any holding times exceeded?: ___ Yes X No If yes, please explain in comments field.

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 2277805003 — Final Lab Analysis CompletionDate: 12/5/2017

Name/Affiliation of Person who Filled Out Form: Mark D. Reider

Comments:

I.D. No	101389
Monitoring Point No.	FFMP04AW
Sample Date	11/20/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

1-Q. Inorganics (Enter all data in mg/l except as noted)

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	D6919-09
BICARBONATE ALKALINITY	213	SM20-2320B
CALCIUM, TOTAL	144	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	7 ND	EPA 410.4
CHLORIDE	298	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	67 ND	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	24.5	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	110	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	0.2 ND	EPA 300
pH-FIELD (SU)	6.67	FIELD
pH-LAB (SU)	8.02	SM20-4500HB
POTASSIUM, TOTAL	2.1	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	79.8	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	1504	FIELD
SPEC. COND., LAB (umhos/cm)	1390	SW846 9050A
SULFATE	46.3	EPA 300
ALKALINITY	213	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	862	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	0.72	SW846 9060A
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.49	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.
T Please indicate detection limit if analyte is not detected.
** Total and dissolved analysis required only in conjunction with additional annual metals sampling (see page 4). Remaining quarterly samples only require total metals analysis.

I.D. No	101389
Monitoring Point No.	FFMP04AW
Sample Date	11/20/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

2-Q. Organics (Enter all data in ug/l)

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHENE	1 ND	SW846 8260B
1,2-DICHLOROETHANE	1 ND	SW846 8260B
CIS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
TRANS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
ETHYLBENZENE	1 ND	SW846 8260B
METHYLENE CHLORIDE	1 ND	SW846 8260B
TETRACHLOROETHENE	1 ND	SW846 8260B
TOLUENE	1 ND	SW846 8260B
1,1,1-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROETHENE	1 ND	SW846 8260B
VINYL CHLORIDE	1 ND	SW846 8260B
XYLENES (TOTAL)	3 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

2540-FM-BWM0041 Rev. 6/2005

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

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QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Frey Farm Landfill

Facitlity ID (as issued by DEP): 101389

SECTION B. FACILITY INFORMATION

Monitoring Wells must be designed and constructed in accordance with Department Standards. INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (D° MM' SS.S")

Monitoring Point Number: FFMP032W — X Well ___ Spring ___ Stream ___ Other

X Upgradient/Upstream ___ Downgradient/Downstream

Location (County): Lancaster County — Municipality: MANOR TOWNSHIP

Sampling Point: Latitude: 39 ° 57 ' 33.45 " — Longitude: 76 ° 27 ' 17.71 "

Depth to Water Level: 50.35 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: 2.06 ft — Elevation of Water Level: 543.74 ft./MSL

Sampling Depth: 62 ft — Volume of Water Column: 36.20 gal

Total Well Depth: 75 ft — Sampling Method: X Pumped ___ Bailed ___ Grab

Well Purged: X Yes ___ No — Well Volumes Purged: 0.6

Sample Field Filtered (must be 0.45 micron)?: ___ Yes X No

Spring Flow Rate: ___ gpm

Sample Date (mm/dd/yy): 11/20/2017 — Sample Collection Time: 15:00

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS Environmental

Laboratory(ies) Performing Analysis: ALS Environmental

Were any holding times exceeded?: ___ Yes X No If yes, please explain in comments field.

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 2277805004 — Final Lab Analysis CompletionDate: 12/5/2017

Name/Affiliation of Person who Filled Out Form: Mark D. Reider

Comments:

I.D. No	101389
Monitoring Point No.	FFMP032W
Sample Date	11/20/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

1-Q. Inorganics (Enter all data in mg/l except as noted)

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	1.84	D6919-09
BICARBONATE ALKALINITY	81	SM20-2320B
CALCIUM, TOTAL	18.5	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	7 ND	EPA 410.4
CHLORIDE	25	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	7400	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	4.8	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	290	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	0.2 ND	EPA 300
pH-FIELD (SU)	7.03	FIELD
pH-LAB (SU)	8.01	SM20-4500HB
POTASSIUM, TOTAL	1.3	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	14.3	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	245	FIELD
SPEC. COND., LAB (umhos/cm)	201	SW846 9050A
SULFATE	2 ND	EPA 300
ALKALINITY	81	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	131	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	0.5 ND	SW846 9060A
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	109	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.
T Please indicate detection limit if analyte is not detected.
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I.D. No	101389
Monitoring Point No.	FFMP032W
Sample Date	11/20/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

2-Q. Organics (Enter all data in ug/l)

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHENE	1 ND	SW846 8260B
1,2-DICHLOROETHANE	1 ND	SW846 8260B
CIS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
TRANS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
ETHYLBENZENE	1 ND	SW846 8260B
METHYLENE CHLORIDE	1 ND	SW846 8260B
TETRACHLOROETHENE	1 ND	SW846 8260B
TOLUENE	1 ND	SW846 8260B
1,1,1-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROETHENE	1 ND	SW846 8260B
VINYL CHLORIDE	1 ND	SW846 8260B
XYLENES (TOTAL)	3 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

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Site Name: Frey Farm Landfill

Facitlity ID (as issued by DEP): 101389

SECTION B. FACILITY INFORMATION

Monitoring Wells must be designed and constructed in accordance with Department Standards. INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (D° MM' SS.S")

Monitoring Point Number: FFMP005W — X Well ___ Spring ___ Stream ___ Other

___ Upgradient/Upstream X Downgradient/Downstream

Location (County): Lancaster County — Municipality: Manor Township

Sampling Point: Latitude: 39 ° 57 ' 10.67 " — Longitude: 76 ° 27 ' 21.3 "

Depth to Water Level: 78.39 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: 1.70 ft — Elevation of Water Level: 459.01 ft./MSL

Sampling Depth: 135 ft — Volume of Water Column: 105.17 gal

Total Well Depth: 150 ft — Sampling Method: X Pumped ___ Bailed ___ Grab

Well Purged: X Yes ___ No — Well Volumes Purged: 1.1

Sample Field Filtered (must be 0.45 micron)?: ___ Yes X No

Spring Flow Rate: ___ gpm

Sample Date (mm/dd/yy): 11/21/2017 — Sample Collection Time: 9:46

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS Environmental

Laboratory(ies) Performing Analysis: ALS Environmental

Were any holding times exceeded?: ___ Yes X No If yes, please explain in comments field.

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 2278116001 — Final Lab Analysis CompletionDate: 12/5/2017

Name/Affiliation of Person who Filled Out Form: Mark D. Reider

Comments:

I.D. No	101389
Monitoring Point No.	FFMP005W
Sample Date	11/21/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

1-Q. Inorganics (Enter all data in mg/l except as noted)

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	D6919-09
BICARBONATE ALKALINITY	40	SM20-2320B
CALCIUM, TOTAL	73.3	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	7 ND	EPA 410.4
CHLORIDE	196	EPA 300
FLUORIDE	0.5 ND	EPA 300
IRON, TOTAL (ug/l)	67 ND	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	16.7	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	35	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	3.9	EPA 300
pH-FIELD (SU)	5.33	FIELD
pH-LAB (SU)	6.8	SM20-4500HB
POTASSIUM, TOTAL	2.3	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	40	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	863	FIELD
SPEC. COND., LAB (umhos/cm)	798	SW846 9050A
SULFATE	55.4	EPA 300
ALKALINITY	40	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	466	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	0.5 ND	SW846 9060A
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.1 ND	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.
T Please indicate detection limit if analyte is not detected.
** Total and dissolved analysis required only in conjunction with additional annual metals sampling (see page 4). Remaining quarterly samples only require total metals analysis.

I.D. No	101389
Monitoring Point No.	FFMP005W
Sample Date	11/21/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

2-Q. Organics (Enter all data in ug/l)

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHENE	1 ND	SW846 8260B
1,2-DICHLOROETHANE	1 ND	SW846 8260B
CIS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
TRANS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
ETHYLBENZENE	1 ND	SW846 8260B
METHYLENE CHLORIDE	1 ND	SW846 8260B
TETRACHLOROETHENE	1 ND	SW846 8260B
TOLUENE	1 ND	SW846 8260B
1,1,1-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROETHENE	1 ND	SW846 8260B
VINYL CHLORIDE	1 ND	SW846 8260B
XYLENES (TOTAL)	3 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

2540-FM-BWM0041 Rev. 6/2005

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

Date Prepared/Revised
12/29/2017
DEP USE ONLY
Date Received

FORM 19

MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

This form must be fully and accurately completed. All required information must be typed or legibly printed in the spaces provided. If additional space is necessary, identify each attached sheet as Form 19, reference the item number and identify the date prepared. The "date prepared/revised" on any attached sheets needs to match the "date prepared/revised" on this page.

General Reference: Section 273.284
Federal Regulations, Subtitle D: 258.54 and Appendix I to Part 258.

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Frey Farm Landfill

Facitlity ID (as issued by DEP): 101389

SECTION B. FACILITY INFORMATION

Monitoring Wells must be designed and constructed in accordance with Department Standards. INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (D° MM' SS.S")

Monitoring Point Number: FFMP26RW — X Well ___ Spring ___ Stream ___ Other

___ Upgradient/Upstream X Downgradient/Downstream

Location (County): Lancaster County — Municipality: Manor Township

Sampling Point: Latitude: 39 ° 57 ' 11.03 " — Longitude: 76 ° 27 ' 20.3 "

Depth to Water Level: 90.24 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: 3.30 ft — Elevation of Water Level: 457.16 ft./MSL

Sampling Depth: 105 ft — Volume of Water Column: 34.90 gal

Total Well Depth: 114 ft — Sampling Method: X Pumped ___ Bailed ___ Grab

Well Purged: X Yes ___ No — Well Volumes Purged: 0.8

Sample Field Filtered (must be 0.45 micron)?: ___ Yes X No

Spring Flow Rate: ___ gpm

Sample Date (mm/dd/yy): 11/21/2017 — Sample Collection Time: 10:44

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS Environmental

Laboratory(ies) Performing Analysis: ALS Environmental

Were any holding times exceeded?: ___ Yes X No If yes, please explain in comments field.

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 2278116002 — Final Lab Analysis CompletionDate: 12/5/2017

Name/Affiliation of Person who Filled Out Form: Mark D. Reider

Comments:

I.D. No	101389
Monitoring Point No.	FFMP26RW
Sample Date	11/21/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

1-Q. Inorganics (Enter all data in mg/l except as noted)

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	D6919-09
BICARBONATE ALKALINITY	39	SM20-2320B
CALCIUM, TOTAL	75.3	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	7 ND	EPA 410.4
CHLORIDE	230	EPA 300
FLUORIDE	0.5 ND	EPA 300
IRON, TOTAL (ug/l)	67 ND	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	20.9	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	470	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	2.8	EPA 300
pH-FIELD (SU)	5.26	FIELD
pH-LAB (SU)	6.02	SM20-4500HB
POTASSIUM, TOTAL	8	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	58.8	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	1037	FIELD
SPEC. COND., LAB (umhos/cm)	934	SW846 9050A
SULFATE	73	EPA 300
ALKALINITY	39	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	521	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	0.9	SW846 9060A
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.12	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.
T Please indicate detection limit if analyte is not detected.
** Total and dissolved analysis required only in conjunction with additional annual metals sampling (see page 4). Remaining quarterly samples only require total metals analysis.

I.D. No	101389
Monitoring Point No.	FFMP26RW
Sample Date	11/21/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

2-Q. Organics (Enter all data in ug/l)

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHENE	1 ND	SW846 8260B
1,2-DICHLOROETHANE	1 ND	SW846 8260B
CIS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
TRANS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
ETHYLBENZENE	1 ND	SW846 8260B
METHYLENE CHLORIDE	1 ND	SW846 8260B
TETRACHLOROETHENE	1 ND	SW846 8260B
TOLUENE	1 ND	SW846 8260B
1,1,1-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROETHENE	1 ND	SW846 8260B
VINYL CHLORIDE	1 ND	SW846 8260B
XYLENES (TOTAL)	3 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

2540-FM-BWM0041 Rev. 6/2005

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

Date Prepared/Revised
12/29/2017
DEP USE ONLY
Date Received

FORM 19

MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

This form must be fully and accurately completed. All required information must be typed or legibly printed in the spaces provided. If additional space is necessary, identify each attached sheet as Form 19, reference the item number and identify the date prepared. The "date prepared/revised" on any attached sheets needs to match the "date prepared/revised" on this page.

General Reference: Section 273.284
Federal Regulations, Subtitle D: 258.54 and Appendix I to Part 258.

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Frey Farm Landfill

Facitlity ID (as issued by DEP): 101389

SECTION B. FACILITY INFORMATION

Monitoring Wells must be designed and constructed in accordance with Department Standards. INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (D° MM' SS.S")

Monitoring Point Number: FFMP03AW — X Well ___ Spring ___ Stream ___ Other

___ Upgradient/Upstream X Downgradient/Downstream

Location (County): Lancaster County — Municipality: Manor Township

Sampling Point: Latitude: 39 ° 57 ' 24.05 " — Longitude: 76 ° 27 ' 30.58 "

Depth to Water Level: 55.17 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: 1.20 ft — Elevation of Water Level: 535.73 ft./MSL

Sampling Depth: 130 ft — Volume of Water Column: 135.16 gal

Total Well Depth: 147.2 ft — Sampling Method: X Pumped ___ Bailed ___ Grab

Well Purged: X Yes ___ No — Well Volumes Purged: 0.8

Sample Field Filtered (must be 0.45 micron)?: ___ Yes X No

Spring Flow Rate: ___ gpm

Sample Date (mm/dd/yy): 11/21/2017 — Sample Collection Time: 12:01

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS Environmental

Laboratory(ies) Performing Analysis: ALS Environmental

Were any holding times exceeded?: ___ Yes X No If yes, please explain in comments field.

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 2278116003 — Final Lab Analysis CompletionDate: 12/5/2017

Name/Affiliation of Person who Filled Out Form: Mark D. Reider

Comments:

I.D. No	101389
Monitoring Point No.	FFMP03AW
Sample Date	11/21/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

1-Q. Inorganics (Enter all data in mg/l except as noted)

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	D6919-09
BICARBONATE ALKALINITY	14	SM20-2320B
CALCIUM, TOTAL	16.9	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	7 ND	EPA 410.4
CHLORIDE	26.5	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	67 ND	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	12	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	220	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	21.8	EPA 300
pH-FIELD (SU)	4.96	FIELD
pH-LAB (SU)	5.88	SM20-4500HB
POTASSIUM, TOTAL	1.3	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	11.8	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	316	FIELD
SPEC. COND., LAB (umhos/cm)	255	SW846 9050A
SULFATE	3.5	EPA 300
ALKALINITY	14	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	148	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	0.5 ND	SW846 9060A
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.1 ND	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.
T Please indicate detection limit if analyte is not detected.
** Total and dissolved analysis required only in conjunction with additional annual metals sampling (see page 4). Remaining quarterly samples only require total metals analysis.

I.D. No	101389
Monitoring Point No.	FFMP03AW
Sample Date	11/21/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

2-Q. Organics (Enter all data in ug/l)

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHENE	1 ND	SW846 8260B
1,2-DICHLOROETHANE	1 ND	SW846 8260B
CIS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
TRANS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
ETHYLBENZENE	1 ND	SW846 8260B
METHYLENE CHLORIDE	1 ND	SW846 8260B
TETRACHLOROETHENE	1 ND	SW846 8260B
TOLUENE	1 ND	SW846 8260B
1,1,1-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROETHENE	1 ND	SW846 8260B
VINYL CHLORIDE	1 ND	SW846 8260B
XYLENES (TOTAL)	3 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

2540-FM-BWM0041 Rev. 6/2005

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

Date Prepared/Revised
12/29/2017
DEP USE ONLY
Date Received

FORM 19

MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

This form must be fully and accurately completed. All required information must be typed or legibly printed in the spaces provided. If additional space is necessary, identify each attached sheet as Form 19, reference the item number and identify the date prepared. The "date prepared/revised" on any attached sheets needs to match the "date prepared/revised" on this page.

General Reference: Section 273.284
Federal Regulations, Subtitle D: 258.54 and Appendix I to Part 258.

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Frey Farm Landfill

Facitlity ID (as issued by DEP): 101389

SECTION B. FACILITY INFORMATION

Monitoring Wells must be designed and constructed in accordance with Department Standards. INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (D° MM' SS.S")

Monitoring Point Number: FFMP027W — X Well ___ Spring ___ Stream ___ Other

___ Upgradient/Upstream X Downgradient/Downstream

Location (County): Lancaster County — Municipality: Manor Township

Sampling Point: Latitude: 39 ° 57 ' 32.62 " — Longitude: 76 ° 27 ' 7.12 "

Depth to Water Level: 22.44 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: 2.50 ft — Elevation of Water Level: 499.66 ft./MSL

Sampling Depth: 45 ft — Volume of Water Column: 41.94 gal

Total Well Depth: 51 ft — Sampling Method: X Pumped ___ Bailed ___ Grab

Well Purged: X Yes ___ No — Well Volumes Purged: 6.3

Sample Field Filtered (must be 0.45 micron)?: ___ Yes X No

Spring Flow Rate: ___ gpm

Sample Date (mm/dd/yy): 11/21/2017 — Sample Collection Time: 13:10

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS Environmental

Laboratory(ies) Performing Analysis: ALS Environmental

Were any holding times exceeded?: ___ Yes X No If yes, please explain in comments field.

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 2278116004 — Final Lab Analysis CompletionDate: 12/5/2017

Name/Affiliation of Person who Filled Out Form: Mark D. Reider

Comments:

I.D. No	101389
Monitoring Point No.	FFMP027W
Sample Date	11/21/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

1-Q. Inorganics (Enter all data in mg/l except as noted)

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	D6919-09
BICARBONATE ALKALINITY	7	SM20-2320B
CALCIUM, TOTAL	16	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	7 ND	EPA 410.4
CHLORIDE	39.1	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	67 ND	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	9.9	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	23	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	11	EPA 300
pH-FIELD (SU)	5.03	FIELD
pH-LAB (SU)	6.08	SM20-4500HB
POTASSIUM, TOTAL	1.4	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	10.9	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	286	FIELD
SPEC. COND., LAB (umhos/cm)	230	SW846 9050A
SULFATE	5.8	EPA 300
ALKALINITY	7	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	165	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	0.5 ND	SW846 9060A
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.1 ND	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.
T Please indicate detection limit if analyte is not detected.
** Total and dissolved analysis required only in conjunction with additional annual metals sampling (see page 4). Remaining quarterly samples only require total metals analysis.

I.D. No	101389
Monitoring Point No.	FFMP027W
Sample Date	11/21/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

2-Q. Organics (Enter all data in ug/l)

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHENE	1 ND	SW846 8260B
1,2-DICHLOROETHANE	1 ND	SW846 8260B
CIS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
TRANS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
ETHYLBENZENE	1 ND	SW846 8260B
METHYLENE CHLORIDE	1 ND	SW846 8260B
TETRACHLOROETHENE	1 ND	SW846 8260B
TOLUENE	1 ND	SW846 8260B
1,1,1-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROETHENE	1 ND	SW846 8260B
VINYL CHLORIDE	1 ND	SW846 8260B
XYLENES (TOTAL)	3 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

2540-FM-BWM0041 Rev. 6/2005

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

Date Prepared/Revised
12/29/2017
DEP USE ONLY
Date Received

FORM 19

MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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General Reference: Section 273.284
Federal Regulations, Subtitle D: 258.54 and Appendix I to Part 258.

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Frey Farm Landfill

Facitlity ID (as issued by DEP): 101389

SECTION B. FACILITY INFORMATION

Monitoring Wells must be designed and constructed in accordance with Department Standards. INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (D° MM' SS.S")

Monitoring Point Number: FFMP02DW — X Well ___ Spring ___ Stream ___ Other

___ Upgradient/Upstream X Downgradient/Downstream

Location (County): Lancaster County — Municipality: MANOR TOWNSHIP

Sampling Point: Latitude: 39 ° 57 ' 27.74 " — Longitude: 76 ° 27 ' 1.49 "

Depth to Water Level: 21.83 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: ___ ft — Elevation of Water Level: 487.77 ft./MSL

Sampling Depth: 120 ft — Volume of Water Column: ___ gal

Total Well Depth: 152 ft — Sampling Method: X Pumped ___ Bailed ___ Grab

Well Purged: X Yes ___ No — Well Volumes Purged: 0.6

Sample Field Filtered (must be 0.45 micron)?: ___ Yes X No

Spring Flow Rate: ___ gpm

Sample Date (mm/dd/yy): 11/22/2017 — Sample Collection Time: 11:06

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS Environmental

Laboratory(ies) Performing Analysis: ALS Environmental

Were any holding times exceeded?: ___ Yes X No If yes, please explain in comments field.

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 2278565001 — Final Lab Analysis CompletionDate: 12/7/2017

Name/Affiliation of Person who Filled Out Form: Mark D. Reider

Comments:

I.D. No	101389
Monitoring Point No.	FFMP02DW
Sample Date	11/22/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

1-Q. Inorganics (Enter all data in mg/l except as noted)

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	D6919-09
BICARBONATE ALKALINITY	133	SM20-2320B
CALCIUM, TOTAL	69.7	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	7 ND	EPA 410.4
CHLORIDE	150	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	130	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	12.5	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	360	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	2.5	EPA 300
pH-FIELD (SU)	6.82	FIELD
pH-LAB (SU)	7.93	SM20-4500HB
POTASSIUM, TOTAL	1.8	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	62.3	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	880	FIELD
SPEC. COND., LAB (umhos/cm)	804	SW846 9050A
SULFATE	30.2	EPA 300
ALKALINITY	133	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	474	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	0.65	SW846 9060A
TOTAL PHENOLICS (ug/l)	9	SW846 9066
TURBIDITY (N.T.U.)	1.99	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.
T Please indicate detection limit if analyte is not detected.
** Total and dissolved analysis required only in conjunction with additional annual metals sampling (see page 4). Remaining quarterly samples only require total metals analysis.

I.D. No	101389
Monitoring Point No.	FFMP02DW
Sample Date	11/22/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

2-Q. Organics (Enter all data in ug/l)

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHENE	1 ND	SW846 8260B
1,2-DICHLOROETHANE	1 ND	SW846 8260B
CIS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
TRANS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
ETHYLBENZENE	1 ND	SW846 8260B
METHYLENE CHLORIDE	1 ND	SW846 8260B
TETRACHLOROETHENE	1 ND	SW846 8260B
TOLUENE	1 ND	SW846 8260B
1,1,1-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROETHENE	1 ND	SW846 8260B
VINYL CHLORIDE	1 ND	SW846 8260B
XYLENES (TOTAL)	3 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

2540-FM-BWM0041 Rev. 6/2005

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

Date Prepared/Revised
12/29/2017
DEP USE ONLY
Date Received

FORM 19

MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

This form must be fully and accurately completed. All required information must be typed or legibly printed in the spaces provided. If additional space is necessary, identify each attached sheet as Form 19, reference the item number and identify the date prepared. The "date prepared/revised" on any attached sheets needs to match the "date prepared/revised" on this page.

General Reference: Section 273.284
Federal Regulations, Subtitle D: 258.54 and Appendix I to Part 258.

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Frey Farm Landfill

Facitlity ID (as issued by DEP): 101389

SECTION B. FACILITY INFORMATION

Monitoring Wells must be designed and constructed in accordance with Department Standards. INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (D° MM' SS.S")

Monitoring Point Number: FFMP02SW — X Well ___ Spring ___ Stream ___ Other

___ Upgradient/Upstream X Downgradient/Downstream

Location (County): Lancaster County — Municipality: MANOR TOWNSHIP

Sampling Point: Latitude: 39 ° 57 ' 27.9 " — Longitude: 76 ° 27 ' 1.58 "

Depth to Water Level: 15.7 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: ___ ft — Elevation of Water Level: 494.2 ft./MSL

Sampling Depth: 0 ft — Volume of Water Column: ___ gal

Total Well Depth: 25 ft — Sampling Method: X Pumped ___ Bailed ___ Grab

Well Purged: X Yes ___ No — Well Volumes Purged: 3.1

Sample Field Filtered (must be 0.45 micron)?: ___ Yes X No

Spring Flow Rate: ___ gpm

Sample Date (mm/dd/yy): 11/22/2017 — Sample Collection Time: 11:47

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS Environmental

Laboratory(ies) Performing Analysis: ALS Environmental

Were any holding times exceeded?: ___ Yes X No If yes, please explain in comments field.

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 2278565002 — Final Lab Analysis CompletionDate: 12/7/2017

Name/Affiliation of Person who Filled Out Form: Mark D. Reider

Comments:

I.D. No	101389
Monitoring Point No.	FFMP02SW
Sample Date	11/22/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

1-Q. Inorganics (Enter all data in mg/l except as noted)

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	D6919-09
BICARBONATE ALKALINITY	12	SM20-2320B
CALCIUM, TOTAL	39.4	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	8	EPA 410.4
CHLORIDE	331	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	250	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	15.9	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	72	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	13	EPA 300
pH-FIELD (SU)	5.32	FIELD
pH-LAB (SU)	6.14	SM20-4500HB
POTASSIUM, TOTAL	5.7	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	148	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	1282	FIELD
SPEC. COND., LAB (umhos/cm)	1200	SW846 9050A
SULFATE	29.8	EPA 300
ALKALINITY	12	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	599	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	0.93	SW846 9060A
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	37.5	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.
T Please indicate detection limit if analyte is not detected.
** Total and dissolved analysis required only in conjunction with additional annual metals sampling (see page 4). Remaining quarterly samples only require total metals analysis.

I.D. No	101389
Monitoring Point No.	FFMP02SW
Sample Date	11/22/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

2-Q. Organics (Enter all data in ug/l)

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHENE	1 ND	SW846 8260B
1,2-DICHLOROETHANE	1 ND	SW846 8260B
CIS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
TRANS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
ETHYLBENZENE	1 ND	SW846 8260B
METHYLENE CHLORIDE	1 ND	SW846 8260B
TETRACHLOROETHENE	1 ND	SW846 8260B
TOLUENE	1 ND	SW846 8260B
1,1,1-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROETHENE	1 ND	SW846 8260B
VINYL CHLORIDE	1 ND	SW846 8260B
XYLENES (TOTAL)	3 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

2540-FM-BWM0041 Rev. 6/2005

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

Date Prepared/Revised
12/29/2017
DEP USE ONLY
Date Received

FORM 19

MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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General Reference: Section 273.284
Federal Regulations, Subtitle D: 258.54 and Appendix I to Part 258.

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Frey Farm Landfill

Facitlity ID (as issued by DEP): 101389

SECTION B. FACILITY INFORMATION

Monitoring Wells must be designed and constructed in accordance with Department Standards. INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (D° MM' SS.S")

Monitoring Point Number: FFMP033W — X Well ___ Spring ___ Stream ___ Other

___ Upgradient/Upstream X Downgradient/Downstream

Location (County): Lancaster County — Municipality: MANOR TOWNSHIP

Sampling Point: Latitude: 39 ° 57 ' 31.09 " — Longitude: 76 ° 27 ' 4.98 "

Depth to Water Level: 17.96 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: 0.49 ft — Elevation of Water Level: 498.56 ft./MSL

Sampling Depth: 79 ft — Volume of Water Column: 114.61 gal

Total Well Depth: 96 ft — Sampling Method: X Pumped ___ Bailed ___ Grab

Well Purged: X Yes ___ No — Well Volumes Purged: 0.6

Sample Field Filtered (must be 0.45 micron)?: ___ Yes X No

Spring Flow Rate: ___ gpm

Sample Date (mm/dd/yy): 11/22/2017 — Sample Collection Time: 13:07

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS Environmental

Laboratory(ies) Performing Analysis: ALS Environmental

Were any holding times exceeded?: ___ Yes X No If yes, please explain in comments field.

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 2278565003 — Final Lab Analysis CompletionDate: 12/7/2017

Name/Affiliation of Person who Filled Out Form: Mark D. Reider

Comments:

I.D. No	101389
Monitoring Point No.	FFMP033W
Sample Date	11/22/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

1-Q. Inorganics (Enter all data in mg/l except as noted)

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.739	D6919-09
BICARBONATE ALKALINITY	42	SM20-2320B
CALCIUM, TOTAL	23.4	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	7 ND	EPA 410.4
CHLORIDE	35.5	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	4500	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	8.1	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	680	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	10	EPA 300
pH-FIELD (SU)	5.64	FIELD
pH-LAB (SU)	6.67	SM20-4500HB
POTASSIUM, TOTAL	1.6	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	12.6	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	328	FIELD
SPEC. COND., LAB (umhos/cm)	266	SW846 9050A
SULFATE	8.4	EPA 300
ALKALINITY	42	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	185	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	0.5 ND	SW846 9060A
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	19.5	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.
T Please indicate detection limit if analyte is not detected.
** Total and dissolved analysis required only in conjunction with additional annual metals sampling (see page 4). Remaining quarterly samples only require total metals analysis.

I.D. No	101389
Monitoring Point No.	FFMP033W
Sample Date	11/22/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

2-Q. Organics (Enter all data in ug/l)

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHENE	1 ND	SW846 8260B
1,2-DICHLOROETHANE	1 ND	SW846 8260B
CIS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
TRANS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
ETHYLBENZENE	1 ND	SW846 8260B
METHYLENE CHLORIDE	1 ND	SW846 8260B
TETRACHLOROETHENE	1 ND	SW846 8260B
TOLUENE	1 ND	SW846 8260B
1,1,1-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROETHENE	1 ND	SW846 8260B
VINYL CHLORIDE	1 ND	SW846 8260B
XYLENES (TOTAL)	3 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

2540-FM-BWM0041 Rev. 6/2005

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

Date Prepared/Revised
12/29/2017
DEP USE ONLY
Date Received

FORM 19

MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

This form must be fully and accurately completed. All required information must be typed or legibly printed in the spaces provided. If additional space is necessary, identify each attached sheet as Form 19, reference the item number and identify the date prepared. The "date prepared/revised" on any attached sheets needs to match the "date prepared/revised" on this page.

General Reference: Section 273.284
Federal Regulations, Subtitle D: 258.54 and Appendix I to Part 258.

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Frey Farm Landfill

Facitlity ID (as issued by DEP): 101389

SECTION B. FACILITY INFORMATION

Monitoring Wells must be designed and constructed in accordance with Department Standards. INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (D° MM' SS.S")

Monitoring Point Number: FFMP028W — X Well ___ Spring ___ Stream ___ Other

___ Upgradient/Upstream X Downgradient/Downstream

Location (County): Lancaster County — Municipality: Manor Township

Sampling Point: Latitude: 37 ° 57 ' 21.62 " — Longitude: 76 ° 27 ' 0.1 "

Depth to Water Level: 13.48 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: 2.50 ft — Elevation of Water Level: 451.52 ft./MSL

Sampling Depth: 50 ft — Volume of Water Column: ___ gal

Total Well Depth: 60 ft — Sampling Method: X Pumped ___ Bailed ___ Grab

Well Purged: X Yes ___ No — Well Volumes Purged: 2.6

Sample Field Filtered (must be 0.45 micron)?: ___ Yes X No

Spring Flow Rate: ___ gpm

Sample Date (mm/dd/yy): 11/22/2017 — Sample Collection Time: 14:48

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS Environmental

Laboratory(ies) Performing Analysis: ALS Environmental

Were any holding times exceeded?: ___ Yes X No If yes, please explain in comments field.

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 2278565004 — Final Lab Analysis CompletionDate: 12/7/2017

Name/Affiliation of Person who Filled Out Form: Mark D. Reider

Comments:

I.D. No	101389
Monitoring Point No.	FFMP028W
Sample Date	11/22/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

1-Q. Inorganics (Enter all data in mg/l except as noted)

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	D6919-09
BICARBONATE ALKALINITY	30	SM20-2320B
CALCIUM, TOTAL	41	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	7	EPA 410.4
CHLORIDE	89.3	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	67 ND	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	17.5	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	12	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	18.6	EPA 300
pH-FIELD (SU)	5.38	FIELD
pH-LAB (SU)	6.55	SM20-4500HB
POTASSIUM, TOTAL	2.2	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	26.9	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	612	FIELD
SPEC. COND., LAB (umhos/cm)	550	SW846 9050A
SULFATE	25.5	EPA 300
ALKALINITY	30	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	348	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	0.9	SW846 9060A
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.16	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.
T Please indicate detection limit if analyte is not detected.
** Total and dissolved analysis required only in conjunction with additional annual metals sampling (see page 4). Remaining quarterly samples only require total metals analysis.

I.D. No	101389
Monitoring Point No.	FFMP028W
Sample Date	11/22/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

2-Q. Organics (Enter all data in ug/l)

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHENE	1 ND	SW846 8260B
1,2-DICHLOROETHANE	1 ND	SW846 8260B
CIS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
TRANS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
ETHYLBENZENE	1 ND	SW846 8260B
METHYLENE CHLORIDE	1 ND	SW846 8260B
TETRACHLOROETHENE	1 ND	SW846 8260B
TOLUENE	1 ND	SW846 8260B
1,1,1-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROETHENE	1 ND	SW846 8260B
VINYL CHLORIDE	1 ND	SW846 8260B
XYLENES (TOTAL)	3 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

2540-FM-BWM0041 Rev. 6/2005

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

Date Prepared/Revised
12/29/2017
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FORM 19

MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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General Reference: Section 273.284
Federal Regulations, Subtitle D: 258.54 and Appendix I to Part 258.

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Frey Farm Landfill

Facitlity ID (as issued by DEP): 101389

SECTION B. FACILITY INFORMATION

Monitoring Wells must be designed and constructed in accordance with Department Standards. INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (D° MM' SS.S")

Monitoring Point Number: FFMP025W — X Well ___ Spring ___ Stream ___ Other

___ Upgradient/Upstream X Downgradient/Downstream

Location (County): Lancaster County — Municipality: Manor Township

Sampling Point: Latitude: 39 ° 57 ' 19.07 " — Longitude: 76 ° 27 ' 1.12 "

Depth to Water Level: 28.82 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: 1.50 ft — Elevation of Water Level: 447.98 ft./MSL

Sampling Depth: 39 ft — Volume of Water Column: 16.42 gal

Total Well Depth: 40 ft — Sampling Method: X Pumped ___ Bailed ___ Grab

Well Purged: X Yes ___ No — Well Volumes Purged: 3.5

Sample Field Filtered (must be 0.45 micron)?: ___ Yes X No

Spring Flow Rate: ___ gpm

Sample Date (mm/dd/yy): 11/22/2017 — Sample Collection Time: 15:43

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS Environmental

Laboratory(ies) Performing Analysis: ALS Environmental

Were any holding times exceeded?: ___ Yes X No If yes, please explain in comments field.

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 2278565005 — Final Lab Analysis CompletionDate: 12/7/2017

Name/Affiliation of Person who Filled Out Form: Mark D. Reider

Comments:

I.D. No	101389
Monitoring Point No.	FFMP025W
Sample Date	11/22/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

1-Q. Inorganics (Enter all data in mg/l except as noted)

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	D6919-09
BICARBONATE ALKALINITY	18	SM20-2320B
CALCIUM, TOTAL	26.5	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	7 ND	EPA 410.4
CHLORIDE	67.4	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	67 ND	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	13.6	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	13	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	11	EPA 300
pH-FIELD (SU)	5.24	FIELD
pH-LAB (SU)	6.43	SM20-4500HB
POTASSIUM, TOTAL	2.1	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	20.8	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	446	FIELD
SPEC. COND., LAB (umhos/cm)	358	SW846 9050A
SULFATE	22.4	EPA 300
ALKALINITY	18	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	266	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	0.69	SW846 9060A
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.23	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.
T Please indicate detection limit if analyte is not detected.
** Total and dissolved analysis required only in conjunction with additional annual metals sampling (see page 4). Remaining quarterly samples only require total metals analysis.

I.D. No	101389
Monitoring Point No.	FFMP025W
Sample Date	11/22/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

2-Q. Organics (Enter all data in ug/l)

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHENE	1 ND	SW846 8260B
1,2-DICHLOROETHANE	1 ND	SW846 8260B
CIS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
TRANS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
ETHYLBENZENE	1 ND	SW846 8260B
METHYLENE CHLORIDE	1 ND	SW846 8260B
TETRACHLOROETHENE	1 ND	SW846 8260B
TOLUENE	1 ND	SW846 8260B
1,1,1-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROETHENE	1 ND	SW846 8260B
VINYL CHLORIDE	1 ND	SW846 8260B
XYLENES (TOTAL)	3 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

2540-FM-BWM0041 Rev. 6/2005

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

Date Prepared/Revised
12/29/2017
DEP USE ONLY
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FORM 19

MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Frey Farm Landfill

Facitlity ID (as issued by DEP): 101389

SECTION B. FACILITY INFORMATION

Monitoring Wells must be designed and constructed in accordance with Department Standards. INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (D° MM' SS.S")

Monitoring Point Number: FFMP018W — X Well ___ Spring ___ Stream ___ Other

___ Upgradient/Upstream X Downgradient/Downstream

Location (County): Lancaster County — Municipality: Manor Township

Sampling Point: Latitude: 39 ° 57 ' 11.62 " — Longitude: 76 ° 27 ' 5.68 "

Depth to Water Level: 28.46 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: 2.46 ft — Elevation of Water Level: 443.74 ft./MSL

Sampling Depth: 40 ft — Volume of Water Column: 14.99 gal

Total Well Depth: 51.43 ft — Sampling Method: X Pumped ___ Bailed ___ Grab

Well Purged: X Yes ___ No — Well Volumes Purged: 4.0

Sample Field Filtered (must be 0.45 micron)?: ___ Yes X No

Spring Flow Rate: ___ gpm

Sample Date (mm/dd/yy): 11/29/2017 — Sample Collection Time: 10:20

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS Environmental

Laboratory(ies) Performing Analysis: ALS Environmental

Were any holding times exceeded?: ___ Yes X No If yes, please explain in comments field.

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 2279434001 — Final Lab Analysis CompletionDate: 12/9/2017

Name/Affiliation of Person who Filled Out Form: Mark D. Reider

Comments:

I.D. No	101389
Monitoring Point No.	FFMP018W
Sample Date	11/29/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

1-Q. Inorganics (Enter all data in mg/l except as noted)

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	D6919-09
BICARBONATE ALKALINITY	13	SM20-2320B
CALCIUM, TOTAL	31.1	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	7 ND	EPA 410.4
CHLORIDE	117	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	67 ND	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	16.4	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	290	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	5.4	EPA 300
pH-FIELD (SU)	3.91	FIELD
pH-LAB (SU)	5.77	SM20-4500HB
POTASSIUM, TOTAL	3.9	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	37.9	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	610	FIELD
SPEC. COND., LAB (umhos/cm)	541	SW846 9050A
SULFATE	49	EPA 300
ALKALINITY	13	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	296	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	0.5 ND	SW846 9060A
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.1 ND	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.
T Please indicate detection limit if analyte is not detected.
** Total and dissolved analysis required only in conjunction with additional annual metals sampling (see page 4). Remaining quarterly samples only require total metals analysis.

I.D. No	101389
Monitoring Point No.	FFMP018W
Sample Date	11/29/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

2-Q. Organics (Enter all data in ug/l)

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHENE	1 ND	SW846 8260B
1,2-DICHLOROETHANE	1 ND	SW846 8260B
CIS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
TRANS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
ETHYLBENZENE	1 ND	SW846 8260B
METHYLENE CHLORIDE	1 ND	SW846 8260B
TETRACHLOROETHENE	1 ND	SW846 8260B
TOLUENE	1 ND	SW846 8260B
1,1,1-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROETHENE	1 ND	SW846 8260B
VINYL CHLORIDE	1 ND	SW846 8260B
XYLENES (TOTAL)	3 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

2540-FM-BWM0041 Rev. 6/2005

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

Date Prepared/Revised
12/29/2017
DEP USE ONLY
Date Received

FORM 19

MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

This form must be fully and accurately completed. All required information must be typed or legibly printed in the spaces provided. If additional space is necessary, identify each attached sheet as Form 19, reference the item number and identify the date prepared. The "date prepared/revised" on any attached sheets needs to match the "date prepared/revised" on this page.

General Reference: Section 273.284
Federal Regulations, Subtitle D: 258.54 and Appendix I to Part 258.

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Frey Farm Landfill

Facitlity ID (as issued by DEP): 101389

SECTION B. FACILITY INFORMATION

Monitoring Wells must be designed and constructed in accordance with Department Standards. INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (D° MM' SS.S")

Monitoring Point Number: FFMP019W — X Well ___ Spring ___ Stream ___ Other

___ Upgradient/Upstream X Downgradient/Downstream

Location (County): Lancaster County — Municipality: Manor Township

Sampling Point: Latitude: 39 ° 57 ' 11.58 " — Longitude: 76 ° 27 ' 5.75 "

Depth to Water Level: 29.03 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: 1.79 ft — Elevation of Water Level: 442.92 ft./MSL

Sampling Depth: 49 ft — Volume of Water Column: 67.73 gal

Total Well Depth: 132.79 ft — Sampling Method: X Pumped ___ Bailed ___ Grab

Well Purged: X Yes ___ No — Well Volumes Purged: 3.0

Sample Field Filtered (must be 0.45 micron)?: ___ Yes X No

Spring Flow Rate: ___ gpm

Sample Date (mm/dd/yy): 11/29/2017 — Sample Collection Time: 11:06

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS Environmental

Laboratory(ies) Performing Analysis: ALS Environmental

Were any holding times exceeded?: ___ Yes X No If yes, please explain in comments field.

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 2279434002 — Final Lab Analysis CompletionDate: 12/9/2017

Name/Affiliation of Person who Filled Out Form: Mark D. Reider

Comments:

I.D. No	101389
Monitoring Point No.	FFMP019W
Sample Date	11/29/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

1-Q. Inorganics (Enter all data in mg/l except as noted)

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	D6919-09
BICARBONATE ALKALINITY	68	SM20-2320B
CALCIUM, TOTAL	55.9	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	7 ND	EPA 410.4
CHLORIDE	81	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	67 ND	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	5.4	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	5.6 ND	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	0.58	EPA 300
pH-FIELD (SU)	4.65	FIELD
pH-LAB (SU)	7.01	SM20-4500HB
POTASSIUM, TOTAL	0.85	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	9.7	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	470	FIELD
SPEC. COND., LAB (umhos/cm)	416	SW846 9050A
SULFATE	14.7	EPA 300
ALKALINITY	68	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	246	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	0.5 ND	SW846 9060A
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.1 ND	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.
T Please indicate detection limit if analyte is not detected.
** Total and dissolved analysis required only in conjunction with additional annual metals sampling (see page 4). Remaining quarterly samples only require total metals analysis.

I.D. No	101389
Monitoring Point No.	FFMP019W
Sample Date	11/29/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

2-Q. Organics (Enter all data in ug/l)

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHENE	1 ND	SW846 8260B
1,2-DICHLOROETHANE	1 ND	SW846 8260B
CIS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
TRANS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
ETHYLBENZENE	1 ND	SW846 8260B
METHYLENE CHLORIDE	1 ND	SW846 8260B
TETRACHLOROETHENE	1 ND	SW846 8260B
TOLUENE	1 ND	SW846 8260B
1,1,1-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROETHENE	1 ND	SW846 8260B
VINYL CHLORIDE	1 ND	SW846 8260B
XYLENES (TOTAL)	3 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

2540-FM-BWM0041 Rev. 6/2005

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

Date Prepared/Revised
12/29/2017
DEP USE ONLY
Date Received

FORM 19

MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

This form must be fully and accurately completed. All required information must be typed or legibly printed in the spaces provided. If additional space is necessary, identify each attached sheet as Form 19, reference the item number and identify the date prepared. The "date prepared/revised" on any attached sheets needs to match the "date prepared/revised" on this page.

General Reference: Section 273.284
Federal Regulations, Subtitle D: 258.54 and Appendix I to Part 258.

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Frey Farm Landfill

Facitlity ID (as issued by DEP): 101389

SECTION B. FACILITY INFORMATION

Monitoring Wells must be designed and constructed in accordance with Department Standards. INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (D° MM' SS.S")

Monitoring Point Number: FFMP029W — X Well ___ Spring ___ Stream ___ Other

___ Upgradient/Upstream X Downgradient/Downstream

Location (County): Lancaster County — Municipality: Manor Township

Sampling Point: Latitude: 39 ° 57 ' 12.93 " — Longitude: 76 ° 27 ' 0.67 "

Depth to Water Level: 40.4 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: 2.00 ft — Elevation of Water Level: 436.9 ft./MSL

Sampling Depth: 55 ft — Volume of Water Column: 26.58 gal

Total Well Depth: 58.5 ft — Sampling Method: X Pumped ___ Bailed ___ Grab

Well Purged: X Yes ___ No — Well Volumes Purged: 4.1

Sample Field Filtered (must be 0.45 micron)?: ___ Yes X No

Spring Flow Rate: ___ gpm

Sample Date (mm/dd/yy): 11/29/2017 — Sample Collection Time: 12:02

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS Environmental

Laboratory(ies) Performing Analysis: ALS Environmental

Were any holding times exceeded?: ___ Yes X No If yes, please explain in comments field.

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 2279434003 — Final Lab Analysis CompletionDate: 12/9/2017

Name/Affiliation of Person who Filled Out Form: Mark D. Reider

Comments:

I.D. No	101389
Monitoring Point No.	FFMP029W
Sample Date	11/29/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

1-Q. Inorganics (Enter all data in mg/l except as noted)

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	D6919-09
BICARBONATE ALKALINITY	11	SM20-2320B
CALCIUM, TOTAL	14	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	7 ND	EPA 410.4
CHLORIDE	65.5	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	67 ND	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	9.1	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	25	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	3.8	EPA 300
pH-FIELD (SU)	4.94	FIELD
pH-LAB (SU)	5.94	SM20-4500HB
POTASSIUM, TOTAL	2	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	20.4	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	315	FIELD
SPEC. COND., LAB (umhos/cm)	259	SW846 9050A
SULFATE	7.2	EPA 300
ALKALINITY	11	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	137	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	0.5 ND	SW846 9060A
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.26	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.
T Please indicate detection limit if analyte is not detected.
** Total and dissolved analysis required only in conjunction with additional annual metals sampling (see page 4). Remaining quarterly samples only require total metals analysis.

I.D. No	101389
Monitoring Point No.	FFMP029W
Sample Date	11/29/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

2-Q. Organics (Enter all data in ug/l)

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHENE	1 ND	SW846 8260B
1,2-DICHLOROETHANE	1 ND	SW846 8260B
CIS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
TRANS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
ETHYLBENZENE	1 ND	SW846 8260B
METHYLENE CHLORIDE	1 ND	SW846 8260B
TETRACHLOROETHENE	1 ND	SW846 8260B
TOLUENE	1 ND	SW846 8260B
1,1,1-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROETHENE	1 ND	SW846 8260B
VINYL CHLORIDE	1 ND	SW846 8260B
XYLENES (TOTAL)	3 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

2540-FM-BWM0041 Rev. 6/2005

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

Date Prepared/Revised
12/29/2017
DEP USE ONLY
Date Received

FORM 19

MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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General Reference: Section 273.284
Federal Regulations, Subtitle D: 258.54 and Appendix I to Part 258.

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Frey Farm Landfill

Facitlity ID (as issued by DEP): 101389

SECTION B. FACILITY INFORMATION

Monitoring Wells must be designed and constructed in accordance with Department Standards. INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (D° MM' SS.S")

Monitoring Point Number: FFMP016W — X Well ___ Spring ___ Stream ___ Other

___ Upgradient/Upstream X Downgradient/Downstream

Location (County): Lancaster County — Municipality: Manor Township

Sampling Point: Latitude: 39 ° 57 ' 19.15 " — Longitude: 76 ° 27 ' 0.88 "

Depth to Water Level: 26.68 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: 1.97 ft — Elevation of Water Level: 447.92 ft./MSL

Sampling Depth: 135 ft — Volume of Water Column: 180.82 gal

Total Well Depth: 149.8 ft — Sampling Method: X Pumped ___ Bailed ___ Grab

Well Purged: X Yes ___ No — Well Volumes Purged: ___

Sample Field Filtered (must be 0.45 micron)?: ___ Yes X No

Spring Flow Rate: ___ gpm

Sample Date (mm/dd/yy): 11/29/2017 — Sample Collection Time: 12:27

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS Environmental

Laboratory(ies) Performing Analysis: ALS Environmental

Were any holding times exceeded?: ___ Yes X No If yes, please explain in comments field.

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 2279434004 — Final Lab Analysis CompletionDate: 12/9/2017

Name/Affiliation of Person who Filled Out Form: Mark D. Reider

Comments:

I.D. No	101389
Monitoring Point No.	FFMP016W
Sample Date	11/29/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

1-Q. Inorganics (Enter all data in mg/l except as noted)

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	D6919-09
BICARBONATE ALKALINITY	35	SM20-2320B
CALCIUM, TOTAL	44.2	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	9	EPA 410.4
CHLORIDE	119	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	67 ND	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	17	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	110	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	13.7	EPA 300
pH-FIELD (SU)	5.35	FIELD
pH-LAB (SU)	6.22	SM20-4500HB
POTASSIUM, TOTAL	2.1	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	33	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	659	FIELD
SPEC. COND., LAB (umhos/cm)	603	SW846 9050A
SULFATE	24.4	EPA 300
ALKALINITY	35	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	363	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	0.69	SW846 9060A
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.14	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.
T Please indicate detection limit if analyte is not detected.
** Total and dissolved analysis required only in conjunction with additional annual metals sampling (see page 4). Remaining quarterly samples only require total metals analysis.

I.D. No	101389
Monitoring Point No.	FFMP016W
Sample Date	11/29/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

2-Q. Organics (Enter all data in ug/l)

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHENE	1 ND	SW846 8260B
1,2-DICHLOROETHANE	1 ND	SW846 8260B
CIS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
TRANS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
ETHYLBENZENE	1 ND	SW846 8260B
METHYLENE CHLORIDE	1 ND	SW846 8260B
TETRACHLOROETHENE	1 ND	SW846 8260B
TOLUENE	1 ND	SW846 8260B
1,1,1-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROETHENE	1 ND	SW846 8260B
VINYL CHLORIDE	1 ND	SW846 8260B
XYLENES (TOTAL)	3 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

2540-FM-BWM0041 Rev. 6/2005

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

Date Prepared/Revised
12/29/2017
DEP USE ONLY
Date Received

FORM 19

MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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General Reference: Section 273.284
Federal Regulations, Subtitle D: 258.54 and Appendix I to Part 258.

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Frey Farm Landfill

Facitlity ID (as issued by DEP): 101389

SECTION B. FACILITY INFORMATION

Monitoring Wells must be designed and constructed in accordance with Department Standards. INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (D° MM' SS.S")

Monitoring Point Number: FFMP031W — X Well ___ Spring ___ Stream ___ Other

X Upgradient/Upstream ___ Downgradient/Downstream

Location (County): Lancaster County — Municipality: MANOR TOWNSHIP

Sampling Point: Latitude: 39 ° 57 ' 31.2 " — Longitude: 76 ° 27 ' 23.53 "

Depth to Water Level: 84.86 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: 2.38 ft — Elevation of Water Level: 527.8 ft./MSL

Sampling Depth: 130 ft — Volume of Water Column: 80.98 gal

Total Well Depth: 140 ft — Sampling Method: X Pumped ___ Bailed ___ Grab

Well Purged: X Yes ___ No — Well Volumes Purged: 0.8

Sample Field Filtered (must be 0.45 micron)?: ___ Yes X No

Spring Flow Rate: ___ gpm

Sample Date (mm/dd/yy): 11/29/2017 — Sample Collection Time: 13:49

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS Environmental

Laboratory(ies) Performing Analysis: ALS Environmental

Were any holding times exceeded?: ___ Yes X No If yes, please explain in comments field.

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 2279434005 — Final Lab Analysis CompletionDate: 12/9/2017

Name/Affiliation of Person who Filled Out Form: Mark D. Reider

Comments:

I.D. No	101389
Monitoring Point No.	FFMP031W
Sample Date	11/29/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

1-Q. Inorganics (Enter all data in mg/l except as noted)

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	D6919-09
BICARBONATE ALKALINITY	102	SM20-2320B
CALCIUM, TOTAL	55.4	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	7 ND	EPA 410.4
CHLORIDE	23.8	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	340	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	3.2	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	200	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	1.6	EPA 300
pH-FIELD (SU)	7.43	FIELD
pH-LAB (SU)	8	SM20-4500HB
POTASSIUM, TOTAL	1.2	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	7.3	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	389	FIELD
SPEC. COND., LAB (umhos/cm)	320	SW846 9050A
SULFATE	45	EPA 300
ALKALINITY	102	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	198	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	0.5 ND	SW846 9060A
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	3.31	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.
T Please indicate detection limit if analyte is not detected.
** Total and dissolved analysis required only in conjunction with additional annual metals sampling (see page 4). Remaining quarterly samples only require total metals analysis.

I.D. No	101389
Monitoring Point No.	FFMP031W
Sample Date	11/29/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

2-Q. Organics (Enter all data in ug/l)

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHENE	1 ND	SW846 8260B
1,2-DICHLOROETHANE	1 ND	SW846 8260B
CIS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
TRANS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
ETHYLBENZENE	1 ND	SW846 8260B
METHYLENE CHLORIDE	1 ND	SW846 8260B
TETRACHLOROETHENE	1 ND	SW846 8260B
TOLUENE	1 ND	SW846 8260B
1,1,1-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROETHENE	1 ND	SW846 8260B
VINYL CHLORIDE	1 ND	SW846 8260B
XYLENES (TOTAL)	3 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

Date Prepared/Revised
12/29/2017
DEP USE ONLY
Date Received

FORM 19

MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

This form must be fully and accurately completed. All required information must be typed or legibly printed in the spaces provided. If additional space is necessary, identify each attached sheet as Form 19, reference the item number and identify the date prepared. The "date prepared/revised" on any attached sheets needs to match the "date prepared/revised" on this page.

General Reference: Section 273.284
Federal Regulations, Subtitle D: 258.54 and Appendix I to Part 258.

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Frey Farm Landfill

Facitlity ID (as issued by DEP): 101389

SECTION B. FACILITY INFORMATION

Monitoring Wells must be designed and constructed in accordance with Department Standards. INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (D° MM' SS.S")

Monitoring Point Number: FFMP002W — X Well ___ Spring ___ Stream ___ Other

X Upgradient/Upstream ___ Downgradient/Downstream

Location (County): Lancaster County — Municipality: Manor Township

Sampling Point: Latitude: 39 ° 57 ' 32.25 " — Longitude: 76 ° 27 ' 24.03 "

Depth to Water Level: 70.94 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: 1.60 ft — Elevation of Water Level: 542.26 ft./MSL

Sampling Depth: 85 ft — Volume of Water Column: 144.90 gal

Total Well Depth: 169.6 ft — Sampling Method: X Pumped ___ Bailed ___ Grab

Well Purged: X Yes ___ No — Well Volumes Purged: 0.6

Sample Field Filtered (must be 0.45 micron)?: ___ Yes X No

Spring Flow Rate: ___ gpm

Sample Date (mm/dd/yy): 11/29/2017 — Sample Collection Time: 14:17

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS Environmental

Laboratory(ies) Performing Analysis: ALS Environmental

Were any holding times exceeded?: ___ Yes X No If yes, please explain in comments field.

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 2279434006 — Final Lab Analysis CompletionDate: 12/9/2017

Name/Affiliation of Person who Filled Out Form: Mark D. Reider

Comments:

I.D. No	101389
Monitoring Point No.	FFMP002W
Sample Date	11/29/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

1-Q. Inorganics (Enter all data in mg/l except as noted)

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	D6919-09
BICARBONATE ALKALINITY	5 ND	SM20-2320B
CALCIUM, TOTAL	21.4	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	7 ND	EPA 410.4
CHLORIDE	23.4	EPA 300
FLUORIDE	0.5 ND	EPA 300
IRON, TOTAL (ug/l)	67 ND	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	9.2	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	260	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	26.7	EPA 300
pH-FIELD (SU)	4.57	FIELD
pH-LAB (SU)	5.63	SM20-4500HB
POTASSIUM, TOTAL	1.9	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	14.4	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	350	FIELD
SPEC. COND., LAB (umhos/cm)	287	SW846 9050A
SULFATE	18.9	EPA 300
ALKALINITY	5 ND	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	172	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	0.5 ND	SW846 9060A
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.1 ND	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.
T Please indicate detection limit if analyte is not detected.
** Total and dissolved analysis required only in conjunction with additional annual metals sampling (see page 4). Remaining quarterly samples only require total metals analysis.

I.D. No	101389
Monitoring Point No.	FFMP002W
Sample Date	11/29/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

2-Q. Organics (Enter all data in ug/l)

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHENE	1 ND	SW846 8260B
1,2-DICHLOROETHANE	1 ND	SW846 8260B
CIS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
TRANS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
ETHYLBENZENE	1 ND	SW846 8260B
METHYLENE CHLORIDE	1 ND	SW846 8260B
TETRACHLOROETHENE	1 ND	SW846 8260B
TOLUENE	1 ND	SW846 8260B
1,1,1-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROETHENE	1 ND	SW846 8260B
VINYL CHLORIDE	1 ND	SW846 8260B
XYLENES (TOTAL)	3 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

2540-FM-BWM0041 Rev. 6/2005

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

Date Prepared/Revised
12/29/2017
DEP USE ONLY
Date Received

FORM 19

MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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General Reference: Section 273.284
Federal Regulations, Subtitle D: 258.54 and Appendix I to Part 258.

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Frey Farm Landfill

Facitlity ID (as issued by DEP): 101389

SECTION B. FACILITY INFORMATION

Monitoring Wells must be designed and constructed in accordance with Department Standards. INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (D° MM' SS.S")

Monitoring Point Number: FFMP017W — X Well ___ Spring ___ Stream ___ Other

___ Upgradient/Upstream X Downgradient/Downstream

Location (County): Lancaster County — Municipality: Manor Township

Sampling Point: Latitude: 39 ° 57 ' 8.5 " — Longitude: 76 ° 27 ' 6.17 "

Depth to Water Level: 44.32 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: 2.00 ft — Elevation of Water Level: 436.38 ft./MSL

Sampling Depth: 135 ft — Volume of Water Column: 155.94 gal

Total Well Depth: 150.5 ft — Sampling Method: X Pumped ___ Bailed ___ Grab

Well Purged: X Yes ___ No — Well Volumes Purged: 1.4

Sample Field Filtered (must be 0.45 micron)?: ___ Yes X No

Spring Flow Rate: ___ gpm

Sample Date (mm/dd/yy): 11/29/2017 — Sample Collection Time: 15:43

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS Environmental

Laboratory(ies) Performing Analysis: ALS Environmental

Were any holding times exceeded?: ___ Yes X No If yes, please explain in comments field.

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 2279434007 — Final Lab Analysis CompletionDate: 12/9/2017

Name/Affiliation of Person who Filled Out Form: Mark D. Reider

Comments:

I.D. No	101389
Monitoring Point No.	FFMP017W
Sample Date	11/29/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

1-Q. Inorganics (Enter all data in mg/l except as noted)

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	D6919-09
BICARBONATE ALKALINITY	42	SM20-2320B
CALCIUM, TOTAL	91.8	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	7 ND	EPA 410.4
CHLORIDE	347	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	67 ND	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	40.7	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	340	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	2.5	EPA 300
pH-FIELD (SU)	5.32	FIELD
pH-LAB (SU)	6.44	SM20-4500HB
POTASSIUM, TOTAL	4.2	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	68.3	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	1409	FIELD
SPEC. COND., LAB (umhos/cm)	1290	SW846 9050A
SULFATE	59.2	EPA 300
ALKALINITY	42	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	748	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	1.5	SW846 9060A
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.6	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.
T Please indicate detection limit if analyte is not detected.
** Total and dissolved analysis required only in conjunction with additional annual metals sampling (see page 4). Remaining quarterly samples only require total metals analysis.

I.D. No	101389
Monitoring Point No.	FFMP017W
Sample Date	11/29/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

2-Q. Organics (Enter all data in ug/l)

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHENE	1 ND	SW846 8260B
1,2-DICHLOROETHANE	1 ND	SW846 8260B
CIS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
TRANS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
ETHYLBENZENE	1 ND	SW846 8260B
METHYLENE CHLORIDE	1 ND	SW846 8260B
TETRACHLOROETHENE	1 ND	SW846 8260B
TOLUENE	1 ND	SW846 8260B
1,1,1-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROETHENE	1 ND	SW846 8260B
VINYL CHLORIDE	1 ND	SW846 8260B
XYLENES (TOTAL)	3 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

ALS Environmental

34 Dogwood Lane ■ Middletown, PA 17057 ■ Phone: 717-944-5541 ■ Fax: 717-944-1430 ■ www.alsglobal.com

NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

December 15, 2017

Mr. Daniel Brown
Lancaster County Solid Waste Authority
1299 Hbg Pike, P.O. Box 4425
Lancaster, PA 17604

Certificate of Analysis

Project Name:	**2017-FREY FARM**	Workorder:	**2279434**
Purchase Order:		Workorder ID:	**4TH QTR 2017 GWMP-FORM 19Q**

Dear Mr. Brown:

Enclosed are the analytical results for samples received by the laboratory on Wednesday, November 29, 2017.

The ALS Environmental laboratory in Middletown, Pennsylvania is a National Environmental Laboratory Accreditation Program (NELAP) accredited laboratory and as such, certifies that all applicable test results meet the requirements of NELAP.

If you have any questions regarding this certificate of analysis, please contact Ms. Susan J Scherer (Project Coordinator) at (717) 944-5541.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications section of the ALS website at www.alsglobal.com/en/Our-Services/Life-Sciences/Environmental/Downloads.

This laboratory report may not be reproduced, except in full, without the written approval of ALS Environmental.

ALS Spring City: 10 Riverside Drive, Spring City, PA 19475 610-948-4903

CC: Ms. Jordan Gallagher , Mr. Mark Reider , Mr. Jeff Musser

This page is included as part of the Analytical Report and must be retained as a permanent record thereof.

Susan J. Scherer

Ms. Susan J Scherer
Project Coordinator

ALS Environmental

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

SAMPLE SUMMARY

Workorder: 2279434 4TH QTR 2017 GWMP-FORM 19Q

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
2279434001	FFMP018W	Ground Water	11/29/2017 10:20	11/29/2017 16:45	Mr. Brian G Shade
2279434002	FFMP019W	Ground Water	11/29/2017 11:06	11/29/2017 16:45	Mr. Brian G Shade
2279434003	FFMP029W	Ground Water	11/29/2017 12:02	11/29/2017 16:45	Mr. Brian G Shade
2279434004	FFMP016W	Ground Water	11/29/2017 12:27	11/29/2017 16:45	Mr. Brian G Shade
2279434005	FFMP031W	Ground Water	11/29/2017 13:49	11/29/2017 16:45	Mr. Brian G Shade
2279434006	FFMP002W	Ground Water	11/29/2017 14:17	11/29/2017 16:45	Mr. Brian G Shade
2279434007	FFMP017W	Ground Water	11/29/2017 15:43	11/29/2017 16:45	Mr. Brian G Shade
2279434008	FIELD BLANK	Ground Water	11/29/2017 14:55	11/29/2017 16:45	Mr. Brian G Shade
2279434009	TRIP BLANK	Ground Water	11/29/2017 16:45	11/29/2017 16:45	Mr. Brian G Shade

ALS Environmental

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SAMPLE SUMMARY

Workorder: 2279434 4TH QTR 2017 GWMP-FORM 19Q

Notes

-- Samples collected by ALS personnel are done so in accordance with the procedures set forth in the ALS Field Sampling Plan (20 - Field Services Sampling Plan).
-- All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
-- All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
-- Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
-- The Chain of Custody document is included as part of this report.
-- All Library Search analytes should be regarded as tentative identifications based on the presumptive evidence of the mass spectra. Concentrations reported are estimated values.
-- Parameters identified as "analyze immediately" require analysis within 15 minutes of collection. Any "analyze immediately" parameters not listed under the header "Field Parameters" are preformed in the laboratory and are therefore analyzed out of hold time.
-- Method references listed on this report beginning with the prefix “S” followed by a method number (such as S2310B-97) refer to methods from “Standard Methods for the Examination of Water and Wastewater”.
-- For microbiological analyses, the "Prepared" value is the date/time into the incurbator and the "Analyzed" value is the date/time out the incubator.

Standard Acronyms/Flags

J	Indicates an estimated value between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL) for the analyte
U	Indicates that the analyte was Not Detected (ND)
N	Indicates presumptive evidence of the presence of a compound
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
RDL	Reporting Detection Limit
ND	Not Detected - indicates that the analyte was Not Detected at the RDL
Cntr	Analysis was performed using this container
RegLmt	Regulatory Limit
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
%Rec	Percent Recovery
RPD	Relative Percent Difference
LOD	DoD Limit of Detection
LOQ	DoD Limit of Quantitation
DL	DoD Detection Limit
I	Indicates reported value is greater than or equal to the Method Detection Limit (MDL) but less than the Report Detection Limit (RDL)
(S)	Surrogate Compound
NC	Not Calculated
*	Result outside of QC limits

ALS Environmental

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ANALYTICAL RESULTS

Workorder: 2279434 4TH QTR 2017 GWMP-FORM 19Q

Lab ID: **2279434001** Date Collected: 11/29/2017 10:20 Matrix: Ground Water
Sample ID: **FFMP018W** Date Received: 11/29/2017 16:45

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			12/7/17 18:41	TMP	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			12/7/17 18:41	TMP	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			12/7/17 18:41	TMP	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			12/7/17 18:41	TMP	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/7/17 18:41	TMP	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/7/17 18:41	TMP	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/7/17 18:41	TMP	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			12/7/17 18:41	TMP	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			12/7/17 18:41	TMP	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			12/7/17 18:41	TMP	G
Toluene	ND		ug/L	1.0	SW846 8260B			12/7/17 18:41	TMP	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			12/7/17 18:41	TMP	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			12/7/17 18:41	TMP	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			12/7/17 18:41	TMP	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			12/7/17 18:41	TMP	G
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	112		%	62 - 133	SW846 8260B			12/7/17 18:41	TMP	G
4-Bromofluorobenzene (S)	101		%	79 - 114	SW846 8260B			12/7/17 18:41	TMP	G
Dibromofluoromethane (S)	103		%	78 - 116	SW846 8260B			12/7/17 18:41	TMP	G
Toluene-d8 (S)	101		%	76 - 127	SW846 8260B			12/7/17 18:41	TMP	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	13		mg/L	5	S2320B-97			11/30/17 08:02	MSA	B
Alkalinity, Total	13	2	mg/L	5	S2320B-97			11/30/17 08:02	MSA	B
Ammonia-N	ND		mg/L	0.100	D6919-09			12/9/17 19:15	NJA	A
Chemical Oxygen Demand (COD)	ND		mg/L	7	EPA 410.4			12/5/17 20:14	AK	A
Chloride	117		mg/L	2.0	EPA 300.0			11/30/17 12:33	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			11/30/17 12:33	CHW	B
Nitrate-N	5.4		mg/L	0.20	EPA 300.0			11/30/17 12:33	CHW	B
pH	5.77	1	pH_Units		S4500HB-11			11/30/17 08:02	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	12/6/17 00:00	JLG	12/6/17 09:40	JLG	F
Specific Conductance	541		umhos/cm	1	SW846 9050A			11/30/17 08:02	MSA	B
Sulfate	49.0		mg/L	2.0	EPA 300.0			11/30/17 12:33	CHW	B
Total Dissolved Solids	296		mg/L	5	S2540C-11			11/30/17 12:00	BMK	B
Total Organic Carbon (TOC)	ND		mg/L	0.50	SW846 9060A			12/7/17 12:01	PAG	D
Turbidity	ND		NTU	0.10	S2130B-01			11/30/17 03:53	MSA	B

ALS Environmental

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NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2279434 4TH QTR 2017 GWMP-FORM 19Q

Lab ID: **2279434001** Date Collected: 11/29/2017 10:20 Matrix: Ground Water

Sample ID: **FFMP018W** Date Received: 11/29/2017 16:45

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Calcium, Total	31.1		mg/L	0.11	SW846 6010C	12/5/17 02:30	LXC	12/5/17 17:21	SRT	J1
Iron, Total	ND		mg/L	0.067	SW846 6010C	12/5/17 02:30	LXC	12/5/17 17:21	SRT	J1
Magnesium, Total	16.4		mg/L	0.11	SW846 6010C	12/5/17 02:30	LXC	12/5/17 17:21	SRT	J1
Manganese, Total	0.29		mg/L	0.0056	SW846 6010C	12/5/17 02:30	LXC	12/5/17 17:21	SRT	J1
Potassium, Total	3.9		mg/L	0.56	SW846 6010C	12/5/17 02:30	LXC	12/5/17 17:21	SRT	J1
Sodium, Total	37.9		mg/L	0.56	SW846 6010C	12/5/17 02:30	LXC	12/5/17 17:21	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	28.460		Feet		Field			11/29/17 10:20	BGS	C
Elev Top MW Casing above MSL	472.20		Feet		Field			11/29/17 10:20	BGS	C
Flow Rate	4.00		gal/min		Field			11/29/17 10:20	BGS	C
Ground Water Elevation	443.740		ft/MSL		Field			11/29/17 10:20	BGS	C
pH, Field (SM4500B)	3.910		pH_Units		Field			11/29/17 10:20	BGS	C
Sample Depth	40.000		Feet		Field			11/29/17 10:20	BGS	C
Specific Conductance, Field	610		umhos/cm	1	Field			11/29/17 10:20	BGS	C
Temperature	13.12		Deg. C		Field			11/29/17 10:20	BGS	C
Total Well Depth	51.460		Feet		Field			11/29/17 10:20	BGS	C
Volume in Water Column	14.950		Gallons		Field			11/29/17 10:20	BGS	C
Water Level After Purge	33.030		Feet		Field			11/29/17 10:20	BGS	C
Well Volumes Purged	4.01		Vol		Field			11/29/17 10:20	BGS	C

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Ms. Susan J Scherer
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ANALYTICAL RESULTS

Workorder: 2279434 4TH QTR 2017 GWMP-FORM 19Q

Lab ID: **2279434002** Date Collected: 11/29/2017 11:06 Matrix: Ground Water

Sample ID: **FFMP019W** Date Received: 11/29/2017 16:45

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			12/7/17 19:04	TMP	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			12/7/17 19:04	TMP	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			12/7/17 19:04	TMP	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			12/7/17 19:04	TMP	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/7/17 19:04	TMP	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/7/17 19:04	TMP	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/7/17 19:04	TMP	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			12/7/17 19:04	TMP	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			12/7/17 19:04	TMP	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			12/7/17 19:04	TMP	G
Toluene	ND		ug/L	1.0	SW846 8260B			12/7/17 19:04	TMP	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			12/7/17 19:04	TMP	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			12/7/17 19:04	TMP	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			12/7/17 19:04	TMP	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			12/7/17 19:04	TMP	G
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	112		%	62 - 133	SW846 8260B			12/7/17 19:04	TMP	G
4-Bromofluorobenzene (S)	103		%	79 - 114	SW846 8260B			12/7/17 19:04	TMP	G
Dibromofluoromethane (S)	102		%	78 - 116	SW846 8260B			12/7/17 19:04	TMP	G
Toluene-d8 (S)	102		%	76 - 127	SW846 8260B			12/7/17 19:04	TMP	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	68		mg/L	5	S2320B-97			11/30/17 09:48	MSA	B
Alkalinity, Total	68	2	mg/L	5	S2320B-97			11/30/17 09:48	MSA	B
Ammonia-N	ND		mg/L	0.100	D6919-09			12/9/17 19:29	NJA	A
Chemical Oxygen Demand (COD)	ND		mg/L	7	EPA 410.4			12/5/17 20:14	AK	A
Chloride	81.0		mg/L	2.0	EPA 300.0			11/30/17 12:44	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			11/30/17 12:44	CHW	B
Nitrate-N	0.58		mg/L	0.20	EPA 300.0			11/30/17 12:44	CHW	B
pH	7.01	1	pH_Units		S4500HB-11			11/30/17 09:48	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	12/6/17 00:00	JLG	12/6/17 09:40	JLG	F
Specific Conductance	416		umhos/cm	1	SW846 9050A			11/30/17 09:48	MSA	B
Sulfate	14.7		mg/L	2.0	EPA 300.0			11/30/17 12:44	CHW	B
Total Dissolved Solids	246		mg/L	5	S2540C-11			11/30/17 12:00	BMK	I
Total Organic Carbon (TOC)	ND		mg/L	0.50	SW846 9060A			12/7/17 12:01	PAG	D
Turbidity	ND		NTU	0.10	S2130B-01			11/30/17 03:53	MSA	B

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ANALYTICAL RESULTS

Workorder: 2279434 4TH QTR 2017 GWMP-FORM 19Q

Lab ID: **2279434002** Date Collected: 11/29/2017 11:06 Matrix: Ground Water

Sample ID: **FFMP019W** Date Received: 11/29/2017 16:45

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Calcium, Total	55.9		mg/L	0.11	SW846 6010C	12/5/17 02:30	LXC	12/5/17 17:25	SRT	J1
Iron, Total	ND		mg/L	0.067	SW846 6010C	12/5/17 02:30	LXC	12/5/17 17:25	SRT	J1
Magnesium, Total	5.4		mg/L	0.11	SW846 6010C	12/5/17 02:30	LXC	12/5/17 17:25	SRT	J1
Manganese, Total	ND		mg/L	0.0056	SW846 6010C	12/5/17 02:30	LXC	12/5/17 17:25	SRT	J1
Potassium, Total	0.85		mg/L	0.56	SW846 6010C	12/5/17 02:30	LXC	12/5/17 17:25	SRT	J1
Sodium, Total	9.7		mg/L	0.56	SW846 6010C	12/5/17 02:30	LXC	12/5/17 17:25	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	29.030		Feet		Field			11/29/17 11:06	BGS	C
Elev Top MW Casing above MSL	471.95		Feet		Field			11/29/17 11:06	BGS	C
Flow Rate	5.00		gal/min		Field			11/29/17 11:06	BGS	C
Ground Water Elevation	442.920		ft/MSL		Field			11/29/17 11:06	BGS	C
pH, Field (SM4500B)	4.650		pH_Units		Field			11/29/17 11:06	BGS	C
Sample Depth	49.000		Feet		Field			11/29/17 11:06	BGS	C
Specific Conductance, Field	470		umhos/cm	1	Field			11/29/17 11:06	BGS	C
Temperature	11.84		Deg. C		Field			11/29/17 11:06	BGS	C
Total Well Depth	132.790		Feet		Field			11/29/17 11:06	BGS	C
Volume in Water Column	67.444		Gallons		Field			11/29/17 11:06	BGS	C
Water Level After Purge	39.220		Feet		Field			11/29/17 11:06	BGS	C
Well Volumes Purged	2.97		Vol		Field			11/29/17 11:06	BGS	C

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ANALYTICAL RESULTS

Workorder: 2279434 4TH QTR 2017 GWMP-FORM 19Q

Lab ID: **2279434003** Date Collected: 11/29/2017 12:02 Matrix: Ground Water

Sample ID: **FFMP029W** Date Received: 11/29/2017 16:45

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			12/7/17 19:26	TMP	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			12/7/17 19:26	TMP	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			12/7/17 19:26	TMP	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			12/7/17 19:26	TMP	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/7/17 19:26	TMP	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/7/17 19:26	TMP	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/7/17 19:26	TMP	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			12/7/17 19:26	TMP	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			12/7/17 19:26	TMP	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			12/7/17 19:26	TMP	G
Toluene	ND		ug/L	1.0	SW846 8260B			12/7/17 19:26	TMP	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			12/7/17 19:26	TMP	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			12/7/17 19:26	TMP	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			12/7/17 19:26	TMP	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			12/7/17 19:26	TMP	G
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	112		%	62 - 133	SW846 8260B			12/7/17 19:26	TMP	G
4-Bromofluorobenzene (S)	101		%	79 - 114	SW846 8260B			12/7/17 19:26	TMP	G
Dibromofluoromethane (S)	103		%	78 - 116	SW846 8260B			12/7/17 19:26	TMP	G
Toluene-d8 (S)	101		%	76 - 127	SW846 8260B			12/7/17 19:26	TMP	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	11		mg/L	5	S2320B-97			11/30/17 11:51	MSA	B
Alkalinity, Total	11	2	mg/L	5	S2320B-97			11/30/17 11:51	MSA	B
Ammonia-N	ND		mg/L	0.100	D6919-09			12/9/17 19:43	NJA	A
Chemical Oxygen Demand (COD)	ND		mg/L	7	EPA 410.4			12/5/17 20:14	AK	A
Chloride	65.5		mg/L	2.0	EPA 300.0			11/30/17 12:56	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			11/30/17 12:56	CHW	B
Nitrate-N	3.8		mg/L	0.20	EPA 300.0			11/30/17 12:56	CHW	B
pH	5.94	1	pH_Units		S4500HB-11			11/30/17 11:51	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	12/6/17 00:00	JLG	12/6/17 09:40	JLG	F
Specific Conductance	259		umhos/cm	1	SW846 9050A			11/30/17 11:51	MSA	B
Sulfate	7.2		mg/L	2.0	EPA 300.0			11/30/17 12:56	CHW	B
Total Dissolved Solids	137		mg/L	5	S2540C-11			11/30/17 12:00	BMK	B
Total Organic Carbon (TOC)	ND		mg/L	0.50	SW846 9060A			12/7/17 12:01	PAG	D
Turbidity	0.26		NTU	0.10	S2130B-01			11/30/17 03:53	MSA	B

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ANALYTICAL RESULTS

Workorder: 2279434 4TH QTR 2017 GWMP-FORM 19Q

Lab ID: **2279434003** Date Collected: 11/29/2017 12:02 Matrix: Ground Water

Sample ID: **FFMP029W** Date Received: 11/29/2017 16:45

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Calcium, Total	14.0		mg/L	0.11	SW846 6010C	12/5/17 02:30	LXC	12/5/17 17:28	SRT	J1
Iron, Total	ND		mg/L	0.067	SW846 6010C	12/5/17 02:30	LXC	12/5/17 17:28	SRT	J1
Magnesium, Total	9.1		mg/L	0.11	SW846 6010C	12/5/17 02:30	LXC	12/5/17 17:28	SRT	J1
Manganese, Total	0.025		mg/L	0.0056	SW846 6010C	12/5/17 02:30	LXC	12/5/17 17:28	SRT	J1
Potassium, Total	2.0		mg/L	0.56	SW846 6010C	12/5/17 02:30	LXC	12/5/17 17:28	SRT	J1
Sodium, Total	20.4		mg/L	0.56	SW846 6010C	12/5/17 02:30	LXC	12/5/17 17:28	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	40.400		Feet		Field			11/29/17 12:07	BGS	C
Elev Top MW Casing above MSL	477.30		Feet		Field			11/29/17 12:07	BGS	C
Flow Rate	2.42		gal/min		Field			11/29/17 12:07	BGS	C
Ground Water Elevation	436.900		ft/MSL		Field			11/29/17 12:07	BGS	C
pH, Field (SM4500B)	4.940		pH_Units		Field			11/29/17 12:07	BGS	C
Sample Depth	55.000		Feet		Field			11/29/17 12:07	BGS	C
Specific Conductance, Field	315		umhos/cm	1	Field			11/29/17 12:07	BGS	C
Temperature	12.28		Deg. C		Field			11/29/17 12:07	BGS	C
Total Well Depth	60.500		Feet		Field			11/29/17 12:07	BGS	C
Volume in Water Column	29.547		Gallons		Field			11/29/17 12:07	BGS	C
Water Level After Purge	47.030		Feet		Field			11/29/17 12:07	BGS	C
Well Volumes Purged	4.09		Vol		Field			11/29/17 12:07	BGS	C

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ANALYTICAL RESULTS

Workorder: 2279434 4TH QTR 2017 GWMP-FORM 19Q

Lab ID: **2279434004** Date Collected: 11/29/2017 12:27 Matrix: Ground Water

Sample ID: **FFMP016W** Date Received: 11/29/2017 16:45

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			12/7/17 18:29	DD	G
1,2-Dibromoethane	ND	7	ug/L	1.0	SW846 8260B			12/7/17 18:29	DD	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			12/7/17 18:29	DD	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			12/7/17 18:29	DD	G
1,1-Dichloroethene	ND	3	ug/L	1.0	SW846 8260B			12/7/17 18:29	DD	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/7/17 18:29	DD	G
trans-1,2-Dichloroethene	ND	5	ug/L	1.0	SW846 8260B			12/7/17 18:29	DD	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			12/7/17 18:29	DD	G
Methylene Chloride	ND	4	ug/L	1.0	SW846 8260B			12/7/17 18:29	DD	G
Tetrachloroethene	ND	8	ug/L	1.0	SW846 8260B			12/7/17 18:29	DD	G
Toluene	ND	6	ug/L	1.0	SW846 8260B			12/7/17 18:29	DD	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			12/7/17 18:29	DD	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			12/7/17 18:29	DD	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			12/7/17 18:29	DD	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			12/7/17 18:29	DD	G
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	86.8		%	62 - 133	SW846 8260B			12/7/17 18:29	DD	G
4-Bromofluorobenzene (S)	78.6	2	%	79 - 114	SW846 8260B			12/7/17 18:29	DD	G
Dibromofluoromethane (S)	92		%	78 - 116	SW846 8260B			12/7/17 18:29	DD	G
Toluene-d8 (S)	96.1		%	76 - 127	SW846 8260B			12/7/17 18:29	DD	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	35		mg/L	5	S2320B-97			11/30/17 13:49	MSA	B
Alkalinity, Total	35	9	mg/L	5	S2320B-97			11/30/17 13:49	MSA	B
Ammonia-N	ND		mg/L	0.100	D6919-09			12/9/17 19:57	NJA	A
Chemical Oxygen Demand (COD)	9		mg/L	7	EPA 410.4			12/5/17 20:14	AK	A
Chloride	119		mg/L	2.0	EPA 300.0			11/30/17 13:08	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			11/30/17 13:08	CHW	B
Nitrate-N	13.7		mg/L	0.20	EPA 300.0			11/30/17 13:08	CHW	B
pH	6.22	1	pH_Units		S4500HB-11			11/30/17 13:49	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	12/6/17 00:00	JLG	12/6/17 09:40	JLG	F
Specific Conductance	603		umhos/cm	1	SW846 9050A			11/30/17 13:49	MSA	B
Sulfate	24.4		mg/L	2.0	EPA 300.0			11/30/17 13:08	CHW	B
Total Dissolved Solids	363		mg/L	5	S2540C-11			11/30/17 12:00	BMK	I
Total Organic Carbon (TOC)	0.69		mg/L	0.50	SW846 9060A			12/7/17 12:01	PAG	D
Turbidity	0.14		NTU	0.10	S2130B-01			11/30/17 03:53	MSA	B

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ANALYTICAL RESULTS

Workorder: 2279434 4TH QTR 2017 GWMP-FORM 19Q

Lab ID: **2279434004** Date Collected: 11/29/2017 12:27 Matrix: Ground Water

Sample ID: **FFMP016W** Date Received: 11/29/2017 16:45

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Calcium, Total	44.2		mg/L	0.11	SW846 6010C	12/5/17 02:30	LXC	12/5/17 17:32	SRT	J1
Iron, Total	ND		mg/L	0.067	SW846 6010C	12/5/17 02:30	LXC	12/5/17 17:32	SRT	J1
Magnesium, Total	17.0		mg/L	0.11	SW846 6010C	12/5/17 02:30	LXC	12/5/17 17:32	SRT	J1
Manganese, Total	0.11		mg/L	0.0056	SW846 6010C	12/5/17 02:30	LXC	12/5/17 17:32	SRT	J1
Potassium, Total	2.1		mg/L	0.56	SW846 6010C	12/5/17 02:30	LXC	12/5/17 17:32	SRT	J1
Sodium, Total	33.0		mg/L	0.56	SW846 6010C	12/5/17 02:30	LXC	12/5/17 17:32	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	26.680		Feet		Field			11/22/17 12:25	BGS	C
Elev Top MW Casing above MSL	474.60		Feet		Field			11/22/17 12:25	BGS	C
Ground Water Elevation	447.920		ft/MSL		Field			11/22/17 12:25	BGS	C
pH, Field (SM4500B)	5.350		pH_Units		Field			11/22/17 12:25	BGS	C
Sample Depth	135.000		Feet		Field			11/22/17 12:25	BGS	C
Specific Conductance, Field	659		umhos/cm	1	Field			11/22/17 12:25	BGS	C
Temperature	10.97		Deg. C		Field			11/22/17 12:25	BGS	C
Total Well Depth	149.800		Feet		Field			11/22/17 12:25	BGS	C
Volume in Water Column	321.343		Gallons		Field			11/22/17 12:25	BGS	C

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ANALYTICAL RESULTS

Workorder: 2279434 4TH QTR 2017 GWMP-FORM 19Q

Lab ID: **2279434005** Date Collected: 11/29/2017 13:49 Matrix: Ground Water

Sample ID: **FFMP031W** Date Received: 11/29/2017 16:45

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			12/7/17 18:48	DD	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			12/7/17 18:48	DD	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			12/7/17 18:48	DD	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			12/7/17 18:48	DD	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/7/17 18:48	DD	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/7/17 18:48	DD	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/7/17 18:48	DD	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			12/7/17 18:48	DD	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			12/7/17 18:48	DD	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			12/7/17 18:48	DD	G
Toluene	ND		ug/L	1.0	SW846 8260B			12/7/17 18:48	DD	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			12/7/17 18:48	DD	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			12/7/17 18:48	DD	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			12/7/17 18:48	DD	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			12/7/17 18:48	DD	G
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	90.4		%	62 - 133	SW846 8260B			12/7/17 18:48	DD	G
4-Bromofluorobenzene (S)	98.5		%	79 - 114	SW846 8260B			12/7/17 18:48	DD	G
Dibromofluoromethane (S)	91.4		%	78 - 116	SW846 8260B			12/7/17 18:48	DD	G
Toluene-d8 (S)	79.7		%	76 - 127	SW846 8260B			12/7/17 18:48	DD	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	102		mg/L	5	S2320B-97			11/30/17 15:57	MSA	B
Alkalinity, Total	102	2	mg/L	5	S2320B-97			11/30/17 15:57	MSA	B
Ammonia-N	ND		mg/L	0.100	D6919-09			12/9/17 20:40	NJA	A
Chemical Oxygen Demand (COD)	ND		mg/L	7	EPA 410.4			12/2/17 00:07	AK	A
Chloride	23.8		mg/L	2.0	EPA 300.0			11/30/17 13:20	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			11/30/17 13:20	CHW	B
Nitrate-N	1.6		mg/L	0.20	EPA 300.0			11/30/17 13:20	CHW	B
pH	8.00	1	pH_Units		S4500HB-11			11/30/17 15:57	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	12/8/17 00:00	JLG	12/8/17 00:00	JLG	F
Specific Conductance	320		umhos/cm	1	SW846 9050A			11/30/17 15:57	MSA	B
Sulfate	45.0		mg/L	2.0	EPA 300.0			11/30/17 13:20	CHW	B
Total Dissolved Solids	198		mg/L	5	S2540C-11			11/30/17 12:00	BMK	B
Total Organic Carbon (TOC)	ND		mg/L	0.50	SW846 9060A			12/7/17 12:01	PAG	D
Turbidity	3.31		NTU	0.10	S2130B-01			11/30/17 03:53	MSA	B

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ANALYTICAL RESULTS

Workorder: 2279434 4TH QTR 2017 GWMP-FORM 19Q

Lab ID: **2279434005** Date Collected: 11/29/2017 13:49 Matrix: Ground Water

Sample ID: **FFMP031W** Date Received: 11/29/2017 16:45

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Calcium, Total	55.4		mg/L	0.11	SW846 6010C	12/5/17 02:30	LXC	12/5/17 17:36	SRT	J1
Iron, Total	0.34		mg/L	0.067	SW846 6010C	12/5/17 02:30	LXC	12/5/17 17:36	SRT	J1
Magnesium, Total	3.2		mg/L	0.11	SW846 6010C	12/5/17 02:30	LXC	12/5/17 17:36	SRT	J1
Manganese, Total	0.20		mg/L	0.0056	SW846 6010C	12/5/17 02:30	LXC	12/5/17 17:36	SRT	J1
Potassium, Total	1.2		mg/L	0.56	SW846 6010C	12/5/17 02:30	LXC	12/5/17 17:36	SRT	J1
Sodium, Total	7.3		mg/L	0.56	SW846 6010C	12/5/17 02:30	LXC	12/5/17 17:36	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	84.860		Feet		Field			11/29/17 13:49	BGS	C
Elev Top MW Casing above MSL	612.66		Feet		Field			11/29/17 13:49	BGS	C
Flow Rate	0.94		gal/min		Field			11/29/17 13:49	BGS	C
Ground Water Elevation	527.800		ft/MSL		Field			11/29/17 13:49	BGS	C
pH, Field (SM4500B)	7.430		pH_Units		Field			11/29/17 13:49	BGS	C
Sample Depth	130.000		Feet		Field			11/29/17 13:49	BGS	C
Specific Conductance, Field	389		umhos/cm	1	Field			11/29/17 13:49	BGS	C
Temperature	12.59		Deg. C		Field			11/29/17 13:49	BGS	C
Total Well Depth	142.700		Feet		Field			11/29/17 13:49	BGS	C
Volume in Water Column	85.025		Gallons		Field			11/29/17 13:49	BGS	C
Water Level After Purge	102.110		Feet		Field			11/29/17 13:49	BGS	C
Well Volumes Purged	0.77		Vol		Field			11/29/17 13:49	BGS	C

Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2279434 4TH QTR 2017 GWMP-FORM 19Q

Lab ID: **2279434006** Date Collected: 11/29/2017 14:17 Matrix: Ground Water

Sample ID: **FFMP002W** Date Received: 11/29/2017 16:45

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			12/7/17 19:06	DD	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			12/7/17 19:06	DD	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			12/7/17 19:06	DD	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			12/7/17 19:06	DD	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/7/17 19:06	DD	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/7/17 19:06	DD	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/7/17 19:06	DD	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			12/7/17 19:06	DD	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			12/7/17 19:06	DD	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			12/7/17 19:06	DD	G
Toluene	ND		ug/L	1.0	SW846 8260B			12/7/17 19:06	DD	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			12/7/17 19:06	DD	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			12/7/17 19:06	DD	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			12/7/17 19:06	DD	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			12/7/17 19:06	DD	G
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	88.8		%	62 - 133	SW846 8260B			12/7/17 19:06	DD	G
4-Bromofluorobenzene (S)	97.1		%	79 - 114	SW846 8260B			12/7/17 19:06	DD	G
Dibromofluoromethane (S)	91.4		%	78 - 116	SW846 8260B			12/7/17 19:06	DD	G
Toluene-d8 (S)	94.2		%	76 - 127	SW846 8260B			12/7/17 19:06	DD	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	ND		mg/L	5	S2320B-97			11/30/17 16:07	MSA	B
Alkalinity, Total	ND	2	mg/L	5	S2320B-97			11/30/17 16:07	MSA	B
Ammonia-N	ND		mg/L	0.100	D6919-09			12/9/17 20:54	NJA	A
Chemical Oxygen Demand (COD)	ND		mg/L	7	EPA 410.4			12/2/17 00:07	AK	A
Chloride	23.4		mg/L	5.0	EPA 300.0			11/30/17 13:32	CHW	B
Fluoride	ND		mg/L	0.50	EPA 300.0			11/30/17 13:32	CHW	B
Nitrate-N	26.7		mg/L	0.50	EPA 300.0			11/30/17 13:32	CHW	B
pH	5.63	1	pH_Units		S4500HB-11			11/30/17 16:07	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	12/8/17 00:00	JLG	12/8/17 00:00	JLG	F
Specific Conductance	287		umhos/cm	1	SW846 9050A			11/30/17 16:07	MSA	B
Sulfate	18.9		mg/L	5.0	EPA 300.0			11/30/17 13:32	CHW	B
Total Dissolved Solids	172		mg/L	5	S2540C-11			11/30/17 12:00	BMK	B
Total Organic Carbon (TOC)	ND		mg/L	0.50	SW846 9060A			12/7/17 12:01	PAG	D
Turbidity	ND		NTU	0.10	S2130B-01			11/30/17 03:53	MSA	B

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2279434 4TH QTR 2017 GWMP-FORM 19Q

Lab ID: **2279434006** Date Collected: 11/29/2017 14:17 Matrix: Ground Water

Sample ID: **FFMP002W** Date Received: 11/29/2017 16:45

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Calcium, Total	21.4		mg/L	0.11	SW846 6010C	12/5/17 02:30	LXC	12/5/17 17:39	SRT	J1
Iron, Total	ND		mg/L	0.067	SW846 6010C	12/5/17 02:30	LXC	12/5/17 17:39	SRT	J1
Magnesium, Total	9.2		mg/L	0.11	SW846 6010C	12/5/17 02:30	LXC	12/5/17 17:39	SRT	J1
Manganese, Total	0.26		mg/L	0.0056	SW846 6010C	12/5/17 02:30	LXC	12/5/17 17:39	SRT	J1
Potassium, Total	1.9		mg/L	0.56	SW846 6010C	12/5/17 02:30	LXC	12/5/17 17:39	SRT	J1
Sodium, Total	14.4		mg/L	0.56	SW846 6010C	12/5/17 02:30	LXC	12/5/17 17:39	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	70.940		Feet		Field			11/29/17 14:17	BGS	C
Elev Top MW Casing above MSL	613.20		Feet		Field			11/29/17 14:17	BGS	C
Flow Rate	0.87		gal/min		Field			11/29/17 14:17	BGS	C
Ground Water Elevation	542.260		ft/MSL		Field			11/29/17 14:17	BGS	C
pH, Field (SM4500B)	4.570		pH_Units		Field			11/29/17 14:17	BGS	C
Sample Depth	85.000		Feet		Field			11/29/17 14:17	BGS	C
Specific Conductance, Field	350		umhos/cm	1	Field			11/29/17 14:17	BGS	C
Temperature	12.46		Deg. C		Field			11/29/17 14:17	BGS	C
Total Well Depth	90.020		Feet		Field			11/29/17 14:17	BGS	C
Volume in Water Column	28.048		Gallons		Field			11/29/17 14:17	BGS	C
Water Level After Purge	79.980		Feet		Field			11/29/17 14:17	BGS	C
Well Volumes Purged	0.62		Vol		Field			11/29/17 14:17	BGS	C

Susan J. Scherer

Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2279434 4TH QTR 2017 GWMP-FORM 19Q

Lab ID: **2279434007** Date Collected: 11/29/2017 15:43 Matrix: Ground Water

Sample ID: **FFMP017W** Date Received: 11/29/2017 16:45

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			12/7/17 19:24	DD	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			12/7/17 19:24	DD	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			12/7/17 19:24	DD	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			12/7/17 19:24	DD	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/7/17 19:24	DD	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/7/17 19:24	DD	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/7/17 19:24	DD	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			12/7/17 19:24	DD	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			12/7/17 19:24	DD	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			12/7/17 19:24	DD	G
Toluene	ND		ug/L	1.0	SW846 8260B			12/7/17 19:24	DD	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			12/7/17 19:24	DD	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			12/7/17 19:24	DD	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			12/7/17 19:24	DD	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			12/7/17 19:24	DD	G
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	91.5		%	62 - 133	SW846 8260B			12/7/17 19:24	DD	G
4-Bromofluorobenzene (S)	101		%	79 - 114	SW846 8260B			12/7/17 19:24	DD	G
Dibromofluoromethane (S)	94		%	78 - 116	SW846 8260B			12/7/17 19:24	DD	G
Toluene-d8 (S)	93		%	76 - 127	SW846 8260B			12/7/17 19:24	DD	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	42		mg/L	5	S2320B-97			11/30/17 16:16	MSA	B
Alkalinity, Total	42	2	mg/L	5	S2320B-97			11/30/17 16:16	MSA	B
Ammonia-N	ND		mg/L	0.100	D6919-09			12/9/17 21:08	NJA	A
Chemical Oxygen Demand (COD)	ND		mg/L	7	EPA 410.4			12/5/17 20:14	AK	A
Chloride	347		mg/L	10.0	EPA 300.0			11/30/17 14:55	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			11/30/17 14:43	CHW	B
Nitrate-N	2.5		mg/L	0.20	EPA 300.0			11/30/17 14:43	CHW	B
pH	6.44	1	pH_Units		S4500HB-11			11/30/17 16:16	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	12/8/17 00:00	JLG	12/8/17 00:00	JLG	F
Specific Conductance	1290		umhos/cm	1	SW846 9050A			11/30/17 16:16	MSA	B
Sulfate	59.2		mg/L	2.0	EPA 300.0			11/30/17 14:43	CHW	B
Total Dissolved Solids	748		mg/L	5	S2540C-11			11/30/17 12:00	BMK	B
Total Organic Carbon (TOC)	1.5		mg/L	0.50	SW846 9060A			12/7/17 12:01	PAG	D
Turbidity	0.60		NTU	0.10	S2130B-01			11/30/17 03:53	MSA	B

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ANALYTICAL RESULTS

Workorder: 2279434 4TH QTR 2017 GWMP-FORM 19Q

Lab ID: **2279434007** Date Collected: 11/29/2017 15:43 Matrix: Ground Water

Sample ID: **FFMP017W** Date Received: 11/29/2017 16:45

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Calcium, Total	91.8		mg/L	0.11	SW846 6010C	12/5/17 02:30	LXC	12/5/17 17:43	SRT	J1
Iron, Total	ND		mg/L	0.067	SW846 6010C	12/5/17 02:30	LXC	12/5/17 17:43	SRT	J1
Magnesium, Total	40.7		mg/L	0.11	SW846 6010C	12/5/17 02:30	LXC	12/5/17 17:43	SRT	J1
Manganese, Total	0.34		mg/L	0.0056	SW846 6010C	12/5/17 02:30	LXC	12/5/17 17:43	SRT	J1
Potassium, Total	4.2		mg/L	0.56	SW846 6010C	12/5/17 02:30	LXC	12/5/17 17:43	SRT	J1
Sodium, Total	68.3		mg/L	0.56	SW846 6010C	12/5/17 02:30	LXC	12/5/17 17:43	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	44.320		Feet		Field			11/29/17 15:43	BGS	C
Elev Top MW Casing above MSL	480.70		Feet		Field			11/29/17 15:43	BGS	C
Flow Rate	3.16		gal/min		Field			11/29/17 15:43	BGS	C
Ground Water Elevation	436.380		ft/MSL		Field			11/29/17 15:43	BGS	C
pH, Field (SM4500B)	5.320		pH_Units		Field			11/29/17 15:43	BGS	C
Sample Depth	135.000		Feet		Field			11/29/17 15:43	BGS	C
Specific Conductance, Field	1409		umhos/cm	1	Field			11/29/17 15:43	BGS	C
Temperature	10.57		Deg. C		Field			11/29/17 15:43	BGS	C
Total Well Depth	150.500		Feet		Field			11/29/17 15:43	BGS	C
Volume in Water Column	156.085		Gallons		Field			11/29/17 15:43	BGS	C
Water Level After Purge	50.020		Feet		Field			11/29/17 15:43	BGS	C
Well Volumes Purged	1.42		Vol		Field			11/29/17 15:43	BGS	C

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ANALYTICAL RESULTS

Workorder: 2279434 4TH QTR 2017 GWMP-FORM 19Q

Lab ID: **2279434008** Date Collected: 11/29/2017 14:55 Matrix: Ground Water

Sample ID: **FIELD BLANK** Date Received: 11/29/2017 16:45

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			12/7/17 17:17	DD	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			12/7/17 17:17	DD	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			12/7/17 17:17	DD	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			12/7/17 17:17	DD	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/7/17 17:17	DD	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/7/17 17:17	DD	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/7/17 17:17	DD	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			12/7/17 17:17	DD	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			12/7/17 17:17	DD	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			12/7/17 17:17	DD	G
Toluene	ND		ug/L	1.0	SW846 8260B			12/7/17 17:17	DD	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			12/7/17 17:17	DD	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			12/7/17 17:17	DD	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			12/7/17 17:17	DD	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			12/7/17 17:17	DD	G
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	90.7		%	62 - 133	SW846 8260B			12/7/17 17:17	DD	G
4-Bromofluorobenzene (S)	96.3		%	79 - 114	SW846 8260B			12/7/17 17:17	DD	G
Dibromofluoromethane (S)	91.2		%	78 - 116	SW846 8260B			12/7/17 17:17	DD	G
Toluene-d8 (S)	87.4		%	76 - 127	SW846 8260B			12/7/17 17:17	DD	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	ND		mg/L	5	S2320B-97			11/30/17 16:25	MSA	B
Alkalinity, Total	ND	2	mg/L	5	S2320B-97			11/30/17 16:25	MSA	B
Ammonia-N	ND		mg/L	0.100	D6919-09			12/9/17 21:22	NJA	A
Chemical Oxygen Demand (COD)	ND		mg/L	7	EPA 410.4			12/2/17 00:07	AK	A
Chloride	ND		mg/L	1.0	EPA 300.0			11/30/17 15:07	CHW	B
Fluoride	ND		mg/L	0.10	EPA 300.0			11/30/17 15:07	CHW	B
Nitrate-N	ND		mg/L	0.10	EPA 300.0			11/30/17 15:07	CHW	B
pH	6.17	1	pH_Units		S4500HB-11			11/30/17 16:25	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	12/8/17 00:00	JLG	12/8/17 00:00	JLG	F
Specific Conductance	1		umhos/cm	1	SW846 9050A			12/4/17 01:10	MSA	B
Sulfate	ND		mg/L	1.0	EPA 300.0			11/30/17 15:07	CHW	B
Total Dissolved Solids	7		mg/L	5	S2540C-11			11/30/17 12:00	BMK	B
Total Organic Carbon (TOC)	ND		mg/L	0.50	SW846 9060A			12/7/17 12:01	PAG	D
Turbidity	ND		NTU	0.10	S2130B-01			11/30/17 03:53	MSA	B

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ANALYTICAL RESULTS

Workorder: 2279434 4TH QTR 2017 GWMP-FORM 19Q

Lab ID: **2279434008** Date Collected: 11/29/2017 14:55 Matrix: Ground Water

Sample ID: **FIELD BLANK** Date Received: 11/29/2017 16:45

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Calcium, Total	ND		mg/L	0.11	SW846 6010C	12/5/17 02:30	LXC	12/5/17 17:47	SRT	J1
Iron, Total	ND		mg/L	0.067	SW846 6010C	12/5/17 02:30	LXC	12/5/17 17:47	SRT	J1
Magnesium, Total	ND		mg/L	0.11	SW846 6010C	12/5/17 02:30	LXC	12/5/17 17:47	SRT	J1
Manganese, Total	ND		mg/L	0.0056	SW846 6010C	12/5/17 02:30	LXC	12/5/17 17:47	SRT	J1
Potassium, Total	ND		mg/L	0.56	SW846 6010C	12/5/17 02:30	LXC	12/5/17 17:47	SRT	J1
Sodium, Total	ND		mg/L	0.56	SW846 6010C	12/5/17 02:30	LXC	12/5/17 17:47	SRT	J1

Susan J. Scherer

Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2279434 4TH QTR 2017 GWMP-FORM 19Q

Lab ID: **2279434009** Date Collected: 11/29/2017 16:45 Matrix: Ground Water

Sample ID: **TRIP BLANK** Date Received: 11/29/2017 16:45

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			12/7/17 16:58	DD	A
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			12/7/17 16:58	DD	A
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			12/7/17 16:58	DD	A
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			12/7/17 16:58	DD	A
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/7/17 16:58	DD	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/7/17 16:58	DD	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/7/17 16:58	DD	A
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			12/7/17 16:58	DD	A
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			12/7/17 16:58	DD	A
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			12/7/17 16:58	DD	A
Toluene	ND		ug/L	1.0	SW846 8260B			12/7/17 16:58	DD	A
Total Xylenes	ND		ug/L	3.0	SW846 8260B			12/7/17 16:58	DD	A
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			12/7/17 16:58	DD	A
Trichloroethene	ND		ug/L	1.0	SW846 8260B			12/7/17 16:58	DD	A
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			12/7/17 16:58	DD	A
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	89.4		%	62 - 133	SW846 8260B			12/7/17 16:58	DD	A
4-Bromofluorobenzene (S)	96.9		%	79 - 114	SW846 8260B			12/7/17 16:58	DD	A
Dibromofluoromethane (S)	90.2		%	78 - 116	SW846 8260B			12/7/17 16:58	DD	A
Toluene-d8 (S)	81.5		%	76 - 127	SW846 8260B			12/7/17 16:58	DD	A

Susan J. Scherer

Ms. Susan J Scherer
Project Coordinator

ANALYTICAL RESULTS

Workorder: 2279434 4TH QTR 2017 GWMP-FORM 19Q

PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
2279434001	1	FFMP018W	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				
2279434001	2	FFMP018W	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
2279434002	1	FFMP019W	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				
2279434002	2	FFMP019W	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
2279434003	1	FFMP029W	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				
2279434003	2	FFMP029W	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
2279434004	1	FFMP016W	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				
2279434004	2	FFMP016W	SW846 8260B	4-Bromofluorobenzene
The surrogate 4-Bromofluorobenzene for method SW846 8260B was outside of control limits. The % Recovery was reported as 78.6 and the control limits were 79 to 114. This result was reported at a dilution of 1.				
2279434004	3	FFMP016W	SW846 8260B	1,1-Dichloroethene
The QC sample type MSD for method SW846 8260B was outside the control limits for the analyte 1,1-Dichloroethene. The % Recovery was reported as 135 and the control limits were 63 to 128.				
2279434004	4	FFMP016W	SW846 8260B	Methylene Chloride
The QC sample type MS for method SW846 8260B was outside the control limits for the analyte Methylene Chloride. The % Recovery was reported as 132 and the control limits were 76 to 121.				
2279434004	5	FFMP016W	SW846 8260B	trans-1,2-Dichloroethene
The QC sample type MSD for method SW846 8260B was outside the control limits for the analyte trans-1,2-Dichloroethene. The % Recovery was reported as 132 and the control limits were 71 to 122.				
2279434004	6	FFMP016W	SW846 8260B	Toluene
The QC sample type MS for method SW846 8260B was outside the control limits for the analyte Toluene. The % Recovery was reported as 127 and the control limits were 80 to 125.				
2279434004	7	FFMP016W	SW846 8260B	1,2-Dibromoethane
The QC sample type MSD for method SW846 8260B was outside the control limits for the analyte 1,2-Dibromoethane. The RPD was reported as 20.1 and the upper control limit is 19.				
2279434004	8	FFMP016W	SW846 8260B	Tetrachloroethene
The QC sample type MS for method SW846 8260B was outside the control limits for the analyte Tetrachloroethene. The % Recovery was reported as 140 and the control limits were 72 to 124.				
2279434004	9	FFMP016W	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				

ANALYTICAL RESULTS

Workorder: 2279434 4TH QTR 2017 GWMP-FORM 19Q

2279434005	1	FFMP031W	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				
2279434005	2	FFMP031W	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
2279434006	1	FFMP002W	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				
2279434006	2	FFMP002W	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
2279434007	1	FFMP017W	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				
2279434007	2	FFMP017W	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
2279434008	1	FIELD BLANK	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				
2279434008	2	FIELD BLANK	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				

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CHAIN OF CUSTODY/ REQUEST FOR ANALYSIS

Generated by ALS

COC # *2279434*

1 of 1

ALL SHADED AREAS MUST BE COMPLETED BY THE CLIENT / SAMPLER. INSTRUCTIONS ON THE BACK.

Client Name: Lancaster County Solid Waste MA
Address: 1299 Harrisburg Pike, P.O. Box 4424
Lancaster, PA 17604
Contact: Mark Reider
Phone#: (717) 735-0193
Project Name/#: Frey Farm Quarterly (GWMP)
Bill To: Lancaster County Solid Waste MA

TAT [X] Normal-Standard TAT is 10-12 business days. [ ] Rush-Subject to ALS approval and surcharges.
Date Required: _____ Approved By: _____
Email? [X] -Y mreider@LCSWMA.com
Fax? [X] -Y No.: (717) 397-9973

Sample Description/Location (as it will appear on the lab report)	Sample Date	Time	*G or C	**Matrix	TOC	O-OH	VOC - Form 19Q	Field Measurements	Sample Depth for AUX Data	NH3-N, COD	Metals: Fe, Mn, Na, Ca, K, Mg	pH, Cl, SpC, F, SO4, TDS, NO3, Turb.	Alkalinity Bicarbonate
Container Type					AG	AN	CG	—	—	PL	PL	PL	PL
Container Size					40 ml	500 ml	40 ml	—	—	500 ml	500 ml	1 L	500 ml
Preservative					HCl	H2SO4	HCl	—	—	H2SO4	HNO3	None	None
					Enter Number of Containers Per Sample or Field Results Below.								
1 FFMP01BW	11/29/17	1020	G	GW	2	1	2	x	x	1	1	1	1
2 FFMP01GW		1106											
3 FFMP02GW		1202											
4 FFMP01GW		1227											
5 FFMP03JW		1349											
6 FFMP002W		1417											
7 FFMP01JW		1543											
8 Field Blank		1455											
9 Trip Blank		1645											
10													

Receipt Information (completed by Receiving Lab)
Cooler Temp: 1° Therm ID: 402
No. of Coolers: _____

	Y	N	Initial
Custody Seals Present?		/	gm
(If present) Seals Intact?			
Received on Ice?	/		
COC/Labels Complete/Accurate?	/		
Cont. In Good Cond.?	/		
Correct Containers?	/		
Correct Sample Volumes?	/		
Correct Preservation?	/		
Headspace/Volatiles?		/	

Courier/Tracking #:

Sample/COC Comments

ALS Field Services: ☐Pickup ☐Labor ☐Composite_Sampling ☐Rental_Equipment ☐Other:

Project Comments:

LOGGED BY(signature): DATE TIME
REVIEWED BY(signature): DATE TIME

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
1 [signature] ALS	11/29/17	1645	2 [signature]	11-29	1645
3			4		
5			6		
7			8		
9			10		

Data Deliverables: [ ] Standard [ ] CLP-like [ ] USACE [ ]
Special Processing: USACE [ ] Navy [ ]
State Samples Collected In: [ ] NY [ ] NJ [X] PA [ ] NC [ ]
Reportable to PADEP? Yes [ ] PWSID # _____
Sample Disposal: Lab [X] Special [ ]
EDDS: Format Type-

* G=Grab; C=Composite **Matrix - Al=Air; DW=Drinking Water; GW=Groundwater; Oi=Oil; OL=Other Liquid; SL=Sludge; SO=Soil; WP=Wipe; WW=Wastewater

ALS ENVIRONMENTAL SHIPPING ADDRESS: 34 DOGWOOD LANE, MIDDLETOWN, PA 17057

Rev 8/04

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

December 12, 2017

Mr. Daniel Brown
Lancaster County Solid Waste Authority
1299 Hbg Pike, P.O. Box 4425
Lancaster, PA 17604

Certificate of Analysis

Project Name:	**2017-FREY FARM**	Workorder:	**2278565**
Purchase Order:		Workorder ID:	**4TH QTR 2017 GWMP-FORM 19Q**

Dear Mr. Brown:

Enclosed are the analytical results for samples received by the laboratory on Wednesday, November 22, 2017.

The ALS Environmental laboratory in Middletown, Pennsylvania is a National Environmental Laboratory Accreditation Program (NELAP) accredited laboratory and as such, certifies that all applicable test results meet the requirements of NELAP.

If you have any questions regarding this certificate of analysis, please contact Ms. Susan J Scherer (Project Coordinator) at (717) 944-5541.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications section of the ALS website at www.alsglobal.com/en/Our-Services/Life-Sciences/Environmental/Downloads.

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ALS Spring City: 10 Riverside Drive, Spring City, PA 19475 610-948-4903

CC: Ms. Jordan Gallagher , Mr. Mark Reider , Mr. Jeff Musser

This page is included as part of the Analytical Report and must be retained as a permanent record thereof.

Susan J. Scherer

Ms. Susan J Scherer
Project Coordinator

ALS Environmental

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SAMPLE SUMMARY

Workorder: 2278565 4TH QTR 2017 GWMP-FORM 19Q

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
2278565001	FFMP02DW	Ground Water	11/22/2017 11:06	11/22/2017 16:49	Mr. Brian G Shade
2278565002	FFMP02SW	Ground Water	11/22/2017 11:47	11/22/2017 16:49	Mr. Brian G Shade
2278565003	FFMP033W	Ground Water	11/22/2017 13:07	11/22/2017 16:49	Mr. Brian G Shade
2278565004	FFMP028W	Ground Water	11/22/2017 14:48	11/22/2017 16:49	Mr. Brian G Shade
2278565005	FFMP025W	Ground Water	11/22/2017 15:43	11/22/2017 16:49	Mr. Brian G Shade
2278565006	FIELD BLANK	Ground Water	11/22/2017 16:01	11/22/2017 16:49	Mr. Brian G Shade
2278565007	TRIP BLANK	Ground Water	11/22/2017 16:49	11/22/2017 16:49	Mr. Brian G Shade

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SAMPLE SUMMARY

Workorder: 2278565 4TH QTR 2017 GWMP-FORM 19Q

Notes

-- Samples collected by ALS personnel are done so in accordance with the procedures set forth in the ALS Field Sampling Plan (20 - Field Services Sampling Plan).
-- All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
-- All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
-- Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
-- The Chain of Custody document is included as part of this report.
-- All Library Search analytes should be regarded as tentative identifications based on the presumptive evidence of the mass spectra. Concentrations reported are estimated values.
-- Parameters identified as "analyze immediately" require analysis within 15 minutes of collection. Any "analyze immediately" parameters not listed under the header "Field Parameters" are preformed in the laboratory and are therefore analyzed out of hold time.
-- Method references listed on this report beginning with the prefix “S” followed by a method number (such as S2310B-97) refer to methods from “Standard Methods for the Examination of Water and Wastewater”.
-- For microbiological analyses, the "Prepared" value is the date/time into the incurbator and the "Analyzed" value is the date/time out the incubator.

Standard Acronyms/Flags

J	Indicates an estimated value between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL) for the analyte
U	Indicates that the analyte was Not Detected (ND)
N	Indicates presumptive evidence of the presence of a compound
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
RDL	Reporting Detection Limit
ND	Not Detected - indicates that the analyte was Not Detected at the RDL
Cntr	Analysis was performed using this container
RegLmt	Regulatory Limit
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
%Rec	Percent Recovery
RPD	Relative Percent Difference
LOD	DoD Limit of Detection
LOQ	DoD Limit of Quantitation
DL	DoD Detection Limit
I	Indicates reported value is greater than or equal to the Method Detection Limit (MDL) but less than the Report Detection Limit (RDL)
(S)	Surrogate Compound
NC	Not Calculated
*	Result outside of QC limits

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ANALYTICAL RESULTS

Workorder: 2278565 4TH QTR 2017 GWMP-FORM 19Q

Lab ID: **2278565001** Date Collected: 11/22/2017 11:06 Matrix: Ground Water

Sample ID: **FFMP02DW** Date Received: 11/22/2017 16:49

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			12/5/17 16:33	TMP	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			12/5/17 16:33	TMP	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			12/5/17 16:33	TMP	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			12/5/17 16:33	TMP	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/5/17 16:33	TMP	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/5/17 16:33	TMP	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/5/17 16:33	TMP	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			12/5/17 16:33	TMP	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			12/5/17 16:33	TMP	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			12/5/17 16:33	TMP	G
Toluene	ND		ug/L	1.0	SW846 8260B			12/5/17 16:33	TMP	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			12/5/17 16:33	TMP	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			12/5/17 16:33	TMP	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			12/5/17 16:33	TMP	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			12/5/17 16:33	TMP	G
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	112		%	62 - 133	SW846 8260B			12/5/17 16:33	TMP	G
4-Bromofluorobenzene (S)	103		%	79 - 114	SW846 8260B			12/5/17 16:33	TMP	G
Dibromofluoromethane (S)	101		%	78 - 116	SW846 8260B			12/5/17 16:33	TMP	G
Toluene-d8 (S)	104		%	76 - 127	SW846 8260B			12/5/17 16:33	TMP	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	133		mg/L	5	S2320B-97			11/29/17 14:34	MSA	B
Alkalinity, Total	133	2	mg/L	5	S2320B-97			11/29/17 14:34	MSA	B
Ammonia-N	ND		mg/L	0.100	D6919-09			12/7/17 00:10	NJA	A
Chemical Oxygen Demand (COD)	ND		mg/L	7	EPA 410.4			12/4/17 21:49	AK	A
Chloride	150		mg/L	2.0	EPA 300.0			11/23/17 13:15	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			11/23/17 13:15	CHW	B
Nitrate-N	2.5		mg/L	0.20	EPA 300.0			11/23/17 13:15	CHW	B
pH	7.93	1	pH_Units		S4500HB-11			11/29/17 14:34	MSA	B
Phenolics	0.009		mg/L	0.005	SW846 9066	12/6/17 00:00	JLG	12/6/17 09:40	JLG	F
Specific Conductance	804		umhos/cm	1	SW846 9050A			11/29/17 14:34	MSA	B
Sulfate	30.2		mg/L	2.0	EPA 300.0			11/23/17 13:15	CHW	B
Total Dissolved Solids	474		mg/L	5	S2540C-11			11/28/17 11:30	BMK	B
Total Organic Carbon (TOC)	0.65		mg/L	0.50	SW846 9060A			12/4/17 10:52	PAG	D
Turbidity	1.99		NTU	0.10	S2130B-01			11/22/17 22:57	MSA	B

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ANALYTICAL RESULTS

Workorder: 2278565 4TH QTR 2017 GWMP-FORM 19Q

Lab ID: **2278565001** Date Collected: 11/22/2017 11:06 Matrix: Ground Water

Sample ID: **FFMP02DW** Date Received: 11/22/2017 16:49

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Calcium, Total	69.7		mg/L	0.11	SW846 6010C	12/4/17 16:50	SRT	12/5/17 13:52	SRT	J1
Iron, Total	0.13		mg/L	0.067	SW846 6010C	12/4/17 16:50	SRT	12/5/17 13:52	SRT	J1
Magnesium, Total	12.5		mg/L	0.11	SW846 6010C	12/4/17 16:50	SRT	12/5/17 13:52	SRT	J1
Manganese, Total	0.36		mg/L	0.0056	SW846 6010C	12/4/17 16:50	SRT	12/5/17 13:52	SRT	J1
Potassium, Total	1.8		mg/L	0.56	SW846 6010C	12/4/17 16:50	SRT	12/5/17 13:52	SRT	J1
Sodium, Total	62.3		mg/L	0.56	SW846 6010C	12/4/17 16:50	SRT	12/5/17 13:52	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	21.830		Feet		Field			11/22/17 11:06	BGS	C
Elev Top MW Casing above MSL	509.60		Feet		Field			11/22/17 11:06	BGS	C
Flow Rate	1.66		gal/min		Field			11/22/17 11:06	BGS	C
Ground Water Elevation	487.770		ft/MSL		Field			11/22/17 11:06	BGS	C
pH, Field (SM4500B)	6.820		pH_Units		Field			11/22/17 11:06	BGS	C
Sample Depth	120.000		Feet		Field			11/22/17 11:06	BGS	C
Specific Conductance, Field	880		umhos/cm	1	Field			11/22/17 11:06	BGS	C
Temperature	10.72		Deg. C		Field			11/22/17 11:06	BGS	C
Total Well Depth	153.000		Feet		Field			11/22/17 11:06	BGS	C
Volume in Water Column	192.820		Gallons		Field			11/22/17 11:06	BGS	C
Water Level After Purge	60.180		Feet		Field			11/22/17 11:06	BGS	C
Well Volumes Purged	0.60		Vol		Field			11/22/17 11:06	BGS	C

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ANALYTICAL RESULTS

Workorder: 2278565 4TH QTR 2017 GWMP-FORM 19Q

Lab ID: **2278565002** Date Collected: 11/22/2017 11:47 Matrix: Ground Water

Sample ID: **FFMP02SW** Date Received: 11/22/2017 16:49

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			12/5/17 16:56	TMP	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			12/5/17 16:56	TMP	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			12/5/17 16:56	TMP	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			12/5/17 16:56	TMP	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/5/17 16:56	TMP	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/5/17 16:56	TMP	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/5/17 16:56	TMP	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			12/5/17 16:56	TMP	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			12/5/17 16:56	TMP	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			12/5/17 16:56	TMP	G
Toluene	ND		ug/L	1.0	SW846 8260B			12/5/17 16:56	TMP	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			12/5/17 16:56	TMP	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			12/5/17 16:56	TMP	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			12/5/17 16:56	TMP	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			12/5/17 16:56	TMP	G
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	113		%	62 - 133	SW846 8260B			12/5/17 16:56	TMP	G
4-Bromofluorobenzene (S)	103		%	79 - 114	SW846 8260B			12/5/17 16:56	TMP	G
Dibromofluoromethane (S)	103		%	78 - 116	SW846 8260B			12/5/17 16:56	TMP	G
Toluene-d8 (S)	104		%	76 - 127	SW846 8260B			12/5/17 16:56	TMP	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	12		mg/L	5	S2320B-97			11/29/17 14:43	MSA	B
Alkalinity, Total	12	2	mg/L	5	S2320B-97			11/29/17 14:43	MSA	B
Ammonia-N	ND		mg/L	0.100	D6919-09			12/7/17 00:25	NJA	A
Chemical Oxygen Demand (COD)	8		mg/L	7	EPA 410.4			12/4/17 21:49	AK	A
Chloride	331		mg/L	5.0	EPA 300.0			11/29/17 14:07	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			11/23/17 13:26	CHW	B
Nitrate-N	13.0		mg/L	0.20	EPA 300.0			11/23/17 13:26	CHW	B
pH	6.14	1	pH_Units		S4500HB-11			11/29/17 14:43	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	12/6/17 00:00	JLG	12/6/17 09:40	JLG	F
Specific Conductance	1200		umhos/cm	1	SW846 9050A			11/29/17 14:43	MSA	B
Sulfate	29.8		mg/L	2.0	EPA 300.0			11/23/17 13:26	CHW	B
Total Dissolved Solids	599		mg/L	5	S2540C-11			11/28/17 11:30	BMK	B
Total Organic Carbon (TOC)	0.93		mg/L	0.50	SW846 9060A			12/4/17 10:52	PAG	D
Turbidity	37.5		NTU	0.10	S2130B-01			11/22/17 22:57	MSA	B

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ANALYTICAL RESULTS

Workorder: 2278565 4TH QTR 2017 GWMP-FORM 19Q

Lab ID: **2278565002** Date Collected: 11/22/2017 11:47 Matrix: Ground Water

Sample ID: **FFMP02SW** Date Received: 11/22/2017 16:49

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Calcium, Total	39.4		mg/L	0.11	SW846 6010C	12/4/17 16:50	SRT	12/5/17 13:55	SRT	J1
Iron, Total	0.25		mg/L	0.067	SW846 6010C	12/4/17 16:50	SRT	12/5/17 13:55	SRT	J1
Magnesium, Total	15.9		mg/L	0.11	SW846 6010C	12/4/17 16:50	SRT	12/5/17 13:55	SRT	J1
Manganese, Total	0.072		mg/L	0.0056	SW846 6010C	12/4/17 16:50	SRT	12/5/17 13:55	SRT	J1
Potassium, Total	5.7		mg/L	0.56	SW846 6010C	12/4/17 16:50	SRT	12/5/17 13:55	SRT	J1
Sodium, Total	148		mg/L	0.56	SW846 6010C	12/4/17 16:50	SRT	12/5/17 13:55	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	15.700		Feet		Field			11/22/17 11:47	BGS	C
Elev Top MW Casing above MSL	509.90		Feet		Field			11/22/17 11:47	BGS	C
Flow Rate	0.48		gal/min		Field			11/22/17 11:47	BGS	C
Ground Water Elevation	494.200		ft/MSL		Field			11/22/17 11:47	BGS	C
pH, Field (SM4500B)	5.320		pH_Units		Field			11/22/17 11:47	BGS	C
Sample Depth	18.000		Feet		Field			11/22/17 11:47	BGS	C
Specific Conductance, Field	1282		umhos/cm	1	Field			11/22/17 11:47	BGS	C
Temperature	13.81		Deg. C		Field			11/22/17 11:47	BGS	C
Total Well Depth	22.700		Feet		Field			11/22/17 11:47	BGS	C
Volume in Water Column	4.550		Gallons		Field			11/22/17 11:47	BGS	C
Water Level After Purge	17.750		Feet		Field			11/22/17 11:47	BGS	C
Well Volumes Purged	3.14		Vol		Field			11/22/17 11:47	BGS	C

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ANALYTICAL RESULTS

Workorder: 2278565 4TH QTR 2017 GWMP-FORM 19Q

Lab ID: **2278565003** Date Collected: 11/22/2017 13:07 Matrix: Ground Water

Sample ID: **FFMP033W** Date Received: 11/22/2017 16:49

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			12/5/17 17:19	TMP	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			12/5/17 17:19	TMP	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			12/5/17 17:19	TMP	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			12/5/17 17:19	TMP	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/5/17 17:19	TMP	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/5/17 17:19	TMP	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/5/17 17:19	TMP	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			12/5/17 17:19	TMP	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			12/5/17 17:19	TMP	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			12/5/17 17:19	TMP	G
Toluene	ND		ug/L	1.0	SW846 8260B			12/5/17 17:19	TMP	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			12/5/17 17:19	TMP	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			12/5/17 17:19	TMP	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			12/5/17 17:19	TMP	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			12/5/17 17:19	TMP	G
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	112		%	62 - 133	SW846 8260B			12/5/17 17:19	TMP	G
4-Bromofluorobenzene (S)	103		%	79 - 114	SW846 8260B			12/5/17 17:19	TMP	G
Dibromofluoromethane (S)	103		%	78 - 116	SW846 8260B			12/5/17 17:19	TMP	G
Toluene-d8 (S)	103		%	76 - 127	SW846 8260B			12/5/17 17:19	TMP	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	42		mg/L	5	S2320B-97			11/29/17 14:52	MSA	B
Alkalinity, Total	42	2	mg/L	5	S2320B-97			11/29/17 14:52	MSA	B
Ammonia-N	0.739		mg/L	0.100	D6919-09			12/7/17 00:39	NJA	A
Chemical Oxygen Demand (COD)	ND		mg/L	7	EPA 410.4			12/4/17 21:49	AK	A
Chloride	35.5		mg/L	2.0	EPA 300.0			11/23/17 13:38	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			11/23/17 13:38	CHW	B
Nitrate-N	10.0		mg/L	0.20	EPA 300.0			11/23/17 13:38	CHW	B
pH	6.67	1	pH_Units		S4500HB-11			11/29/17 14:52	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	12/6/17 00:00	JLG	12/6/17 09:40	JLG	F
Specific Conductance	266		umhos/cm	1	SW846 9050A			11/29/17 14:52	MSA	B
Sulfate	8.4		mg/L	2.0	EPA 300.0			11/23/17 13:38	CHW	B
Total Dissolved Solids	185		mg/L	5	S2540C-11			11/28/17 11:30	BMK	B
Total Organic Carbon (TOC)	ND		mg/L	0.50	SW846 9060A			12/4/17 10:52	PAG	D
Turbidity	19.5		NTU	0.10	S2130B-01			11/22/17 22:57	MSA	B

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ANALYTICAL RESULTS

Workorder: 2278565 4TH QTR 2017 GWMP-FORM 19Q

Lab ID: **2278565003** Date Collected: 11/22/2017 13:07 Matrix: Ground Water

Sample ID: **FFMP033W** Date Received: 11/22/2017 16:49

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Calcium, Total	23.4		mg/L	0.11	SW846 6010C	12/4/17 16:50	SRT	12/5/17 13:59	SRT	J1
Iron, Total	4.5		mg/L	0.067	SW846 6010C	12/4/17 16:50	SRT	12/5/17 13:59	SRT	J1
Magnesium, Total	8.1		mg/L	0.11	SW846 6010C	12/4/17 16:50	SRT	12/5/17 13:59	SRT	J1
Manganese, Total	0.68		mg/L	0.0056	SW846 6010C	12/4/17 16:50	SRT	12/5/17 13:59	SRT	J1
Potassium, Total	1.6		mg/L	0.56	SW846 6010C	12/4/17 16:50	SRT	12/5/17 13:59	SRT	J1
Sodium, Total	12.6		mg/L	0.56	SW846 6010C	12/4/17 16:50	SRT	12/5/17 13:59	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	17.960		Feet		Field			11/22/17 13:07	BGS	C
Elev Top MW Casing above MSL	516.52		Feet		Field			11/22/17 13:07	BGS	C
Flow Rate	1.27		gal/min		Field			11/22/17 13:07	BGS	C
Ground Water Elevation	498.560		ft/MSL		Field			11/22/17 13:07	BGS	C
pH, Field (SM4500B)	5.640		pH_Units		Field			11/22/17 13:07	BGS	C
Sample Depth	79.000		Feet		Field			11/22/17 13:07	BGS	C
Specific Conductance, Field	328		umhos/cm	1	Field			11/22/17 13:07	BGS	C
Temperature	12.26		Deg. C		Field			11/22/17 13:07	BGS	C
Total Well Depth	100.000		Feet		Field			11/22/17 13:07	BGS	C
Volume in Water Column	120.599		Gallons		Field			11/22/17 13:07	BGS	C
Water Level After Purge	21.950		Feet		Field			11/22/17 13:07	BGS	C
Well Volumes Purged	0.63		Vol		Field			11/22/17 13:07	BGS	C

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ANALYTICAL RESULTS

Workorder: 2278565 4TH QTR 2017 GWMP-FORM 19Q

Lab ID: **2278565004** Date Collected: 11/22/2017 14:48 Matrix: Ground Water

Sample ID: **FFMP028W** Date Received: 11/22/2017 16:49

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			12/5/17 17:42	TMP	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			12/5/17 17:42	TMP	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			12/5/17 17:42	TMP	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			12/5/17 17:42	TMP	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/5/17 17:42	TMP	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/5/17 17:42	TMP	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/5/17 17:42	TMP	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			12/5/17 17:42	TMP	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			12/5/17 17:42	TMP	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			12/5/17 17:42	TMP	G
Toluene	ND		ug/L	1.0	SW846 8260B			12/5/17 17:42	TMP	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			12/5/17 17:42	TMP	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			12/5/17 17:42	TMP	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			12/5/17 17:42	TMP	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			12/5/17 17:42	TMP	G
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	111		%	62 - 133	SW846 8260B			12/5/17 17:42	TMP	G
4-Bromofluorobenzene (S)	103		%	79 - 114	SW846 8260B			12/5/17 17:42	TMP	G
Dibromofluoromethane (S)	102		%	78 - 116	SW846 8260B			12/5/17 17:42	TMP	G
Toluene-d8 (S)	102		%	76 - 127	SW846 8260B			12/5/17 17:42	TMP	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	30		mg/L	5	S2320B-97			11/29/17 15:02	MSA	B
Alkalinity, Total	30	2	mg/L	5	S2320B-97			11/29/17 15:02	MSA	B
Ammonia-N	ND		mg/L	0.100	D6919-09			12/7/17 01:21	NJA	A
Chemical Oxygen Demand (COD)	7		mg/L	7	EPA 410.4			12/4/17 21:49	AK	A
Chloride	89.3		mg/L	2.0	EPA 300.0			11/23/17 13:50	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			11/23/17 13:50	CHW	B
Nitrate-N	18.6		mg/L	0.20	EPA 300.0			11/23/17 13:50	CHW	B
pH	6.55	1	pH_Units		S4500HB-11			11/29/17 15:02	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	12/6/17 00:00	JLG	12/6/17 09:40	JLG	F
Specific Conductance	550		umhos/cm	1	SW846 9050A			11/29/17 15:02	MSA	B
Sulfate	25.5		mg/L	2.0	EPA 300.0			11/23/17 13:50	CHW	B
Total Dissolved Solids	348		mg/L	5	S2540C-11			11/28/17 11:30	BMK	B
Total Organic Carbon (TOC)	0.90		mg/L	0.50	SW846 9060A			12/4/17 10:52	PAG	D
Turbidity	0.16		NTU	0.10	S2130B-01			11/22/17 22:57	MSA	B

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2278565 4TH QTR 2017 GWMP-FORM 19Q

Lab ID: **2278565004** Date Collected: 11/22/2017 14:48 Matrix: Ground Water

Sample ID: **FFMP028W** Date Received: 11/22/2017 16:49

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Calcium, Total	41.0		mg/L	0.11	SW846 6010C	12/4/17 16:50	SRT	12/5/17 14:03	SRT	J1
Iron, Total	ND		mg/L	0.067	SW846 6010C	12/4/17 16:50	SRT	12/5/17 14:03	SRT	J1
Magnesium, Total	17.5		mg/L	0.11	SW846 6010C	12/4/17 16:50	SRT	12/5/17 14:03	SRT	J1
Manganese, Total	0.012		mg/L	0.0056	SW846 6010C	12/4/17 16:50	SRT	12/5/17 14:03	SRT	J1
Potassium, Total	2.2		mg/L	0.56	SW846 6010C	12/4/17 16:50	SRT	12/5/17 14:03	SRT	J1
Sodium, Total	26.9		mg/L	0.56	SW846 6010C	12/4/17 16:50	SRT	12/5/17 14:03	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	13.480		Feet		Field			11/22/17 14:48	BGS	C
Elev Top MW Casing above MSL	465.00		Feet		Field			11/22/17 14:48	BGS	C
Flow Rate	3.00		gal/min		Field			11/22/17 14:48	BGS	C
Ground Water Elevation	451.520		ft/MSL		Field			11/22/17 14:48	BGS	C
pH, Field (SM4500B)	5.380		pH_Units		Field			11/22/17 14:48	BGS	C
Sample Depth	50.000		Feet		Field			11/22/17 14:48	BGS	C
Specific Conductance, Field	612		umhos/cm	1	Field			11/22/17 14:48	BGS	C
Temperature	10.91		Deg. C		Field			11/22/17 14:48	BGS	C
Total Well Depth	60.000		Feet		Field			11/22/17 14:48	BGS	C
Volume in Water Column	68.384		Gallons		Field			11/22/17 14:48	BGS	C
Water Level After Purge	37.660		Feet		Field			11/22/17 14:48	BGS	C
Well Volumes Purged	2.63		Vol		Field			11/22/17 14:48	BGS	C

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ANALYTICAL RESULTS

Workorder: 2278565 4TH QTR 2017 GWMP-FORM 19Q

Lab ID: **2278565005** Date Collected: 11/22/2017 15:43 Matrix: Ground Water

Sample ID: **FFMP025W** Date Received: 11/22/2017 16:49

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			12/5/17 18:04	TMP	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			12/5/17 18:04	TMP	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			12/5/17 18:04	TMP	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			12/5/17 18:04	TMP	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/5/17 18:04	TMP	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/5/17 18:04	TMP	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/5/17 18:04	TMP	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			12/5/17 18:04	TMP	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			12/5/17 18:04	TMP	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			12/5/17 18:04	TMP	G
Toluene	ND		ug/L	1.0	SW846 8260B			12/5/17 18:04	TMP	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			12/5/17 18:04	TMP	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			12/5/17 18:04	TMP	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			12/5/17 18:04	TMP	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			12/5/17 18:04	TMP	G
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	111		%	62 - 133	SW846 8260B			12/5/17 18:04	TMP	G
4-Bromofluorobenzene (S)	104		%	79 - 114	SW846 8260B			12/5/17 18:04	TMP	G
Dibromofluoromethane (S)	102		%	78 - 116	SW846 8260B			12/5/17 18:04	TMP	G
Toluene-d8 (S)	103		%	76 - 127	SW846 8260B			12/5/17 18:04	TMP	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	18		mg/L	5	S2320B-97			11/29/17 15:49	MSA	B
Alkalinity, Total	18	2	mg/L	5	S2320B-97			11/29/17 15:49	MSA	B
Ammonia-N	ND		mg/L	0.100	D6919-09			12/7/17 01:35	NJA	A
Chemical Oxygen Demand (COD)	ND		mg/L	7	EPA 410.4			12/4/17 21:49	AK	A
Chloride	67.4		mg/L	2.0	EPA 300.0			11/23/17 14:02	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			11/23/17 14:02	CHW	B
Nitrate-N	11.0		mg/L	0.20	EPA 300.0			11/23/17 14:02	CHW	B
pH	6.43	1	pH_Units		S4500HB-11			11/29/17 15:49	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	12/6/17 00:00	JLG	12/6/17 09:40	JLG	F
Specific Conductance	358		umhos/cm	1	SW846 9050A			11/29/17 15:49	MSA	B
Sulfate	22.4		mg/L	2.0	EPA 300.0			11/23/17 14:02	CHW	B
Total Dissolved Solids	266		mg/L	5	S2540C-11			11/28/17 11:30	BMK	B
Total Organic Carbon (TOC)	0.69		mg/L	0.50	SW846 9060A			12/4/17 10:52	PAG	D
Turbidity	0.23		NTU	0.10	S2130B-01			11/22/17 22:57	MSA	B

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ANALYTICAL RESULTS

Workorder: 2278565 4TH QTR 2017 GWMP-FORM 19Q

Lab ID: **2278565005** Date Collected: 11/22/2017 15:43 Matrix: Ground Water

Sample ID: **FFMP025W** Date Received: 11/22/2017 16:49

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Calcium, Total	26.5		mg/L	0.11	SW846 6010C	12/4/17 16:50	SRT	12/5/17 14:06	SRT	J1
Iron, Total	ND		mg/L	0.067	SW846 6010C	12/4/17 16:50	SRT	12/5/17 14:06	SRT	J1
Magnesium, Total	13.6		mg/L	0.11	SW846 6010C	12/4/17 16:50	SRT	12/5/17 14:06	SRT	J1
Manganese, Total	0.013		mg/L	0.0056	SW846 6010C	12/4/17 16:50	SRT	12/5/17 14:06	SRT	J1
Potassium, Total	2.1		mg/L	0.56	SW846 6010C	12/4/17 16:50	SRT	12/5/17 14:06	SRT	J1
Sodium, Total	20.8		mg/L	0.56	SW846 6010C	12/4/17 16:50	SRT	12/5/17 14:06	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	28.820		Feet		Field			11/22/17 15:43	BGS	C
Elev Top MW Casing above MSL	476.80		Feet		Field			11/22/17 15:43	BGS	C
Flow Rate	2.14		gal/min		Field			11/22/17 15:43	BGS	C
Ground Water Elevation	447.980		ft/MSL		Field			11/22/17 15:43	BGS	C
pH, Field (SM4500B)	5.240		pH_Units		Field			11/22/17 15:43	BGS	C
Sample Depth	39.000		Feet		Field			11/22/17 15:43	BGS	C
Specific Conductance, Field	446		umhos/cm	1	Field			11/22/17 15:43	BGS	C
Temperature	11.11		Deg. C		Field			11/22/17 15:43	BGS	C
Total Well Depth	41.500		Feet		Field			11/22/17 15:43	BGS	C
Volume in Water Column	18.640		Gallons		Field			11/22/17 15:43	BGS	C
Water Level After Purge	31.710		Feet		Field			11/22/17 15:43	BGS	C
Well Volumes Purged	3.45		Vol		Field			11/22/17 15:43	BGS	C

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ANALYTICAL RESULTS

Workorder: 2278565 4TH QTR 2017 GWMP-FORM 19Q

Lab ID: **2278565006** Date Collected: 11/22/2017 16:01 Matrix: Ground Water

Sample ID: **FIELD BLANK** Date Received: 11/22/2017 16:49

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			12/5/17 12:22	TMP	A
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			12/5/17 12:22	TMP	A
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			12/5/17 12:22	TMP	A
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			12/5/17 12:22	TMP	A
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/5/17 12:22	TMP	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/5/17 12:22	TMP	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/5/17 12:22	TMP	A
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			12/5/17 12:22	TMP	A
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			12/5/17 12:22	TMP	A
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			12/5/17 12:22	TMP	A
Toluene	ND		ug/L	1.0	SW846 8260B			12/5/17 12:22	TMP	A
Total Xylenes	ND		ug/L	3.0	SW846 8260B			12/5/17 12:22	TMP	A
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			12/5/17 12:22	TMP	A
Trichloroethene	ND		ug/L	1.0	SW846 8260B			12/5/17 12:22	TMP	A
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			12/5/17 12:22	TMP	A
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	109		%	62 - 133	SW846 8260B			12/5/17 12:22	TMP	A
4-Bromofluorobenzene (S)	103		%	79 - 114	SW846 8260B			12/5/17 12:22	TMP	A
Dibromofluoromethane (S)	99.6		%	78 - 116	SW846 8260B			12/5/17 12:22	TMP	A
Toluene-d8 (S)	103		%	76 - 127	SW846 8260B			12/5/17 12:22	TMP	A

Susan J. Scherer

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ANALYTICAL RESULTS

Workorder: 2278565 4TH QTR 2017 GWMP-FORM 19Q

Lab ID: **2278565007** Date Collected: 11/22/2017 16:49 Matrix: Ground Water

Sample ID: **TRIP BLANK** Date Received: 11/22/2017 16:49

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			12/5/17 14:14	TMP	A
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			12/5/17 14:14	TMP	A
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			12/5/17 14:14	TMP	A
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			12/5/17 14:14	TMP	A
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/5/17 14:14	TMP	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/5/17 14:14	TMP	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/5/17 14:14	TMP	A
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			12/5/17 14:14	TMP	A
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			12/5/17 14:14	TMP	A
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			12/5/17 14:14	TMP	A
Toluene	ND		ug/L	1.0	SW846 8260B			12/5/17 14:14	TMP	A
Total Xylenes	ND		ug/L	3.0	SW846 8260B			12/5/17 14:14	TMP	A
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			12/5/17 14:14	TMP	A
Trichloroethene	ND		ug/L	1.0	SW846 8260B			12/5/17 14:14	TMP	A
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			12/5/17 14:14	TMP	A
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	92.9		%	62 - 133	SW846 8260B			12/5/17 14:14	TMP	A
4-Bromofluorobenzene (S)	95.4		%	79 - 114	SW846 8260B			12/5/17 14:14	TMP	A
Dibromofluoromethane (S)	94.5		%	78 - 116	SW846 8260B			12/5/17 14:14	TMP	A
Toluene-d8 (S)	97.1		%	76 - 127	SW846 8260B			12/5/17 14:14	TMP	A

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ANALYTICAL RESULTS

Workorder: 2278565 4TH QTR 2017 GWMP-FORM 19Q

PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
2278565001	1	FFMP02DW	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				
2278565001	2	FFMP02DW	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
2278565002	1	FFMP02SW	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				
2278565002	2	FFMP02SW	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
2278565003	1	FFMP033W	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				
2278565003	2	FFMP033W	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
2278565004	1	FFMP028W	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				
2278565004	2	FFMP028W	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
2278565005	1	FFMP025W	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				
2278565005	2	FFMP025W	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				

Tuesday, December 12, 2017 1:00:43 PM

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CHAIN OF CUSTODY/ REQUEST FOR ANALYSIS

Generated by ALS

COC ALS

2278565

1 of 1

ALL SHADED AREAS MUST BE COMPLETED BY THE CLIENT / SAMPLER. INSTRUCTIONS ON THE BACK.

Client Name: Lancaster County Solid Waste MA

Address: 1299 Harrisburg Pike, P.O. Box 4424
Lancaster, PA 17604

Contact: Mark Reider

Phone#: (717) 735-0193

Project Name/#: Frey Farm Quarterly (GWMP)

Bill To: Lancaster County Solid Waste MA

TAT [X] Normal-Standard TAT is 10-12 business days.
[ ] Rush-Subject to ALS approval and surcharges.

Date Required: _____ Approved By: _____

Email? [X] -Y mreider@LCSWMA.com

Fax? [X] -Y No.: (717) 397-9973

Sample Description/Location (as it will appear on the lab report)	Sample Date	Time	*G or C	**Matrix	Container Type	Container Size	Preservative	TOC	O-OH	VOC - Form 19Q	Field Measurements	Sample Depth for AUX Data	NH3-N, COD	Metals: Fe, Mn, Na, Ca, K, Mg	pH, Cl, SpC, F, SO4, TDS, NO3, Turb.	Alkalinity Bicarbonate
					AG	40 ml	HCl									
					AN	500 ml	H2SO4									
					CG	40 ml	HCl									
					---	---	---									
					---	---	---									
					PL	500 ml	H2SO4									
					PL	500 ml	HNO3									
					PL	1 L	None									
					PL	500 ml	None									
					ANALYSES/METHOD REQUESTED											
					Enter Number of Containers Per Sample or Field Results Below.											
1. FFMP02DW	11/22/17	1106	G	GW	2	1	2	x	x	1	1	1	1			
2 FFMP02SW		1147														
3 FFMP033W		1307														
4 FFMP028W		1448														
5 FFMP025W		1543														
6 Field Blank		1601														
7 Trip Blank		1649														
8																
9																
10																

Project Comments: FFMP001P DUP-A0 samples.

LOGGED BY(signature): DATE 11-22-17 TIME 8234

REVIEWED BY(signature): DATE TIME

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
1 [signature] ALS	11/22/17	1649	2 [signature] ALS	11/22	1649
3			4		
5			6		
7			8		
9			10		

Receipt Information (completed by Receiving Lab)

Cooler Temp: 2°C Therm ID: 402

No. of Coolers: _____

	Y	N	Initial
Custody Seals Present?		✓	
(if present) Seals Intact?		✓	
Received on Ice?	✓		
COC/Labels Complete/Accurate?	✓		
Cont. in Good Cond.?	✓		
Correct Containers?	✓		
Correct Sample Volumes?	✓		
Correct Preservation?	✓		
Headspace/Volatiles?			

Courier/Tracking #:

Sample/COC Comments

ALS Field Services: ☐Pickup ☐Labor ☐Composite_Sampling ☐Rental_Equipment ☐Other: _____

Data Deliverables: [ ] Standard [ ] CLP-like [ ] USACE [ ]

Special Processing: USACE [ ] Navy [ ]

State Samples Collected In: [ ] NY [ ] NJ [X] PA [ ] NC [ ]

Reportable to PADEP? Yes [ ]

PWSID # _____

Sample Disposal: Lab [X] Special [ ]

EDDS: Format Type- _____

* G=Grab; C=Composite

**Matrix - AI=Air; DW=Drinking Water; GW=Groundwater; OI=Oil; OL=Other Liquid; SL=Sludge; SO=Soil; WP=Wipe; WW=Wastewater

ALS ENVIRONMENTAL SHIPPING ADDRESS: 34 DOGWOOD LANE, MIDDLETOWN, PA 17057

Rev 8/04

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NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

December 12, 2017

Mr. Daniel Brown
Lancaster County Solid Waste Authority
1299 Hbg Pike, P.O. Box 4425
Lancaster, PA 17604

Certificate of Analysis

Project Name:	**2017-FREY FARM**	Workorder:	**2278116**
Purchase Order:		Workorder ID:	**4TH QTR 2017 GWMP-FORM 19Q**

Dear Mr. Brown:

Enclosed are the analytical results for samples received by the laboratory on Tuesday, November 21, 2017.

The ALS Environmental laboratory in Middletown, Pennsylvania is a National Environmental Laboratory Accreditation Program (NELAP) accredited laboratory and as such, certifies that all applicable test results meet the requirements of NELAP.

If you have any questions regarding this certificate of analysis, please contact Ms. Susan J Scherer (Project Coordinator) at (717) 944-5541.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications section of the ALS website at www.alsglobal.com/en/Our-Services/Life-Sciences/Environmental/Downloads.

This laboratory report may not be reproduced, except in full, without the written approval of ALS Environmental.

ALS Spring City: 10 Riverside Drive, Spring City, PA 19475 610-948-4903

CC: Ms. Jordan Gallagher , Mr. Mark Reider , Mr. Jeff Musser

This page is included as part of the Analytical Report and must be retained as a permanent record thereof.

Susan J. Scherer

Ms. Susan J Scherer
Project Coordinator

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SAMPLE SUMMARY

Workorder: 2278116 4TH QTR 2017 GWMP-FORM 19Q

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
2278116001	FFMP005W	Ground Water	11/21/2017 09:46	11/21/2017 16:28	Mr. Brian G Shade
2278116002	FFMP26RW	Ground Water	11/21/2017 10:44	11/21/2017 16:28	Mr. Brian G Shade
2278116003	FFMP03AW	Ground Water	11/21/2017 12:01	11/21/2017 16:28	Mr. Brian G Shade
2278116004	FFMP027W	Ground Water	11/21/2017 13:10	11/21/2017 16:28	Mr. Brian G Shade
2278116005	FIELD BLANK	Ground Water	11/21/2017 14:22	11/21/2017 16:28	Mr. Brian G Shade
2278116006	TRIP BLANK	Ground Water	11/21/2017 16:28	11/21/2017 16:28	Mr. Brian G Shade

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SAMPLE SUMMARY

Workorder: 2278116 4TH QTR 2017 GWMP-FORM 19Q

Notes

-- Samples collected by ALS personnel are done so in accordance with the procedures set forth in the ALS Field Sampling Plan (20 - Field Services Sampling Plan).
-- All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
-- All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
-- Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
-- The Chain of Custody document is included as part of this report.
-- All Library Search analytes should be regarded as tentative identifications based on the presumptive evidence of the mass spectra. Concentrations reported are estimated values.
-- Parameters identified as "analyze immediately" require analysis within 15 minutes of collection. Any "analyze immediately" parameters not listed under the header "Field Parameters" are preformed in the laboratory and are therefore analyzed out of hold time.
-- Method references listed on this report beginning with the prefix “S” followed by a method number (such as S2310B-97) refer to methods from “Standard Methods for the Examination of Water and Wastewater”.
-- For microbiological analyses, the "Prepared" value is the date/time into the incurbator and the "Analyzed" value is the date/time out the incubator.

Standard Acronyms/Flags

J	Indicates an estimated value between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL) for the analyte
U	Indicates that the analyte was Not Detected (ND)
N	Indicates presumptive evidence of the presence of a compound
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
RDL	Reporting Detection Limit
ND	Not Detected - indicates that the analyte was Not Detected at the RDL
Cntr	Analysis was performed using this container
RegLmt	Regulatory Limit
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
%Rec	Percent Recovery
RPD	Relative Percent Difference
LOD	DoD Limit of Detection
LOQ	DoD Limit of Quantitation
DL	DoD Detection Limit
I	Indicates reported value is greater than or equal to the Method Detection Limit (MDL) but less than the Report Detection Limit (RDL)
(S)	Surrogate Compound
NC	Not Calculated
*	Result outside of QC limits

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ANALYTICAL RESULTS

Workorder: 2278116 4TH QTR 2017 GWMP-FORM 19Q

Lab ID: **2278116001** Date Collected: 11/21/2017 09:46 Matrix: Ground Water
Sample ID: **FFMP005W** Date Received: 11/21/2017 16:28

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			12/1/17 23:25	CJG	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			12/1/17 23:25	CJG	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			12/1/17 23:25	CJG	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			12/1/17 23:25	CJG	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/1/17 23:25	CJG	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/1/17 23:25	CJG	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/1/17 23:25	CJG	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			12/1/17 23:25	CJG	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			12/1/17 23:25	CJG	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			12/1/17 23:25	CJG	G
Toluene	ND		ug/L	1.0	SW846 8260B			12/1/17 23:25	CJG	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			12/1/17 23:25	CJG	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			12/1/17 23:25	CJG	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			12/1/17 23:25	CJG	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			12/1/17 23:25	CJG	G
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	99.3		%	62 - 133	SW846 8260B			12/1/17 23:25	CJG	G
4-Bromofluorobenzene (S)	99		%	79 - 114	SW846 8260B			12/1/17 23:25	CJG	G
Dibromofluoromethane (S)	92.7		%	78 - 116	SW846 8260B			12/1/17 23:25	CJG	G
Toluene-d8 (S)	94.2		%	76 - 127	SW846 8260B			12/1/17 23:25	CJG	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	40		mg/L	5	S2320B-97			11/28/17 08:58	MSA	B
Alkalinity, Total	40	2	mg/L	5	S2320B-97			11/28/17 08:58	MSA	B
Ammonia-N	ND		mg/L	0.100	D6919-09			12/5/17 13:25	NJA	A
Chemical Oxygen Demand (COD)	ND		mg/L	7	EPA 410.4			12/2/17 00:07	AK	A
Chloride	196		mg/L	5.0	EPA 300.0			11/22/17 11:16	CHW	B
Fluoride	ND		mg/L	0.50	EPA 300.0			11/22/17 11:16	CHW	B
Nitrate-N	3.9		mg/L	0.50	EPA 300.0			11/22/17 11:16	CHW	B
pH	6.80	1	pH_Units		S4500HB-11			11/28/17 08:58	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	12/5/17 00:00	JLG	12/5/17 10:24	JLG	F
Specific Conductance	798		umhos/cm	1	SW846 9050A			11/28/17 08:58	MSA	B
Sulfate	55.4		mg/L	5.0	EPA 300.0			11/22/17 11:16	CHW	B
Total Dissolved Solids	466		mg/L	5	S2540C-11			11/28/17 11:00	BMK	B
Total Organic Carbon (TOC)	ND		mg/L	0.50	SW846 9060A			12/4/17 10:52	PAG	D
Turbidity	ND		NTU	0.10	S2130B-01			11/22/17 20:57	MSA	B

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ANALYTICAL RESULTS

Workorder: 2278116 4TH QTR 2017 GWMP-FORM 19Q

Lab ID: **2278116001** Date Collected: 11/21/2017 09:46 Matrix: Ground Water

Sample ID: **FFMP005W** Date Received: 11/21/2017 16:28

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Calcium, Total	73.3		mg/L	0.11	SW846 6010C	12/4/17 16:50	SRT	12/5/17 11:29	SRT	J1
Iron, Total	ND		mg/L	0.067	SW846 6010C	12/4/17 16:50	SRT	12/5/17 11:29	SRT	J1
Magnesium, Total	16.7		mg/L	0.11	SW846 6010C	12/4/17 16:50	SRT	12/5/17 11:29	SRT	J1
Manganese, Total	0.035		mg/L	0.0056	SW846 6010C	12/4/17 16:50	SRT	12/5/17 11:29	SRT	J1
Potassium, Total	2.3		mg/L	0.56	SW846 6010C	12/4/17 16:50	SRT	12/5/17 11:29	SRT	J1
Sodium, Total	40.0		mg/L	0.56	SW846 6010C	12/4/17 16:50	SRT	12/5/17 11:29	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	78.390		Feet		Field			11/21/17 09:46	BGS	C
Elev Top MW Casing above MSL	537.40		Feet		Field			11/21/17 09:46	BGS	C
Flow Rate	2.00		gal/min		Field			11/21/17 09:46	BGS	C
Ground Water Elevation	459.010		ft/MSL		Field			11/21/17 09:46	BGS	C
pH, Field (SM4500B)	5.330		pH_Units		Field			11/21/17 09:46	BGS	C
Sample Depth	135.000		Feet		Field			11/21/17 09:46	BGS	C
Specific Conductance, Field	863		umhos/cm	1	Field			11/21/17 09:46	BGS	C
Temperature	11.25		Deg. C		Field			11/21/17 09:46	BGS	C
Total Well Depth	149.700		Feet		Field			11/21/17 09:46	BGS	C
Volume in Water Column	104.826		Gallons		Field			11/21/17 09:46	BGS	C
Water Level After Purge	103.320		Feet		Field			11/21/17 09:46	BGS	C
Well Volumes Purged	1.14		Vol		Field			11/21/17 09:46	BGS	C

Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2278116 4TH QTR 2017 GWMP-FORM 19Q

Lab ID: **2278116002** Date Collected: 11/21/2017 10:44 Matrix: Ground Water

Sample ID: **FFMP26RW** Date Received: 11/21/2017 16:28

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			12/1/17 23:47	CJG	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			12/1/17 23:47	CJG	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			12/1/17 23:47	CJG	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			12/1/17 23:47	CJG	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/1/17 23:47	CJG	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/1/17 23:47	CJG	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/1/17 23:47	CJG	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			12/1/17 23:47	CJG	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			12/1/17 23:47	CJG	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			12/1/17 23:47	CJG	G
Toluene	ND		ug/L	1.0	SW846 8260B			12/1/17 23:47	CJG	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			12/1/17 23:47	CJG	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			12/1/17 23:47	CJG	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			12/1/17 23:47	CJG	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			12/1/17 23:47	CJG	G
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	100		%	62 - 133	SW846 8260B			12/1/17 23:47	CJG	G
4-Bromofluorobenzene (S)	98.3		%	79 - 114	SW846 8260B			12/1/17 23:47	CJG	G
Dibromofluoromethane (S)	94.3		%	78 - 116	SW846 8260B			12/1/17 23:47	CJG	G
Toluene-d8 (S)	94.4		%	76 - 127	SW846 8260B			12/1/17 23:47	CJG	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	39		mg/L	5	S2320B-97			11/28/17 11:07	MSA	B
Alkalinity, Total	39	2	mg/L	5	S2320B-97			11/28/17 11:07	MSA	B
Ammonia-N	ND		mg/L	0.100	D6919-09			12/5/17 13:39	NJA	A
Chemical Oxygen Demand (COD)	ND		mg/L	7	EPA 410.4			12/2/17 00:07	AK	A
Chloride	230		mg/L	5.0	EPA 300.0			11/22/17 11:27	CHW	B
Fluoride	ND		mg/L	0.50	EPA 300.0			11/22/17 11:27	CHW	B
Nitrate-N	2.8		mg/L	0.50	EPA 300.0			11/22/17 11:27	CHW	B
pH	6.02	1	pH_Units		S4500HB-11			11/28/17 11:07	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	12/5/17 00:00	JLG	12/5/17 10:24	JLG	F
Specific Conductance	934		umhos/cm	1	SW846 9050A			11/28/17 11:07	MSA	B
Sulfate	73.0		mg/L	5.0	EPA 300.0			11/22/17 11:27	CHW	B
Total Dissolved Solids	521		mg/L	5	S2540C-11			11/28/17 11:00	BMK	B
Total Organic Carbon (TOC)	0.90		mg/L	0.50	SW846 9060A			12/4/17 10:52	PAG	D
Turbidity	0.12		NTU	0.10	S2130B-01			11/22/17 20:57	MSA	B

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ANALYTICAL RESULTS

Workorder: 2278116 4TH QTR 2017 GWMP-FORM 19Q

Lab ID: **2278116002** Date Collected: 11/21/2017 10:44 Matrix: Ground Water

Sample ID: **FFMP26RW** Date Received: 11/21/2017 16:28

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Calcium, Total	75.3		mg/L	0.11	SW846 6010C	12/4/17 16:50	SRT	12/5/17 11:33	SRT	J1
Iron, Total	ND		mg/L	0.067	SW846 6010C	12/4/17 16:50	SRT	12/5/17 11:33	SRT	J1
Magnesium, Total	20.9		mg/L	0.11	SW846 6010C	12/4/17 16:50	SRT	12/5/17 11:33	SRT	J1
Manganese, Total	0.47		mg/L	0.0056	SW846 6010C	12/4/17 16:50	SRT	12/5/17 11:33	SRT	J1
Potassium, Total	8.0		mg/L	0.56	SW846 6010C	12/4/17 16:50	SRT	12/5/17 11:33	SRT	J1
Sodium, Total	58.8		mg/L	0.56	SW846 6010C	12/4/17 16:50	SRT	12/5/17 11:33	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	90.240		Feet		Field			11/21/17 10:44	BGS	C
Elev Top MW Casing above MSL	547.40		Feet		Field			11/21/17 10:44	BGS	C
Flow Rate	0.82		gal/min		Field			11/21/17 10:44	BGS	C
Ground Water Elevation	457.160		ft/MSL		Field			11/21/17 10:44	BGS	C
pH, Field (SM4500B)	5.260		pH_Units		Field			11/21/17 10:44	BGS	C
Sample Depth	105.000		Feet		Field			11/21/17 10:44	BGS	C
Specific Conductance, Field	1037		umhos/cm	1	Field			11/21/17 10:44	BGS	C
Temperature	12.65		Deg. C		Field			11/21/17 10:44	BGS	C
Total Well Depth	118.300		Feet		Field			11/21/17 10:44	BGS	C
Volume in Water Column	41.248		Gallons		Field			11/21/17 10:44	BGS	C
Water Level After Purge	95.340		Feet		Field			11/21/17 10:44	BGS	C
Well Volumes Purged	0.80		Vol		Field			11/21/17 10:44	BGS	C

Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2278116 4TH QTR 2017 GWMP-FORM 19Q

Lab ID: **2278116003** Date Collected: 11/21/2017 12:01 Matrix: Ground Water
Sample ID: **FFMP03AW** Date Received: 11/21/2017 16:28

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			12/2/17 00:10	CJG	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			12/2/17 00:10	CJG	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			12/2/17 00:10	CJG	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			12/2/17 00:10	CJG	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/2/17 00:10	CJG	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/2/17 00:10	CJG	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/2/17 00:10	CJG	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			12/2/17 00:10	CJG	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			12/2/17 00:10	CJG	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			12/2/17 00:10	CJG	G
Toluene	ND		ug/L	1.0	SW846 8260B			12/2/17 00:10	CJG	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			12/2/17 00:10	CJG	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			12/2/17 00:10	CJG	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			12/2/17 00:10	CJG	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			12/2/17 00:10	CJG	G
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	97.8		%	62 - 133	SW846 8260B			12/2/17 00:10	CJG	G
4-Bromofluorobenzene (S)	98		%	79 - 114	SW846 8260B			12/2/17 00:10	CJG	G
Dibromofluoromethane (S)	92.5		%	78 - 116	SW846 8260B			12/2/17 00:10	CJG	G
Toluene-d8 (S)	95		%	76 - 127	SW846 8260B			12/2/17 00:10	CJG	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	14		mg/L	5	S2320B-97			11/28/17 12:47	MSA	B
Alkalinity, Total	14	2	mg/L	5	S2320B-97			11/28/17 12:47	MSA	B
Ammonia-N	ND		mg/L	0.100	D6919-09			12/5/17 13:53	NJA	A
Chemical Oxygen Demand (COD)	ND		mg/L	7	EPA 410.4			12/2/17 00:07	AK	A
Chloride	26.5		mg/L	2.0	EPA 300.0			11/22/17 11:39	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			11/22/17 11:39	CHW	B
Nitrate-N	21.8		mg/L	1.0	EPA 300.0			11/22/17 11:51	CHW	B
pH	5.88	1	pH_Units		S4500HB-11			11/28/17 12:47	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	12/5/17 00:00	JLG	12/5/17 10:24	JLG	F
Specific Conductance	255		umhos/cm	1	SW846 9050A			11/28/17 12:47	MSA	B
Sulfate	3.5		mg/L	2.0	EPA 300.0			11/22/17 11:39	CHW	B
Total Dissolved Solids	148		mg/L	5	S2540C-11			11/28/17 11:00	BMK	B
Total Organic Carbon (TOC)	ND		mg/L	0.50	SW846 9060A			12/4/17 10:52	PAG	D
Turbidity	ND		NTU	0.10	S2130B-01			11/22/17 20:57	MSA	B

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2278116 4TH QTR 2017 GWMP-FORM 19Q

Lab ID: **2278116003** Date Collected: 11/21/2017 12:01 Matrix: Ground Water

Sample ID: **FFMP03AW** Date Received: 11/21/2017 16:28

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Calcium, Total	16.9		mg/L	0.11	SW846 6010C	12/4/17 16:50	SRT	12/5/17 11:37	SRT	J1
Iron, Total	ND		mg/L	0.067	SW846 6010C	12/4/17 16:50	SRT	12/5/17 11:37	SRT	J1
Magnesium, Total	12.0		mg/L	0.11	SW846 6010C	12/4/17 16:50	SRT	12/5/17 11:37	SRT	J1
Manganese, Total	0.22		mg/L	0.0056	SW846 6010C	12/4/17 16:50	SRT	12/5/17 11:37	SRT	J1
Potassium, Total	1.3		mg/L	0.56	SW846 6010C	12/4/17 16:50	SRT	12/5/17 11:37	SRT	J1
Sodium, Total	11.8		mg/L	0.56	SW846 6010C	12/4/17 16:50	SRT	12/5/17 11:37	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	55.170		Feet		Field			11/21/17 12:01	BGS	C
Elev Top MW Casing above MSL	590.90		Feet		Field			11/21/17 12:01	BGS	C
Flow Rate	1.76		gal/min		Field			11/21/17 12:01	BGS	C
Ground Water Elevation	535.730		ft/MSL		Field			11/21/17 12:01	BGS	C
pH, Field (SM4500B)	4.960		pH_Units		Field			11/21/17 12:01	BGS	C
Sample Depth	130.000		Feet		Field			11/21/17 12:01	BGS	C
Specific Conductance, Field	316		umhos/cm	1	Field			11/21/17 12:01	BGS	C
Temperature	11.41		Deg. C		Field			11/21/17 12:01	BGS	C
Total Well Depth	148.400		Feet		Field			11/21/17 12:01	BGS	C
Volume in Water Column	137.048		Gallons		Field			11/21/17 12:01	BGS	C
Water Level After Purge	87.940		Feet		Field			11/21/17 12:01	BGS	C
Well Volumes Purged	0.77		Vol		Field			11/21/17 12:01	BGS	C

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ANALYTICAL RESULTS

Workorder: 2278116 4TH QTR 2017 GWMP-FORM 19Q

Lab ID: **2278116004** Date Collected: 11/21/2017 13:10 Matrix: Ground Water
Sample ID: **FFMP027W** Date Received: 11/21/2017 16:28

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			12/2/17 00:33	CJG	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			12/2/17 00:33	CJG	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			12/2/17 00:33	CJG	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			12/2/17 00:33	CJG	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/2/17 00:33	CJG	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/2/17 00:33	CJG	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/2/17 00:33	CJG	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			12/2/17 00:33	CJG	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			12/2/17 00:33	CJG	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			12/2/17 00:33	CJG	G
Toluene	ND		ug/L	1.0	SW846 8260B			12/2/17 00:33	CJG	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			12/2/17 00:33	CJG	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			12/2/17 00:33	CJG	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			12/2/17 00:33	CJG	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			12/2/17 00:33	CJG	G
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	98.9		%	62 - 133	SW846 8260B			12/2/17 00:33	CJG	G
4-Bromofluorobenzene (S)	98.4		%	79 - 114	SW846 8260B			12/2/17 00:33	CJG	G
Dibromofluoromethane (S)	91.7		%	78 - 116	SW846 8260B			12/2/17 00:33	CJG	G
Toluene-d8 (S)	94.7		%	76 - 127	SW846 8260B			12/2/17 00:33	CJG	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	7		mg/L	5	S2320B-97			11/28/17 13:06	MSA	B
Alkalinity, Total	7	2	mg/L	5	S2320B-97			11/28/17 13:06	MSA	B
Ammonia-N	ND		mg/L	0.100	D6919-09			12/5/17 14:36	NJA	A
Chemical Oxygen Demand (COD)	ND		mg/L	7	EPA 410.4			12/2/17 00:07	AK	A
Chloride	39.1		mg/L	2.0	EPA 300.0			11/22/17 12:03	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			11/22/17 12:03	CHW	B
Nitrate-N	11.0		mg/L	0.20	EPA 300.0			11/22/17 12:03	CHW	B
pH	6.08	1	pH_Units		S4500HB-11			11/28/17 13:06	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	12/5/17 00:00	JLG	12/5/17 10:24	JLG	F
Specific Conductance	230		umhos/cm	1	SW846 9050A			11/28/17 13:06	MSA	B
Sulfate	5.8		mg/L	2.0	EPA 300.0			11/22/17 12:03	CHW	B
Total Dissolved Solids	165		mg/L	5	S2540C-11			11/28/17 11:00	BMK	B
Total Organic Carbon (TOC)	ND		mg/L	0.50	SW846 9060A			12/4/17 10:52	PAG	D
Turbidity	ND		NTU	0.10	S2130B-01			11/22/17 20:57	MSA	B

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ANALYTICAL RESULTS

Workorder: 2278116 4TH QTR 2017 GWMP-FORM 19Q

Lab ID: **2278116004** Date Collected: 11/21/2017 13:10 Matrix: Ground Water

Sample ID: **FFMP027W** Date Received: 11/21/2017 16:28

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Calcium, Total	16.0		mg/L	0.11	SW846 6010C	12/4/17 16:50	SRT	12/5/17 11:40	SRT	J1
Iron, Total	ND		mg/L	0.067	SW846 6010C	12/4/17 16:50	SRT	12/5/17 11:40	SRT	J1
Magnesium, Total	9.9		mg/L	0.11	SW846 6010C	12/4/17 16:50	SRT	12/5/17 11:40	SRT	J1
Manganese, Total	0.023		mg/L	0.0056	SW846 6010C	12/4/17 16:50	SRT	12/5/17 11:40	SRT	J1
Potassium, Total	1.4		mg/L	0.56	SW846 6010C	12/4/17 16:50	SRT	12/5/17 11:40	SRT	J1
Sodium, Total	10.9		mg/L	0.56	SW846 6010C	12/4/17 16:50	SRT	12/5/17 11:40	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	22.440		Feet		Field			11/21/17 13:10	BGS	C
Elev Top MW Casing above MSL	522.10		Feet		Field			11/21/17 13:10	BGS	C
Flow Rate	5.78		gal/min		Field			11/21/17 13:10	BGS	C
Ground Water Elevation	499.660		ft/MSL		Field			11/21/17 13:10	BGS	C
pH, Field (SM4500B)	5.030		pH_Units		Field			11/21/17 13:10	BGS	C
Sample Depth	45.000		Feet		Field			11/21/17 13:10	BGS	C
Specific Conductance, Field	286		umhos/cm	1	Field			11/21/17 13:10	BGS	C
Temperature	14.08		Deg. C		Field			11/21/17 13:10	BGS	C
Total Well Depth	53.500		Feet		Field			11/21/17 13:10	BGS	C
Volume in Water Column	45.658		Gallons		Field			11/21/17 13:10	BGS	C
Water Level After Purge	22.960		Feet		Field			11/21/17 13:10	BGS	C
Well Volumes Purged	6.33		Vol		Field			11/21/17 13:10	BGS	C

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ANALYTICAL RESULTS

Workorder: 2278116 4TH QTR 2017 GWMP-FORM 19Q

Lab ID: **2278116005** Date Collected: 11/21/2017 14:22 Matrix: Ground Water

Sample ID: **FIELD BLANK** Date Received: 11/21/2017 16:28

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			12/2/17 06:36	CJG	A
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			12/2/17 06:36	CJG	A
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			12/2/17 06:36	CJG	A
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			12/2/17 06:36	CJG	A
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/2/17 06:36	CJG	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/2/17 06:36	CJG	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/2/17 06:36	CJG	A
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			12/2/17 06:36	CJG	A
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			12/2/17 06:36	CJG	A
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			12/2/17 06:36	CJG	A
Toluene	ND		ug/L	1.0	SW846 8260B			12/2/17 06:36	CJG	A
Total Xylenes	ND		ug/L	3.0	SW846 8260B			12/2/17 06:36	CJG	A
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			12/2/17 06:36	CJG	A
Trichloroethene	ND		ug/L	1.0	SW846 8260B			12/2/17 06:36	CJG	A
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			12/2/17 06:36	CJG	A
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	98.4		%	62 - 133	SW846 8260B			12/2/17 06:36	CJG	A
4-Bromofluorobenzene (S)	99		%	79 - 114	SW846 8260B			12/2/17 06:36	CJG	A
Dibromofluoromethane (S)	92.2		%	78 - 116	SW846 8260B			12/2/17 06:36	CJG	A
Toluene-d8 (S)	94.4		%	76 - 127	SW846 8260B			12/2/17 06:36	CJG	A

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ANALYTICAL RESULTS

Workorder: 2278116 4TH QTR 2017 GWMP-FORM 19Q

Lab ID: **2278116006** Date Collected: 11/21/2017 16:28 Matrix: Ground Water

Sample ID: **TRIP BLANK** Date Received: 11/21/2017 16:28

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			12/2/17 06:59	CJG	A
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			12/2/17 06:59	CJG	A
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			12/2/17 06:59	CJG	A
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			12/2/17 06:59	CJG	A
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/2/17 06:59	CJG	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/2/17 06:59	CJG	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/2/17 06:59	CJG	A
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			12/2/17 06:59	CJG	A
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			12/2/17 06:59	CJG	A
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			12/2/17 06:59	CJG	A
Toluene	ND		ug/L	1.0	SW846 8260B			12/2/17 06:59	CJG	A
Total Xylenes	ND		ug/L	3.0	SW846 8260B			12/2/17 06:59	CJG	A
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			12/2/17 06:59	CJG	A
Trichloroethene	ND		ug/L	1.0	SW846 8260B			12/2/17 06:59	CJG	A
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			12/2/17 06:59	CJG	A
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	98.8		%	62 - 133	SW846 8260B			12/2/17 06:59	CJG	A
4-Bromofluorobenzene (S)	98.5		%	79 - 114	SW846 8260B			12/2/17 06:59	CJG	A
Dibromofluoromethane (S)	92.7		%	78 - 116	SW846 8260B			12/2/17 06:59	CJG	A
Toluene-d8 (S)	95.4		%	76 - 127	SW846 8260B			12/2/17 06:59	CJG	A

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ANALYTICAL RESULTS

Workorder: 2278116 4TH QTR 2017 GWMP-FORM 19Q

PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
2278116001	1	FFMP005W	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				
2278116001	2	FFMP005W	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
2278116002	1	FFMP26RW	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				
2278116002	2	FFMP26RW	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
2278116003	1	FFMP03AW	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				
2278116003	2	FFMP03AW	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
2278116004	1	FFMP027W	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				
2278116004	2	FFMP027W	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				

Tuesday, December 12, 2017 12:56:54 PM

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CHAIN OF CUSTODY/ REQUEST FOR ANALYSIS

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22781116

1 of 1

ALL SHADED AREAS MUST BE COMPLETED BY THE CLIENT / SAMPLER. INSTRUCTIONS ON THE BACK.

Client Name: Lancaster County Solid Waste MA

Address: 1299 Harrisburg Pike, P.O. Box 4424

Lancaster, PA 17604

Contact: Mark Reider

Phone#: (717) 735-0193

Project Name/#: Frey Farm Quarterly (GWMP)

Bill To: Lancaster County Solid Waste MA

TAT [X] Normal-Standard TAT is 10-12 business days. [ ] Rush-Subject to ALS approval and surcharges.

Date Required: _____ Approved By: _____

Email? [X] -Y mreider@LCSWMA.com

Fax? [X] -Y No.: (717) 397-9973

Container Type	AG	AN	CG	—	—	PL	PL	PL	PL	
Container Size	~~40 ml~~	~~500 ml~~	~~40 ml~~	—	—	500 ml	500 ml	1 L	500 ml	
Preservative	HCl	H2SO4	HCl	—	—	H2SO4	HNO3	None	None	

ANALYSES/METHOD REQUESTED

Sample Description/Location (as it will appear on the lab report)	Sample Date	Time	*G or C	**Matrix	TOC	O-OH	VOC - Form 19Q	Field Measurements	Sample Depth for AUX Data	NH3-N, COD	Metals: Fe, Mn, Na, Ca, K, Mg	pH, Cl, SpC, F, SO4, TDS, NO3, Turb.	Alkalinity Bicarbonate	
			Enter Number of Containers Per Sample or Field Results Below.											
1. FFMW005W	11/21/17	0946	G	GW	2	1	2	x	x	1	1	1	1	
2 FFMW26RW		1044												
3 FFMW03AW		1201												
4 FFMW02RW		1310												
5 Field Blank		1422												
6 Trip Blank		1428												
7														
8														
9														
10														

Receipt Information (completed by Receiving Lab)

Cooler Temp: 9 Therm ID: 402

No. of Coolers: _____

	Y	N	Initial
Custody Seals Present?		/	BB
(if present) Seals Intact?		/	
Received on Ice?	/		
COC/Labels Complete/Accurate?	/		
Cont. in Good Cond.?	/		
Correct Containers?	/		
Correct Sample Volumes?	/		
Correct Preservation?	/		
Headspace/Volatiles?	/		

Courier/Tracking #:

Sample/COC Comments

ALS Field Services: ☐Pickup ☐Labor ☐Composite_Sampling ☐Rental_Equipment ☐Other:

Project Comments:

LOGGED BY(signature): _____ DATE 11-21-17 TIME

REVIEWED BY(signature): _____ DATE TIME

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
1 [signature] ALS	11/21/17	1628	2 Chelsea Wrather ALS	11-21	1620
3			4		1621
5			6		
7			8		
9			10		

Data Deliverables: ☐Standard ☐CLP-like ☐USACE ☐

Special Processing: USACE ☐ Navy ☐ ☐

State Samples Collected In: ☐NY ☐NJ [X] PA ☐NC ☐

Reportable to PADEP? Yes ☐

PWSID # _____

Sample Disposal: Lab [X] Special ☐

EDDS: Format Type- _____

* G=Grab; C=Composite **Matrix - Al=Air; DW=Drinking Water; GW=Groundwater; Oil=Oil; OL=Other Liquid; SL=Sludge; SO=Soil; WP=Wipe; WW=Wastewater

ALS ENVIRONMENTAL SHIPPING ADDRESS: 34 DOGWOOD LANE, MIDDLETOWN, PA 17057

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December 12, 2017

Mr. Daniel Brown
Lancaster County Solid Waste Authority
1299 Hbg Pike, P.O. Box 4425
Lancaster, PA 17604

Certificate of Analysis

Project Name:	**2017-FREY FARM**	Workorder:	**2277805**
Purchase Order:		Workorder ID:	**4TH QTR 2017 GWMP-FORM 19Q**

Dear Mr. Brown:

Enclosed are the analytical results for samples received by the laboratory on Monday, November 20, 2017.

The ALS Environmental laboratory in Middletown, Pennsylvania is a National Environmental Laboratory Accreditation Program (NELAP) accredited laboratory and as such, certifies that all applicable test results meet the requirements of NELAP.

If you have any questions regarding this certificate of analysis, please contact Ms. Susan J Scherer (Project Coordinator) at (717) 944-5541.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications section of the ALS website at www.alsglobal.com/en/Our-Services/Life-Sciences/Environmental/Downloads.

This laboratory report may not be reproduced, except in full, without the written approval of ALS Environmental.

ALS Spring City: 10 Riverside Drive, Spring City, PA 19475 610-948-4903

CC: Ms. Jordan Gallagher , Mr. Mark Reider , Mr. Jeff Musser

This page is included as part of the Analytical Report and must be retained as a permanent record thereof.

Susan J. Scherer

Ms. Susan J Scherer
Project Coordinator

ALS Environmental

34 Dogwood Lane ■ Middletown, PA 17057 ■ Phone: 717-944-5541 ■ Fax: 717-944-1430 ■ www.alsglobal.com

NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

SAMPLE SUMMARY

Workorder: 2277805 4TH QTR 2017 GWMP-FORM 19Q

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
2277805001	FFMP015W	Ground Water	11/20/2017 10:16	11/20/2017 16:34	Mr. Brian G Shade
2277805002	FFMP30RW	Ground Water	11/20/2017 12:48	11/20/2017 16:34	Mr. Brian G Shade
2277805003	FFMP04AW	Ground Water	11/20/2017 13:56	11/20/2017 16:34	Mr. Brian G Shade
2277805004	FFMP032W	Ground Water	11/20/2017 15:00	11/20/2017 16:34	Mr. Brian G Shade
2277805005	FIELD BLANK	Ground Water	11/20/2017 15:14	11/20/2017 16:34	Mr. Brian G Shade
2277805006	TRIP BLANK	Ground Water	11/20/2017 16:34	11/20/2017 16:34	Mr. Brian G Shade

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SAMPLE SUMMARY

Workorder: 2277805 4TH QTR 2017 GWMP-FORM 19Q

Notes

-- Samples collected by ALS personnel are done so in accordance with the procedures set forth in the ALS Field Sampling Plan (20 - Field Services Sampling Plan).
-- All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
-- All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
-- Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
-- The Chain of Custody document is included as part of this report.
-- All Library Search analytes should be regarded as tentative identifications based on the presumptive evidence of the mass spectra. Concentrations reported are estimated values.
-- Parameters identified as "analyze immediately" require analysis within 15 minutes of collection. Any "analyze immediately" parameters not listed under the header "Field Parameters" are preformed in the laboratory and are therefore analyzed out of hold time.
-- Method references listed on this report beginning with the prefix “S” followed by a method number (such as S2310B-97) refer to methods from “Standard Methods for the Examination of Water and Wastewater”.
-- For microbiological analyses, the "Prepared" value is the date/time into the incurbator and the "Analyzed" value is the date/time out the incubator.

Standard Acronyms/Flags

J	Indicates an estimated value between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL) for the analyte
U	Indicates that the analyte was Not Detected (ND)
N	Indicates presumptive evidence of the presence of a compound
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
RDL	Reporting Detection Limit
ND	Not Detected - indicates that the analyte was Not Detected at the RDL
Cntr	Analysis was performed using this container
RegLmt	Regulatory Limit
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
%Rec	Percent Recovery
RPD	Relative Percent Difference
LOD	DoD Limit of Detection
LOQ	DoD Limit of Quantitation
DL	DoD Detection Limit
I	Indicates reported value is greater than or equal to the Method Detection Limit (MDL) but less than the Report Detection Limit (RDL)
(S)	Surrogate Compound
NC	Not Calculated
*	Result outside of QC limits

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ANALYTICAL RESULTS

Workorder: 2277805 4TH QTR 2017 GWMP-FORM 19Q

Lab ID: **2277805001** Date Collected: 11/20/2017 10:16 Matrix: Ground Water

Sample ID: **FFMP015W** Date Received: 11/20/2017 16:34

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			12/1/17 01:23	CJG	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			12/1/17 01:23	CJG	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			12/1/17 01:23	CJG	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			12/1/17 01:23	CJG	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/1/17 01:23	CJG	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/1/17 01:23	CJG	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/1/17 01:23	CJG	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			12/1/17 01:23	CJG	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			12/1/17 01:23	CJG	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			12/1/17 01:23	CJG	G
Toluene	ND		ug/L	1.0	SW846 8260B			12/1/17 01:23	CJG	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			12/1/17 01:23	CJG	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			12/1/17 01:23	CJG	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			12/1/17 01:23	CJG	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			12/1/17 01:23	CJG	G
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	100		%	62 - 133	SW846 8260B			12/1/17 01:23	CJG	G
4-Bromofluorobenzene (S)	98.3		%	79 - 114	SW846 8260B			12/1/17 01:23	CJG	G
Dibromofluoromethane (S)	91		%	78 - 116	SW846 8260B			12/1/17 01:23	CJG	G
Toluene-d8 (S)	94.6		%	76 - 127	SW846 8260B			12/1/17 01:23	CJG	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	22		mg/L	5	S2320B-97			11/28/17 04:11	MSA	B
Alkalinity, Total	22	2	mg/L	5	S2320B-97			11/28/17 04:11	MSA	B
Ammonia-N	ND		mg/L	0.100	D6919-09			12/2/17 23:23	NJA	A
Chemical Oxygen Demand (COD)	ND		mg/L	7	EPA 410.4			12/2/17 00:07	AK	A
Chloride	8.4		mg/L	2.0	EPA 300.0			11/21/17 17:39	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			11/21/17 17:39	CHW	B
Nitrate-N	7.0		mg/L	0.20	EPA 300.0			11/21/17 17:39	CHW	B
pH	6.90	1	pH_Units		S4500HB-11			11/28/17 04:11	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	12/4/17 00:00	JLG	12/4/17 11:36	JLG	F
Specific Conductance	159		umhos/cm	1	SW846 9050A			11/28/17 04:11	MSA	B
Sulfate	26.6		mg/L	2.0	EPA 300.0			11/21/17 17:39	CHW	B
Total Dissolved Solids	107		mg/L	5	S2540C-11			11/27/17 13:30	BMK	B
Total Organic Carbon (TOC)	0.68		mg/L	0.50	SW846 9060A			12/1/17 09:58	PAG	D
Turbidity	0.34		NTU	0.10	S2130B-01			11/22/17 03:50	MSA	B

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ANALYTICAL RESULTS

Workorder: 2277805 4TH QTR 2017 GWMP-FORM 19Q

Lab ID: **2277805001** Date Collected: 11/20/2017 10:16 Matrix: Ground Water

Sample ID: **FFMP015W** Date Received: 11/20/2017 16:34

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Calcium, Total	10.5		mg/L	0.11	SW846 6010C	12/4/17 14:15	SRT	12/5/17 10:32	SRT	J1
Iron, Total	ND		mg/L	0.067	SW846 6010C	12/4/17 14:15	SRT	12/5/17 10:32	SRT	J1
Magnesium, Total	7.0		mg/L	0.11	SW846 6010C	12/4/17 14:15	SRT	12/5/17 10:32	SRT	J1
Manganese, Total	0.0071		mg/L	0.0056	SW846 6010C	12/4/17 14:15	SRT	12/5/17 10:32	SRT	J1
Potassium, Total	1.2		mg/L	0.56	SW846 6010C	12/4/17 14:15	SRT	12/5/17 10:32	SRT	J1
Sodium, Total	9.4		mg/L	0.56	SW846 6010C	12/4/17 14:15	SRT	12/5/17 10:32	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	62.410		Feet		Field			11/20/17 10:16	BGS	C
Elev Top MW Casing above MSL	576.40		Feet		Field			11/20/17 10:16	BGS	C
Flow Rate	1.99		gal/min		Field			11/20/17 10:16	BGS	C
Ground Water Elevation	513.990		ft/MSL		Field			11/20/17 10:16	BGS	C
pH, Field (SM4500B)	5.240		pH_Units		Field			11/20/17 10:16	BGS	C
Sample Depth	135.000		Feet		Field			11/20/17 10:16	BGS	C
Specific Conductance, Field	197		umhos/cm	1	Field			11/20/17 10:16	BGS	C
Temperature	12.56		Deg. C		Field			11/20/17 10:16	BGS	C
Total Well Depth	149.900		Feet		Field			11/20/17 10:16	BGS	C
Volume in Water Column	128.610		Gallons		Field			11/20/17 10:16	BGS	C
Water Level After Purge	109.580		Feet		Field			11/20/17 10:16	BGS	C
Well Volumes Purged	1.24		Vol		Field			11/20/17 10:16	BGS	C

Susan J. Scherer

Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2277805 4TH QTR 2017 GWMP-FORM 19Q

Lab ID: **2277805002** Date Collected: 11/20/2017 12:48 Matrix: Ground Water

Sample ID: **FFMP30RW** Date Received: 11/20/2017 16:34

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			12/1/17 01:46	CJG	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			12/1/17 01:46	CJG	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			12/1/17 01:46	CJG	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			12/1/17 01:46	CJG	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/1/17 01:46	CJG	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/1/17 01:46	CJG	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/1/17 01:46	CJG	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			12/1/17 01:46	CJG	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			12/1/17 01:46	CJG	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			12/1/17 01:46	CJG	G
Toluene	ND		ug/L	1.0	SW846 8260B			12/1/17 01:46	CJG	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			12/1/17 01:46	CJG	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			12/1/17 01:46	CJG	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			12/1/17 01:46	CJG	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			12/1/17 01:46	CJG	G
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	100		%	62 - 133	SW846 8260B			12/1/17 01:46	CJG	G
4-Bromofluorobenzene (S)	98.6		%	79 - 114	SW846 8260B			12/1/17 01:46	CJG	G
Dibromofluoromethane (S)	93		%	78 - 116	SW846 8260B			12/1/17 01:46	CJG	G
Toluene-d8 (S)	95.2		%	76 - 127	SW846 8260B			12/1/17 01:46	CJG	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	43		mg/L	5	S2320B-97			11/28/17 04:24	MSA	B
Alkalinity, Total	43	2	mg/L	5	S2320B-97			11/28/17 04:24	MSA	B
Ammonia-N	ND		mg/L	0.100	D6919-09			12/2/17 23:37	NJA	A
Chemical Oxygen Demand (COD)	ND		mg/L	7	EPA 410.4			12/2/17 00:07	AK	A
Chloride	323		mg/L	5.0	EPA 300.0			11/28/17 07:59	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			11/21/17 17:52	CHW	B
Nitrate-N	5.2		mg/L	0.20	EPA 300.0			11/21/17 17:52	CHW	B
pH	6.88	1	pH_Units		S4500HB-11			11/28/17 04:24	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	12/4/17 00:00	JLG	12/4/17 11:36	JLG	F
Specific Conductance	1240		umhos/cm	1	SW846 9050A			11/28/17 04:24	MSA	B
Sulfate	41.4		mg/L	2.0	EPA 300.0			11/21/17 17:52	CHW	B
Total Dissolved Solids	677		mg/L	5	S2540C-11			11/27/17 13:30	BMK	B
Total Organic Carbon (TOC)	0.88		mg/L	0.50	SW846 9060A			12/4/17 10:52	PAG	D
Turbidity	2.67		NTU	0.10	S2130B-01			11/22/17 03:50	MSA	B

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ANALYTICAL RESULTS

Workorder: 2277805 4TH QTR 2017 GWMP-FORM 19Q

Lab ID: **2277805002** Date Collected: 11/20/2017 12:48 Matrix: Ground Water

Sample ID: **FFMP30RW** Date Received: 11/20/2017 16:34

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Calcium, Total	54.7		mg/L	0.11	SW846 6010C	12/4/17 14:15	SRT	12/5/17 10:43	SRT	J1
Iron, Total	0.13		mg/L	0.067	SW846 6010C	12/4/17 14:15	SRT	12/5/17 10:43	SRT	J1
Magnesium, Total	18.8		mg/L	0.11	SW846 6010C	12/4/17 14:15	SRT	12/5/17 10:43	SRT	J1
Manganese, Total	3.7		mg/L	0.0056	SW846 6010C	12/4/17 14:15	SRT	12/5/17 10:43	SRT	J1
Potassium, Total	7.9		mg/L	0.56	SW846 6010C	12/4/17 14:15	SRT	12/5/17 10:43	SRT	J1
Sodium, Total	133		mg/L	0.56	SW846 6010C	12/4/17 14:15	SRT	12/5/17 10:43	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	37.530		Feet		Field			11/20/17 12:48	BGS	C
Elev Top MW Casing above MSL	562.30		Feet		Field			11/20/17 12:48	BGS	C
Flow Rate	2.23		gal/min		Field			11/20/17 12:48	BGS	C
Ground Water Elevation	524.770		ft/MSL		Field			11/20/17 12:48	BGS	C
pH, Field (SM4500B)	5.400		pH_Units		Field			11/20/17 12:48	BGS	C
Sample Depth	85.000		Feet		Field			11/20/17 12:48	BGS	C
Specific Conductance, Field	1251		umhos/cm	1	Field			11/20/17 12:48	BGS	C
Temperature	11.31		Deg. C		Field			11/20/17 12:48	BGS	C
Total Well Depth	94.200		Feet		Field			11/20/17 12:48	BGS	C
Volume in Water Column	83.305		Gallons		Field			11/20/17 12:48	BGS	C
Water Level After Purge	69.990		Feet		Field			11/20/17 12:48	BGS	C
Well Volumes Purged	1.61		Vol		Field			11/20/17 12:48	BGS	C

Susan J. Scherer

Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2277805 4TH QTR 2017 GWMP-FORM 19Q

Lab ID: **2277805003** Date Collected: 11/20/2017 13:56 Matrix: Ground Water
Sample ID: **FFMP04AW** Date Received: 11/20/2017 16:34

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			12/1/17 02:09	CJG	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			12/1/17 02:09	CJG	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			12/1/17 02:09	CJG	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			12/1/17 02:09	CJG	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/1/17 02:09	CJG	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/1/17 02:09	CJG	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/1/17 02:09	CJG	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			12/1/17 02:09	CJG	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			12/1/17 02:09	CJG	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			12/1/17 02:09	CJG	G
Toluene	ND		ug/L	1.0	SW846 8260B			12/1/17 02:09	CJG	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			12/1/17 02:09	CJG	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			12/1/17 02:09	CJG	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			12/1/17 02:09	CJG	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			12/1/17 02:09	CJG	G
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	99.2		%	62 - 133	SW846 8260B			12/1/17 02:09	CJG	G
4-Bromofluorobenzene (S)	98.8		%	79 - 114	SW846 8260B			12/1/17 02:09	CJG	G
Dibromofluoromethane (S)	92.8		%	78 - 116	SW846 8260B			12/1/17 02:09	CJG	G
Toluene-d8 (S)	95.7		%	76 - 127	SW846 8260B			12/1/17 02:09	CJG	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	213		mg/L	5	S2320B-97			11/28/17 05:14	MSA	B
Alkalinity, Total	213	2	mg/L	5	S2320B-97			11/28/17 05:14	MSA	B
Ammonia-N	ND		mg/L	0.100	D6919-09			12/2/17 23:51	NJA	A
Chemical Oxygen Demand (COD)	ND		mg/L	7	EPA 410.4			12/2/17 00:07	AK	A
Chloride	298		mg/L	5.0	EPA 300.0			11/28/17 08:12	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			11/21/17 18:05	CHW	B
Nitrate-N	ND		mg/L	0.20	EPA 300.0			11/21/17 18:05	CHW	B
pH	8.02	1	pH_Units		S4500HB-11			11/28/17 05:14	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	12/4/17 00:00	JLG	12/4/17 11:36	JLG	F
Specific Conductance	1390		umhos/cm	1	SW846 9050A			11/28/17 05:14	MSA	B
Sulfate	46.3		mg/L	2.0	EPA 300.0			11/21/17 18:05	CHW	B
Total Dissolved Solids	862		mg/L	5	S2540C-11			11/27/17 13:30	BMK	B
Total Organic Carbon (TOC)	0.72		mg/L	0.50	SW846 9060A			12/4/17 10:52	PAG	D
Turbidity	0.49		NTU	0.10	S2130B-01			11/22/17 03:50	MSA	B

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NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2277805 4TH QTR 2017 GWMP-FORM 19Q

Lab ID: **2277805003** Date Collected: 11/20/2017 13:56 Matrix: Ground Water

Sample ID: **FFMP04AW** Date Received: 11/20/2017 16:34

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Calcium, Total	144		mg/L	0.11	SW846 6010C	12/4/17 14:15	SRT	12/5/17 10:46	SRT	J1
Iron, Total	ND		mg/L	0.067	SW846 6010C	12/4/17 14:15	SRT	12/5/17 10:46	SRT	J1
Magnesium, Total	24.5		mg/L	0.11	SW846 6010C	12/4/17 14:15	SRT	12/5/17 10:46	SRT	J1
Manganese, Total	0.11		mg/L	0.0056	SW846 6010C	12/4/17 14:15	SRT	12/5/17 10:46	SRT	J1
Potassium, Total	2.1		mg/L	0.56	SW846 6010C	12/4/17 14:15	SRT	12/5/17 10:46	SRT	J1
Sodium, Total	79.8		mg/L	0.56	SW846 6010C	12/4/17 14:15	SRT	12/5/17 10:46	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	38.910		Feet		Field			11/20/17 13:56	BGS	C
Elev Top MW Casing above MSL	560.72		Feet		Field			11/20/17 13:56	BGS	C
Flow Rate	1.92		gal/min		Field			11/20/17 13:56	BGS	C
Ground Water Elevation	521.810		ft/MSL		Field			11/20/17 13:56	BGS	C
pH, Field (SM4500B)	6.670		pH_Units		Field			11/20/17 13:56	BGS	C
Sample Depth	146.000		Feet		Field			11/20/17 13:56	BGS	C
Specific Conductance, Field	1504		umhos/cm	1	Field			11/20/17 13:56	BGS	C
Temperature	11.19		Deg. C		Field			11/20/17 13:56	BGS	C
Total Well Depth	148.500		Feet		Field			11/20/17 13:56	BGS	C
Volume in Water Column	161.097		Gallons		Field			11/20/17 13:56	BGS	C
Water Level After Purge	82.810		Feet		Field			11/20/17 13:56	BGS	C
Well Volumes Purged	0.71		Vol		Field			11/20/17 13:56	BGS	C

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ANALYTICAL RESULTS

Workorder: 2277805 4TH QTR 2017 GWMP-FORM 19Q

Lab ID: **2277805004** Date Collected: 11/20/2017 15:00 Matrix: Ground Water
Sample ID: **FFMP032W** Date Received: 11/20/2017 16:34

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			12/1/17 02:32	CJG	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			12/1/17 02:32	CJG	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			12/1/17 02:32	CJG	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			12/1/17 02:32	CJG	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/1/17 02:32	CJG	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/1/17 02:32	CJG	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/1/17 02:32	CJG	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			12/1/17 02:32	CJG	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			12/1/17 02:32	CJG	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			12/1/17 02:32	CJG	G
Toluene	ND		ug/L	1.0	SW846 8260B			12/1/17 02:32	CJG	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			12/1/17 02:32	CJG	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			12/1/17 02:32	CJG	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			12/1/17 02:32	CJG	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			12/1/17 02:32	CJG	G
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	100		%	62 - 133	SW846 8260B			12/1/17 02:32	CJG	G
4-Bromofluorobenzene (S)	98		%	79 - 114	SW846 8260B			12/1/17 02:32	CJG	G
Dibromofluoromethane (S)	92.5		%	78 - 116	SW846 8260B			12/1/17 02:32	CJG	G
Toluene-d8 (S)	94.2		%	76 - 127	SW846 8260B			12/1/17 02:32	CJG	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	81		mg/L	5	S2320B-97			11/28/17 05:23	MSA	B
Alkalinity, Total	81	2	mg/L	5	S2320B-97			11/28/17 05:23	MSA	B
Ammonia-N	1.84		mg/L	0.100	D6919-09			12/3/17 00:05	NJA	A
Chemical Oxygen Demand (COD)	ND		mg/L	7	EPA 410.4			12/2/17 00:07	AK	A
Chloride	25.0		mg/L	2.0	EPA 300.0			11/21/17 18:19	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			11/21/17 18:19	CHW	B
Nitrate-N	ND		mg/L	0.20	EPA 300.0			11/21/17 18:19	CHW	B
pH	8.01	1	pH_Units		S4500HB-11			11/28/17 05:23	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	12/4/17 00:00	JLG	12/4/17 11:36	JLG	F
Specific Conductance	201		umhos/cm	1	SW846 9050A			11/28/17 05:23	MSA	B
Sulfate	ND		mg/L	2.0	EPA 300.0			11/21/17 18:19	CHW	B
Total Dissolved Solids	131		mg/L	5	S2540C-11			11/27/17 13:30	BMK	B
Total Organic Carbon (TOC)	ND		mg/L	0.50	SW846 9060A			12/4/17 10:52	PAG	D
Turbidity	109		NTU	0.10	S2130B-01			11/22/17 03:50	MSA	B

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ANALYTICAL RESULTS

Workorder: 2277805 4TH QTR 2017 GWMP-FORM 19Q

Lab ID: **2277805004** Date Collected: 11/20/2017 15:00 Matrix: Ground Water

Sample ID: **FFMP032W** Date Received: 11/20/2017 16:34

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Calcium, Total	18.5		mg/L	0.11	SW846 6010C	12/4/17 14:15	SRT	12/5/17 10:50	SRT	J1
Iron, Total	7.4		mg/L	0.067	SW846 6010C	12/4/17 14:15	SRT	12/5/17 10:50	SRT	J1
Magnesium, Total	4.8		mg/L	0.11	SW846 6010C	12/4/17 14:15	SRT	12/5/17 10:50	SRT	J1
Manganese, Total	0.29		mg/L	0.0056	SW846 6010C	12/4/17 14:15	SRT	12/5/17 10:50	SRT	J1
Potassium, Total	1.3		mg/L	0.56	SW846 6010C	12/4/17 14:15	SRT	12/5/17 10:50	SRT	J1
Sodium, Total	14.3		mg/L	0.56	SW846 6010C	12/4/17 14:15	SRT	12/5/17 10:50	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	50.350		Feet		Field			11/20/17 15:00	BGS	C
Elev Top MW Casing above MSL	594.09		Feet		Field			11/20/17 15:00	BGS	C
Flow Rate	0.75		gal/min		Field			11/20/17 15:00	BGS	C
Ground Water Elevation	543.740		ft/MSL		Field			11/20/17 15:00	BGS	C
pH, Field (SM4500B)	7.030		pH_Units		Field			11/20/17 15:00	BGS	C
Sample Depth	62.000		Feet		Field			11/20/17 15:00	BGS	C
Specific Conductance, Field	245		umhos/cm	1	Field			11/20/17 15:00	BGS	C
Temperature	9.72		Deg. C		Field			11/20/17 15:00	BGS	C
Total Well Depth	77.600		Feet		Field			11/20/17 15:00	BGS	C
Volume in Water Column	40.058		Gallons		Field			11/20/17 15:00	BGS	C
Water Level After Purge	57.460		Feet		Field			11/20/17 15:00	BGS	C
Well Volumes Purged	0.56		Vol		Field			11/20/17 15:00	BGS	C

Susan J. Scherer

Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2277805 4TH QTR 2017 GWMP-FORM 19Q

Lab ID: **2277805005** Date Collected: 11/20/2017 15:14 Matrix: Ground Water

Sample ID: **FIELD BLANK** Date Received: 11/20/2017 16:34

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			12/1/17 00:38	CJG	A
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			12/1/17 00:38	CJG	A
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			12/1/17 00:38	CJG	A
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			12/1/17 00:38	CJG	A
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/1/17 00:38	CJG	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/1/17 00:38	CJG	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/1/17 00:38	CJG	A
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			12/1/17 00:38	CJG	A
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			12/1/17 00:38	CJG	A
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			12/1/17 00:38	CJG	A
Toluene	ND		ug/L	1.0	SW846 8260B			12/1/17 00:38	CJG	A
Total Xylenes	ND		ug/L	3.0	SW846 8260B			12/1/17 00:38	CJG	A
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			12/1/17 00:38	CJG	A
Trichloroethene	ND		ug/L	1.0	SW846 8260B			12/1/17 00:38	CJG	A
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			12/1/17 00:38	CJG	A
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	101		%	62 - 133	SW846 8260B			12/1/17 00:38	CJG	A
4-Bromofluorobenzene (S)	100		%	79 - 114	SW846 8260B			12/1/17 00:38	CJG	A
Dibromofluoromethane (S)	93		%	78 - 116	SW846 8260B			12/1/17 00:38	CJG	A
Toluene-d8 (S)	96.3		%	76 - 127	SW846 8260B			12/1/17 00:38	CJG	A

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ANALYTICAL RESULTS

Workorder: 2277805 4TH QTR 2017 GWMP-FORM 19Q

Lab ID: **2277805006** Date Collected: 11/20/2017 16:34 Matrix: Ground Water

Sample ID: **TRIP BLANK** Date Received: 11/20/2017 16:34

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			12/1/17 01:00	CJG	A
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			12/1/17 01:00	CJG	A
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			12/1/17 01:00	CJG	A
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			12/1/17 01:00	CJG	A
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/1/17 01:00	CJG	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/1/17 01:00	CJG	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			12/1/17 01:00	CJG	A
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			12/1/17 01:00	CJG	A
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			12/1/17 01:00	CJG	A
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			12/1/17 01:00	CJG	A
Toluene	ND		ug/L	1.0	SW846 8260B			12/1/17 01:00	CJG	A
Total Xylenes	ND		ug/L	3.0	SW846 8260B			12/1/17 01:00	CJG	A
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			12/1/17 01:00	CJG	A
Trichloroethene	ND		ug/L	1.0	SW846 8260B			12/1/17 01:00	CJG	A
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			12/1/17 01:00	CJG	A
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	100		%	62 - 133	SW846 8260B			12/1/17 01:00	CJG	A
4-Bromofluorobenzene (S)	98		%	79 - 114	SW846 8260B			12/1/17 01:00	CJG	A
Dibromofluoromethane (S)	92.1		%	78 - 116	SW846 8260B			12/1/17 01:00	CJG	A
Toluene-d8 (S)	94.9		%	76 - 127	SW846 8260B			12/1/17 01:00	CJG	A

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ANALYTICAL RESULTS

Workorder: 2277805 4TH QTR 2017 GWMP-FORM 19Q

PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
2277805001	1	FFMP015W	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				
2277805001	2	FFMP015W	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
2277805002	1	FFMP30RW	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				
2277805002	2	FFMP30RW	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
2277805003	1	FFMP04AW	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				
2277805003	2	FFMP04AW	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
2277805004	1	FFMP032W	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				
2277805004	2	FFMP032W	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				

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Tuesday, December 12, 2017 12:54:32 PM
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CHAIN OF CUSTODY/ REQUEST FOR ANALYSIS

Generated by ALS

COC #: *2277805*

1 of 1

ALL SHADED AREAS MUST BE COMPLETED BY THE CLIENT / SAMPLER. INSTRUCTIONS ON THE BACK.

Client Name: Lancaster County Solid Waste MA
Address: 1299 Harrisburg Pike, P.O. Box 4424
Lancaster, PA 17604
Contact: Mark Reider
Phone#: (717) 735-0193
Project Name/#: Frey Farm Quarterly (GWMP)
Bill To: Lancaster County Solid Waste MA
TAT [X] Normal-Standard TAT is 10-12 business days. [ ] Rush-Subject to ALS approval and surcharges.
Date Required: _____ Approved By: _____
Email? [X] -Y mreider@LCSWMA.com
Fax? [X] -Y No.: (717) 397-9973

Container Type	AG	AN	CG	—	—	PL	PL	PL	PL	
Container Size	40 ml	500 ml	40 ml	—	—	500 ml	500 ml	1 L	500 ml	
Preservative	HCl	H2SO4	HCl	—	—	H2SO4	HNO3	None	None	

ANALYSES/METHOD REQUESTED

Sample Description/Location (as it will appear on the lab report)	Sample Date	Time	*G or C	**Matrix	TOC	O-OH	VOC - Form 19Q	Field Measurements	Sample Depth for AUX Data	NH3-N, COD	Metals: Fe, Mn, Na, Ca, K, Mg	pH, Cl, SpC, F, SO4, TDS, NO3, Turb.	Alkalinity Bicarbonate	
			Enter Number of Containers Per Sample or Field Results Below.											Sample/COC Comments
1. FFMP015W	11/20/17	1016	G	GW	2	1	2	x	x	1	1	1	1	
2 FFMP30RW		1248												
3 FFMP04AW		1256												
4 FFMP032W		1500												
5 Field Blank		1074												
6 Trip Blank		1634												
7														
8														
9														
10														

Receipt Environmental (Lab)
Cooler Temp: 6 Therm ID: 402
No. of Coolers: _____

	Y	N	Initial
Custody Seals Present?			CW
(if present) Seals Intact?			
Received on Ice?	X		
COC/Labels Complete/Accurate?	X		
Cont. in Good Cond.?	X		
Correct Containers?	X		
Correct Sample Volumes?	X		
Correct Preservation?	X		
Headspace/Volatiles?		X	

Courier/Tracking #:

ALS Field Services: ☐Pickup ☐Labor ☐Composite_Sampling ☐Rental_Equipment ☐Other:

Project Comments:

LOGGED BY(signature): DATE: TIME:
REVIEWED BY(signature): DATE: TIME:

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
1 [signature] ALS	11/20/17	1634	2 Chelsea Wickes ALS	11-20	1634
3			4		
5			6		
7			8		
9			10		

Data Deliverables: [ ] Standard [ ] CLP-like [ ] USACE [ ]
Special Processing: USACE [ ] Navy [ ]
State Samples Collected In: [ ] NY [ ] NJ [X] PA [ ] NC [ ]
Reportable to PADEP? Yes [ ] PWSID # _____
Sample Disposal: Lab [X] Special [ ]
EDDS: Format Type- _____

* G=Grab; C=Composite **Matrix - Al=Air; DW=Drinking Water; GW=Groundwater; OI=Oil; OL=Other Liquid; SL=Sludge; SO=Soil; WP=Wipe; WW=Wastewater

ALS ENVIRONMENTAL SHIPPING ADDRESS: 34 DOGWOOD LANE, MIDDLETOWN, PA 17057

Rev 8/04

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF LAND RECYCLING AND WASTE

Date Prepared/Revised
01/04/2018
DEP USE ONLY
Date Received

FORM 8
MUNICIPAL WASTE LANDFILLS
BASELINE GROUND WATER ANALYSES

This form must be fully and accurately completed. All required information must be typed or legibly printed in the spaces provided. If additional space is necessary, identify each attached sheet as Form 8, reference the item number and identify the date prepared. The "date prepared/revised" on any attached sheets needs to match the "date prepared/revised" on this page.

General Reference: Section 273.284
Federal Regulations, Subtitle D: 258.54 and Appendix I to Part 258.

An application for a municipal waste landfill shall contain a description of the chemical characteristics of each aqyufer in the proposed permit area and adjacent area, based on at least two quarters of monitoring data, one of which shall include the season of the highest local groundwater levels. Submit separate forms for each sample analysis.

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Management Authority

Site Name: Frey Farm Landfill

Facitlity ID (as issued by DEP): 101389

SECTION B. FACILITY INFORMATION

Monitoring Wells must be designed and constructed in accordance with Department Standards. INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (DD º MM' SS.S")

Monitoring Point Number: FFMP033W — X Well ___ Spring ___ Stream ___ Other

___ Upgradient/Upstream X Downgradient/Downstream

Location (County): Lancaster County — Municipality: MANOR TOWNSHIP

Sampling Point: Latitude: 39 º 57 ' 31.09 " — Longitude: 76 º 27 ' 4.98 "

Depth to Water Level: 18.75 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: 0.49 ft — Elevation of Water Level: 497.77 ft./MSL

Sampling Depth: 79 ft — Volume of Water Column: 113.45 gal

Total Well Depth: 96 ft — Sampling Method: X Pumped ___ Bailed ___ Grab

Well Purged: X Yes ___ No — Well Volumes Purged: ___

Sample Field Filtered (must be 0.45 micron)?: X Yes ___ No

Spring Flow Rate: __gpm

Sample Date (mm/dd/yy): 10/18/2017 — Sample Collection Time: 10:43

Sample Collector's Name: Mr. Brian G Sh

Sample Collector's Affiliation: ALS Environmental

Laboratory(ies) Performing Analysis: ALS Environmental

Were any holding times exceeded?: ___ Yes X No If yes, please explain in comments field.

Lab Certification Number(s): 22-293

Lab Sample Number(s): 2270109001 — Final Lab Analysis CompletionDate: 11/1/2017

Name/Affiliation of Person who Filled Out Form: Mark D. Reider

Comments:

I.D. No	101389
Monitoring Point No.	FFMP033W
Sample Date	10/18/2017

FORM 8

1. Inorganics (Enter all data in mg/l except as noted)

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.322	ASTM D6919-03
BICARBONATE ALKALINITY	31	SM20 2321
CALCIUM, TOTAL	23.7	EPA 200.7
CALCIUM, DISSOLVED	23	EPA 200.7
COD (CHEMICAL OXYGEN DEMAND)	7 ND	EPA 410.4
CHLORIDE	35.9	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL	2400	EPA 200.7
IRON, DISSOLVED	1600	EPA 200.7
MAGNESIUM, TOTAL	8.3	EPA 200.7
MAGNESIUM, DISSOLVED	8.5	EPA 200.7
MANGANESE, TOTAL	510	EPA 200.7
MANGANESE, DISSOLVED	490	EPA 200.7
NITRATE-NITROGEN	12.8	EPA 300
pH-FIELD	5.74	FIELD
pH-LAB	5.94	EPA 150.1
POTASSIUM, TOTAL	1.5	EPA 200.7
POTASSIUM, DISSOLVED	1.5	EPA 200.7
SODIUM, TOTAL	12.7	EPA 200.7
SODIUM, DISSOLVED	12.9	EPA 200.7
SPEC. COND., FIELD	330	FIELD
SPEC. COND., LAB	264	EPA 120.1
SULFATE	9	EPA 300
ALKALINITY	31	SM20 2320B
TDS (TOT. DISSOLVED SOLIDS)	151	SM20 2540C
TOC (TOTAL ORGANIC CARBON)	0.5 ND	SM20 5310B
TOTAL PHENOLICS	5 ND	SW846 9066
TURBIDITY	0.7	SM 2130B

T Please indicate detection limit if analyte is not detected.

I.D. No	101389
Monitoring Point No.	FFMP033W
Sample Date	10/18/2017

FORM 8

2. Metals (Enter all data in ug/l)

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
ARSENIC, TOTAL	3.3 ND	EPA 200.8
ARSENIC, DISSOLVED	3 ND	EPA 200.8
BARIUM, TOTAL	45	EPA 200.8
BARIUM, DISSOLVED	44	EPA 200.8
CADMIUM, TOTAL	1.1 ND	EPA 200.8
CADMIUM, DISSOLVED	1.1 ND	EPA 200.8
CHROMIUM, TOTAL	2.2 ND	EPA 200.8
CHROMIUM, DISSOLVED	2.2 ND	EPA 200.8
COPPER, TOTAL	5.6 ND	EPA 200.8
COPPER, DISSOLVED	5.6 ND	EPA 200.8
LEAD-FLAMELESS, TOTAL	2.2 ND	EPA 200.8
LEAD, DISSOLVED	2.2 ND	EPA 200.8
MERCURY, TOTAL	0.5 ND	EPA 200.8
MERCURY, DISSOLVED	0.5 ND	EPA 200.8
SELENIUM, TOTAL	5.6 ND	EPA 200.8
SELENIUM, DISSOLVED	5.6 ND	EPA 200.8
SILVER, TOTAL	2.2 ND	EPA 200.8
SILVER, DISSOLVED	2.2 ND	EPA 200.8
ZINC, TOTAL	5.6 ND	EPA 200.8
ZINC, DISSOLVED	5.6 ND	EPA 200.8

T Please indicate detection limit if analyte is not detected.

I.D. No	101389
Monitoring Point No.	FFMP033W
Sample Date	10/18/2017

FORM 8

3. Organics (Enter all data in ug/l)

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
BENZENE	1 ND	EPA 524.2
BROMOFORM	1 ND	EPA 524.2
CARBON TETRACHLORIDE	1 ND	EPA 524.2
CHLOROBENZENE	1 ND	EPA 524.2
CHLOROETHANE	1 ND	EPA 524.2
3-CHLORO-1-PROPENE	1 ND	EPA 524.2
DIBROMOCHLOROMETHANE	1 ND	EPA 524.2
1,2-DIBROMOETHANE	1 ND	EPA 524.2
1,2-DICHLOROBENZENE	1 ND	EPA 524.2
1,3-DICHLOROBENZENE	1 ND	EPA 524.2
1,4-DICHLOROBENZENE	1 ND	EPA 524.2
DICHLORODIFLUOROMETHANE	1 ND	EPA 524.2
1,1-DICHLOROETHANE	1 ND	EPA 524.2
1,1-DICHLOROETHENE	1 ND	EPA 524.2
1,2-DICHLOROETHANE	1 ND	EPA 524.2
CIS 1,2-DICHLOROETHENE	1 ND	EPA 524.2
TRANS 1,2-DICHLOROETHENE	1 ND	EPA 524.2
1,2-DICHLOROPROPANE	1 ND	EPA 524.2
CIS 1,3-DICHLOROPROPENE	1 ND	EPA 524.2
TRANS 1,3-DICHLOROPROPENE	1 ND	EPA 524.2
ETHYLBENZENE	1 ND	EPA 524.2
BROMOMETHANE	1 ND	EPA 524.2
CHLOROMETHANE	1 ND	EPA 524.2
METHYLENE CHLORIDE	1 ND	EPA 524.2
2-BUTANONE (MEK)	10 ND	EPA 524.2
1,1,1,2-TETRACHLOROETHANE	1 ND	EPA 524.2
TETRACHLOROETHENE	1 ND	EPA 524.2
1,1,2,2-TETRACHLOROETHANE	1 ND	EPA 524.2
TOLUENE	1 ND	EPA 524.2
1,1,1-TRICHLOROETHANE	1 ND	EPA 524.2
1,1,2-TRICHLOROETHANE	1 ND	EPA 524.2
TRICHLOROETHENE	1 ND	EPA 524.2
TRICHLOROFLUOROMETHANE	1 ND	EPA 524.2
1,2,3-TRICHLOROPROPANE	2 ND	EPA 524.2
VINYL CHLORIDE	1 ND	EPA 524.2
XYLENES (TOTAL)	3 ND	EPA 524.2
4-METHYL-2-PENTANONE	5 ND	EPA 524.2

T Please indicate detection limit if analyte is not detected.

I.D. No	101389
Monitoring Point No.	FFMP033W
Sample Date	10/18/2017

FORM 8

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

SUBTITLE D - Add-On List - For Detection Zone Analytes (mg/l). When the MCLs (where established) of any analyte is exceeded in the detection zone (e.g. established cells) Form 50 monitoring, the following analytes must be monitored during the baseline groundwater analyses .

ORGANICS AND METALS

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
ACETONE	10 ND	EPA 524.2
ACRYLONITRILE	5 ND	EPA 524.2
BROMOCHLOROMETHANE (CHLOROBRO	1 ND	EPA 524.2
BROMODICHLOROMETHANE	1 ND	EPA 524.2
CARBON DISULFIDE	1 ND	EPA 524.2
CHLOROFORM	1 ND	EPA 524.2
1,2-DIBROMO-3-CHLOROPROPANE	7 ND	EPA 524.2
TRANS 1,4-DICHLORO-2-BUTENE	3 ND	EPA 524.2
2-HEXANONE	5 ND	EPA 524.2
DIBROMOMETHANE	1 ND	EPA 524.2
IODOMETHANE	1 ND	EPA 524.2
STYRENE	1 ND	EPA 524.2
VINYL ACETATE	5 ND	EPA 524.2
ANTIMONY	2.2 ND	EPA 200.8
BERYLLIUM	1.1 ND	EPA 200.8
COBALT	5.6 ND	SW846 6010B
NICKEL	5.6 ND	SW846 6010B
THALLIUM	1.1 ND	EPA 200.8
VANADIUM	2.2 ND	SW846 6010B

T Please indicate detection limit if analyte is not detected.

I.D. No	101389
Monitoring Point No.	FFMP033W
Sample Date	10/18/2017

FORM 8

Qualitatively Identified Organic Compounds

List at least ten volatile organic compounds not otherwise identified in this section. Their identification should be based upon those compounds showing the greatest apparent concentration from the peaks of a mass spectrum of each sample. These ten compounds shall be identified but the concentration of each is not required.

Constituent	CAS Number

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

November 8, 2017

Mr. Daniel Brown
Lancaster County Solid Waste Authority
1299 Hbg Pike, P.O. Box 4425
Lancaster, PA 17604

Certificate of Analysis

Project Name:	**2017-FREY FARM**	Workorder:	**2270109**
Purchase Order:		Workorder ID:	**Form 8/FFMP033W**

Dear Mr. Brown:

Enclosed are the analytical results for samples received by the laboratory on Wednesday, October 18, 2017.

The ALS Environmental laboratory in Middletown, Pennsylvania is a National Environmental Laboratory Accreditation Program (NELAP) accredited laboratory and as such, certifies that all applicable test results meet the requirements of NELAP.

If you have any questions regarding this certificate of analysis, please contact Ms. Susan J Scherer (Project Coordinator) at (717) 944-5541.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications section of the ALS website at www.alsglobal.com/en/Our-Services/Life-Sciences/Environmental/Downloads.

This laboratory report may not be reproduced, except in full, without the written approval of ALS Environmental.

ALS Spring City: 10 Riverside Drive, Spring City, PA 19475 610-948-4903

CC: Ms. Jordan Gallagher , Mr. Mark Reider , Mr. Jeff Musser

This page is included as part of the Analytical Report and must be retained as a permanent record thereof.

Ms. Susan J Scherer
Project Coordinator

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

SAMPLE SUMMARY

Workorder: 2270109 Form 8/FFMP033W

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
2270109001	FFMP033W	Ground Water	10/18/2017 10:43	10/18/2017 14:29	Mr. Brian G Shade

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SAMPLE SUMMARY

Workorder: 2270109 Form 8/FFMP033W

Notes

-- Samples collected by ALS personnel are done so in accordance with the procedures set forth in the ALS Field Sampling Plan (20 - Field Services Sampling Plan).
-- All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
-- All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
-- Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
-- The Chain of Custody document is included as part of this report.
-- All Library Search analytes should be regarded as tentative identifications based on the presumptive evidence of the mass spectra. Concentrations reported are estimated values.
-- Parameters identified as "analyze immediately" require analysis within 15 minutes of collection. Any "analyze immediately" parameters not listed under the header "Field Parameters" are preformed in the laboratory and are therefore analyzed out of hold time.
-- Method references listed on this report beginning with the prefix “S” followed by a method number (such as S2310B-97) refer to methods from “Standard Methods for the Examination of Water and Wastewater”.
-- For microbiological analyses, the "Prepared" value is the date/time into the incurbator and the "Analyzed" value is the date/time out the incubator.

Standard Acronyms/Flags

J	Indicates an estimated value between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL) for the analyte
U	Indicates that the analyte was Not Detected (ND)
N	Indicates presumptive evidence of the presence of a compound
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
RDL	Reporting Detection Limit
ND	Not Detected - indicates that the analyte was Not Detected at the RDL
Cntr	Analysis was performed using this container
RegLmt	Regulatory Limit
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
%Rec	Percent Recovery
RPD	Relative Percent Difference
LOD	DoD Limit of Detection
LOQ	DoD Limit of Quantitation
DL	DoD Detection Limit
I	Indicates reported value is greater than or equal to the Method Detection Limit (MDL) but less than the Report Detection Limit (RDL)
(S)	Surrogate Compound
NC	Not Calculated
*	Result outside of QC limits

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ANALYTICAL RESULTS

Workorder: 2270109 Form 8/FFMP033W

Lab ID: **2270109001** Date Collected: 10/18/2017 10:43 Matrix: Ground Water

Sample ID: **FFMP033W** Date Received: 10/18/2017 14:29

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	SW846 8260B			10/20/17 13:52	TMP	J
Acrylonitrile	ND		ug/L	5.0	SW846 8260B			10/20/17 13:52	TMP	J
Benzene	ND		ug/L	1.0	SW846 8260B			10/20/17 13:52	TMP	J
Bromochloromethane	ND		ug/L	1.0	SW846 8260B			10/20/17 13:52	TMP	J
Bromodichloromethane	ND		ug/L	1.0	SW846 8260B			10/20/17 13:52	TMP	J
Bromoform	ND		ug/L	1.0	SW846 8260B			10/20/17 13:52	TMP	J
Bromomethane	ND		ug/L	1.0	SW846 8260B			10/20/17 13:52	TMP	J
2-Butanone	ND		ug/L	10.0	SW846 8260B			10/20/17 13:52	TMP	J
Carbon Disulfide	ND		ug/L	1.0	SW846 8260B			10/20/17 13:52	TMP	J
Carbon Tetrachloride	ND		ug/L	1.0	SW846 8260B			10/20/17 13:52	TMP	J
Chlorobenzene	ND		ug/L	1.0	SW846 8260B			10/20/17 13:52	TMP	J
Chlorodibromomethane	ND		ug/L	1.0	SW846 8260B			10/20/17 13:52	TMP	J
Chloroethane	ND		ug/L	1.0	SW846 8260B			10/20/17 13:52	TMP	J
Chloroform	ND		ug/L	1.0	SW846 8260B			10/20/17 13:52	TMP	J
Chloromethane	ND		ug/L	1.0	SW846 8260B			10/20/17 13:52	TMP	J
3-Chloro-1-propene	ND		ug/L	1.0	SW846 8260B			10/20/17 13:52	TMP	J
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	SW846 8260B			10/20/17 13:52	TMP	J
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			10/20/17 13:52	TMP	J
Dibromomethane	ND		ug/L	1.0	SW846 8260B			10/20/17 13:52	TMP	J
trans-1,4-Dichloro-2-butene	ND	3	ug/L	3.0	SW846 8260B			10/20/17 13:52	TMP	J
1,2-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			10/20/17 13:52	TMP	J
1,3-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			10/20/17 13:52	TMP	J
1,4-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			10/20/17 13:52	TMP	J
Dichlorodifluoromethane	ND		ug/L	1.0	SW846 8260B			10/20/17 13:52	TMP	J
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			10/20/17 13:52	TMP	J
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			10/20/17 13:52	TMP	J
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			10/20/17 13:52	TMP	J
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			10/20/17 13:52	TMP	J
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			10/20/17 13:52	TMP	J
1,2-Dichloropropane	ND		ug/L	1.0	SW846 8260B			10/20/17 13:52	TMP	J
cis-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			10/20/17 13:52	TMP	J
trans-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			10/20/17 13:52	TMP	J
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			10/20/17 13:52	TMP	J
2-Hexanone	ND		ug/L	5.0	SW846 8260B			10/20/17 13:52	TMP	J
Iodomethane	ND	4	ug/L	1.0	SW846 8260B			10/20/17 13:52	TMP	J
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	SW846 8260B			10/20/17 13:52	TMP	J

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2270109 Form 8/FFMP033W

Lab ID: **2270109001** Date Collected: 10/18/2017 10:43 Matrix: Ground Water

Sample ID: **FFMP033W** Date Received: 10/18/2017 14:29

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			10/20/17 13:52	TMP	J
Styrene	ND		ug/L	1.0	SW846 8260B			10/20/17 13:52	TMP	J
1,1,1,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			10/20/17 13:52	TMP	J
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			10/20/17 13:52	TMP	J
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			10/20/17 13:52	TMP	J
Toluene	ND		ug/L	1.0	SW846 8260B			10/20/17 13:52	TMP	J
Total Xylenes	ND		ug/L	3.0	SW846 8260B			10/20/17 13:52	TMP	J
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			10/20/17 13:52	TMP	J
1,1,2-Trichloroethane	ND		ug/L	1.0	SW846 8260B			10/20/17 13:52	TMP	J
Trichloroethene	ND		ug/L	1.0	SW846 8260B			10/20/17 13:52	TMP	J
Trichlorofluoromethane	ND		ug/L	1.0	SW846 8260B			10/20/17 13:52	TMP	J
1,2,3-Trichloropropane	ND		ug/L	2.0	SW846 8260B			10/20/17 13:52	TMP	J
Vinyl Acetate	ND		ug/L	5.0	SW846 8260B			10/20/17 13:52	TMP	J
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			10/20/17 13:52	TMP	J
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	90.4		%	62 - 133	SW846 8260B			10/20/17 13:52	TMP	J
4-Bromofluorobenzene (S)	92.5		%	79 - 114	SW846 8260B			10/20/17 13:52	TMP	J
Dibromofluoromethane (S)	92.4		%	78 - 116	SW846 8260B			10/20/17 13:52	TMP	J
Toluene-d8 (S)	93		%	76 - 127	SW846 8260B			10/20/17 13:52	TMP	J
LIBRARY SEARCH - VOLATILES										
No TIC's Detected	.				Lib Search VOC			10/20/17 13:52	CPK	J
WET CHEMISTRY										
Alkalinity, Bicarbonate	31		mg/L	5	S2320B-97			10/20/17 03:33	MSA	B
Alkalinity, Total	31	1	mg/L	5	S2320B-97			10/20/17 03:33	MSA	B
Ammonia-N	0.322		mg/L	0.100	D6919-09			10/28/17 02:23	JAM	C
Chemical Oxygen Demand (COD)	ND		mg/L	7	EPA 410.4			10/22/17 21:06	AK	C
Chloride	35.9		mg/L	2.0	EPA 300.0			10/19/17 11:04	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			10/19/17 11:04	CHW	B
Nitrate-N	12.8		mg/L	0.20	EPA 300.0			10/19/17 11:04	CHW	B
pH	5.94	2	pH_Units		S4500HB-11			10/20/17 03:33	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	11/1/17 00:00	JLG	11/1/17 10:17	JLG	I
Specific Conductance	264		umhos/cm	1	S2510B-97			10/20/17 03:33	MSA	B
Sulfate	9.0		mg/L	2.0	EPA 300.0			10/19/17 11:04	CHW	B
Total Dissolved Solids	151		mg/L	5	S2540C-11			10/24/17 14:29	BMK	B
Total Organic Carbon (TOC)	ND		mg/L	0.50	S5310B-00			10/25/17 13:13	PAG	G
Turbidity	0.70		NTU	0.10	S2130B-01			10/20/17 00:44	MSA	B

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ANALYTICAL RESULTS

Workorder: 2270109 Form 8/FFMP033W

Lab ID: **2270109001** Date Collected: 10/18/2017 10:43 Matrix: Ground Water

Sample ID: **FFMP033W** Date Received: 10/18/2017 14:29

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Antimony, Total	ND		mg/L	0.0022	SW846 6020A	10/26/17 06:02	SRT	10/28/17 14:11	JTP	E1
Arsenic, Total	ND		mg/L	0.0033	SW846 6020A	10/26/17 06:02	SRT	10/28/17 14:11	JTP	E1
Arsenic, Dissolved	ND		mg/L	0.0030	SW846 6020A	11/1/17 05:40	LXC	11/1/17 12:22	JTP	D2
Barium, Total	0.045		mg/L	0.0056	SW846 6020A	10/26/17 06:02	SRT	10/28/17 14:11	JTP	E1
Barium, Dissolved	0.044		mg/L	0.0056	SW846 6020A	11/1/17 05:40	LXC	11/1/17 12:22	JTP	D2
Beryllium, Total	ND		mg/L	0.0011	SW846 6020A	10/26/17 06:02	SRT	10/28/17 14:11	JTP	E1
Cadmium, Total	ND		mg/L	0.0011	SW846 6020A	10/26/17 06:02	SRT	10/28/17 14:11	JTP	E1
Cadmium, Dissolved	ND		mg/L	0.0011	SW846 6020A	11/1/17 05:40	LXC	11/1/17 12:22	JTP	D2
Calcium, Total	23.7		mg/L	0.11	SW846 6020A	10/26/17 06:02	SRT	10/28/17 14:11	JTP	E1
Calcium, Dissolved	23.0		mg/L	0.11	SW846 6020A	11/1/17 05:40	LXC	11/1/17 12:22	JTP	D2
Chromium, Total	ND		mg/L	0.0022	SW846 6020A	10/26/17 06:02	SRT	10/28/17 14:11	JTP	E1
Chromium, Dissolved	ND		mg/L	0.0022	SW846 6020A	11/1/17 05:40	LXC	11/1/17 12:22	JTP	D2
Cobalt, Total	ND		mg/L	0.0056	SW846 6020A	10/26/17 06:02	SRT	10/28/17 14:11	JTP	E1
Copper, Total	ND		mg/L	0.0056	SW846 6020A	10/26/17 06:02	SRT	10/28/17 14:11	JTP	E1
Copper, Dissolved	ND		mg/L	0.0056	SW846 6020A	11/1/17 05:40	LXC	11/1/17 12:22	JTP	D2
Iron, Total	2.4		mg/L	0.056	SW846 6020A	10/26/17 06:02	SRT	10/28/17 14:11	JTP	E1
Iron, Dissolved	1.6		mg/L	0.056	SW846 6020A	11/1/17 05:40	LXC	11/1/17 13:55	JTP	D2
Lead, Total	ND		mg/L	0.0022	SW846 6020A	10/26/17 06:02	SRT	10/28/17 14:11	JTP	E1
Lead, Dissolved	ND		mg/L	0.0022	SW846 6020A	11/1/17 05:40	LXC	11/1/17 12:22	JTP	D2
Magnesium, Total	8.3		mg/L	0.11	SW846 6020A	10/26/17 06:02	SRT	10/28/17 14:11	JTP	E1
Magnesium, Dissolved	8.5		mg/L	0.11	SW846 6020A	11/1/17 05:40	LXC	11/1/17 12:22	JTP	D2
Manganese, Total	0.51		mg/L	0.0056	SW846 6020A	10/26/17 06:02	SRT	10/28/17 14:11	JTP	E1
Manganese, Dissolved	0.49		mg/L	0.0056	SW846 6020A	11/1/17 05:40	LXC	11/1/17 12:22	JTP	D2
Mercury, Total	ND		mg/L	0.00050	SW846 7470A	10/26/17 09:30	AXC	10/26/17 13:30	AXC	E2
Mercury, Dissolved	ND		mg/L	0.00050	SW846 7470A	10/26/17 09:30	AXC	10/26/17 14:46	AXC	D1
Nickel, Total	ND		mg/L	0.0056	SW846 6020A	10/26/17 06:02	SRT	10/28/17 14:11	JTP	E1
Potassium, Total	1.5		mg/L	0.11	SW846 6020A	10/26/17 06:02	SRT	10/28/17 14:11	JTP	E1
Potassium, Dissolved	1.5		mg/L	0.11	SW846 6020A	11/1/17 05:40	LXC	11/1/17 12:22	JTP	D2
Selenium, Total	ND		mg/L	0.0056	SW846 6020A	10/26/17 06:02	SRT	10/28/17 14:11	JTP	E1
Selenium, Dissolved	ND		mg/L	0.0056	SW846 6020A	11/1/17 05:40	LXC	11/1/17 12:22	JTP	D2
Silver, Total	ND		mg/L	0.0022	SW846 6020A	10/26/17 06:02	SRT	10/28/17 14:11	JTP	E1
Silver, Dissolved	ND		mg/L	0.0022	SW846 6020A	11/1/17 05:40	LXC	11/1/17 12:22	JTP	D2
Sodium, Total	12.7		mg/L	0.11	SW846 6020A	10/26/17 06:02	SRT	10/28/17 14:11	JTP	E1
Sodium, Dissolved	12.9		mg/L	0.11	SW846 6020A	11/1/17 05:40	LXC	11/1/17 12:22	JTP	D2
Thallium, Total	ND		mg/L	0.0011	SW846 6020A	10/26/17 06:02	SRT	10/28/17 14:11	JTP	E1
Vanadium, Total	ND		mg/L	0.0022	SW846 6020A	10/26/17 06:02	SRT	10/28/17 14:11	JTP	E1
Zinc, Total	ND		mg/L	0.0056	SW846 6020A	10/26/17 06:02	SRT	10/28/17 14:11	JTP	E1

ALS Environmental

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NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2270109 Form 8/FFMP033W

Lab ID: **2270109001** Date Collected: 10/18/2017 10:43 Matrix: Ground Water

Sample ID: **FFMP033W** Date Received: 10/18/2017 14:29

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
Zinc, Dissolved	ND		mg/L	0.0056	SW846 6020A	11/1/17 05:40	LXC	11/1/17 12:22	JTP	D2
FIELD PARAMETERS										
Depth to Water Level	18.750		Feet		Field			10/18/17 10:43	BGS	F
Flow Rate	1.15		gal/min		Field			10/18/17 10:43	BGS	F
pH, Field (SM4500B)	5.740		pH_Units		Field			10/18/17 10:43	BGS	F
Sample Depth	79.000		Feet		Field			10/18/17 10:43	BGS	F
Specific Conductance, Field	330		umhos/cm	1	Field			10/18/17 10:43	BGS	F
Temperature	12.43		Deg. C		Field			10/18/17 10:43	BGS	F
Total Well Depth	100.000		Feet		Field			10/18/17 10:43	BGS	F
Volume in Water Column	119.438		Gallons		Field			10/18/17 10:43	BGS	F
Water Level After Purge	22.790		Feet		Field			10/18/17 10:43	BGS	F
Well Volumes Purged	0.92		Vol		Field			10/18/17 10:43	BGS	F

Ms. Susan J Scherer
Project Coordinator

ALS Environmental

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ANALYTICAL RESULTS

Workorder: 2270109 Form 8/FFMP033W

PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
2270109001	1	FFMP033W	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
2270109001	2	FFMP033W	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				
2270109001	3	FFMP033W	SW846 8260B	trans-1,4-Dichloro-2-butene
The QC sample type LCS for method SW846 8260B was outside the control limits for the analyte trans-1,4-Dichloro-2-butene. The % Recovery was reported as 52.1 and the control limits were 60 to 141.				
2270109001	4	FFMP033W	SW846 8260B	Iodomethane
The QC sample type LCS for method SW846 8260B was outside the control limits for the analyte Iodomethane. The % Recovery was reported as 35.8 and the control limits were 37 to 128.				

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CHAIN OF CUSTODY/ REQUEST FOR ANALYSIS

Generated by ALS

COC #: 1 of 1

ALS Q: *2270109*

ALL SHADED AREAS MUST BE COMPLETED BY THE CLIENT / SAMPLER. INSTRUCTIONS ON THE BACK.

Client Name: Lancaster County Solid Waste MA	Container Type	AG	AN	CG	—	—	PL	PL	PL	PL	PL
Address: 1299 Harrisburg Pike, P.O. Box 4424	Container Size	40 ml	125 ml	40 ml	—	—	500 ml	500 ml	500 ml	1 L	500 ml
Lancaster, PA 17604	Preservative	HCl	H2SO4	HCl	—	—	H2SO4	HNO3	HNO3	None	None
Contact: Mark Reider	ANALYSES/METHOD REQUESTED										
Phone#: (717) 735-0193											
Project Name/#: FORM 8/FFMP033W											
Bill To: Lancaster County Solid Waste MA											
TAT [X] Normal-Standard TAT is 10-12 business days. [ ] Rush-Subject to ALS approval and surcharges.											
Date Required: _____ Approved By: _____											
Email? [X] -Y mreider@LCSWMA.com											
Fax? [X] -Y No.: (717) 397-9973											

Sample Description/Location (as it will appear on the lab report)	Sample Date	Time	*G or C	**Matrix	TOC	O-OH	8260 - Form 8 with Subtitle D	Field Measurements	Sample Depth for AUX Data	NH3-N, COD	Dissolved Metals Form 8 (Field Filtered)	Total Metals, with Subtitle D	pH, Cl, SpC, F, SO4, TDS, NO3, Turb.	Alkalinity Bicarbonate	Sample/COC Comments
					Enter Number of Containers Per Sample or Field Results Below.										
1. FFMP033W	10/18/12	1043	G	GW	2	1	2	x	x	1	1	1	1	1	
2															
3															
4															
5															
6															
7															
8															
9															
10															

Receipt Information (completed by Receiving Lab)

Cooler Temp: 3.0C Therm ID: 309

No. of Coolers: _____

	Y	N	Initial
Custody Seals Present?			RB
(if present) Seals Intact?			
Received on Ice?	✓		
COC/Labels Complete/Accurate?	✓		
Cont. In Good Cond.?	✓		
Correct Containers?	✓		
Correct Sample Volumes?	✓		
Correct Preservation?	✓		
Headspace/Volatiles?			

Courier/Tracking #:

ALS Field Services: ☐Pickup ☐Labor ☐Composite_Sampling ☐Rental_Equipment ☐Other: _____

Project Comments:

LOGGED BY(signature): DATE TIME

REVIEWED BY(signature): DATE TIME

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
1 [illegible] ALS	10/19/12	1429	2 [illegible]	10-18-	1429
3			4		
5			6		
7			8		
9			10		

Data Deliverables: ☐Standard ☐CLP-like ☐USACE ☐

Special Processing: USACE ☐ Navy ☐ ☐

State Samples Collected In: ☐NY ☐NJ ☒PA ☐NC ☐

Reportable to PADEP? Yes ☐ PWSID # _____

Sample Disposal: Lab ☒ Special ☐

EDDS: Format Type- _____

* G=Grab; C=Composite

**Matrix - Al=Air; DW=Drinking Water; GW=Groundwater; Ol=Oil; OL=Other Liquid; SL=Sludge; SO=Soil; WP=Wipe; WW=Wastewater

ALS ENVIRONMENTAL SHIPPING ADDRESS: 34 DOGWOOD LANE, MIDDLETOWN, PA 17057

Rev 8/04