LCSWMA

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

April 16, 2019

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 2W, 2SW, 3A, 28, & 33W exceeded the primary standard for nitrate, samples are consistent with historic data the cause is attributed to agricultural impacts. No other MCL's were exceeded.

2. USEPA SMCL's exceedance report; Samples 2W, 2DW, 3AW, 4AW, 5W, 17W, 18W, 26RW, 30RW, 31W, 32W, 33W exceeded the secondary standard for manganese, Samples 2DW, 2SW, 31W, 32W & 33W exceeded the secondary standard for iron, Samples 2DW, 4AW, 5W, 17W & 26RW exceeded the secondary standard for total dissolved solids, and Samples 2DW, 4AW, & 17W 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. ARM reviews the site historic Chloride issues annually and has assessed the causes. No other SMCL's were exceeded.

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

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 NROGERS@LCSWMA.ORG.

Respectfully Submitted,

Nick Rogers
Environmental Compliance Manager

Enclosures:
cc: Michelle Marsh, Dan Brown, Bob Eshbach, Jeff Musser, Jordan Gallagher
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
04/10/2019
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: 4.14 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: 2.50 ft — Elevation of Water Level: 460.86 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: 3.1

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

Spring Flow Rate: ___ gpm

Sample Date (mm/dd/yy): 2/19/2019 — Sample Collection Time: 12:45

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

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): 3017246001 — Final Lab Analysis CompletionDate: 2/27/2019

Name/Affiliation of Person who Filled Out Form: Nick R. Rogers

Comments:

I.D. No	101389
Monitoring Point No.	FFMP028W
Sample Date	2/19/2019

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	34	SM20-2320B
CALCIUM, TOTAL	36.6	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	88.2	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	67 ND	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	15.1	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	7.8	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	16.6	EPA 300
pH-FIELD (SU)	5.25	FIELD
pH-LAB (SU)	6.49	SM20-4500HB
POTASSIUM, TOTAL	1.8	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	23	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	548	FIELD
SPEC. COND., LAB (umhos/cm)	556	SW846 9050A
SULFATE	24.4	EPA 300
ALKALINITY	34	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	249	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	0.77	SW846 9060A
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.11	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	2/19/2019

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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04/10/2019
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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: 16.93 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: ___ ft — Elevation of Water Level: 492.67 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: 0.5

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

Spring Flow Rate: ___ gpm

Sample Date (mm/dd/yy): 2/19/2019 — Sample Collection Time: 14:13

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

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): 3017246002 — Final Lab Analysis CompletionDate: 2/26/2019

Name/Affiliation of Person who Filled Out Form: Nick R. Rogers

Comments:

I.D. No	101389
Monitoring Point No.	FFMP02DW
Sample Date	2/19/2019

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	130	SM20-2320B
CALCIUM, TOTAL	110	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	357	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	1600	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	18.1	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	480	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	4.3	EPA 300
pH-FIELD (SU)	7.11	FIELD
pH-LAB (SU)	7.56	SM20-4500HB
POTASSIUM, TOTAL	1.8	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	96.3	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	1425	FIELD
SPEC. COND., LAB (umhos/cm)	1480	SW846 9050A
SULFATE	34	EPA 300
ALKALINITY	130	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	765	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	0.81	SW846 9060A
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	16.5	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.	FFMP02DW
Sample Date	2/19/2019

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
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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: 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: 13.98 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: ___ ft — Elevation of Water Level: 495.92 ft./MSL

Sampling Depth: 18 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: 0.9

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

Spring Flow Rate: ___ gpm

Sample Date (mm/dd/yy): 2/19/2019 — Sample Collection Time: 14:34

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

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): 3017246003 — Final Lab Analysis CompletionDate: 2/27/2019

Name/Affiliation of Person who Filled Out Form: Nick R. Rogers

Comments:

I.D. No	101389
Monitoring Point No.	FFMP02SW
Sample Date	2/19/2019

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	28	SM20-2320B
CALCIUM, TOTAL	16	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	23	EPA 410.4
CHLORIDE	68	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	400	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	6.1	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	11	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	14.6	EPA 300
pH-FIELD (SU)	5.66	FIELD
pH-LAB (SU)	6.43	SM20-4500HB
POTASSIUM, TOTAL	4.7	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	44.8	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	441	FIELD
SPEC. COND., LAB (umhos/cm)	453	SW846 9050A
SULFATE	29.3	EPA 300
ALKALINITY	28	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	250	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	3.4	SW846 9060A
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	14.5	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	2/19/2019

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
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FORM 19

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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: 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: 21.62 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: 1.50 ft — Elevation of Water Level: 455.18 ft./MSL

Sampling Depth: 39 ft — Volume of Water Column: 26.99 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): 2/20/2019 — Sample Collection Time: 9:39

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

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): 3017548001 — Final Lab Analysis CompletionDate: 3/6/2019

Name/Affiliation of Person who Filled Out Form: Nick R. Rogers

Comments:

I.D. No	101389
Monitoring Point No.	FFMP025W
Sample Date	2/20/2019

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	0.187	D6919-09
BICARBONATE ALKALINITY	56	SM20-2320B
CALCIUM, TOTAL	42.4	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	29	EPA 410.4
CHLORIDE	107	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	67 ND	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	19.6	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	5.6 ND	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	2.8	EPA 300
pH-FIELD (SU)	5.87	FIELD
pH-LAB (SU)	6.86	SM20-4500HB
POTASSIUM, TOTAL	3	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	42.1	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	617	FIELD
SPEC. COND., LAB (umhos/cm)	624	SW846 9050A
SULFATE	62.9	EPA 300
ALKALINITY	56	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	394	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	2.3	SW846 9060A
TOTAL PHENOLICS (ug/l)	6	SW846 9066
TURBIDITY (N.T.U.)	0.42	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.	FFMP025W
Sample Date	2/20/2019

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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DEPARTMENT OF ENVIRONMENTAL PROTECTION
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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: 37.41 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: 2.00 ft — Elevation of Water Level: 443.29 ft./MSL

Sampling Depth: 135 ft — Volume of Water Column: 166.09 gal

Total Well Depth: 150.5 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): 2/20/2019 — Sample Collection Time: 11:21

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

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): 3017548002 — Final Lab Analysis CompletionDate: 3/6/2019

Name/Affiliation of Person who Filled Out Form: Nick R. Rogers

Comments:

I.D. No	101389
Monitoring Point No.	FFMP017W
Sample Date	2/20/2019

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	0.162	D6919-09
BICARBONATE ALKALINITY	60	SM20-2320B
CALCIUM, TOTAL	96.2	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	22	EPA 410.4
CHLORIDE	334	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	67 ND	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	41.9	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	620	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	2.1	EPA 300
pH-FIELD (SU)	5.56	FIELD
pH-LAB (SU)	6.53	SM20-4500HB
POTASSIUM, TOTAL	6	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	83.6	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	1360	FIELD
SPEC. COND., LAB (umhos/cm)	1400	SW846 9050A
SULFATE	58.8	EPA 300
ALKALINITY	60	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	851	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	2.1	SW846 9060A
TOTAL PHENOLICS (ug/l)	20	SW846 9066
TURBIDITY (N.T.U.)	1.29	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	2/20/2019

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
04/10/2019
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: 52.33 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: 1.90 ft — Elevation of Water Level: 524.07 ft./MSL

Sampling Depth: 135 ft — Volume of Water Column: 141.83 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): 2/20/2019 — Sample Collection Time: 12:58

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

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): 3017548003 — Final Lab Analysis CompletionDate: 3/6/2019

Name/Affiliation of Person who Filled Out Form: Nick R. Rogers

Comments:

I.D. No	101389
Monitoring Point No.	FFMP015W
Sample Date	2/20/2019

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	0.174	D6919-09
BICARBONATE ALKALINITY	36	SM20-2320B
CALCIUM, TOTAL	14.8	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	19	EPA 410.4
CHLORIDE	10.9	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	67 ND	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	9.8	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	9.700001	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	7.5	EPA 300
pH-FIELD (SU)	5.79	FIELD
pH-LAB (SU)	6.61	SM20-4500HB
POTASSIUM, TOTAL	1.9	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	21.7	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	334	FIELD
SPEC. COND., LAB (umhos/cm)	261	SW846 9050A
SULFATE	52.1	EPA 300
ALKALINITY	36	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	241	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	1	SW846 9060A
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.24	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	2/20/2019

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
04/10/2019
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: 35.67 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: 2.00 ft — Elevation of Water Level: 441.63 ft./MSL

Sampling Depth: 55 ft — Volume of Water Column: 33.53 gal

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

Well Purged: X Yes ___ No — Well Volumes Purged: 2.7

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

Spring Flow Rate: ___ gpm

Sample Date (mm/dd/yy): 2/21/2019 — Sample Collection Time: 9:22

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

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): 3017924001 — Final Lab Analysis CompletionDate: 3/6/2019

Name/Affiliation of Person who Filled Out Form: Nick R. Rogers

Comments:

I.D. No	101389
Monitoring Point No.	FFMP029W
Sample Date	2/21/2019

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	16	SM20-2320B
CALCIUM, TOTAL	3.9	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	22.3	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	120	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	3.9	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	19	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	3.6	EPA 300
pH-FIELD (SU)	4.59	FIELD
pH-LAB (SU)	6.31	SM20-4500HB
POTASSIUM, TOTAL	1.4	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	9.2	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	116	FIELD
SPEC. COND., LAB (umhos/cm)	106	SW846 9050A
SULFATE	2 ND	EPA 300
ALKALINITY	16	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	105	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	0.5 ND	SW846 9060A
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	2.08	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	2/21/2019

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
04/10/2019
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: 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: 25.14 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: 1.79 ft — Elevation of Water Level: 446.81 ft./MSL

Sampling Depth: 49 ft — Volume of Water Column: 70.27 gal

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

Well Purged: X Yes ___ No — Well Volumes Purged: 2.8

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

Spring Flow Rate: ___ gpm

Sample Date (mm/dd/yy): 2/21/2019 — Sample Collection Time: 10:31

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

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): 3017924002 — Final Lab Analysis CompletionDate: 3/6/2019

Name/Affiliation of Person who Filled Out Form: Nick R. Rogers

Comments:

I.D. No	101389
Monitoring Point No.	FFMP019W
Sample Date	2/21/2019

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	71	SM20-2320B
CALCIUM, TOTAL	59.7	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	70.2	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	67 ND	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	5.8	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	5.6 ND	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	0.36	EPA 300
pH-FIELD (SU)	6.18	FIELD
pH-LAB (SU)	7.22	SM20-4500HB
POTASSIUM, TOTAL	1.1	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	10.6	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	428	FIELD
SPEC. COND., LAB (umhos/cm)	434	SW846 9050A
SULFATE	13.9	EPA 300
ALKALINITY	71	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	358	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	0.56	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	2/21/2019

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
04/10/2019
DEP USE ONLY
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FORM 19

MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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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: 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: 24.31 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: 2.46 ft — Elevation of Water Level: 447.89 ft./MSL

Sampling Depth: 40 ft — Volume of Water Column: 17.70 gal

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

Well Purged: X Yes ___ No — Well Volumes Purged: 6.4

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

Spring Flow Rate: ___ gpm

Sample Date (mm/dd/yy): 2/21/2019 — Sample Collection Time: 11:02

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

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): 3017924003 — Final Lab Analysis CompletionDate: 3/6/2019

Name/Affiliation of Person who Filled Out Form: Nick R. Rogers

Comments:

I.D. No	101389
Monitoring Point No.	FFMP018W
Sample Date	2/21/2019

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	26	SM20-2320B
CALCIUM, TOTAL	31.4	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	95.5	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	67 ND	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	15.3	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	360	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	4.4	EPA 300
pH-FIELD (SU)	5.08	FIELD
pH-LAB (SU)	6.38	SM20-4500HB
POTASSIUM, TOTAL	5.7	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	35.3	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	442	FIELD
SPEC. COND., LAB (umhos/cm)	541	SW846 9050A
SULFATE	38.4	EPA 300
ALKALINITY	26	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	352	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	1.2	SW846 9060A
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.15	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	2/21/2019

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
04/10/2019
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: 61.26 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: 3.30 ft — Elevation of Water Level: 486.14 ft./MSL

Sampling Depth: 105 ft — Volume of Water Column: 77.46 gal

Total Well Depth: 114 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): 2/21/2019 — Sample Collection Time: 12:20

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

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): 3017924004 — Final Lab Analysis CompletionDate: 3/6/2019

Name/Affiliation of Person who Filled Out Form: Nick R. Rogers

Comments:

I.D. No	101389
Monitoring Point No.	FFMP26RW
Sample Date	2/21/2019

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	51	SM20-2320B
CALCIUM, TOTAL	77.1	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	180	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	67 ND	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	16.6	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	950	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	1.4	EPA 300
pH-FIELD (SU)	5.29	FIELD
pH-LAB (SU)	6.42	SM20-4500HB
POTASSIUM, TOTAL	11	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	60.3	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	904	FIELD
SPEC. COND., LAB (umhos/cm)	932	SW846 9050A
SULFATE	92.8	EPA 300
ALKALINITY	51	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	539	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	2.5	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.	FFMP26RW
Sample Date	2/21/2019

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
04/10/2019
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: 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: 52.67 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: 1.70 ft — Elevation of Water Level: 484.73 ft./MSL

Sampling Depth: 135 ft — Volume of Water Column: 142.94 gal

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

Well Purged: X Yes ___ No — Well Volumes Purged: 0.9

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

Spring Flow Rate: ___ gpm

Sample Date (mm/dd/yy): 2/21/2019 — Sample Collection Time: 13:32

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

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): 3017924005 — Final Lab Analysis CompletionDate: 3/6/2019

Name/Affiliation of Person who Filled Out Form: Nick R. Rogers

Comments:

I.D. No	101389
Monitoring Point No.	FFMP005W
Sample Date	2/21/2019

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	53	SM20-2320B
CALCIUM, TOTAL	91	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	19	EPA 410.4
CHLORIDE	232	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	67 ND	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	23.6	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	110	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	2.5	EPA 300
pH-FIELD (SU)	5.28	FIELD
pH-LAB (SU)	6.47	SM20-4500HB
POTASSIUM, TOTAL	3.7	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	65.2	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	1047	FIELD
SPEC. COND., LAB (umhos/cm)	1090	SW846 9050A
SULFATE	71.1	EPA 300
ALKALINITY	53	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	623	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	2.2	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	2/21/2019

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
04/10/2019
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: 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: 31.18 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: 2.20 ft — Elevation of Water Level: 531.12 ft./MSL

Sampling Depth: 85 ft — Volume of Water Column: 86.39 gal

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

Well Purged: X Yes ___ No — Well Volumes Purged: 1.5

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

Spring Flow Rate: ___ gpm

Sample Date (mm/dd/yy): 2/21/2019 — Sample Collection Time: 15:03

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

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): 3017924006 — Final Lab Analysis CompletionDate: 3/6/2019

Name/Affiliation of Person who Filled Out Form: Nick R. Rogers

Comments:

I.D. No	101389
Monitoring Point No.	FFMP30RW
Sample Date	2/21/2019

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	0.227	D6919-09
BICARBONATE ALKALINITY	29	SM20-2320B
CALCIUM, TOTAL	21.8	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	124	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	120 ND	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	15.1	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	1000	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	4.6	EPA 300
pH-FIELD (SU)	5.02	FIELD
pH-LAB (SU)	6.25	SM20-4500HB
POTASSIUM, TOTAL	2.8	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	60.4	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	599	FIELD
SPEC. COND., LAB (umhos/cm)	588	SW846 9050A
SULFATE	13.4	EPA 300
ALKALINITY	29	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	388	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	1.1	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.	FFMP30RW
Sample Date	2/21/2019

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
04/10/2019
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: 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: 30.83 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: 2.52 ft — Elevation of Water Level: 529.89 ft./MSL

Sampling Depth: 146 ft — Volume of Water Column: 397.55 gal

Total Well Depth: 301.52 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): 2/22/2019 — Sample Collection Time: 9:46

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

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): 3018009001 — Final Lab Analysis CompletionDate: 3/5/2019

Name/Affiliation of Person who Filled Out Form: Nick R. Rogers

Comments:

I.D. No	101389
Monitoring Point No.	FFMP04AW
Sample Date	2/22/2019

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	0.192	D6919-09
BICARBONATE ALKALINITY	199	SM20-2320B
CALCIUM, TOTAL	143	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	290	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	67 ND	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	24.9	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	260	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	0.3	EPA 300
pH-FIELD (SU)	6.73	FIELD
pH-LAB (SU)	7.24	SM20-4500HB
POTASSIUM, TOTAL	1.9	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	84.6	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	1446	FIELD
SPEC. COND., LAB (umhos/cm)	1470	SW846 9050A
SULFATE	49.9	EPA 300
ALKALINITY	199	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	879	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	1.1	SW846 9060A
TOTAL PHENOLICS (ug/l)	20	SW846 9066
TURBIDITY (N.T.U.)	0.5	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.	FFMP04AW
Sample Date	2/22/2019

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
04/10/2019
DEP USE ONLY
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FORM 19

MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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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: 46.97 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: 1.20 ft — Elevation of Water Level: 543.93 ft./MSL

Sampling Depth: 130 ft — Volume of Water Column: 147.20 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): 2/22/2019 — Sample Collection Time: 11:05

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

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): 3018009002 — Final Lab Analysis CompletionDate: 3/5/2019

Name/Affiliation of Person who Filled Out Form: Nick R. Rogers

Comments:

I.D. No	101389
Monitoring Point No.	FFMP03AW
Sample Date	2/22/2019

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	0.359	D6919-09
BICARBONATE ALKALINITY	29	SM20-2320B
CALCIUM, TOTAL	15.5	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	26.3	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	67 ND	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	11.2	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	260	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	19	EPA 300
pH-FIELD (SU)	4.95	FIELD
pH-LAB (SU)	5.75	SM20-4500HB
POTASSIUM, TOTAL	0.81	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	12	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	281	FIELD
SPEC. COND., LAB (umhos/cm)	255	SW846 9050A
SULFATE	2.9	EPA 300
ALKALINITY	29	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	230	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	0.87	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	2/22/2019

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
04/10/2019
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: 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: 60.59 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: 2.38 ft — Elevation of Water Level: 552.07 ft./MSL

Sampling Depth: 130 ft — Volume of Water Column: 116.63 gal

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

Well Purged: X Yes ___ No — Well Volumes Purged: 1.0

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

Spring Flow Rate: ___ gpm

Sample Date (mm/dd/yy): 2/22/2019 — Sample Collection Time: 12:29

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

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): 3018009003 — Final Lab Analysis CompletionDate: 3/7/2019

Name/Affiliation of Person who Filled Out Form: Nick R. Rogers

Comments:

I.D. No	101389
Monitoring Point No.	FFMP031W
Sample Date	2/22/2019

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	0.472	D6919-09
BICARBONATE ALKALINITY	65	SM20-2320B
CALCIUM, TOTAL	40.1	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	23.8	EPA 300
FLUORIDE	0.26	EPA 300
IRON, TOTAL (ug/l)	3800	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	4	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	300	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	0.2 ND	EPA 300
pH-FIELD (SU)	7.96	FIELD
pH-LAB (SU)	7.09	SM20-4500HB
POTASSIUM, TOTAL	1.4	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	9.6	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	316	FIELD
SPEC. COND., LAB (umhos/cm)	278	SW846 9050A
SULFATE	48.8	EPA 300
ALKALINITY	65	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	261	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	0.5 ND	SW846 9060A
TOTAL PHENOLICS (ug/l)	10	SW846 9066
TURBIDITY (N.T.U.)	15.2	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	2/22/2019

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
04/10/2019
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: 55.04 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: 1.60 ft — Elevation of Water Level: 558.16 ft./MSL

Sampling Depth: 85 ft — Volume of Water Column: 168.25 gal

Total Well Depth: 169.6 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): 2/22/2019 — Sample Collection Time: 14:01

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

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): 3018009004 — Final Lab Analysis CompletionDate: 3/7/2019

Name/Affiliation of Person who Filled Out Form: Nick R. Rogers

Comments:

I.D. No	101389
Monitoring Point No.	FFMP002W
Sample Date	2/22/2019

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	6	SM20-2320B
CALCIUM, TOTAL	20.9	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	20.7	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	190	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	7.6	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	280	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	20.9	EPA 300
pH-FIELD (SU)	4.55	FIELD
pH-LAB (SU)	5.51	SM20-4500HB
POTASSIUM, TOTAL	1	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	14.4	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	302	FIELD
SPEC. COND., LAB (umhos/cm)	272	SW846 9050A
SULFATE	9.7	EPA 300
ALKALINITY	6	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	225	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	0.6	SW846 9060A
TOTAL PHENOLICS (ug/l)	10	SW846 9066
TURBIDITY (N.T.U.)	0.45	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	2/22/2019

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
04/10/2019
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: 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: 46.31 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: 2.06 ft — Elevation of Water Level: 547.78 ft./MSL

Sampling Depth: 62 ft — Volume of Water Column: 42.14 gal

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

Well Purged: X Yes ___ No — Well Volumes Purged: 0.4

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

Spring Flow Rate: ___ gpm

Sample Date (mm/dd/yy): 2/22/2019 — Sample Collection Time: 14:50

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

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): 3018009005 — Final Lab Analysis CompletionDate: 3/7/2019

Name/Affiliation of Person who Filled Out Form: Nick R. Rogers

Comments:

I.D. No	101389
Monitoring Point No.	FFMP032W
Sample Date	2/22/2019

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	1.4	D6919-09
BICARBONATE ALKALINITY	69	SM20-2320B
CALCIUM, TOTAL	16.3	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	20.3	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	5900	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	5.3	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	700	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	0.2 ND	EPA 300
pH-FIELD (SU)	6.95	FIELD
pH-LAB (SU)	7.01	SM20-4500HB
POTASSIUM, TOTAL	1.4	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	14	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	219	FIELD
SPEC. COND., LAB (umhos/cm)	186	SW846 9050A
SULFATE	2 ND	EPA 300
ALKALINITY	69	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	137	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	0.67	SW846 9060A
TOTAL PHENOLICS (ug/l)	7	SW846 9066
TURBIDITY (N.T.U.)	79.5	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.	FFMP032W
Sample Date	2/22/2019

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
04/10/2019
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: 15.52 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: 0.49 ft — Elevation of Water Level: 501.00 ft./MSL

Sampling Depth: 79 ft — Volume of Water Column: 118.20 gal

Total Well Depth: 96 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): 2/22/2019 — Sample Collection Time: 16:06

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

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): 3018009006 — Final Lab Analysis CompletionDate: 3/7/2019

Name/Affiliation of Person who Filled Out Form: Nick R. Rogers

Comments:

I.D. No	101389
Monitoring Point No.	FFMP033W
Sample Date	2/22/2019

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	1.11	D6919-09
BICARBONATE ALKALINITY	47	SM20-2320B
CALCIUM, TOTAL	26.1	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	38.6	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	4200	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	9	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	600	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	10.8	EPA 300
pH-FIELD (SU)	5.46	FIELD
pH-LAB (SU)	6.19	SM20-4500HB
POTASSIUM, TOTAL	1.7	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	14.1	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	340	FIELD
SPEC. COND., LAB (umhos/cm)	312	SW846 9050A
SULFATE	7.6	EPA 300
ALKALINITY	47	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	250	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	1.1	SW846 9060A
TOTAL PHENOLICS (ug/l)	6	SW846 9066
TURBIDITY (N.T.U.)	12.3	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	2/22/2019

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
04/10/2019
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: 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: 16.2 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: 1.97 ft — Elevation of Water Level: 458.4 ft./MSL

Sampling Depth: 135 ft — Volume of Water Column: 196.21 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): 2/22/2019 — Sample Collection Time: 16:26

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

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): 3018009007 — Final Lab Analysis CompletionDate: 3/7/2019

Name/Affiliation of Person who Filled Out Form: Nick R. Rogers

Comments:

I.D. No	101389
Monitoring Point No.	FFMP016W
Sample Date	2/22/2019

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	0.219	D6919-09
BICARBONATE ALKALINITY	51	SM20-2320B
CALCIUM, TOTAL	40.9	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	19	EPA 410.4
CHLORIDE	102	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)	5.6 ND	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	1.9	EPA 300
pH-FIELD (SU)	6.12	FIELD
pH-LAB (SU)	6.57	SM20-4500HB
POTASSIUM, TOTAL	3.3	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	42.6	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	612	FIELD
SPEC. COND., LAB (umhos/cm)	617	SW846 9050A
SULFATE	56.5	EPA 300
ALKALINITY	51	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	364	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	2.4	SW846 9060A
TOTAL PHENOLICS (ug/l)	9	SW846 9066
TURBIDITY (N.T.U.)	0.84	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	2/22/2019

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

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State Certifications: FL E871113 , WA C999 , MD 128 , VA 460157 , WV DW 9961-C , WV 343

March 19, 2019

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

Certificate of Analysis

Project Name:	**FREY FARM**	Workorder:	**3018009**
Purchase Order:	**PO1000126**	Workorder ID:	**1ST QTR 2019 GWMP-FORM 19Q**

Dear Mr. Brown:

Enclosed are the analytical results for samples received by the laboratory on Friday, February 22, 2019.

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: Mr. Nicholas Rogers , Ms. Jordan Gallagher , 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

ALS Environmental

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SAMPLE SUMMARY

Workorder: 3018009 1ST QTR 2019 GWMP-FORM 19Q

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
3018009001	FFMP04AW	Ground Water	2/22/2019 09:46	2/22/2019 17:47	Mr. Brian G Shade
3018009002	FFMP03AW	Ground Water	2/22/2019 11:05	2/22/2019 17:47	Mr. Brian G Shade
3018009003	FFMP031W	Ground Water	2/22/2019 12:29	2/22/2019 17:47	Mr. Brian G Shade
3018009004	FFMP002W	Ground Water	2/22/2019 14:01	2/22/2019 17:47	Mr. Brian G Shade
3018009005	FFMP032W	Ground Water	2/22/2019 14:50	2/22/2019 17:47	Mr. Brian G Shade
3018009006	FFMP033W	Ground Water	2/22/2019 16:06	2/22/2019 17:47	Mr. Brian G Shade
3018009007	FFMP016W	Ground Water	2/22/2019 16:26	2/22/2019 17:47	Mr. Brian G Shade
3018009008	FIELD BLANK	Water	2/22/2019 16:36	2/22/2019 17:47	Mr. Brian G Shade
3018009009	TRIP BLANK	Ground Water	2/22/2019 17:47	2/22/2019 17:47	Mr. Brian G Shade

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SAMPLE SUMMARY

Workorder: 3018009 1ST QTR 2019 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 incubator and the "Analyzed" value is the date/time out the incubator.
-- An Analysis-Prep Method Cross Reference Table is included after Analytical Results & Qualifiers section in this report.

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: 3018009 1ST QTR 2019 GWMP-FORM 19Q

Lab ID: **3018009001** Date Collected: 2/22/2019 09:46 Matrix: Ground Water
Sample ID: **FFMP04AW** Date Received: 2/22/2019 17:47

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			2/28/19 03:20	PDK	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			2/28/19 03:20	PDK	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			2/28/19 03:20	PDK	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			2/28/19 03:20	PDK	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			2/28/19 03:20	PDK	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			2/28/19 03:20	PDK	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			2/28/19 03:20	PDK	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			2/28/19 03:20	PDK	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			2/28/19 03:20	PDK	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			2/28/19 03:20	PDK	G
Toluene	ND		ug/L	1.0	SW846 8260B			2/28/19 03:20	PDK	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			2/28/19 03:20	PDK	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			2/28/19 03:20	PDK	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			2/28/19 03:20	PDK	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			2/28/19 03:20	PDK	G
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	109		%	62 - 133	SW846 8260B			2/28/19 03:20	PDK	G
4-Bromofluorobenzene (S)	101		%	79 - 114	SW846 8260B			2/28/19 03:20	PDK	G
Dibromofluoromethane (S)	97.5		%	78 - 116	SW846 8260B			2/28/19 03:20	PDK	G
Toluene-d8 (S)	103		%	76 - 127	SW846 8260B			2/28/19 03:20	PDK	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	199		mg/L	5	SM2320B-2011			2/23/19 07:08	MBW	B
Alkalinity, Total	199	2	mg/L	5	SM2320B-2011			2/23/19 07:08	MBW	B
Ammonia-N	0.192		mg/L	0.100	D6919-09			3/5/19 01:45	AK	A
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			3/4/19 15:27	AK	A
Chloride	290		mg/L	5.0	EPA 300.0			2/27/19 06:13	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			2/23/19 06:16	CHW	B
Nitrate-N	0.30		mg/L	0.20	EPA 300.0			2/23/19 06:16	CHW	B
pH	7.24	1	pH_Units		S4500HB-11			2/23/19 07:08	MBW	B
Phenolics	0.02		mg/L	0.005	SW846 9066	2/26/19 12:00	RXB	2/27/19 16:02	RXB	F
Specific Conductance	1470		umhos/cm	1	SW846 9050A			2/23/19 07:08	MBW	B
Sulfate	49.9		mg/L	2.0	EPA 300.0			2/23/19 06:16	CHW	B
Total Dissolved Solids	879		mg/L	5	S2540C-11			2/26/19 12:35	EXS	B
Total Organic Carbon (TOC)	1.1		mg/L	0.50	SW846 9060A			2/26/19 11:52	PAG	D
Turbidity	0.50		NTU	0.10	SM2130B-2011			2/23/19 06:55	MBW	B

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ANALYTICAL RESULTS

Workorder: 3018009 1ST QTR 2019 GWMP-FORM 19Q

Lab ID: **3018009001** Date Collected: 2/22/2019 09:46 Matrix: Ground Water

Sample ID: **FFMP04AW** Date Received: 2/22/2019 17:47

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Calcium, Total	143		mg/L	0.11	SW846 6010C	2/25/19 10:40	BMK	2/27/19 13:02	MNP	J1
Iron, Total	ND		mg/L	0.067	SW846 6010C	2/25/19 10:40	BMK	2/27/19 13:02	MNP	J1
Magnesium, Total	24.9		mg/L	0.11	SW846 6010C	2/25/19 10:40	BMK	2/27/19 13:02	MNP	J1
Manganese, Total	0.26		mg/L	0.0056	SW846 6010C	2/25/19 10:40	BMK	2/27/19 13:02	MNP	J1
Potassium, Total	1.9		mg/L	0.56	SW846 6010C	2/25/19 10:40	BMK	2/28/19 13:39	MNP	J1
Sodium, Total	84.6		mg/L	0.56	SW846 6010C	2/25/19 10:40	BMK	2/27/19 13:02	MNP	J1
FIELD PARAMETERS										
Depth to Water Level	30.83		Feet		Field			2/22/19 09:46	BGS	C
Elev Top MW Casing above MSL	560.72		Feet		Field			2/22/19 09:46	BGS	C
Flow Rate	1.85		gal/min		Field			2/22/19 09:46	BGS	C
Ground Water Elevation	529.89		ft/MSL		Field			2/22/19 09:46	BGS	C
pH, Field (SM4500B)	6.73		pH_Units		Field			2/22/19 09:46	BGS	C
Sample Depth	146.00		Feet		Field			2/22/19 09:46	BGS	C
Specific Conductance, Field	1446		umhos/cm	1	Field			2/22/19 09:46	BGS	C
Temperature	10.75		Deg. C		Field			2/22/19 09:46	BGS	C
Total Well Depth	148.50		Feet		Field			2/22/19 09:46	BGS	C
Volume in Water Column	172.97		Gallons		Field			2/22/19 09:46	BGS	C
Water Level After Purge	82.81		Feet		Field			2/22/19 09:46	BGS	C
Well Volumes Purged	0.64		Vol		Field			2/22/19 09:46	BGS	C

Susan J. Scherer

Ms. Susan J Scherer
Project Coordinator

ALS Environmental

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ANALYTICAL RESULTS

Workorder: 3018009 1ST QTR 2019 GWMP-FORM 19Q

Lab ID: **3018009002** Date Collected: 2/22/2019 11:05 Matrix: Ground Water

Sample ID: **FFMP03AW** Date Received: 2/22/2019 17:47

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			2/28/19 03:42	PDK	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			2/28/19 03:42	PDK	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			2/28/19 03:42	PDK	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			2/28/19 03:42	PDK	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			2/28/19 03:42	PDK	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			2/28/19 03:42	PDK	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			2/28/19 03:42	PDK	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			2/28/19 03:42	PDK	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			2/28/19 03:42	PDK	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			2/28/19 03:42	PDK	G
Toluene	ND		ug/L	1.0	SW846 8260B			2/28/19 03:42	PDK	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			2/28/19 03:42	PDK	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			2/28/19 03:42	PDK	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			2/28/19 03:42	PDK	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			2/28/19 03:42	PDK	G
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	109		%	62 - 133	SW846 8260B			2/28/19 03:42	PDK	G
4-Bromofluorobenzene (S)	103		%	79 - 114	SW846 8260B			2/28/19 03:42	PDK	G
Dibromofluoromethane (S)	95.4		%	78 - 116	SW846 8260B			2/28/19 03:42	PDK	G
Toluene-d8 (S)	103		%	76 - 127	SW846 8260B			2/28/19 03:42	PDK	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	29		mg/L	5	SM2320B-2011			2/23/19 07:17	MBW	B
Alkalinity, Total	29	2	mg/L	5	SM2320B-2011			2/23/19 07:17	MBW	B
Ammonia-N	0.359		mg/L	0.100	D6919-09			3/5/19 02:00	AK	A
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			3/1/19 13:02	AK	A
Chloride	26.3		mg/L	2.0	EPA 300.0			2/23/19 06:31	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			2/23/19 06:31	CHW	B
Nitrate-N	19.0		mg/L	0.20	EPA 300.0			2/23/19 06:31	CHW	B
pH	5.75	1	pH_Units		S4500HB-11			2/23/19 07:17	MBW	B
Phenolics	ND		mg/L	0.005	SW846 9066	2/26/19 12:00	RXB	2/27/19 16:02	RXB	F
Specific Conductance	255		umhos/cm	1	SW846 9050A			2/23/19 07:17	MBW	B
Sulfate	2.9		mg/L	2.0	EPA 300.0			2/23/19 06:31	CHW	B
Total Dissolved Solids	230		mg/L	5	S2540C-11			2/26/19 12:35	EXS	B
Total Organic Carbon (TOC)	0.87		mg/L	0.50	SW846 9060A			2/26/19 11:52	PAG	D
Turbidity	ND		NTU	0.10	SM2130B-2011			2/23/19 06:55	MBW	B

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ANALYTICAL RESULTS

Workorder: 3018009 1ST QTR 2019 GWMP-FORM 19Q

Lab ID: **3018009002** Date Collected: 2/22/2019 11:05 Matrix: Ground Water

Sample ID: **FFMP03AW** Date Received: 2/22/2019 17:47

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Calcium, Total	15.5		mg/L	0.11	SW846 6010C	2/25/19 10:40	BMK	2/27/19 13:05	MNP	J1
Iron, Total	ND		mg/L	0.067	SW846 6010C	2/25/19 10:40	BMK	2/27/19 13:05	MNP	J1
Magnesium, Total	11.2		mg/L	0.11	SW846 6010C	2/25/19 10:40	BMK	2/27/19 13:05	MNP	J1
Manganese, Total	0.26		mg/L	0.0056	SW846 6010C	2/25/19 10:40	BMK	2/27/19 13:05	MNP	J1
Potassium, Total	0.81		mg/L	0.56	SW846 6010C	2/25/19 10:40	BMK	2/28/19 13:42	MNP	J1
Sodium, Total	12.0		mg/L	0.56	SW846 6010C	2/25/19 10:40	BMK	2/27/19 13:05	MNP	J1
FIELD PARAMETERS										
Depth to Water Level	46.97		Feet		Field			2/22/19 11:05	BGS	C
Elev Top MW Casing above MSL	590.90		Feet		Field			2/22/19 11:05	BGS	C
Flow Rate	2.03		gal/min		Field			2/22/19 11:05	BGS	C
Ground Water Elevation	543.93		ft/MSL		Field			2/22/19 11:05	BGS	C
pH, Field (SM4500B)	4.95		pH_Units		Field			2/22/19 11:05	BGS	C
Sample Depth	130.00		Feet		Field			2/22/19 11:05	BGS	C
Specific Conductance, Field	281		umhos/cm	1	Field			2/22/19 11:05	BGS	C
Temperature	10.88		Deg. C		Field			2/22/19 11:05	BGS	C
Total Well Depth	148.40		Feet		Field			2/22/19 11:05	BGS	C
Volume in Water Column	149.10		Gallons		Field			2/22/19 11:05	BGS	C
Water Level After Purge	82.59		Feet		Field			2/22/19 11:05	BGS	C
Well Volumes Purged	0.82		Vol		Field			2/22/19 11:05	BGS	C

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ANALYTICAL RESULTS

Workorder: 3018009 1ST QTR 2019 GWMP-FORM 19Q

Lab ID: **3018009003** Date Collected: 2/22/2019 12:29 Matrix: Ground Water
Sample ID: **FFMP031W** Date Received: 2/22/2019 17:47

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			2/28/19 04:05	PDK	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			2/28/19 04:05	PDK	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			2/28/19 04:05	PDK	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			2/28/19 04:05	PDK	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			2/28/19 04:05	PDK	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			2/28/19 04:05	PDK	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			2/28/19 04:05	PDK	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			2/28/19 04:05	PDK	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			2/28/19 04:05	PDK	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			2/28/19 04:05	PDK	G
Toluene	ND		ug/L	1.0	SW846 8260B			2/28/19 04:05	PDK	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			2/28/19 04:05	PDK	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			2/28/19 04:05	PDK	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			2/28/19 04:05	PDK	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			2/28/19 04:05	PDK	G
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	108		%	62 - 133	SW846 8260B			2/28/19 04:05	PDK	G
4-Bromofluorobenzene (S)	98.5		%	79 - 114	SW846 8260B			2/28/19 04:05	PDK	G
Dibromofluoromethane (S)	94.5		%	78 - 116	SW846 8260B			2/28/19 04:05	PDK	G
Toluene-d8 (S)	102		%	76 - 127	SW846 8260B			2/28/19 04:05	PDK	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	65		mg/L	5	SM2320B-2011			2/23/19 07:26	MBW	B
Alkalinity, Total	65	2	mg/L	5	SM2320B-2011			2/23/19 07:26	MBW	B
Ammonia-N	0.472		mg/L	0.100	D6919-09			3/5/19 02:14	AK	A
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			3/1/19 13:02	AK	A
Chloride	23.8		mg/L	2.0	EPA 300.0			2/23/19 06:46	CHW	B
Fluoride	0.26		mg/L	0.20	EPA 300.0			2/23/19 06:46	CHW	B
Nitrate-N	ND		mg/L	0.20	EPA 300.0			2/23/19 06:46	CHW	B
pH	7.09	1	pH_Units		S4500HB-11			2/23/19 07:26	MBW	B
Phenolics	0.01		mg/L	0.005	SW846 9066	2/26/19 12:00	RXB	2/27/19 16:02	RXB	F
Specific Conductance	278		umhos/cm	1	SW846 9050A			2/23/19 07:26	MBW	B
Sulfate	48.8		mg/L	2.0	EPA 300.0			2/23/19 06:46	CHW	B
Total Dissolved Solids	261		mg/L	5	S2540C-11			2/26/19 12:35	EXS	B
Total Organic Carbon (TOC)	ND		mg/L	0.50	SW846 9060A			2/26/19 11:52	PAG	D
Turbidity	15.2		NTU	0.10	SM2130B-2011			2/23/19 06:55	MBW	B

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ANALYTICAL RESULTS

Workorder: 3018009 1ST QTR 2019 GWMP-FORM 19Q

Lab ID: **3018009003** Date Collected: 2/22/2019 12:29 Matrix: Ground Water

Sample ID: **FFMP031W** Date Received: 2/22/2019 17:47

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Calcium, Total	40.1		mg/L	0.11	SW846 6010C	2/26/19 16:30	AHI	3/7/19 17:41	SRT	J1
Iron, Total	3.8		mg/L	0.067	SW846 6010C	2/26/19 16:30	AHI	3/7/19 17:41	SRT	J1
Magnesium, Total	4.0		mg/L	0.11	SW846 6010C	2/26/19 16:30	AHI	3/7/19 17:41	SRT	J1
Manganese, Total	0.30		mg/L	0.0056	SW846 6010C	2/26/19 16:30	AHI	3/7/19 17:41	SRT	J1
Potassium, Total	1.4		mg/L	0.56	SW846 6010C	2/26/19 16:30	AHI	3/7/19 17:41	SRT	J1
Sodium, Total	9.6		mg/L	0.56	SW846 6010C	2/26/19 16:30	AHI	3/7/19 17:41	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	60.59		Feet		Field			2/22/19 12:29	BGS	C
Elev Top MW Casing above MSL	612.66		Feet		Field			2/22/19 12:29	BGS	C
Flow Rate	1.99		gal/min		Field			2/22/19 12:29	BGS	C
Ground Water Elevation	552.07		ft/MSL		Field			2/22/19 12:29	BGS	C
pH, Field (SM4500B)	7.96		pH_Units		Field			2/22/19 12:29	BGS	C
Sample Depth	130.00		Feet		Field			2/22/19 12:29	BGS	C
Specific Conductance, Field	316		umhos/cm	1	Field			2/22/19 12:29	BGS	C
Temperature	11.55		Deg. C		Field			2/22/19 12:29	BGS	C
Total Well Depth	142.70		Feet		Field			2/22/19 12:29	BGS	C
Volume in Water Column	120.70		Gallons		Field			2/22/19 12:29	BGS	C
Water Level After Purge	101.39		Feet		Field			2/22/19 12:29	BGS	C
Well Volumes Purged	0.99		Vol		Field			2/22/19 12:29	BGS	C

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ANALYTICAL RESULTS

Workorder: 3018009 1ST QTR 2019 GWMP-FORM 19Q

Lab ID: **3018009004** Date Collected: 2/22/2019 14:01 Matrix: Ground Water
Sample ID: **FFMP002W** Date Received: 2/22/2019 17:47

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			2/28/19 04:27	PDK	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			2/28/19 04:27	PDK	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			2/28/19 04:27	PDK	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			2/28/19 04:27	PDK	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			2/28/19 04:27	PDK	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			2/28/19 04:27	PDK	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			2/28/19 04:27	PDK	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			2/28/19 04:27	PDK	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			2/28/19 04:27	PDK	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			2/28/19 04:27	PDK	G
Toluene	ND		ug/L	1.0	SW846 8260B			2/28/19 04:27	PDK	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			2/28/19 04:27	PDK	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			2/28/19 04:27	PDK	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			2/28/19 04:27	PDK	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			2/28/19 04:27	PDK	G
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	109		%	62 - 133	SW846 8260B			2/28/19 04:27	PDK	G
4-Bromofluorobenzene (S)	100		%	79 - 114	SW846 8260B			2/28/19 04:27	PDK	G
Dibromofluoromethane (S)	95.3		%	78 - 116	SW846 8260B			2/28/19 04:27	PDK	G
Toluene-d8 (S)	103		%	76 - 127	SW846 8260B			2/28/19 04:27	PDK	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	6		mg/L	5	SM2320B-2011			2/23/19 07:35	MBW	B
Alkalinity, Total	6	2	mg/L	5	SM2320B-2011			2/23/19 07:35	MBW	B
Ammonia-N	ND		mg/L	0.100	D6919-09			2/28/19 06:41	AK	A
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			3/1/19 13:02	AK	A
Chloride	20.7		mg/L	2.0	EPA 300.0			2/23/19 07:01	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			2/23/19 07:01	CHW	B
Nitrate-N	20.9	3	mg/L	0.50	EPA 300.0			2/27/19 06:28	CHW	B
pH	5.51	1	pH_Units		S4500HB-11			2/23/19 07:35	MBW	B
Phenolics	0.01		mg/L	0.005	SW846 9066	2/26/19 12:00	RXB	2/27/19 16:02	RXB	F
Specific Conductance	272		umhos/cm	1	SW846 9050A			2/23/19 07:35	MBW	B
Sulfate	9.7		mg/L	2.0	EPA 300.0			2/23/19 07:01	CHW	B
Total Dissolved Solids	225		mg/L	5	S2540C-11			2/26/19 12:35	EXS	B
Total Organic Carbon (TOC)	0.60		mg/L	0.50	SW846 9060A			2/25/19 16:49	PAG	D
Turbidity	0.45		NTU	0.10	SM2130B-2011			2/23/19 06:55	MBW	B

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ANALYTICAL RESULTS

Workorder: 3018009 1ST QTR 2019 GWMP-FORM 19Q

Lab ID: **3018009004** Date Collected: 2/22/2019 14:01 Matrix: Ground Water

Sample ID: **FFMP002W** Date Received: 2/22/2019 17:47

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Calcium, Total	20.9		mg/L	0.11	SW846 6010C	2/26/19 16:30	AHI	3/7/19 17:45	SRT	J1
Iron, Total	0.19		mg/L	0.067	SW846 6010C	2/26/19 16:30	AHI	3/7/19 17:45	SRT	J1
Magnesium, Total	7.6		mg/L	0.11	SW846 6010C	2/26/19 16:30	AHI	3/7/19 17:45	SRT	J1
Manganese, Total	0.28		mg/L	0.0056	SW846 6010C	2/26/19 16:30	AHI	3/7/19 17:45	SRT	J1
Potassium, Total	1.0		mg/L	0.56	SW846 6010C	2/26/19 16:30	AHI	3/7/19 17:45	SRT	J1
Sodium, Total	14.4		mg/L	0.56	SW846 6010C	2/26/19 16:30	AHI	3/7/19 17:45	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	55.04		Feet		Field			2/22/19 14:01	BGS	C
Elev Top MW Casing above MSL	613.20		Feet		Field			2/22/19 14:01	BGS	C
Flow Rate	1.82		gal/min		Field			2/22/19 14:01	BGS	C
Ground Water Elevation	558.16		ft/MSL		Field			2/22/19 14:01	BGS	C
pH, Field (SM4500B)	4.55		pH_Units		Field			2/22/19 14:01	BGS	C
Sample Depth	85.00		Feet		Field			2/22/19 14:01	BGS	C
Specific Conductance, Field	302		umhos/cm	1	Field			2/22/19 14:01	BGS	C
Temperature	11.27		Deg. C		Field			2/22/19 14:01	BGS	C
Total Well Depth	90.02		Feet		Field			2/22/19 14:01	BGS	C
Volume in Water Column	51.42		Gallons		Field			2/22/19 14:01	BGS	C
Water Level After Purge	76.10		Feet		Field			2/22/19 14:01	BGS	C
Well Volumes Purged	1.06		Vol		Field			2/22/19 14:01	BGS	C

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ANALYTICAL RESULTS

Workorder: 3018009 1ST QTR 2019 GWMP-FORM 19Q

Lab ID: **3018009005** Date Collected: 2/22/2019 14:50 Matrix: Ground Water
Sample ID: **FFMP032W** Date Received: 2/22/2019 17:47

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			2/28/19 04:50	PDK	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			2/28/19 04:50	PDK	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			2/28/19 04:50	PDK	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			2/28/19 04:50	PDK	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			2/28/19 04:50	PDK	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			2/28/19 04:50	PDK	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			2/28/19 04:50	PDK	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			2/28/19 04:50	PDK	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			2/28/19 04:50	PDK	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			2/28/19 04:50	PDK	G
Toluene	ND		ug/L	1.0	SW846 8260B			2/28/19 04:50	PDK	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			2/28/19 04:50	PDK	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			2/28/19 04:50	PDK	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			2/28/19 04:50	PDK	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			2/28/19 04:50	PDK	G
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	106		%	62 - 133	SW846 8260B			2/28/19 04:50	PDK	G
4-Bromofluorobenzene (S)	99.2		%	79 - 114	SW846 8260B			2/28/19 04:50	PDK	G
Dibromofluoromethane (S)	95		%	78 - 116	SW846 8260B			2/28/19 04:50	PDK	G
Toluene-d8 (S)	102		%	76 - 127	SW846 8260B			2/28/19 04:50	PDK	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	69		mg/L	5	SM2320B-2011			2/23/19 07:44	MBW	B
Alkalinity, Total	69	2	mg/L	5	SM2320B-2011			2/23/19 07:44	MBW	B
Ammonia-N	1.40		mg/L	0.100	D6919-09			3/5/19 02:29	AK	A
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			3/1/19 13:02	AK	A
Chloride	20.3		mg/L	2.0	EPA 300.0			2/23/19 07:16	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			2/23/19 07:16	CHW	B
Nitrate-N	ND		mg/L	0.20	EPA 300.0			2/23/19 07:16	CHW	B
pH	7.01	1	pH_Units		S4500HB-11			2/23/19 07:44	MBW	B
Phenolics	0.007		mg/L	0.005	SW846 9066	2/26/19 12:00	RXB	2/27/19 16:02	RXB	F
Specific Conductance	186		umhos/cm	1	SW846 9050A			2/23/19 07:44	MBW	B
Sulfate	ND		mg/L	2.0	EPA 300.0			2/23/19 07:16	CHW	B
Total Dissolved Solids	137		mg/L	5	S2540C-11			2/26/19 12:35	EXS	B
Total Organic Carbon (TOC)	0.67		mg/L	0.50	SW846 9060A			2/25/19 16:49	PAG	D
Turbidity	79.5		NTU	0.10	SM2130B-2011			2/23/19 06:55	MBW	B

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ANALYTICAL RESULTS

Workorder: 3018009 1ST QTR 2019 GWMP-FORM 19Q

Lab ID: **3018009005** Date Collected: 2/22/2019 14:50 Matrix: Ground Water

Sample ID: **FFMP032W** Date Received: 2/22/2019 17:47

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Calcium, Total	16.3		mg/L	0.11	SW846 6010C	2/26/19 16:30	AHI	3/7/19 17:49	SRT	J1
Iron, Total	5.9		mg/L	0.067	SW846 6010C	2/26/19 16:30	AHI	3/7/19 17:49	SRT	J1
Magnesium, Total	5.3		mg/L	0.11	SW846 6010C	2/26/19 16:30	AHI	3/7/19 17:49	SRT	J1
Manganese, Total	0.70		mg/L	0.0056	SW846 6010C	2/26/19 16:30	AHI	3/7/19 17:49	SRT	J1
Potassium, Total	1.4		mg/L	0.56	SW846 6010C	2/26/19 16:30	AHI	3/7/19 17:49	SRT	J1
Sodium, Total	14.0		mg/L	0.56	SW846 6010C	2/26/19 16:30	AHI	3/7/19 17:49	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	46.31		Feet		Field			2/22/19 14:50	BGS	C
Elev Top MW Casing above MSL	594.09		Feet		Field			2/22/19 14:50	BGS	C
Flow Rate	0.69		gal/min		Field			2/22/19 14:50	BGS	C
Ground Water Elevation	547.78		ft/MSL		Field			2/22/19 14:50	BGS	C
pH, Field (SM4500B)	6.95		pH_Units		Field			2/22/19 14:50	BGS	C
Sample Depth	62.00		Feet		Field			2/22/19 14:50	BGS	C
Specific Conductance, Field	219		umhos/cm	1	Field			2/22/19 14:50	BGS	C
Temperature	11.61		Deg. C		Field			2/22/19 14:50	BGS	C
Total Well Depth	77.60		Feet		Field			2/22/19 14:50	BGS	C
Volume in Water Column	46.00		Gallons		Field			2/22/19 14:50	BGS	C
Water Level After Purge	53.19		Feet		Field			2/22/19 14:50	BGS	C
Well Volumes Purged	0.45		Vol		Field			2/22/19 14:50	BGS	C

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ANALYTICAL RESULTS

Workorder: 3018009 1ST QTR 2019 GWMP-FORM 19Q

Lab ID: **3018009006** Date Collected: 2/22/2019 16:06 Matrix: Ground Water
Sample ID: **FFMP033W** Date Received: 2/22/2019 17:47

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			2/28/19 05:12	PDK	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			2/28/19 05:12	PDK	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			2/28/19 05:12	PDK	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			2/28/19 05:12	PDK	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			2/28/19 05:12	PDK	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			2/28/19 05:12	PDK	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			2/28/19 05:12	PDK	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			2/28/19 05:12	PDK	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			2/28/19 05:12	PDK	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			2/28/19 05:12	PDK	G
Toluene	ND		ug/L	1.0	SW846 8260B			2/28/19 05:12	PDK	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			2/28/19 05:12	PDK	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			2/28/19 05:12	PDK	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			2/28/19 05:12	PDK	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			2/28/19 05:12	PDK	G
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	109		%	62 - 133	SW846 8260B			2/28/19 05:12	PDK	G
4-Bromofluorobenzene (S)	102		%	79 - 114	SW846 8260B			2/28/19 05:12	PDK	G
Dibromofluoromethane (S)	92.3		%	78 - 116	SW846 8260B			2/28/19 05:12	PDK	G
Toluene-d8 (S)	103		%	76 - 127	SW846 8260B			2/28/19 05:12	PDK	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	47		mg/L	5	SM2320B-2011			2/23/19 07:53	MBW	B
Alkalinity, Total	47	2	mg/L	5	SM2320B-2011			2/23/19 07:53	MBW	B
Ammonia-N	1.11		mg/L	0.100	D6919-09			3/5/19 02:44	AK	A
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			3/1/19 13:02	AK	A
Chloride	38.6		mg/L	2.0	EPA 300.0			2/23/19 07:31	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			2/23/19 07:31	CHW	B
Nitrate-N	10.8		mg/L	0.20	EPA 300.0			2/23/19 07:31	CHW	B
pH	6.19	1	pH_Units		S4500HB-11			2/23/19 07:53	MBW	B
Phenolics	0.006		mg/L	0.005	SW846 9066	2/26/19 12:00	RXB	2/27/19 16:02	RXB	F
Specific Conductance	312		umhos/cm	1	SW846 9050A			2/23/19 07:53	MBW	B
Sulfate	7.6		mg/L	2.0	EPA 300.0			2/23/19 07:31	CHW	B
Total Dissolved Solids	250		mg/L	5	S2540C-11			2/26/19 12:35	EXS	B
Total Organic Carbon (TOC)	1.1		mg/L	0.50	SW846 9060A			2/25/19 16:49	PAG	D
Turbidity	12.3		NTU	0.10	SM2130B-2011			2/23/19 06:55	MBW	B

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ANALYTICAL RESULTS

Workorder: 3018009 1ST QTR 2019 GWMP-FORM 19Q

Lab ID: **3018009006** Date Collected: 2/22/2019 16:06 Matrix: Ground Water

Sample ID: **FFMP033W** Date Received: 2/22/2019 17:47

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Calcium, Total	26.1		mg/L	0.11	SW846 6010C	2/26/19 16:30	AHI	3/7/19 17:52	SRT	J1
Iron, Total	4.2		mg/L	0.067	SW846 6010C	2/26/19 16:30	AHI	3/7/19 17:52	SRT	J1
Magnesium, Total	9.0		mg/L	0.11	SW846 6010C	2/26/19 16:30	AHI	3/7/19 17:52	SRT	J1
Manganese, Total	0.60		mg/L	0.0056	SW846 6010C	2/26/19 16:30	AHI	3/7/19 17:52	SRT	J1
Potassium, Total	1.7		mg/L	0.56	SW846 6010C	2/26/19 16:30	AHI	3/7/19 17:52	SRT	J1
Sodium, Total	14.1		mg/L	0.56	SW846 6010C	2/26/19 16:30	AHI	3/7/19 17:52	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	15.52		Feet		Field			2/22/19 16:06	BGS	C
Elev Top MW Casing above MSL	516.52		Feet		Field			2/22/19 16:06	BGS	C
Flow Rate	2.31		gal/min		Field			2/22/19 16:06	BGS	C
Ground Water Elevation	501.00		ft/MSL		Field			2/22/19 16:06	BGS	C
pH, Field (SM4500B)	5.46		pH_Units		Field			2/22/19 16:06	BGS	C
Sample Depth	79.00		Feet		Field			2/22/19 16:06	BGS	C
Specific Conductance, Field	340		umhos/cm	1	Field			2/22/19 16:06	BGS	C
Temperature	12.15		Deg. C		Field			2/22/19 16:06	BGS	C
Total Well Depth	100.00		Feet		Field			2/22/19 16:06	BGS	C
Volume in Water Column	124.19		Gallons		Field			2/22/19 16:06	BGS	C
Water Level After Purge	26.80		Feet		Field			2/22/19 16:06	BGS	C
Well Volumes Purged	1.11		Vol		Field			2/22/19 16:06	BGS	C

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ANALYTICAL RESULTS

Workorder: 3018009 1ST QTR 2019 GWMP-FORM 19Q

Lab ID: **3018009007** Date Collected: 2/22/2019 16:26 Matrix: Ground Water
Sample ID: **FFMP016W** Date Received: 2/22/2019 17:47

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			2/28/19 05:35	PDK	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			2/28/19 05:35	PDK	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			2/28/19 05:35	PDK	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			2/28/19 05:35	PDK	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			2/28/19 05:35	PDK	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			2/28/19 05:35	PDK	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			2/28/19 05:35	PDK	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			2/28/19 05:35	PDK	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			2/28/19 05:35	PDK	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			2/28/19 05:35	PDK	G
Toluene	ND		ug/L	1.0	SW846 8260B			2/28/19 05:35	PDK	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			2/28/19 05:35	PDK	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			2/28/19 05:35	PDK	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			2/28/19 05:35	PDK	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			2/28/19 05:35	PDK	G
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	112		%	62 - 133	SW846 8260B			2/28/19 05:35	PDK	G
4-Bromofluorobenzene (S)	102		%	79 - 114	SW846 8260B			2/28/19 05:35	PDK	G
Dibromofluoromethane (S)	98		%	78 - 116	SW846 8260B			2/28/19 05:35	PDK	G
Toluene-d8 (S)	103		%	76 - 127	SW846 8260B			2/28/19 05:35	PDK	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	51		mg/L	5	SM2320B-2011			2/23/19 08:01	MBW	B
Alkalinity, Total	51	2	mg/L	5	SM2320B-2011			2/23/19 08:01	MBW	B
Ammonia-N	0.219		mg/L	0.100	D6919-09			3/5/19 02:59	AK	A
Chemical Oxygen Demand (COD)	19		mg/L	15	EPA 410.4			3/1/19 13:02	AK	A
Chloride	102		mg/L	2.0	EPA 300.0			2/23/19 08:01	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			2/23/19 08:01	CHW	B
Nitrate-N	1.9		mg/L	0.20	EPA 300.0			2/23/19 08:01	CHW	B
pH	6.57	1	pH_Units		S4500HB-11			2/23/19 08:01	MBW	B
Phenolics	0.009		mg/L	0.005	SW846 9066	2/26/19 12:00	RXB	2/27/19 16:02	RXB	F
Specific Conductance	617		umhos/cm	1	SW846 9050A			2/23/19 08:01	MBW	B
Sulfate	56.5		mg/L	2.0	EPA 300.0			2/23/19 08:01	CHW	B
Total Dissolved Solids	364		mg/L	5	S2540C-11			2/26/19 14:50	EXS	B
Total Organic Carbon (TOC)	2.4		mg/L	0.50	SW846 9060A			2/25/19 16:49	PAG	D
Turbidity	0.84		NTU	0.10	SM2130B-2011			2/23/19 06:55	MBW	B

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ANALYTICAL RESULTS

Workorder: 3018009 1ST QTR 2019 GWMP-FORM 19Q

Lab ID: **3018009007** Date Collected: 2/22/2019 16:26 Matrix: Ground Water

Sample ID: **FFMP016W** Date Received: 2/22/2019 17:47

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Calcium, Total	40.9		mg/L	0.11	SW846 6010C	2/26/19 16:30	AHI	3/7/19 17:56	SRT	J1
Iron, Total	ND		mg/L	0.067	SW846 6010C	2/26/19 16:30	AHI	3/7/19 17:56	SRT	J1
Magnesium, Total	17.0		mg/L	0.11	SW846 6010C	2/26/19 16:30	AHI	3/7/19 17:56	SRT	J1
Manganese, Total	ND		mg/L	0.0056	SW846 6010C	2/26/19 16:30	AHI	3/7/19 17:56	SRT	J1
Potassium, Total	3.3		mg/L	0.56	SW846 6010C	2/26/19 16:30	AHI	3/7/19 17:56	SRT	J1
Sodium, Total	42.6		mg/L	0.56	SW846 6010C	2/26/19 16:30	AHI	3/7/19 17:56	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	16.20		Feet		Field			2/22/19 16:25	BGS	C
Elev Top MW Casing above MSL	474.60		Feet		Field			2/22/19 16:25	BGS	C
Ground Water Elevation	458.40		ft/MSL		Field			2/22/19 16:25	BGS	C
pH, Field (SM4500B)	6.12		pH_Units		Field			2/22/19 16:25	BGS	C
Sample Depth	135.00		Feet		Field			2/22/19 16:25	BGS	C
Specific Conductance, Field	612		umhos/cm	1	Field			2/22/19 16:25	BGS	C
Temperature	9.09		Deg. C		Field			2/22/19 16:25	BGS	C
Total Well Depth	149.80		Feet		Field			2/22/19 16:25	BGS	C
Volume in Water Column	348.70		Gallons		Field			2/22/19 16:25	BGS	C

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ANALYTICAL RESULTS

Workorder: 3018009 1ST QTR 2019 GWMP-FORM 19Q

Lab ID: **3018009008** Date Collected: 2/22/2019 16:36 Matrix: Water

Sample ID: **FIELD BLANK** Date Received: 2/22/2019 17:47

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			2/28/19 01:04	PDK	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			2/28/19 01:04	PDK	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			2/28/19 01:04	PDK	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			2/28/19 01:04	PDK	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			2/28/19 01:04	PDK	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			2/28/19 01:04	PDK	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			2/28/19 01:04	PDK	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			2/28/19 01:04	PDK	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			2/28/19 01:04	PDK	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			2/28/19 01:04	PDK	G
Toluene	ND		ug/L	1.0	SW846 8260B			2/28/19 01:04	PDK	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			2/28/19 01:04	PDK	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			2/28/19 01:04	PDK	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			2/28/19 01:04	PDK	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			2/28/19 01:04	PDK	G
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	109		%	62 - 133	SW846 8260B			2/28/19 01:04	PDK	G
4-Bromofluorobenzene (S)	100		%	79 - 114	SW846 8260B			2/28/19 01:04	PDK	G
Dibromofluoromethane (S)	95.2		%	78 - 116	SW846 8260B			2/28/19 01:04	PDK	G
Toluene-d8 (S)	101		%	76 - 127	SW846 8260B			2/28/19 01:04	PDK	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	ND		mg/L	5	SM2320B-2011			2/23/19 08:10	MBW	B
Alkalinity, Total	ND	3	mg/L	5	SM2320B-2011			2/23/19 08:10	MBW	B
Ammonia-N	ND		mg/L	0.100	D6919-09			3/6/19 04:02	NJA	A
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			3/1/19 13:02	AK	A
Chloride	ND		mg/L	1.0	EPA 300.0			2/23/19 07:46	CHW	B
Fluoride	ND		mg/L	0.10	EPA 300.0			2/23/19 07:46	CHW	B
Nitrate-N	ND		mg/L	0.10	EPA 300.0			2/23/19 07:46	CHW	B
pH	6.19	1	pH_Units		S4500HB-11			2/23/19 08:10	MBW	B
Phenolics	ND		mg/L	0.005	SW846 9066	3/14/19 13:00	RXB	3/14/19 14:56	RXB	F
Specific Conductance	2		umhos/cm	1	SW846 9050A			2/28/19 17:07	MBW	B
Sulfate	ND		mg/L	1.0	EPA 300.0			2/23/19 07:46	CHW	B
Total Dissolved Solids	36	2	mg/L	5	S2540C-11			2/26/19 14:50	EXS	B
Total Organic Carbon (TOC)	ND		mg/L	0.50	SW846 9060A			2/25/19 20:55	PAG	D
Turbidity	ND		NTU	0.10	SM2130B-2011			2/23/19 06:55	MBW	B

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ANALYTICAL RESULTS

Workorder: 3018009 1ST QTR 2019 GWMP-FORM 19Q

Lab ID: **3018009008** Date Collected: 2/22/2019 16:36 Matrix: Water

Sample ID: **FIELD BLANK** Date Received: 2/22/2019 17:47

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Calcium, Total	ND		mg/L	0.11	SW846 6010C	2/26/19 16:30	AHI	3/7/19 18:00	SRT	J1
Iron, Total	ND		mg/L	0.067	SW846 6010C	2/26/19 16:30	AHI	3/7/19 18:00	SRT	J1
Magnesium, Total	ND		mg/L	0.11	SW846 6010C	2/26/19 16:30	AHI	3/7/19 18:00	SRT	J1
Manganese, Total	ND		mg/L	0.0056	SW846 6010C	2/26/19 16:30	AHI	3/7/19 18:00	SRT	J1
Potassium, Total	ND		mg/L	0.56	SW846 6010C	2/26/19 16:30	AHI	3/7/19 18:00	SRT	J1
Sodium, Total	ND		mg/L	0.56	SW846 6010C	2/26/19 16:30	AHI	3/7/19 18:00	SRT	J1

Susan J. Scherer

Ms. Susan J Scherer
Project Coordinator

ALS Environmental

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State Certifications: FL E871113 , WA C999 , MD 128 , VA 460157 , WV DW 9961-C , WV 343

ANALYTICAL RESULTS

Workorder: 3018009 1ST QTR 2019 GWMP-FORM 19Q

Lab ID: **3018009009** Date Collected: 2/22/2019 17:47 Matrix: Ground Water
Sample ID: **TRIP BLANK** Date Received: 2/22/2019 17:47

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			2/28/19 00:42	PDK	A
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			2/28/19 00:42	PDK	A
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			2/28/19 00:42	PDK	A
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			2/28/19 00:42	PDK	A
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			2/28/19 00:42	PDK	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			2/28/19 00:42	PDK	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			2/28/19 00:42	PDK	A
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			2/28/19 00:42	PDK	A
Methylene Chloride	4.0		ug/L	1.0	SW846 8260B			2/28/19 00:42	PDK	A
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			2/28/19 00:42	PDK	A
Toluene	ND		ug/L	1.0	SW846 8260B			2/28/19 00:42	PDK	A
Total Xylenes	ND		ug/L	3.0	SW846 8260B			2/28/19 00:42	PDK	A
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			2/28/19 00:42	PDK	A
Trichloroethene	ND		ug/L	1.0	SW846 8260B			2/28/19 00:42	PDK	A
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			2/28/19 00:42	PDK	A
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	109		%	62 - 133	SW846 8260B			2/28/19 00:42	PDK	A
4-Bromofluorobenzene (S)	101		%	79 - 114	SW846 8260B			2/28/19 00:42	PDK	A
Dibromofluoromethane (S)	95.5		%	78 - 116	SW846 8260B			2/28/19 00:42	PDK	A
Toluene-d8 (S)	103		%	76 - 127	SW846 8260B			2/28/19 00:42	PDK	A

Susan J. Scherer

Ms. Susan J Scherer
Project Coordinator

ANALYTICAL RESULTS

Workorder: 3018009 1ST QTR 2019 GWMP-FORM 19Q

PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
3018009001	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.				
3018009001	2	FFMP04AW	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
3018009002	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.				
3018009002	2	FFMP03AW	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
3018009003	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.				
3018009003	2	FFMP031W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
3018009004	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.				
3018009004	2	FFMP002W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
3018009004	3	FFMP002W	EPA 300.0	Nitrate-N
The sample was originally run within hold time, but required further analysis that exceeded hold time.				
3018009005	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.				
3018009005	2	FFMP032W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
3018009006	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.				
3018009006	2	FFMP033W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
3018009007	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.				
3018009007	2	FFMP016W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
3018009008	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.				
3018009008	2	FIELD BLANK	S2540C-11	Total Dissolved Solids
The method blank associated with this analyte had a result of 8 mg/L. Criteria states that the method blank should be less than 5 mg/L.				

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ANALYTICAL RESULTS

Workorder: 3018009 1ST QTR 2019 GWMP-FORM 19Q

3018009008	3	FIELD BLANK	SM2320B-2011	Alkalinity, Total

The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.

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ANALYSIS - PREP METHOD CROSS REFERENCE TABLE

Workorder: 3018009 1ST QTR 2019 GWMP-FORM 19Q

Lab ID	Sample ID	Analysis Method	Prep Method
3018009001	FFMP04AW	D6919-09	
3018009001	FFMP04AW	EPA 300.0	
3018009001	FFMP04AW	EPA 410.4	
3018009001	FFMP04AW	Field	
3018009001	FFMP04AW	S2540C-11	
3018009001	FFMP04AW	S4500HB-11	
3018009001	FFMP04AW	SM2130B-2011	
3018009001	FFMP04AW	SM2320B-2011	
3018009001	FFMP04AW	SW846 6010C	SW846 3015
3018009001	FFMP04AW	SW846 8260B	
3018009001	FFMP04AW	SW846 9050A	
3018009001	FFMP04AW	SW846 9060A	
3018009001	FFMP04AW	SW846 9066	420.4/9066
3018009002	FFMP03AW	D6919-09	
3018009002	FFMP03AW	EPA 300.0	
3018009002	FFMP03AW	EPA 410.4	
3018009002	FFMP03AW	Field	
3018009002	FFMP03AW	S2540C-11	
3018009002	FFMP03AW	S4500HB-11	
3018009002	FFMP03AW	SM2130B-2011	
3018009002	FFMP03AW	SM2320B-2011	
3018009002	FFMP03AW	SW846 6010C	SW846 3015
3018009002	FFMP03AW	SW846 8260B	
3018009002	FFMP03AW	SW846 9050A	
3018009002	FFMP03AW	SW846 9060A	
3018009002	FFMP03AW	SW846 9066	420.4/9066
3018009003	FFMP031W	D6919-09	
3018009003	FFMP031W	EPA 300.0	
3018009003	FFMP031W	EPA 410.4	
3018009003	FFMP031W	Field	
3018009003	FFMP031W	S2540C-11	
3018009003	FFMP031W	S4500HB-11	
3018009003	FFMP031W	SM2130B-2011	
3018009003	FFMP031W	SM2320B-2011	
3018009003	FFMP031W	SW846 6010C	SW846 3015
3018009003	FFMP031W	SW846 8260B	
3018009003	FFMP031W	SW846 9050A	
3018009003	FFMP031W	SW846 9060A	
3018009003	FFMP031W	SW846 9066	420.4/9066
3018009004	FFMP002W	D6919-09	
3018009004	FFMP002W	EPA 300.0	
3018009004	FFMP002W	EPA 410.4	
3018009004	FFMP002W	Field	
3018009004	FFMP002W	S2540C-11	
3018009004	FFMP002W	S4500HB-11	
3018009004	FFMP002W	SM2130B-2011	

ANALYSIS - PREP METHOD CROSS REFERENCE TABLE

Workorder: 3018009 1ST QTR 2019 GWMP-FORM 19Q

Lab ID	Sample ID	Analysis Method	Prep Method
3018009004	FFMP002W	SM2320B-2011	
3018009004	FFMP002W	SW846 6010C	SW846 3015
3018009004	FFMP002W	SW846 8260B	
3018009004	FFMP002W	SW846 9050A	
3018009004	FFMP002W	SW846 9060A	
3018009004	FFMP002W	SW846 9066	420.4/9066
3018009005	FFMP032W	D6919-09	
3018009005	FFMP032W	EPA 300.0	
3018009005	FFMP032W	EPA 410.4	
3018009005	FFMP032W	Field	
3018009005	FFMP032W	S2540C-11	
3018009005	FFMP032W	S4500HB-11	
3018009005	FFMP032W	SM2130B-2011	
3018009005	FFMP032W	SM2320B-2011	
3018009005	FFMP032W	SW846 6010C	SW846 3015
3018009005	FFMP032W	SW846 8260B	
3018009005	FFMP032W	SW846 9050A	
3018009005	FFMP032W	SW846 9060A	
3018009005	FFMP032W	SW846 9066	420.4/9066
3018009006	FFMP033W	D6919-09	
3018009006	FFMP033W	EPA 300.0	
3018009006	FFMP033W	EPA 410.4	
3018009006	FFMP033W	Field	
3018009006	FFMP033W	S2540C-11	
3018009006	FFMP033W	S4500HB-11	
3018009006	FFMP033W	SM2130B-2011	
3018009006	FFMP033W	SM2320B-2011	
3018009006	FFMP033W	SW846 6010C	SW846 3015
3018009006	FFMP033W	SW846 8260B	
3018009006	FFMP033W	SW846 9050A	
3018009006	FFMP033W	SW846 9060A	
3018009006	FFMP033W	SW846 9066	420.4/9066
3018009007	FFMP016W	D6919-09	
3018009007	FFMP016W	EPA 300.0	
3018009007	FFMP016W	EPA 410.4	
3018009007	FFMP016W	Field	
3018009007	FFMP016W	S2540C-11	
3018009007	FFMP016W	S4500HB-11	
3018009007	FFMP016W	SM2130B-2011	
3018009007	FFMP016W	SM2320B-2011	
3018009007	FFMP016W	SW846 6010C	SW846 3015
3018009007	FFMP016W	SW846 8260B	
3018009007	FFMP016W	SW846 9050A	
3018009007	FFMP016W	SW846 9060A	
3018009007	FFMP016W	SW846 9066	420.4/9066
3018009008	FIELD BLANK	D6919-09	

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ANALYSIS - PREP METHOD CROSS REFERENCE TABLE

Workorder: 3018009 1ST QTR 2019 GWMP-FORM 19Q

Lab ID	Sample ID	Analysis Method	Prep Method
3018009008	FIELD BLANK	EPA 300.0	
3018009008	FIELD BLANK	EPA 410.4	
3018009008	FIELD BLANK	S2540C-11	
3018009008	FIELD BLANK	S4500HB-11	
3018009008	FIELD BLANK	SM2130B-2011	
3018009008	FIELD BLANK	SM2320B-2011	
3018009008	FIELD BLANK	SW846 6010C	SW846 3015
3018009008	FIELD BLANK	SW846 8260B	
3018009008	FIELD BLANK	SW846 9050A	
3018009008	FIELD BLANK	SW846 9060A	
3018009008	FIELD BLANK	SW846 9066	420.4/9066
3018009009	TRIP BLANK	SW846 8260B	

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Tuesday, March 19, 2019 10:47:09 PM
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CHAIN OF CUSTODY/ REQUEST FOR ANALYSIS

Generated by ALS

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	AW	CG	---	---	PL	PL	PL	PL
Container Size	40 ml	150 ml	40 ml	---	---	250 ml	120 ml	500 ml	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. FFMP04AW	2/22/19	0946	G	GW	2	1	2	X	X	1	1	1	1	
2. FFMP03AW	2/22/19	1105	G	GW	2	1	2	X	X	1	1	1	1	
3. FFMP031W	2/22/19	1229	G	GW	2	1	2	X	X	1	1	1	1	
4. FFMP002W	2/22/19	1401	G	GW	2	1	2	X	X	1	1	1	1	
5. FFMP032W	2/22/19	1450	G	GW	2	1	2	X	X	1	1	1	1	
6. FFMP033W	2/22/19	1606	G	GW	2	1	2	X	X	1	1	1	1	
7. FFMP016W	2/22/19	1626	G	GW	2	1	2	X	X	1	1	1	1	
8. Field Blank	2/22/19	1636	G	GW	2	1	2			1	1	1		
9. Trip Blank	2/22/19	1747	G	GW			2							
10														

Cooler Temp: _____ Therm ID: _____

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: _____

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] KW	2/22/19	1747	2 [signature] PLO	2/22/19	1747
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 - 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

301 Fulling Mill Road
Middletown, PA 17057
P: (717) 944-5541
F: (717) 944-1430

Condition of Sample Receipt Form

Client:	Work Order #:	Initials:	Date:
Lancaster County SW	3018009	QW	2/22/19

1. Were airbills / tracking numbers present and recorded?	(NONE)	YES	NO
Tracking number:			
2. Are Custody Seals on shipping containers intact?	(NONE)	YES	NO
3. Are Custody Seals on sample containers intact?	(NONE)	YES	NO
4. Is there a COC (Chain-of-Custody) present?		(YES)	NO
5. Are the COC and bottle labels complete, legible and in agreement?		(YES)	NO
5a. Does the COC contain sample locations?		(YES)	NO
5b. Does the COC contain date and time of sample collection for all samples?		(YES)	NO
5c. Does the COC contain sample collectors name?		(YES)	NO
5d. Does the COC note the type(s) of preservation for all bottles?		(YES)	NO
5e. Does the COC note the number of bottles submitted for each sample?		(YES)	NO
5f. Does the COC note the type of sample, composite or grab?		(YES)	NO
5g. Does the COC note the matrix of the sample(s)?		(YES)	NO
6. Are all aqueous samples requiring preservation preserved correctly?	N/A	(YES)	NO
7. Were all samples placed in the proper containers for the requested analyses, with sufficient volume?		(YES)	NO
8. Are all samples within holding times for the requested analyses?		(YES)	NO
9. Were all sample containers received intact and headspace free when required? (not broken, leaking, frozen, etc.)		(YES)	NO
10. Did we receive trip blanks (applies only for methods EPA 504, EPA 524.2 and 1631E (LL Hg)?	N/A	(YES)	NO
11. Were the samples received on ice?		(YES)	NO
12. Were sample temperatures measured at 0.0-6.0°C		(YES)	NO
13. Are the samples DW matrix ? If YES, fill out Reportable Drinking Water questions below		YES	(NO)
13a. Are the samples required for SDWA compliance reporting?	(N/A)	YES	NO
13b. Did the client provide a SDWA PWS ID#?	(N/A)	YES	NO
13c. Are all aqueous unpreserved SDWA samples pH 5-9?	(N/A)	YES	NO
13d. Did the client provide the SDWA sample location ID/Description?	(N/A)	YES	NO
13e. Did the client provide the SDWA sample type (D, E, R, C, P, S)?	(N/A)	YES	NO

Cooler #: _____

Temperature (°C): 2°C

Thermometer ID: 352

COMMENTS (Required for all NO responses above and any sample non-conformance):

Rev. 1/10/2019

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March 4, 2019

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

Certificate of Analysis

Project Name:	**FREY FARM**	Workorder:	**3017246**
Purchase Order:	**PO1000126**	Workorder ID:	**1ST QTR 2019 GWMP-FORM 19Q**

Dear Mr. Brown:

Enclosed are the analytical results for samples received by the laboratory on Tuesday, February 19, 2019.

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: Mr. Nicholas Rogers , Ms. Jordan Gallagher , 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

ALS Environmental

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SAMPLE SUMMARY

Workorder: 3017246 1ST QTR 2019 GWMP-FORM 19Q

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
3017246001	FFMP028W	Ground Water	2/19/2019 12:45	2/19/2019 17:30	Mr. Brian G Shade
3017246002	FFMP02DW	Ground Water	2/19/2019 14:13	2/19/2019 17:30	Mr. Brian G Shade
3017246003	FFMP02SW	Ground Water	2/19/2019 14:34	2/19/2019 17:30	Mr. Brian G Shade
3017246004	FIELD BLANK	Ground Water	2/19/2019 14:52	2/19/2019 17:30	Mr. Brian G Shade
3017246005	TRIP BLANK	Ground Water	2/19/2019 17:00	2/19/2019 17:30	Mr. Brian G Shade

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SAMPLE SUMMARY

Workorder: 3017246 1ST QTR 2019 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 incubator and the "Analyzed" value is the date/time out the incubator.
-- An Analysis-Prep Method Cross Reference Table is included after Analytical Results & Qualifiers section in this report.

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: 3017246 1ST QTR 2019 GWMP-FORM 19Q

Lab ID: **3017246001** Date Collected: 2/19/2019 12:45 Matrix: Ground Water

Sample ID: **FFMP028W** Date Received: 2/19/2019 17:30

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			2/22/19 06:15	PDK	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			2/22/19 06:15	PDK	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			2/22/19 06:15	PDK	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			2/22/19 06:15	PDK	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			2/22/19 06:15	PDK	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			2/22/19 06:15	PDK	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			2/22/19 06:15	PDK	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			2/22/19 06:15	PDK	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			2/22/19 06:15	PDK	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			2/22/19 06:15	PDK	G
Toluene	ND		ug/L	1.0	SW846 8260B			2/22/19 06:15	PDK	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			2/22/19 06:15	PDK	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			2/22/19 06:15	PDK	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			2/22/19 06:15	PDK	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			2/22/19 06:15	PDK	G
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	113		%	62 - 133	SW846 8260B			2/22/19 06:15	PDK	G
4-Bromofluorobenzene (S)	107		%	79 - 114	SW846 8260B			2/22/19 06:15	PDK	G
Dibromofluoromethane (S)	122	3	%	78 - 116	SW846 8260B			2/22/19 06:15	PDK	G
Toluene-d8 (S)	96.4		%	76 - 127	SW846 8260B			2/22/19 06:15	PDK	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	34		mg/L	5	SM2320B-2011			2/26/19 04:43	MSA	B
Alkalinity, Total	34	4	mg/L	5	SM2320B-2011			2/26/19 04:43	MSA	B
Ammonia-N	ND		mg/L	0.100	D6919-09			2/23/19 16:43	RXB	A
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			2/27/19 15:02	AK	A
Chloride	88.2		mg/L	2.0	EPA 300.0			2/20/19 11:03	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			2/20/19 11:03	CHW	B
Nitrate-N	16.6		mg/L	0.20	EPA 300.0			2/20/19 11:03	CHW	B
pH	6.49	1	pH_Units		S4500HB-11			2/26/19 04:43	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	2/21/19 12:00	RXB	2/21/19 14:29	RXB	F
Specific Conductance	556		umhos/cm	1	SW846 9050A			2/26/19 04:43	MSA	B
Sulfate	24.4		mg/L	2.0	EPA 300.0			2/20/19 11:03	CHW	B
Total Dissolved Solids	249	2	mg/L	5	S2540C-11			2/21/19 14:40	EXS	B
Total Organic Carbon (TOC)	0.77		mg/L	0.50	SW846 9060A			2/20/19 21:52	PAG	D
Turbidity	0.11		NTU	0.10	SM2130B-2011			2/20/19 05:25	MBW	B

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ANALYTICAL RESULTS

Workorder: 3017246 1ST QTR 2019 GWMP-FORM 19Q

Lab ID: **3017246001** Date Collected: 2/19/2019 12:45 Matrix: Ground Water

Sample ID: **FFMP028W** Date Received: 2/19/2019 17:30

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Calcium, Total	36.6		mg/L	0.11	SW846 6010C	2/21/19 12:02	BMK	2/22/19 19:45	SRT	J1
Iron, Total	ND		mg/L	0.067	SW846 6010C	2/21/19 12:02	BMK	2/22/19 19:45	SRT	J1
Magnesium, Total	15.1		mg/L	0.11	SW846 6010C	2/21/19 12:02	BMK	2/22/19 19:45	SRT	J1
Manganese, Total	0.0078		mg/L	0.0056	SW846 6010C	2/21/19 12:02	BMK	2/22/19 19:45	SRT	J1
Potassium, Total	1.8		mg/L	0.56	SW846 6010C	2/21/19 12:02	BMK	2/22/19 19:45	SRT	J1
Sodium, Total	23.0		mg/L	0.56	SW846 6010C	2/21/19 12:02	BMK	2/22/19 19:45	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	4.14		Feet		Field			2/19/19 12:45	BGS	C
Elev Top MW Casing above MSL	465.00		Feet		Field			2/19/19 12:45	BGS	C
Flow Rate	2.96		gal/min		Field			2/19/19 12:45	BGS	C
Ground Water Elevation	460.86		ft/MSL		Field			2/19/19 12:45	BGS	C
pH, Field (SM4500B)	5.25		pH_Units		Field			2/19/19 12:45	BGS	C
Sample Depth	50.00		Feet		Field			2/19/19 12:45	BGS	C
Specific Conductance, Field	548		umhos/cm	1	Field			2/19/19 12:45	BGS	C
Temperature	10.54		Deg. C		Field			2/19/19 12:45	BGS	C
Total Well Depth	60.00		Feet		Field			2/19/19 12:45	BGS	C
Volume in Water Column	82.11		Gallons		Field			2/19/19 12:45	BGS	C
Water Level After Purge	27.44		Feet		Field			2/19/19 12:45	BGS	C
Well Volumes Purged	3.10		Vol		Field			2/19/19 12:45	BGS	C

Susan J. Scherer

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ANALYTICAL RESULTS

Workorder: 3017246 1ST QTR 2019 GWMP-FORM 19Q

Lab ID: **3017246002** Date Collected: 2/19/2019 14:13 Matrix: Ground Water

Sample ID: **FFMP02DW** Date Received: 2/19/2019 17:30

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			2/26/19 03:28	PDK	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			2/26/19 03:28	PDK	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			2/26/19 03:28	PDK	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			2/26/19 03:28	PDK	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			2/26/19 03:28	PDK	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			2/26/19 03:28	PDK	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			2/26/19 03:28	PDK	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			2/26/19 03:28	PDK	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			2/26/19 03:28	PDK	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			2/26/19 03:28	PDK	G
Toluene	ND		ug/L	1.0	SW846 8260B			2/26/19 03:28	PDK	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			2/26/19 03:28	PDK	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			2/26/19 03:28	PDK	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			2/26/19 03:28	PDK	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			2/26/19 03:28	PDK	G
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	113		%	62 - 133	SW846 8260B			2/26/19 03:28	PDK	G
4-Bromofluorobenzene (S)	86.3		%	79 - 114	SW846 8260B			2/26/19 03:28	PDK	G
Dibromofluoromethane (S)	107		%	78 - 116	SW846 8260B			2/26/19 03:28	PDK	G
Toluene-d8 (S)	91.9		%	76 - 127	SW846 8260B			2/26/19 03:28	PDK	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	130		mg/L	5	SM2320B-2011			2/26/19 04:54	MSA	B
Alkalinity, Total	130	2	mg/L	5	SM2320B-2011			2/26/19 04:54	MSA	B
Ammonia-N	ND		mg/L	0.100	D6919-09			2/23/19 16:58	RXB	A
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			2/25/19 12:18	AK	A
Chloride	357		mg/L	5.0	EPA 300.0			2/22/19 05:56	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			2/20/19 11:15	CHW	B
Nitrate-N	4.3		mg/L	0.20	EPA 300.0			2/20/19 11:15	CHW	B
pH	7.56	1	pH_Units		S4500HB-11			2/26/19 04:54	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	2/21/19 12:00	RXB	2/21/19 14:29	RXB	F
Specific Conductance	1480		umhos/cm	1	SW846 9050A			2/26/19 04:54	MSA	B
Sulfate	34.0		mg/L	2.0	EPA 300.0			2/20/19 11:15	CHW	B
Total Dissolved Solids	765		mg/L	5	S2540C-11			2/21/19 14:40	EXS	B
Total Organic Carbon (TOC)	0.81		mg/L	0.50	SW846 9060A			2/20/19 21:52	PAG	D
Turbidity	16.5		NTU	0.10	SM2130B-2011			2/20/19 05:25	MBW	B

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ANALYTICAL RESULTS

Workorder: 3017246 1ST QTR 2019 GWMP-FORM 19Q

Lab ID: **3017246002** Date Collected: 2/19/2019 14:13 Matrix: Ground Water

Sample ID: **FFMP02DW** Date Received: 2/19/2019 17:30

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Calcium, Total	110		mg/L	0.11	SW846 6010C	2/21/19 12:02	BMK	2/22/19 19:49	SRT	J1
Iron, Total	1.6		mg/L	0.067	SW846 6010C	2/21/19 12:02	BMK	2/22/19 19:49	SRT	J1
Magnesium, Total	18.1		mg/L	0.11	SW846 6010C	2/21/19 12:02	BMK	2/22/19 19:49	SRT	J1
Manganese, Total	0.48		mg/L	0.0056	SW846 6010C	2/21/19 12:02	BMK	2/22/19 19:49	SRT	J1
Potassium, Total	1.8		mg/L	0.56	SW846 6010C	2/21/19 12:02	BMK	2/22/19 19:49	SRT	J1
Sodium, Total	96.3		mg/L	0.56	SW846 6010C	2/21/19 12:02	BMK	2/22/19 19:49	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	16.93		Feet		Field			2/19/19 14:12	BGS	C
Elev Top MW Casing above MSL	509.60		Feet		Field			2/19/19 14:12	BGS	C
Flow Rate	1.67		gal/min		Field			2/19/19 14:12	BGS	C
Ground Water Elevation	492.67		ft/MSL		Field			2/19/19 14:12	BGS	C
pH, Field (SM4500B)	7.11		pH_Units		Field			2/19/19 14:12	BGS	C
Sample Depth	120.00		Feet		Field			2/19/19 14:12	BGS	C
Specific Conductance, Field	1425		umhos/cm	1	Field			2/19/19 14:12	BGS	C
Temperature	10.66		Deg. C		Field			2/19/19 14:12	BGS	C
Total Well Depth	153.00		Feet		Field			2/19/19 14:12	BGS	C
Volume in Water Column	200.02		Gallons		Field			2/19/19 14:12	BGS	C
Water Level After Purge	33.42		Feet		Field			2/19/19 14:12	BGS	C
Well Volumes Purged	0.50		Vol		Field			2/19/19 14:12	BGS	C

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ANALYTICAL RESULTS

Workorder: 3017246 1ST QTR 2019 GWMP-FORM 19Q

Lab ID: **3017246003** Date Collected: 2/19/2019 14:34 Matrix: Ground Water

Sample ID: **FFMP02SW** Date Received: 2/19/2019 17:30

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			2/22/19 06:38	PDK	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			2/22/19 06:38	PDK	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			2/22/19 06:38	PDK	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			2/22/19 06:38	PDK	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			2/22/19 06:38	PDK	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			2/22/19 06:38	PDK	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			2/22/19 06:38	PDK	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			2/22/19 06:38	PDK	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			2/22/19 06:38	PDK	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			2/22/19 06:38	PDK	G
Toluene	ND		ug/L	1.0	SW846 8260B			2/22/19 06:38	PDK	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			2/22/19 06:38	PDK	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			2/22/19 06:38	PDK	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			2/22/19 06:38	PDK	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			2/22/19 06:38	PDK	G
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	124		%	62 - 133	SW846 8260B			2/22/19 06:38	PDK	G
4-Bromofluorobenzene (S)	105		%	79 - 114	SW846 8260B			2/22/19 06:38	PDK	G
Dibromofluoromethane (S)	131	2	%	78 - 116	SW846 8260B			2/22/19 06:38	PDK	G
Toluene-d8 (S)	96.6		%	76 - 127	SW846 8260B			2/22/19 06:38	PDK	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	28		mg/L	5	SM2320B-2011			2/26/19 05:03	MSA	B
Alkalinity, Total	28	3	mg/L	5	SM2320B-2011			2/26/19 05:03	MSA	B
Ammonia-N	ND		mg/L	0.100	D6919-09			2/23/19 17:13	RXB	A
Chemical Oxygen Demand (COD)	23		mg/L	15	EPA 410.4			2/27/19 15:02	AK	A
Chloride	68.0		mg/L	2.0	EPA 300.0			2/20/19 11:28	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			2/20/19 11:28	CHW	B
Nitrate-N	14.6		mg/L	0.20	EPA 300.0			2/20/19 11:28	CHW	B
pH	6.43	1	pH_Units		S4500HB-11			2/26/19 05:03	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	2/21/19 12:00	RXB	2/21/19 14:29	RXB	F
Specific Conductance	453		umhos/cm	1	SW846 9050A			2/26/19 05:03	MSA	B
Sulfate	29.3		mg/L	2.0	EPA 300.0			2/20/19 11:28	CHW	B
Total Dissolved Solids	250		mg/L	5	S2540C-11			2/21/19 14:40	EXS	B
Total Organic Carbon (TOC)	3.4		mg/L	0.50	SW846 9060A			2/20/19 21:52	PAG	D
Turbidity	14.5		NTU	0.10	SM2130B-2011			2/20/19 05:25	MBW	B

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ANALYTICAL RESULTS

Workorder: 3017246 1ST QTR 2019 GWMP-FORM 19Q

Lab ID: **3017246003** Date Collected: 2/19/2019 14:34 Matrix: Ground Water

Sample ID: **FFMP02SW** Date Received: 2/19/2019 17:30

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Calcium, Total	16.0		mg/L	0.11	SW846 6010C	2/21/19 15:15	AHI	2/22/19 19:52	SRT	J
Iron, Total	0.40		mg/L	0.067	SW846 6010C	2/21/19 15:15	AHI	2/22/19 19:52	SRT	J
Magnesium, Total	6.1		mg/L	0.11	SW846 6010C	2/21/19 15:15	AHI	2/22/19 19:52	SRT	J
Manganese, Total	0.011		mg/L	0.0056	SW846 6010C	2/21/19 15:15	AHI	2/22/19 19:52	SRT	J
Potassium, Total	4.7		mg/L	0.56	SW846 6010C	2/21/19 15:15	AHI	2/22/19 19:52	SRT	J
Sodium, Total	44.8		mg/L	0.56	SW846 6010C	2/21/19 15:15	AHI	2/22/19 19:52	SRT	J
FIELD PARAMETERS										
Depth to Water Level	13.98		Feet		Field			2/19/19 14:34	BGS	C
Elev Top MW Casing above MSL	509.90		Feet		Field			2/19/19 14:34	BGS	C
Flow Rate	0.41		gal/min		Field			2/19/19 14:34	BGS	C
Ground Water Elevation	495.92		ft/MSL		Field			2/19/19 14:34	BGS	C
pH, Field (SM4500B)	5.66		pH_Units		Field			2/19/19 14:34	BGS	C
Sample Depth	18.00		Feet		Field			2/19/19 14:34	BGS	C
Specific Conductance, Field	441		umhos/cm	1	Field			2/19/19 14:34	BGS	C
Temperature	10.10		Deg. C		Field			2/19/19 14:34	BGS	C
Total Well Depth	22.70		Feet		Field			2/19/19 14:34	BGS	C
Volume in Water Column	5.67		Gallons		Field			2/19/19 14:34	BGS	C
Water Level After Purge	18.10		Feet		Field			2/19/19 14:34	BGS	C
Well Volumes Purged	0.86		Vol		Field			2/19/19 14:34	BGS	C

Ms. Susan J Scherer
Project Coordinator

ALS Environmental

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ANALYTICAL RESULTS

Workorder: 3017246 1ST QTR 2019 GWMP-FORM 19Q

Lab ID: **3017246004** Date Collected: 2/19/2019 14:52 Matrix: Ground Water

Sample ID: **FIELD BLANK** Date Received: 2/19/2019 17:30

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			2/22/19 01:43	PDK	A
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			2/22/19 01:43	PDK	A
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			2/22/19 01:43	PDK	A
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			2/22/19 01:43	PDK	A
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			2/22/19 01:43	PDK	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			2/22/19 01:43	PDK	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			2/22/19 01:43	PDK	A
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			2/22/19 01:43	PDK	A
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			2/22/19 01:43	PDK	A
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			2/22/19 01:43	PDK	A
Toluene	ND		ug/L	1.0	SW846 8260B			2/22/19 01:43	PDK	A
Total Xylenes	ND		ug/L	3.0	SW846 8260B			2/22/19 01:43	PDK	A
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			2/22/19 01:43	PDK	A
Trichloroethene	ND		ug/L	1.0	SW846 8260B			2/22/19 01:43	PDK	A
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			2/22/19 01:43	PDK	A

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	100		%	62 - 133	SW846 8260B			2/22/19 01:43	PDK	A
4-Bromofluorobenzene (S)	111		%	79 - 114	SW846 8260B			2/22/19 01:43	PDK	A
Dibromofluoromethane (S)	104		%	78 - 116	SW846 8260B			2/22/19 01:43	PDK	A
Toluene-d8 (S)	103		%	76 - 127	SW846 8260B			2/22/19 01:43	PDK	A

Susan J. Scherer

Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 3017246 1ST QTR 2019 GWMP-FORM 19Q

Lab ID: **3017246005** Date Collected: 2/19/2019 17:00 Matrix: Ground Water

Sample ID: **TRIP BLANK** Date Received: 2/19/2019 17:30

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			2/22/19 01:20	PDK	A
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			2/22/19 01:20	PDK	A
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			2/22/19 01:20	PDK	A
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			2/22/19 01:20	PDK	A
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			2/22/19 01:20	PDK	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			2/22/19 01:20	PDK	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			2/22/19 01:20	PDK	A
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			2/22/19 01:20	PDK	A
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			2/22/19 01:20	PDK	A
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			2/22/19 01:20	PDK	A
Toluene	ND		ug/L	1.0	SW846 8260B			2/22/19 01:20	PDK	A
Total Xylenes	ND		ug/L	3.0	SW846 8260B			2/22/19 01:20	PDK	A
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			2/22/19 01:20	PDK	A
Trichloroethene	ND		ug/L	1.0	SW846 8260B			2/22/19 01:20	PDK	A
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			2/22/19 01:20	PDK	A

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	97.4		%	62 - 133	SW846 8260B			2/22/19 01:20	PDK	A
4-Bromofluorobenzene (S)	110		%	79 - 114	SW846 8260B			2/22/19 01:20	PDK	A
Dibromofluoromethane (S)	101		%	78 - 116	SW846 8260B			2/22/19 01:20	PDK	A
Toluene-d8 (S)	104		%	76 - 127	SW846 8260B			2/22/19 01:20	PDK	A

Susan J. Scherer

Ms. Susan J Scherer
Project Coordinator

ANALYTICAL RESULTS

Workorder: 3017246 1ST QTR 2019 GWMP-FORM 19Q

PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
3017246001	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.				
3017246001	2	FFMP028W	S2540C-11	Total Dissolved Solids
The RPD associated with this sample was recovered at 12%. The RPD is outside method acceptance limits of 0-5%. The results used to calculate the RPD were 249 mg/L and 281 mg/L.				
3017246001	3	FFMP028W	SW846 8260B	Dibromofluoromethane
The surrogate Dibromofluoromethane for method SW846 8260B was outside of control limits. The % Recovery was reported as 122 and the control limits were 78 to 116. This result was reported at a dilution of 1.				
3017246001	4	FFMP028W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
3017246002	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.				
3017246002	2	FFMP02DW	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
3017246003	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.				
3017246003	2	FFMP02SW	SW846 8260B	Dibromofluoromethane
The surrogate Dibromofluoromethane for method SW846 8260B was outside of control limits. The % Recovery was reported as 131 and the control limits were 78 to 116. This result was reported at a dilution of 1.				
3017246003	3	FFMP02SW	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				

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ANALYSIS - PREP METHOD CROSS REFERENCE TABLE

Workorder: 3017246 1ST QTR 2019 GWMP-FORM 19Q

Lab ID	Sample ID	Analysis Method	Prep Method
3017246001	FFMP028W	D6919-09	
3017246001	FFMP028W	EPA 300.0	
3017246001	FFMP028W	EPA 410.4	
3017246001	FFMP028W	Field	
3017246001	FFMP028W	S2540C-11	
3017246001	FFMP028W	S4500HB-11	
3017246001	FFMP028W	SM2130B-2011	
3017246001	FFMP028W	SM2320B-2011	
3017246001	FFMP028W	SW846 6010C	SW846 3015
3017246001	FFMP028W	SW846 8260B	
3017246001	FFMP028W	SW846 9050A	
3017246001	FFMP028W	SW846 9060A	
3017246001	FFMP028W	SW846 9066	420.4/9066
3017246002	FFMP02DW	D6919-09	
3017246002	FFMP02DW	EPA 300.0	
3017246002	FFMP02DW	EPA 410.4	
3017246002	FFMP02DW	Field	
3017246002	FFMP02DW	S2540C-11	
3017246002	FFMP02DW	S4500HB-11	
3017246002	FFMP02DW	SM2130B-2011	
3017246002	FFMP02DW	SM2320B-2011	
3017246002	FFMP02DW	SW846 6010C	SW846 3015
3017246002	FFMP02DW	SW846 8260B	
3017246002	FFMP02DW	SW846 9050A	
3017246002	FFMP02DW	SW846 9060A	
3017246002	FFMP02DW	SW846 9066	420.4/9066
3017246003	FFMP02SW	D6919-09	
3017246003	FFMP02SW	EPA 300.0	
3017246003	FFMP02SW	EPA 410.4	
3017246003	FFMP02SW	Field	
3017246003	FFMP02SW	S2540C-11	
3017246003	FFMP02SW	S4500HB-11	
3017246003	FFMP02SW	SM2130B-2011	
3017246003	FFMP02SW	SM2320B-2011	
3017246003	FFMP02SW	SW846 6010C	SW846 3015
3017246003	FFMP02SW	SW846 8260B	
3017246003	FFMP02SW	SW846 9050A	
3017246003	FFMP02SW	SW846 9060A	
3017246003	FFMP02SW	SW846 9066	420.4/9066
3017246004	FIELD BLANK	SW846 8260B	
3017246005	TRIP BLANK	SW846 8260B	

Monday, March 04, 2019 11:58:03 AM

ALS Environmental

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CHAIN OF CUSTODY/ REQUEST FOR ANALYSIS

Generated by ALS

* 3 0 1 7 2 4 6 *

6 | 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	150 ml	40 ml	—	—	250 ml	150 ml	500 ml	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. FFMP028W	2/19/19	1245	G	GW	2	1	2	X	X	1	1	1	1	
2. FFMP02DW	2/19/19	1413	G	GW	2	1	2	X	X	1	1	1	1	
3. FFMP02SW	2/19/19	1434	G	GW	2	1	2	X	X	1	1	1	1	
4. Field Blank	2/19/19	1452	G	GW			2							
5. Trip Blank	2/19/19	1700	G	GW			2							
6														
7														
8														
9														
10														

(ed by Receiving Lab)

Cooler Temp: 1°C Therm ID: 352

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:

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	2-19-19	1730	2 [signature] ALS	2/19/19	1730
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 - 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

ALS

301 Fulling Mill Road
Middletown, PA 17057
P: (717) 944-5541
F: (717) 944-1430

Condition of Sample Receipt Form

Client:	Work Order #:	Initials:	Date:
LCSWMA	3017246	gw	2/19/19

1. Were airbills / tracking numbers present and recorded?	(NONE)	YES	NO
Tracking number:			
2. Are Custody Seals on shipping containers intact?	(NONE)	YES	NO
3. Are Custody Seals on sample containers intact?	(NONE)	YES	NO
4. Is there a COC (Chain-of-Custody) present?		(YES)	NO
5. Are the COC and bottle labels complete, legible and in agreement?		(YES)	NO
5a. Does the COC contain sample locations?		(YES)	NO
5b. Does the COC contain date and time of sample collection for all samples?		(YES)	NO
5c. Does the COC contain sample collectors name?		(YES)	NO
5d. Does the COC note the type(s) of preservation for all bottles?		(YES)	NO
5e. Does the COC note the number of bottles submitted for each sample?		(YES)	NO
5f. Does the COC note the type of sample, composite or grab?		(YES)	NO
5g. Does the COC note the matrix of the sample(s)?		(YES)	NO
6. Are all aqueous samples requiring preservation preserved correctly?	N/A	(YES)	NO
7. Were all samples placed in the proper containers for the requested analyses, with sufficient volume?		(YES)	NO
8. Are all samples within holding times for the requested analyses?		(YES)	NO
9. Were all sample containers received intact and headspace free when required? (not broken, leaking, frozen, etc.)		(YES)	NO
10. Did we receive trip blanks (applies only for methods EPA 504, EPA 524.2 and 1631E (LL Hg)?	N/A	(YES)	NO
11. Were the samples received on ice?		(YES)	NO
12. Were sample temperatures measured at 0.0-6.0°C		(YES)	NO
13. Are the samples DW matrix ? If YES, fill out Reportable Drinking Water questions below		YES	(NO)
13a. Are the samples required for SDWA compliance reporting?	(N/A)	YES	NO
13b. Did the client provide a SDWA PWS ID#?	(N/A)	YES	NO
13c. Are all aqueous unpreserved SDWA samples pH 5-9?	(N/A)	YES	NO
13d. Did the client provide the SDWA sample location ID/Description?	(N/A)	YES	NO
13e. Did the client provide the SDWA sample type (D, E, R, C, P, S)?	(N/A)	YES	NO

Cooler #: _____

Temperature (°C): 1 °C

Thermometer ID: 352

COMMENTS (Required for all NO responses above and any sample non-conformance):

Rev. 1/10/2019

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March 7, 2019

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

Certificate of Analysis

Project Name:	**FREY FARM**	Workorder:	**3017924**
Purchase Order:	**PO1000126**	Workorder ID:	**1ST QTR 2019 GWMP-FORM 19Q**

Dear Mr. Brown:

Enclosed are the analytical results for samples received by the laboratory on Thursday, February 21, 2019.

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: Mr. Nicholas Rogers , Ms. Jordan Gallagher , 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

ALS Environmental

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SAMPLE SUMMARY

Workorder: 3017924 1ST QTR 2019 GWMP-FORM 19Q

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
3017924001	FFMP029W	Ground Water	2/21/2019 09:22	2/21/2019 17:28	Mr. Brian G Shade
3017924002	FFMP019W	Ground Water	2/21/2019 10:31	2/21/2019 17:28	Mr. Brian G Shade
3017924003	FFMP018W	Ground Water	2/21/2019 11:02	2/21/2019 17:28	Mr. Brian G Shade
3017924004	FFMP26RW	Ground Water	2/21/2019 12:20	2/21/2019 17:28	Mr. Brian G Shade
3017924005	FFMP005W	Ground Water	2/21/2019 13:32	2/21/2019 17:28	Mr. Brian G Shade
3017924006	FFMP30RW	Ground Water	2/21/2019 15:03	2/21/2019 17:28	Mr. Brian G Shade
3017924007	FIELD BLANK	Ground Water	2/21/2019 15:59	2/21/2019 17:28	Mr. Brian G Shade
3017924008	TRIP BLANK	Ground Water	2/21/2019 17:28	2/21/2019 17:28	Mr. Brian G Shade

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SAMPLE SUMMARY

Workorder: 3017924 1ST QTR 2019 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 incubator and the "Analyzed" value is the date/time out the incubator.
-- An Analysis-Prep Method Cross Reference Table is included after Analytical Results & Qualifiers section in this report.

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: 3017924 1ST QTR 2019 GWMP-FORM 19Q

Lab ID: **3017924001** Date Collected: 2/21/2019 09:22 Matrix: Ground Water
Sample ID: **FFMP029W** Date Received: 2/21/2019 17:28

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			2/27/19 02:38	PDK	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			2/27/19 02:38	PDK	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			2/27/19 02:38	PDK	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			2/27/19 02:38	PDK	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			2/27/19 02:38	PDK	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			2/27/19 02:38	PDK	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			2/27/19 02:38	PDK	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			2/27/19 02:38	PDK	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			2/27/19 02:38	PDK	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			2/27/19 02:38	PDK	G
Toluene	ND		ug/L	1.0	SW846 8260B			2/27/19 02:38	PDK	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			2/27/19 02:38	PDK	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			2/27/19 02:38	PDK	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			2/27/19 02:38	PDK	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			2/27/19 02:38	PDK	G
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	107		%	62 - 133	SW846 8260B			2/27/19 02:38	PDK	G
4-Bromofluorobenzene (S)	101		%	79 - 114	SW846 8260B			2/27/19 02:38	PDK	G
Dibromofluoromethane (S)	95.1		%	78 - 116	SW846 8260B			2/27/19 02:38	PDK	G
Toluene-d8 (S)	103		%	76 - 127	SW846 8260B			2/27/19 02:38	PDK	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	16		mg/L	5	SM2320B-2011			2/28/19 14:10	MBW	B
Alkalinity, Total	16	2	mg/L	5	SM2320B-2011			2/28/19 14:10	MBW	B
Ammonia-N	ND		mg/L	0.100	D6919-09			2/27/19 22:46	AK	A
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			2/28/19 13:55	AK	A
Chloride	22.3		mg/L	2.0	EPA 300.0			2/22/19 05:15	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			2/22/19 05:15	CHW	B
Nitrate-N	3.6		mg/L	0.20	EPA 300.0			2/22/19 05:15	CHW	B
pH	6.31	1	pH_Units		S4500HB-11			2/28/19 14:10	MBW	B
Phenolics	ND		mg/L	0.005	SW846 9066	2/26/19 12:00	RXB	2/27/19 16:02	RXB	F
Specific Conductance	106		umhos/cm	1	SW846 9050A			2/28/19 14:10	MBW	B
Sulfate	ND		mg/L	2.0	EPA 300.0			2/22/19 05:15	CHW	B
Total Dissolved Solids	105		mg/L	5	S2540C-11			2/26/19 12:35	EXS	B
Total Organic Carbon (TOC)	ND		mg/L	0.50	SW846 9060A			2/26/19 04:20	PAG	D
Turbidity	2.08		NTU	0.10	SM2130B-2011			2/22/19 05:15	MBW	B

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ANALYTICAL RESULTS

Workorder: 3017924 1ST QTR 2019 GWMP-FORM 19Q

Lab ID: **3017924001** Date Collected: 2/21/2019 09:22 Matrix: Ground Water

Sample ID: **FFMP029W** Date Received: 2/21/2019 17:28

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Calcium, Total	3.9		mg/L	0.11	SW846 6010C	2/23/19 13:45	AHI	3/6/19 16:21	SRT	J1
Iron, Total	0.12		mg/L	0.067	SW846 6010C	2/23/19 13:45	AHI	3/6/19 16:21	SRT	J1
Magnesium, Total	3.9		mg/L	0.11	SW846 6010C	2/23/19 13:45	AHI	3/6/19 16:21	SRT	J1
Manganese, Total	0.019		mg/L	0.0056	SW846 6010C	2/23/19 13:45	AHI	3/6/19 16:21	SRT	J1
Potassium, Total	1.4		mg/L	0.56	SW846 6010C	2/23/19 13:45	AHI	3/6/19 16:21	SRT	J1
Sodium, Total	9.2		mg/L	0.56	SW846 6010C	2/23/19 13:45	AHI	3/6/19 16:21	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	35.67		Feet		Field			2/21/19 09:22	BGS	C
Elev Top MW Casing above MSL	477.30		Feet		Field			2/21/19 09:22	BGS	C
Flow Rate	2.46		gal/min		Field			2/21/19 09:22	BGS	C
Ground Water Elevation	441.63		ft/MSL		Field			2/21/19 09:22	BGS	C
pH, Field (SM4500B)	4.59		pH_Units		Field			2/21/19 09:22	BGS	C
Sample Depth	55.00		Feet		Field			2/21/19 09:22	BGS	C
Specific Conductance, Field	116		umhos/cm	1	Field			2/21/19 09:22	BGS	C
Temperature	12.18		Deg. C		Field			2/21/19 09:22	BGS	C
Total Well Depth	60.50		Feet		Field			2/21/19 09:22	BGS	C
Volume in Water Column	36.50		Gallons		Field			2/21/19 09:22	BGS	C
Water Level After Purge	40.11		Feet		Field			2/21/19 09:22	BGS	C
Well Volumes Purged	2.69		Vol		Field			2/21/19 09:22	BGS	C

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ANALYTICAL RESULTS

Workorder: 3017924 1ST QTR 2019 GWMP-FORM 19Q

Lab ID: **3017924002** Date Collected: 2/21/2019 10:31 Matrix: Ground Water

Sample ID: **FFMP019W** Date Received: 2/21/2019 17:28

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			2/27/19 03:01	PDK	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			2/27/19 03:01	PDK	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			2/27/19 03:01	PDK	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			2/27/19 03:01	PDK	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			2/27/19 03:01	PDK	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			2/27/19 03:01	PDK	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			2/27/19 03:01	PDK	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			2/27/19 03:01	PDK	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			2/27/19 03:01	PDK	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			2/27/19 03:01	PDK	G
Toluene	ND		ug/L	1.0	SW846 8260B			2/27/19 03:01	PDK	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			2/27/19 03:01	PDK	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			2/27/19 03:01	PDK	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			2/27/19 03:01	PDK	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			2/27/19 03:01	PDK	G
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	110		%	62 - 133	SW846 8260B			2/27/19 03:01	PDK	G
4-Bromofluorobenzene (S)	103		%	79 - 114	SW846 8260B			2/27/19 03:01	PDK	G
Dibromofluoromethane (S)	96.7		%	78 - 116	SW846 8260B			2/27/19 03:01	PDK	G
Toluene-d8 (S)	104		%	76 - 127	SW846 8260B			2/27/19 03:01	PDK	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	71		mg/L	5	SM2320B-2011			2/28/19 14:56	MBW	B
Alkalinity, Total	71	2	mg/L	5	SM2320B-2011			2/28/19 14:56	MBW	B
Ammonia-N	ND		mg/L	0.100	D6919-09			2/27/19 22:59	AK	A
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			2/28/19 13:55	AK	A
Chloride	70.2		mg/L	2.0	EPA 300.0			2/22/19 05:29	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			2/22/19 05:29	CHW	B
Nitrate-N	0.36		mg/L	0.20	EPA 300.0			2/22/19 05:29	CHW	B
pH	7.22	1	pH_Units		S4500HB-11			2/28/19 14:56	MBW	B
Phenolics	ND		mg/L	0.005	SW846 9066	2/26/19 12:00	RXB	2/27/19 16:02	RXB	F
Specific Conductance	434		umhos/cm	1	SW846 9050A			2/28/19 14:56	MBW	B
Sulfate	13.9		mg/L	2.0	EPA 300.0			2/22/19 05:29	CHW	B
Total Dissolved Solids	358		mg/L	5	S2540C-11			2/26/19 12:35	EXS	B
Total Organic Carbon (TOC)	0.56		mg/L	0.50	SW846 9060A			2/26/19 04:20	PAG	D
Turbidity	ND		NTU	0.10	SM2130B-2011			2/22/19 05:15	MBW	B

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ANALYTICAL RESULTS

Workorder: 3017924 1ST QTR 2019 GWMP-FORM 19Q

Lab ID: **3017924002** Date Collected: 2/21/2019 10:31 Matrix: Ground Water

Sample ID: **FFMP019W** Date Received: 2/21/2019 17:28

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Calcium, Total	59.7		mg/L	0.11	SW846 6010C	2/23/19 13:45	AHI	3/6/19 16:24	SRT	J1
Iron, Total	ND		mg/L	0.067	SW846 6010C	2/23/19 13:45	AHI	3/6/19 16:24	SRT	J1
Magnesium, Total	5.8		mg/L	0.11	SW846 6010C	2/23/19 13:45	AHI	3/6/19 16:24	SRT	J1
Manganese, Total	ND		mg/L	0.0056	SW846 6010C	2/23/19 13:45	AHI	3/6/19 16:24	SRT	J1
Potassium, Total	1.1		mg/L	0.56	SW846 6010C	2/23/19 13:45	AHI	3/6/19 16:24	SRT	J1
Sodium, Total	10.6		mg/L	0.56	SW846 6010C	2/23/19 13:45	AHI	3/6/19 16:24	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	25.14		Feet		Field			2/21/19 10:31	BGS	C
Elev Top MW Casing above MSL	471.95		Feet		Field			2/21/19 10:31	BGS	C
Flow Rate	4.85		gal/min		Field			2/21/19 10:31	BGS	C
Ground Water Elevation	446.81		ft/MSL		Field			2/21/19 10:31	BGS	C
pH, Field (SM4500B)	6.18		pH_Units		Field			2/21/19 10:31	BGS	C
Sample Depth	49.00		Feet		Field			2/21/19 10:31	BGS	C
Specific Conductance, Field	428		umhos/cm	1	Field			2/21/19 10:31	BGS	C
Temperature	11.45		Deg. C		Field			2/21/19 10:31	BGS	C
Total Well Depth	132.79		Feet		Field			2/21/19 10:31	BGS	C
Volume in Water Column	69.97		Gallons		Field			2/21/19 10:31	BGS	C
Water Level After Purge	38.63		Feet		Field			2/21/19 10:31	BGS	C
Well Volumes Purged	2.78		Vol		Field			2/21/19 10:31	BGS	C

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ANALYTICAL RESULTS

Workorder: 3017924 1ST QTR 2019 GWMP-FORM 19Q

Lab ID: **3017924003** Date Collected: 2/21/2019 11:02 Matrix: Ground Water
Sample ID: **FFMP018W** Date Received: 2/21/2019 17:28

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			2/27/19 03:23	PDK	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			2/27/19 03:23	PDK	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			2/27/19 03:23	PDK	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			2/27/19 03:23	PDK	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			2/27/19 03:23	PDK	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			2/27/19 03:23	PDK	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			2/27/19 03:23	PDK	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			2/27/19 03:23	PDK	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			2/27/19 03:23	PDK	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			2/27/19 03:23	PDK	G
Toluene	ND		ug/L	1.0	SW846 8260B			2/27/19 03:23	PDK	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			2/27/19 03:23	PDK	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			2/27/19 03:23	PDK	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			2/27/19 03:23	PDK	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			2/27/19 03:23	PDK	G
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	106		%	62 - 133	SW846 8260B			2/27/19 03:23	PDK	G
4-Bromofluorobenzene (S)	102		%	79 - 114	SW846 8260B			2/27/19 03:23	PDK	G
Dibromofluoromethane (S)	96.4		%	78 - 116	SW846 8260B			2/27/19 03:23	PDK	G
Toluene-d8 (S)	103		%	76 - 127	SW846 8260B			2/27/19 03:23	PDK	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	26		mg/L	5	SM2320B-2011			2/28/19 15:05	MBW	B
Alkalinity, Total	26	2	mg/L	5	SM2320B-2011			2/28/19 15:05	MBW	B
Ammonia-N	ND		mg/L	0.100	D6919-09			2/27/19 22:33	AK	A
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			2/28/19 13:55	AK	A
Chloride	95.5		mg/L	2.0	EPA 300.0			2/22/19 05:44	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			2/22/19 05:44	CHW	B
Nitrate-N	4.4		mg/L	0.20	EPA 300.0			2/22/19 05:44	CHW	B
pH	6.38	1	pH_Units		S4500HB-11			2/28/19 15:05	MBW	B
Phenolics	ND		mg/L	0.005	SW846 9066	2/26/19 12:00	RXB	2/27/19 16:02	RXB	F
Specific Conductance	541		umhos/cm	1	SW846 9050A			2/28/19 15:05	MBW	B
Sulfate	38.4		mg/L	2.0	EPA 300.0			2/22/19 05:44	CHW	B
Total Dissolved Solids	352		mg/L	5	S2540C-11			2/26/19 12:35	EXS	B
Total Organic Carbon (TOC)	1.2		mg/L	0.50	SW846 9060A			2/26/19 04:20	PAG	D
Turbidity	0.15		NTU	0.10	SM2130B-2011			2/22/19 05:15	MBW	B

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ANALYTICAL RESULTS

Workorder: 3017924 1ST QTR 2019 GWMP-FORM 19Q

Lab ID: **3017924003** Date Collected: 2/21/2019 11:02 Matrix: Ground Water

Sample ID: **FFMP018W** Date Received: 2/21/2019 17:28

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Calcium, Total	31.4		mg/L	0.11	SW846 6010C	2/23/19 13:45	AHI	3/6/19 16:28	SRT	J1
Iron, Total	ND		mg/L	0.067	SW846 6010C	2/23/19 13:45	AHI	3/6/19 16:28	SRT	J1
Magnesium, Total	15.3		mg/L	0.11	SW846 6010C	2/23/19 13:45	AHI	3/6/19 16:28	SRT	J1
Manganese, Total	0.36		mg/L	0.0056	SW846 6010C	2/23/19 13:45	AHI	3/6/19 16:28	SRT	J1
Potassium, Total	5.7		mg/L	0.56	SW846 6010C	2/23/19 13:45	AHI	3/6/19 16:28	SRT	J1
Sodium, Total	35.3		mg/L	0.56	SW846 6010C	2/23/19 13:45	AHI	3/6/19 16:28	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	24.31		Feet		Field			2/21/18 11:02	BGS	C
Elev Top MW Casing above MSL	472.20		Feet		Field			2/21/18 11:02	BGS	C
Flow Rate	5.39		gal/min		Field			2/21/18 11:02	BGS	C
Ground Water Elevation	447.89		ft/MSL		Field			2/21/18 11:02	BGS	C
pH, Field (SM4500B)	5.08		pH_Units		Field			2/21/18 11:02	BGS	C
Sample Depth	40.00		Feet		Field			2/21/18 11:02	BGS	C
Specific Conductance, Field	442		umhos/cm	1	Field			2/21/18 11:02	BGS	C
Temperature	12.83		Deg. C		Field			2/21/18 11:02	BGS	C
Total Well Depth	51.46		Feet		Field			2/21/18 11:02	BGS	C
Volume in Water Column	17.65		Gallons		Field			2/21/18 11:02	BGS	C
Water Level After Purge	28.74		Feet		Field			2/21/18 11:02	BGS	C
Well Volumes Purged	6.41		Vol		Field			2/21/18 11:02	BGS	C

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ANALYTICAL RESULTS

Workorder: 3017924 1ST QTR 2019 GWMP-FORM 19Q

Lab ID: **3017924004** Date Collected: 2/21/2019 12:20 Matrix: Ground Water

Sample ID: **FFMP26RW** Date Received: 2/21/2019 17:28

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			2/27/19 03:46	PDK	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			2/27/19 03:46	PDK	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			2/27/19 03:46	PDK	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			2/27/19 03:46	PDK	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			2/27/19 03:46	PDK	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			2/27/19 03:46	PDK	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			2/27/19 03:46	PDK	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			2/27/19 03:46	PDK	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			2/27/19 03:46	PDK	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			2/27/19 03:46	PDK	G
Toluene	ND		ug/L	1.0	SW846 8260B			2/27/19 03:46	PDK	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			2/27/19 03:46	PDK	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			2/27/19 03:46	PDK	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			2/27/19 03:46	PDK	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			2/27/19 03:46	PDK	G
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	107		%	62 - 133	SW846 8260B			2/27/19 03:46	PDK	G
4-Bromofluorobenzene (S)	101		%	79 - 114	SW846 8260B			2/27/19 03:46	PDK	G
Dibromofluoromethane (S)	93.6		%	78 - 116	SW846 8260B			2/27/19 03:46	PDK	G
Toluene-d8 (S)	102		%	76 - 127	SW846 8260B			2/27/19 03:46	PDK	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	51		mg/L	5	SM2320B-2011			2/28/19 15:14	MBW	B
Alkalinity, Total	51	2	mg/L	5	SM2320B-2011			2/28/19 15:14	MBW	B
Ammonia-N	ND		mg/L	0.100	D6919-09			2/27/19 21:54	AK	A
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			2/28/19 13:55	AK	A
Chloride	180		mg/L	2.0	EPA 300.0			2/22/19 05:58	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			2/22/19 05:58	CHW	B
Nitrate-N	1.4		mg/L	0.20	EPA 300.0			2/22/19 05:58	CHW	B
pH	6.42	1	pH_Units		S4500HB-11			2/28/19 15:14	MBW	B
Phenolics	ND		mg/L	0.005	SW846 9066	2/26/19 12:00	RXB	2/27/19 16:02	RXB	F
Specific Conductance	932		umhos/cm	1	SW846 9050A			2/28/19 15:14	MBW	B
Sulfate	92.8		mg/L	2.0	EPA 300.0			2/22/19 05:58	CHW	B
Total Dissolved Solids	539		mg/L	5	S2540C-11			2/26/19 12:35	EXS	B
Total Organic Carbon (TOC)	2.5		mg/L	0.50	SW846 9060A			2/26/19 04:20	PAG	D
Turbidity	0.34		NTU	0.10	SM2130B-2011			2/22/19 05:15	MBW	B

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ANALYTICAL RESULTS

Workorder: 3017924 1ST QTR 2019 GWMP-FORM 19Q

Lab ID: **3017924004** Date Collected: 2/21/2019 12:20 Matrix: Ground Water

Sample ID: **FFMP26RW** Date Received: 2/21/2019 17:28

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Calcium, Total	77.1		mg/L	0.11	SW846 6010C	2/23/19 13:45	AHI	3/6/19 16:32	SRT	J1
Iron, Total	ND		mg/L	0.067	SW846 6010C	2/23/19 13:45	AHI	3/6/19 16:32	SRT	J1
Magnesium, Total	16.6		mg/L	0.11	SW846 6010C	2/23/19 13:45	AHI	3/6/19 16:32	SRT	J1
Manganese, Total	0.95		mg/L	0.0056	SW846 6010C	2/23/19 13:45	AHI	3/6/19 16:32	SRT	J1
Potassium, Total	11.0		mg/L	0.56	SW846 6010C	2/23/19 13:45	AHI	3/6/19 16:32	SRT	J1
Sodium, Total	60.3		mg/L	0.56	SW846 6010C	2/23/19 13:45	AHI	3/6/19 16:32	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	61.26		Feet		Field			2/21/19 12:20	BGS	C
Elev Top MW Casing above MSL	547.40		Feet		Field			2/21/19 12:20	BGS	C
Flow Rate	2.31		gal/min		Field			2/21/19 12:20	BGS	C
Ground Water Elevation	486.14		ft/MSL		Field			2/21/19 12:20	BGS	C
pH, Field (SM4500B)	5.29		pH_Units		Field			2/21/19 12:20	BGS	C
Sample Depth	105.00		Feet		Field			2/21/19 12:20	BGS	C
Specific Conductance, Field	904		umhos/cm	1	Field			2/21/19 12:20	BGS	C
Temperature	11.61		Deg. C		Field			2/21/19 12:20	BGS	C
Total Well Depth	118.30		Feet		Field			2/21/19 12:20	BGS	C
Volume in Water Column	83.85		Gallons		Field			2/21/19 12:20	BGS	C
Water Level After Purge	77.57		Feet		Field			2/21/19 12:20	BGS	C
Well Volumes Purged	1.65		Vol		Field			2/21/19 12:20	BGS	C

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ANALYTICAL RESULTS

Workorder: 3017924 1ST QTR 2019 GWMP-FORM 19Q

Lab ID: **3017924005** Date Collected: 2/21/2019 13:32 Matrix: Ground Water
Sample ID: **FFMP005W** Date Received: 2/21/2019 17:28

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			2/27/19 04:08	PDK	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			2/27/19 04:08	PDK	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			2/27/19 04:08	PDK	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			2/27/19 04:08	PDK	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			2/27/19 04:08	PDK	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			2/27/19 04:08	PDK	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			2/27/19 04:08	PDK	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			2/27/19 04:08	PDK	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			2/27/19 04:08	PDK	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			2/27/19 04:08	PDK	G
Toluene	ND		ug/L	1.0	SW846 8260B			2/27/19 04:08	PDK	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			2/27/19 04:08	PDK	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			2/27/19 04:08	PDK	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			2/27/19 04:08	PDK	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			2/27/19 04:08	PDK	G
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	110		%	62 - 133	SW846 8260B			2/27/19 04:08	PDK	G
4-Bromofluorobenzene (S)	103		%	79 - 114	SW846 8260B			2/27/19 04:08	PDK	G
Dibromofluoromethane (S)	97		%	78 - 116	SW846 8260B			2/27/19 04:08	PDK	G
Toluene-d8 (S)	105		%	76 - 127	SW846 8260B			2/27/19 04:08	PDK	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	53		mg/L	5	SM2320B-2011			2/28/19 15:23	MBW	B
Alkalinity, Total	53	3	mg/L	5	SM2320B-2011			2/28/19 15:23	MBW	B
Ammonia-N	ND		mg/L	0.100	D6919-09			2/27/19 21:41	AK	A
Chemical Oxygen Demand (COD)	19		mg/L	15	EPA 410.4			2/28/19 13:55	AK	A
Chloride	232		mg/L	5.0	EPA 300.0			2/23/19 07:25	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			2/22/19 06:13	CHW	B
Nitrate-N	2.5		mg/L	0.20	EPA 300.0			2/22/19 06:13	CHW	B
pH	6.47	1	pH_Units		S4500HB-11			2/28/19 15:23	MBW	B
Phenolics	ND		mg/L	0.005	SW846 9066	2/26/19 12:00	RXB	2/27/19 16:02	RXB	F
Specific Conductance	1090		umhos/cm	1	SW846 9050A			2/28/19 15:23	MBW	B
Sulfate	71.1		mg/L	2.0	EPA 300.0			2/22/19 06:13	CHW	B
Total Dissolved Solids	623	2	mg/L	5	S2540C-11			2/26/19 12:35	EXS	B
Total Organic Carbon (TOC)	2.2		mg/L	0.50	SW846 9060A			2/26/19 04:20	PAG	D
Turbidity	ND		NTU	0.10	SM2130B-2011			2/22/19 05:15	MBW	B

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ANALYTICAL RESULTS

Workorder: 3017924 1ST QTR 2019 GWMP-FORM 19Q

Lab ID: **3017924005** Date Collected: 2/21/2019 13:32 Matrix: Ground Water

Sample ID: **FFMP005W** Date Received: 2/21/2019 17:28

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Calcium, Total	91.0		mg/L	0.11	SW846 6010C	2/23/19 13:45	AHI	3/6/19 16:53	SRT	J1
Iron, Total	ND		mg/L	0.067	SW846 6010C	2/23/19 13:45	AHI	3/6/19 16:53	SRT	J1
Magnesium, Total	23.6		mg/L	0.11	SW846 6010C	2/23/19 13:45	AHI	3/6/19 16:53	SRT	J1
Manganese, Total	0.11		mg/L	0.0056	SW846 6010C	2/23/19 13:45	AHI	3/6/19 16:53	SRT	J1
Potassium, Total	3.7		mg/L	0.56	SW846 6010C	2/23/19 13:45	AHI	3/6/19 16:53	SRT	J1
Sodium, Total	65.2		mg/L	0.56	SW846 6010C	2/23/19 13:45	AHI	3/6/19 16:53	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	52.67		Feet		Field			2/21/19 13:32	BGS	C
Elev Top MW Casing above MSL	537.40		Feet		Field			2/21/19 13:32	BGS	C
Flow Rate	2.23		gal/min		Field			2/21/19 13:32	BGS	C
Ground Water Elevation	484.73		ft/MSL		Field			2/21/19 13:32	BGS	C
pH, Field (SM4500B)	5.28		pH_Units		Field			2/21/19 13:32	BGS	C
Sample Depth	135.00		Feet		Field			2/21/19 13:32	BGS	C
Specific Conductance, Field	1047		umhos/cm	1	Field			2/21/19 13:32	BGS	C
Temperature	10.76		Deg. C		Field			2/21/19 13:32	BGS	C
Total Well Depth	149.70		Feet		Field			2/21/19 13:32	BGS	C
Volume in Water Column	142.63		Gallons		Field			2/21/19 13:32	BGS	C
Water Level After Purge	89.77		Feet		Field			2/21/19 13:32	BGS	C
Well Volumes Purged	0.94		Vol		Field			2/21/19 13:32	BGS	C

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ANALYTICAL RESULTS

Workorder: 3017924 1ST QTR 2019 GWMP-FORM 19Q

Lab ID: **3017924006** Date Collected: 2/21/2019 15:03 Matrix: Ground Water

Sample ID: **FFMP30RW** Date Received: 2/21/2019 17:28

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			2/27/19 04:31	PDK	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			2/27/19 04:31	PDK	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			2/27/19 04:31	PDK	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			2/27/19 04:31	PDK	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			2/27/19 04:31	PDK	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			2/27/19 04:31	PDK	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			2/27/19 04:31	PDK	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			2/27/19 04:31	PDK	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			2/27/19 04:31	PDK	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			2/27/19 04:31	PDK	G
Toluene	ND		ug/L	1.0	SW846 8260B			2/27/19 04:31	PDK	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			2/27/19 04:31	PDK	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			2/27/19 04:31	PDK	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			2/27/19 04:31	PDK	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			2/27/19 04:31	PDK	G
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	108		%	62 - 133	SW846 8260B			2/27/19 04:31	PDK	G
4-Bromofluorobenzene (S)	104		%	79 - 114	SW846 8260B			2/27/19 04:31	PDK	G
Dibromofluoromethane (S)	97.6		%	78 - 116	SW846 8260B			2/27/19 04:31	PDK	G
Toluene-d8 (S)	105		%	76 - 127	SW846 8260B			2/27/19 04:31	PDK	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	29		mg/L	5	SM2320B-2011			2/28/19 15:31	MBW	B
Alkalinity, Total	29	3	mg/L	5	SM2320B-2011			2/28/19 15:31	MBW	B
Ammonia-N	0.227		mg/L	0.100	D6919-09			2/27/19 21:28	AK	A
Chemical Oxygen Demand (COD)	ND	1	mg/L	15	EPA 410.4			2/28/19 13:55	AK	A
Chloride	124		mg/L	2.0	EPA 300.0			2/22/19 06:28	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			2/22/19 06:28	CHW	B
Nitrate-N	4.6		mg/L	0.20	EPA 300.0			2/22/19 06:28	CHW	B
pH	6.25	2	pH_Units		S4500HB-11			2/28/19 15:31	MBW	B
Phenolics	ND		mg/L	0.005	SW846 9066	2/26/19 12:00	RXB	2/27/19 16:02	RXB	F
Specific Conductance	588		umhos/cm	1	SW846 9050A			2/28/19 15:31	MBW	B
Sulfate	13.4		mg/L	2.0	EPA 300.0			2/22/19 06:28	CHW	B
Total Dissolved Solids	388		mg/L	5	S2540C-11			2/26/19 12:35	EXS	B
Total Organic Carbon (TOC)	1.1		mg/L	0.50	SW846 9060A			2/26/19 04:20	PAG	D
Turbidity	0.16		NTU	0.10	SM2130B-2011			2/22/19 05:15	MBW	B

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ANALYTICAL RESULTS

Workorder: 3017924 1ST QTR 2019 GWMP-FORM 19Q

Lab ID: **3017924006** Date Collected: 2/21/2019 15:03 Matrix: Ground Water

Sample ID: **FFMP30RW** Date Received: 2/21/2019 17:28

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Calcium, Total	21.8		mg/L	0.20	SW846 6010C	2/23/19 13:45	AHI	3/6/19 16:35	SRT	J1
Iron, Total	ND		mg/L	0.12	SW846 6010C	2/23/19 13:45	AHI	3/6/19 16:35	SRT	J1
Magnesium, Total	15.1		mg/L	0.20	SW846 6010C	2/23/19 13:45	AHI	3/6/19 16:35	SRT	J1
Manganese, Total	1.0		mg/L	0.010	SW846 6010C	2/23/19 13:45	AHI	3/6/19 16:35	SRT	J1
Potassium, Total	2.8		mg/L	1.0	SW846 6010C	2/23/19 13:45	AHI	3/6/19 16:35	SRT	J1
Sodium, Total	60.4		mg/L	1.0	SW846 6010C	2/23/19 13:45	AHI	3/6/19 16:35	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	31.18		Feet		Field			2/21/19 15:03	BGS	C
Elev Top MW Casing above MSL	562.30		Feet		Field			2/21/19 15:03	BGS	C
Flow Rate	2.33		gal/min		Field			2/21/19 15:03	BGS	C
Ground Water Elevation	531.12		ft/MSL		Field			2/21/19 15:03	BGS	C
pH, Field (SM4500B)	5.02		pH_Units		Field			2/21/19 15:03	BGS	C
Sample Depth	85.00		Feet		Field			2/21/19 15:03	BGS	C
Specific Conductance, Field	599		umhos/cm	1	Field			2/21/19 15:03	BGS	C
Temperature	10.99		Deg. C		Field			2/21/19 15:03	BGS	C
Total Well Depth	94.20		Feet		Field			2/21/19 15:03	BGS	C
Volume in Water Column	92.64		Gallons		Field			2/21/19 15:03	BGS	C
Water Level After Purge	33.33		Feet		Field			2/21/19 15:03	BGS	C
Well Volumes Purged	1.51		Vol		Field			2/21/19 15:03	BGS	C

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ANALYTICAL RESULTS

Workorder: 3017924 1ST QTR 2019 GWMP-FORM 19Q

Lab ID: **3017924007** Date Collected: 2/21/2019 15:59 Matrix: Ground Water

Sample ID: **FIELD BLANK** Date Received: 2/21/2019 17:28

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			2/26/19 23:39	PDK	A
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			2/26/19 23:39	PDK	A
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			2/26/19 23:39	PDK	A
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			2/26/19 23:39	PDK	A
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			2/26/19 23:39	PDK	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			2/26/19 23:39	PDK	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			2/26/19 23:39	PDK	A
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			2/26/19 23:39	PDK	A
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			2/26/19 23:39	PDK	A
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			2/26/19 23:39	PDK	A
Toluene	ND		ug/L	1.0	SW846 8260B			2/26/19 23:39	PDK	A
Total Xylenes	ND		ug/L	3.0	SW846 8260B			2/26/19 23:39	PDK	A
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			2/26/19 23:39	PDK	A
Trichloroethene	ND		ug/L	1.0	SW846 8260B			2/26/19 23:39	PDK	A
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			2/26/19 23:39	PDK	A

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	110		%	62 - 133	SW846 8260B			2/26/19 23:39	PDK	A
4-Bromofluorobenzene (S)	104		%	79 - 114	SW846 8260B			2/26/19 23:39	PDK	A
Dibromofluoromethane (S)	100		%	78 - 116	SW846 8260B			2/26/19 23:39	PDK	A
Toluene-d8 (S)	107		%	76 - 127	SW846 8260B			2/26/19 23:39	PDK	A

Susan J. Scherer

Ms. Susan J Scherer
Project Coordinator

ALS Environmental

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State Certifications: FL E871113 , WA C999 , MD 128 , VA 460157 , WV DW 9961-C , WV 343

ANALYTICAL RESULTS

Workorder: 3017924 1ST QTR 2019 GWMP-FORM 19Q

Lab ID: **3017924008** Date Collected: 2/21/2019 17:28 Matrix: Ground Water
Sample ID: **TRIP BLANK** Date Received: 2/21/2019 17:28

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			2/27/19 00:01	PDK	A
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			2/27/19 00:01	PDK	A
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			2/27/19 00:01	PDK	A
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			2/27/19 00:01	PDK	A
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			2/27/19 00:01	PDK	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			2/27/19 00:01	PDK	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			2/27/19 00:01	PDK	A
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			2/27/19 00:01	PDK	A
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			2/27/19 00:01	PDK	A
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			2/27/19 00:01	PDK	A
Toluene	ND		ug/L	1.0	SW846 8260B			2/27/19 00:01	PDK	A
Total Xylenes	ND		ug/L	3.0	SW846 8260B			2/27/19 00:01	PDK	A
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			2/27/19 00:01	PDK	A
Trichloroethene	ND		ug/L	1.0	SW846 8260B			2/27/19 00:01	PDK	A
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			2/27/19 00:01	PDK	A
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	109		%	62 - 133	SW846 8260B			2/27/19 00:01	PDK	A
4-Bromofluorobenzene (S)	102		%	79 - 114	SW846 8260B			2/27/19 00:01	PDK	A
Dibromofluoromethane (S)	97.5		%	78 - 116	SW846 8260B			2/27/19 00:01	PDK	A
Toluene-d8 (S)	104		%	76 - 127	SW846 8260B			2/27/19 00:01	PDK	A

Susan J. Scherer
Ms. Susan J Scherer
Project Coordinator

ANALYTICAL RESULTS

Workorder: 3017924 1ST QTR 2019 GWMP-FORM 19Q

PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
3017924001	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.				
3017924001	2	FFMP029W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
3017924002	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.				
3017924002	2	FFMP019W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
3017924003	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.				
3017924003	2	FFMP018W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
3017924004	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.				
3017924004	2	FFMP26RW	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
3017924005	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.				
3017924005	2	FFMP005W	S2540C-11	Total Dissolved Solids
The RPD associated with this sample was recovered at 8%. The RPD is outside method acceptance limits of 0-5%. The results used to calculate the RPD were 623 mg/L and 677 mg/L.				
3017924005	3	FFMP005W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
3017924006	1	FFMP30RW	EPA 410.4	Chemical Oxygen Demand (COD)
The recovery of the Matrix Spike (MS) associated to this analyte was outside of the established control limits.				
3017924006	2	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.				
3017924006	3	FFMP30RW	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				

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ANALYSIS - PREP METHOD CROSS REFERENCE TABLE

Workorder: 3017924 1ST QTR 2019 GWMP-FORM 19Q

Lab ID	Sample ID	Analysis Method	Prep Method
3017924001	FFMP029W	D6919-09	
3017924001	FFMP029W	EPA 300.0	
3017924001	FFMP029W	EPA 410.4	
3017924001	FFMP029W	Field	
3017924001	FFMP029W	S2540C-11	
3017924001	FFMP029W	S4500HB-11	
3017924001	FFMP029W	SM2130B-2011	
3017924001	FFMP029W	SM2320B-2011	
3017924001	FFMP029W	SW846 6010C	SW846 3015
3017924001	FFMP029W	SW846 8260B	
3017924001	FFMP029W	SW846 9050A	
3017924001	FFMP029W	SW846 9060A	
3017924001	FFMP029W	SW846 9066	420.4/9066
3017924002	FFMP019W	D6919-09	
3017924002	FFMP019W	EPA 300.0	
3017924002	FFMP019W	EPA 410.4	
3017924002	FFMP019W	Field	
3017924002	FFMP019W	S2540C-11	
3017924002	FFMP019W	S4500HB-11	
3017924002	FFMP019W	SM2130B-2011	
3017924002	FFMP019W	SM2320B-2011	
3017924002	FFMP019W	SW846 6010C	SW846 3015
3017924002	FFMP019W	SW846 8260B	
3017924002	FFMP019W	SW846 9050A	
3017924002	FFMP019W	SW846 9060A	
3017924002	FFMP019W	SW846 9066	420.4/9066
3017924003	FFMP018W	D6919-09	
3017924003	FFMP018W	EPA 300.0	
3017924003	FFMP018W	EPA 410.4	
3017924003	FFMP018W	Field	
3017924003	FFMP018W	S2540C-11	
3017924003	FFMP018W	S4500HB-11	
3017924003	FFMP018W	SM2130B-2011	
3017924003	FFMP018W	SM2320B-2011	
3017924003	FFMP018W	SW846 6010C	SW846 3015
3017924003	FFMP018W	SW846 8260B	
3017924003	FFMP018W	SW846 9050A	
3017924003	FFMP018W	SW846 9060A	
3017924003	FFMP018W	SW846 9066	420.4/9066
3017924004	FFMP26RW	D6919-09	
3017924004	FFMP26RW	EPA 300.0	
3017924004	FFMP26RW	EPA 410.4	
3017924004	FFMP26RW	Field	
3017924004	FFMP26RW	S2540C-11	
3017924004	FFMP26RW	S4500HB-11	
3017924004	FFMP26RW	SM2130B-2011	

ANALYSIS - PREP METHOD CROSS REFERENCE TABLE

Workorder: 3017924 1ST QTR 2019 GWMP-FORM 19Q

Lab ID	Sample ID	Analysis Method	Prep Method
3017924004	FFMP26RW	SM2320B-2011	
3017924004	FFMP26RW	SW846 6010C	SW846 3015
3017924004	FFMP26RW	SW846 8260B	
3017924004	FFMP26RW	SW846 9050A	
3017924004	FFMP26RW	SW846 9060A	
3017924004	FFMP26RW	SW846 9066	420.4/9066
3017924005	FFMP005W	D6919-09	
3017924005	FFMP005W	EPA 300.0	
3017924005	FFMP005W	EPA 410.4	
3017924005	FFMP005W	Field	
3017924005	FFMP005W	S2540C-11	
3017924005	FFMP005W	S4500HB-11	
3017924005	FFMP005W	SM2130B-2011	
3017924005	FFMP005W	SM2320B-2011	
3017924005	FFMP005W	SW846 6010C	SW846 3015
3017924005	FFMP005W	SW846 8260B	
3017924005	FFMP005W	SW846 9050A	
3017924005	FFMP005W	SW846 9060A	
3017924005	FFMP005W	SW846 9066	420.4/9066
3017924006	FFMP30RW	D6919-09	
3017924006	FFMP30RW	EPA 300.0	
3017924006	FFMP30RW	EPA 410.4	
3017924006	FFMP30RW	Field	
3017924006	FFMP30RW	S2540C-11	
3017924006	FFMP30RW	S4500HB-11	
3017924006	FFMP30RW	SM2130B-2011	
3017924006	FFMP30RW	SM2320B-2011	
3017924006	FFMP30RW	SW846 6010C	SW846 3015
3017924006	FFMP30RW	SW846 8260B	
3017924006	FFMP30RW	SW846 9050A	
3017924006	FFMP30RW	SW846 9060A	
3017924006	FFMP30RW	SW846 9066	420.4/9066
3017924007	FIELD BLANK	SW846 8260B	
3017924008	TRIP BLANK	SW846 8260B	

524338

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CHAIN OF CUSTODY/ REQUEST FOR ANALYSIS

Generated by ALS

301792 4

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	AW	CG	---	---	PL	PL	PL	PL
Container Size	40 ml	150 ml	40 ml	---	---	250 ml	120 ml	500 ml	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. FFMP029W	2/21/19	0922	G	GW	2	1	2	X	X	1	1	1	1	
2. FFMP019W	2/21/19	1031	G	GW	2	1	2	X	X	1	1	1	1	
3. FFMP018W	2/21/19	1102	G	GW	2	1	2	X	X	1	1	1	1	
4. FFMP26RW	2/21/19	1220	G	GW	2	1	2	X	X	1	1	1	1	
5. FFMP005W	2/21/19	1332	G	GW	2	1	2	X	X	1	1	1	1	
6. FFMP30RW	2/21/19	1503	G	GW	2	1	2	X	X	1	1	1	1	
7. Field Blank	2/21/19	1559	G	GW			2							
8. Trip Blank	2/21/19	1259	G	GW			2							
9														
10														

(Lab Use Only - Receiving Lab)

Cooler Temp: 0 °C Therm ID: 352

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:_____

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	2/21/19	1228	2 [signature] ALS	2/21/19	1728
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; 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

ALS

301 Fulling Mill Road
Middletown, PA 17057
P: (717) 944-5541
F: (717) 944-1430

Condition of Sample Receipt Form

Client:	Work Order #:	Initials:	Date:
LCSW	3017924	SS	2/22/19

1. Were airbills / tracking numbers present and recorded?	(NONE)	YES	NO
Tracking number: _____			
2. Are Custody Seals on shipping containers intact?	(NONE)	YES	NO
3. Are Custody Seals on sample containers intact?	(NONE)	YES	NO
4. Is there a COC (Chain-of-Custody) present?		YES	NO
5. Are the COC and bottle labels complete, legible and in agreement?		(YES)	NO
5a. Does the COC contain sample locations?		(YES)	NO
5b. Does the COC contain date and time of sample collection for all samples?		(YES)	NO
5c. Does the COC contain sample collectors name?		(YES)	NO
5d. Does the COC note the type(s) of preservation for all bottles?		(YES)	NO
5e. Does the COC note the number of bottles submitted for each sample?		(YES)	NO
5f. Does the COC note the type of sample, composite or grab?		(YES)	NO
5g. Does the COC note the matrix of the sample(s)?		(YES)	NO
6. Are all aqueous samples requiring preservation preserved correctly?	N/A	(YES)	NO
7. Were all samples placed in the proper containers for the requested analyses, with sufficient volume?		(YES)	NO
8. Are all samples within holding times for the requested analyses?		(YES)	NO
9. Were all sample containers received intact and headspace free when required? (not broken, leaking, frozen, etc.)		(YES)	NO
10. Did we receive trip blanks (applies only for methods EPA 504, EPA 524.2 and 1631E (LL Hg)?	(N/A)	YES	NO
11. Were the samples received on ice?		(YES)	NO
12. Were sample temperatures measured at 0.0-6.0°C		(YES)	NO
13. Are the samples DW matrix ? If YES, fill out Reportable Drinking Water questions below		YES	(NO)
13a. Are the samples required for SDWA compliance reporting?	(N/A)	YES	NO
13b. Did the client provide a SDWA PWS ID#?	(N/A)	YES	NO
13c. Are all aqueous unpreserved SDWA samples pH 5-9?	(N/A)	YES	NO
13d. Did the client provide the SDWA sample location ID/Description?	(N/A)	YES	NO
13e. Did the client provide the SDWA sample type (D, E, R, C, P, S)?	(N/A)	YES	NO

Cooler #: 1

Temperature (°C): 0

Thermometer ID: 352

COMMENTS (Required for all NO responses above and any sample non-conformance):

Rev. 1/10/2019

ALS Environmental

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March 7, 2019

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

Certificate of Analysis

Project Name:	**FREY FARM**	Workorder:	**3017548**
Purchase Order:	**PO1000126**	Workorder ID:	**1ST QTR 2019 GWMP-FORM 19Q**

Dear Mr. Brown:

Enclosed are the analytical results for samples received by the laboratory on Wednesday, February 20, 2019.

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: Mr. Nicholas Rogers , Ms. Jordan Gallagher , 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

ALS Environmental

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SAMPLE SUMMARY

Workorder: 3017548 1ST QTR 2019 GWMP-FORM 19Q

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
3017548001	FFMP025W	Ground Water	2/20/2019 09:39	2/20/2019 14:35	Mr. Brian G Shade
3017548002	FFMP017W	Ground Water	2/20/2019 11:21	2/20/2019 14:35	Mr. Brian G Shade
3017548003	FFMP015W	Ground Water	2/20/2019 12:58	2/20/2019 14:35	Mr. Brian G Shade

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State Certifications: FL E871113 , WA C999 , MD 128 , VA 460157 , WV DW 9961-C , WV 343

SAMPLE SUMMARY

Workorder: 3017548 1ST QTR 2019 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 incubator and the "Analyzed" value is the date/time out the incubator.
-- An Analysis-Prep Method Cross Reference Table is included after Analytical Results & Qualifiers section in this report.

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: 3017548 1ST QTR 2019 GWMP-FORM 19Q

Lab ID: **3017548001** Date Collected: 2/20/2019 09:39 Matrix: Ground Water
Sample ID: **FFMP025W** Date Received: 2/20/2019 14:35

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			2/26/19 17:33	TMP	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			2/26/19 17:33	TMP	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			2/26/19 17:33	TMP	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			2/26/19 17:33	TMP	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			2/26/19 17:33	TMP	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			2/26/19 17:33	TMP	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			2/26/19 17:33	TMP	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			2/26/19 17:33	TMP	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			2/26/19 17:33	TMP	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			2/26/19 17:33	TMP	G
Toluene	ND		ug/L	1.0	SW846 8260B			2/26/19 17:33	TMP	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			2/26/19 17:33	TMP	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			2/26/19 17:33	TMP	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			2/26/19 17:33	TMP	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			2/26/19 17:33	TMP	G
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	85		%	62 - 133	SW846 8260B			2/26/19 17:33	TMP	G
4-Bromofluorobenzene (S)	95.9		%	79 - 114	SW846 8260B			2/26/19 17:33	TMP	G
Dibromofluoromethane (S)	89.6		%	78 - 116	SW846 8260B			2/26/19 17:33	TMP	G
Toluene-d8 (S)	89.5		%	76 - 127	SW846 8260B			2/26/19 17:33	TMP	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	56		mg/L	5	SM2320B-2011			2/28/19 03:24	MBW	B
Alkalinity, Total	56	2	mg/L	5	SM2320B-2011			2/28/19 03:24	MBW	B
Ammonia-N	0.187		mg/L	0.100	D6919-09			2/27/19 08:13	AK	A
Chemical Oxygen Demand (COD)	29		mg/L	15	EPA 410.4			2/28/19 13:55	AK	A
Chloride	107		mg/L	2.0	EPA 300.0			2/21/19 08:46	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			2/21/19 08:46	CHW	B
Nitrate-N	2.8		mg/L	0.20	EPA 300.0			2/21/19 08:46	CHW	B
pH	6.86	1	pH_Units		S4500HB-11			2/28/19 03:24	MBW	B
Phenolics	0.006		mg/L	0.005	SW846 9066	2/26/19 12:00	RXB	2/27/19 16:02	RXB	F
Specific Conductance	624		umhos/cm	1	SW846 9050A			2/28/19 03:24	MBW	B
Sulfate	62.9		mg/L	2.0	EPA 300.0			2/21/19 08:46	CHW	B
Total Dissolved Solids	394		mg/L	5	S2540C-11			2/25/19 12:55	EXS	B
Total Organic Carbon (TOC)	2.3		mg/L	0.50	SW846 9060A			2/22/19 04:46	PAG	D
Turbidity	0.42		NTU	0.10	SM2130B-2011			2/21/19 05:15	MBW	B

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ANALYTICAL RESULTS

Workorder: 3017548 1ST QTR 2019 GWMP-FORM 19Q

Lab ID: **3017548001** Date Collected: 2/20/2019 09:39 Matrix: Ground Water

Sample ID: **FFMP025W** Date Received: 2/20/2019 14:35

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Calcium, Total	42.4		mg/L	0.11	SW846 6010C	2/22/19 15:55	AHI	3/6/19 15:33	SRT	J1
Iron, Total	ND		mg/L	0.067	SW846 6010C	2/22/19 15:55	AHI	3/6/19 15:33	SRT	J1
Magnesium, Total	19.6		mg/L	0.11	SW846 6010C	2/22/19 15:55	AHI	3/6/19 15:33	SRT	J1
Manganese, Total	ND		mg/L	0.0056	SW846 6010C	2/22/19 15:55	AHI	3/6/19 15:33	SRT	J1
Potassium, Total	3.0		mg/L	0.56	SW846 6010C	2/22/19 15:55	AHI	3/6/19 15:33	SRT	J1
Sodium, Total	42.1		mg/L	0.56	SW846 6010C	2/22/19 15:55	AHI	3/6/19 15:33	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	21.62		Feet		Field			2/20/19 09:42	BGS	C
Elev Top MW Casing above MSL	476.80		Feet		Field			2/20/19 09:42	BGS	C
Flow Rate	3.61		gal/min		Field			2/20/19 09:42	BGS	C
Ground Water Elevation	455.18		ft/MSL		Field			2/20/19 09:42	BGS	C
pH, Field (SM4500B)	5.87		pH_Units		Field			2/20/19 09:42	BGS	C
Sample Depth	39.00		Feet		Field			2/20/19 09:42	BGS	C
Specific Conductance, Field	617		umhos/cm	1	Field			2/20/19 09:42	BGS	C
Temperature	10.93		Deg. C		Field			2/20/19 09:42	BGS	C
Total Well Depth	41.50		Feet		Field			2/20/19 09:42	BGS	C
Volume in Water Column	29.22		Gallons		Field			2/20/19 09:42	BGS	C
Water Level After Purge	22.25		Feet		Field			2/20/19 09:42	BGS	C
Well Volumes Purged	3.46		Vol		Field			2/20/19 09:42	BGS	C

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ANALYTICAL RESULTS

Workorder: 3017548 1ST QTR 2019 GWMP-FORM 19Q

Lab ID: **3017548002** Date Collected: 2/20/2019 11:21 Matrix: Ground Water

Sample ID: **FFMP017W** Date Received: 2/20/2019 14:35

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			2/26/19 17:53	TMP	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			2/26/19 17:53	TMP	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			2/26/19 17:53	TMP	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			2/26/19 17:53	TMP	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			2/26/19 17:53	TMP	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			2/26/19 17:53	TMP	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			2/26/19 17:53	TMP	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			2/26/19 17:53	TMP	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			2/26/19 17:53	TMP	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			2/26/19 17:53	TMP	G
Toluene	ND		ug/L	1.0	SW846 8260B			2/26/19 17:53	TMP	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			2/26/19 17:53	TMP	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			2/26/19 17:53	TMP	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			2/26/19 17:53	TMP	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			2/26/19 17:53	TMP	G
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	81.4		%	62 - 133	SW846 8260B			2/26/19 17:53	TMP	G
4-Bromofluorobenzene (S)	99.5		%	79 - 114	SW846 8260B			2/26/19 17:53	TMP	G
Dibromofluoromethane (S)	86.4		%	78 - 116	SW846 8260B			2/26/19 17:53	TMP	G
Toluene-d8 (S)	92.8		%	76 - 127	SW846 8260B			2/26/19 17:53	TMP	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	60		mg/L	5	SM2320B-2011			2/28/19 04:22	MBW	B
Alkalinity, Total	60	2	mg/L	5	SM2320B-2011			2/28/19 04:22	MBW	B
Ammonia-N	0.162		mg/L	0.100	D6919-09			2/27/19 08:58	AK	A
Chemical Oxygen Demand (COD)	22		mg/L	15	EPA 410.4			2/28/19 13:55	AK	A
Chloride	334		mg/L	5.0	EPA 300.0			2/22/19 06:49	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			2/21/19 08:59	CHW	B
Nitrate-N	2.1		mg/L	0.20	EPA 300.0			2/21/19 08:59	CHW	B
pH	6.53	1	pH_Units		S4500HB-11			2/28/19 04:22	MBW	B
Phenolics	0.02		mg/L	0.005	SW846 9066	2/26/19 12:00	RXB	2/27/19 16:02	RXB	F
Specific Conductance	1400		umhos/cm	1	SW846 9050A			2/28/19 04:22	MBW	B
Sulfate	58.8		mg/L	2.0	EPA 300.0			2/21/19 08:59	CHW	B
Total Dissolved Solids	851		mg/L	5	S2540C-11			2/25/19 12:55	EXS	B
Total Organic Carbon (TOC)	2.1		mg/L	0.50	SW846 9060A			2/22/19 04:46	PAG	D
Turbidity	1.29		NTU	0.10	SM2130B-2011			2/21/19 05:15	MBW	B

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ANALYTICAL RESULTS

Workorder: 3017548 1ST QTR 2019 GWMP-FORM 19Q

Lab ID: **3017548002** Date Collected: 2/20/2019 11:21 Matrix: Ground Water

Sample ID: **FFMP017W** Date Received: 2/20/2019 14:35

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Calcium, Total	96.2		mg/L	0.11	SW846 6010C	2/22/19 15:55	AHI	3/6/19 15:36	SRT	J1
Iron, Total	ND		mg/L	0.067	SW846 6010C	2/22/19 15:55	AHI	3/6/19 15:36	SRT	J1
Magnesium, Total	41.9		mg/L	0.11	SW846 6010C	2/22/19 15:55	AHI	3/6/19 15:36	SRT	J1
Manganese, Total	0.62		mg/L	0.0056	SW846 6010C	2/22/19 15:55	AHI	3/6/19 15:36	SRT	J1
Potassium, Total	6.0		mg/L	0.56	SW846 6010C	2/22/19 15:55	AHI	3/6/19 15:36	SRT	J1
Sodium, Total	83.6		mg/L	0.56	SW846 6010C	2/22/19 15:55	AHI	3/6/19 15:36	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	37.41		Feet		Field			2/20/19 11:21	BGS	C
Elev Top MW Casing above MSL	480.70		Feet		Field			2/20/19 11:21	BGS	C
Flow Rate	2.38		gal/min		Field			2/20/19 11:21	BGS	C
Ground Water Elevation	443.29		ft/MSL		Field			2/20/19 11:21	BGS	C
pH, Field (SM4500B)	5.56		pH_Units		Field			2/20/19 11:21	BGS	C
Sample Depth	135.00		Feet		Field			2/20/19 11:21	BGS	C
Specific Conductance, Field	1360		umhos/cm	1	Field			2/20/19 11:21	BGS	C
Temperature	10.17		Deg. C		Field			2/20/19 11:21	BGS	C
Total Well Depth	150.50		Feet		Field			2/20/19 11:21	BGS	C
Volume in Water Column	166.24		Gallons		Field			2/20/19 11:21	BGS	C
Water Level After Purge	48.46		Feet		Field			2/20/19 11:21	BGS	C
Well Volumes Purged	1.15		Vol		Field			2/20/19 11:21	BGS	C

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ANALYTICAL RESULTS

Workorder: 3017548 1ST QTR 2019 GWMP-FORM 19Q

Lab ID: **3017548003** Date Collected: 2/20/2019 12:58 Matrix: Ground Water
Sample ID: **FFMP015W** Date Received: 2/20/2019 14:35

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			2/26/19 18:14	TMP	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			2/26/19 18:14	TMP	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			2/26/19 18:14	TMP	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			2/26/19 18:14	TMP	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			2/26/19 18:14	TMP	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			2/26/19 18:14	TMP	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			2/26/19 18:14	TMP	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			2/26/19 18:14	TMP	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			2/26/19 18:14	TMP	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			2/26/19 18:14	TMP	G
Toluene	ND		ug/L	1.0	SW846 8260B			2/26/19 18:14	TMP	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			2/26/19 18:14	TMP	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			2/26/19 18:14	TMP	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			2/26/19 18:14	TMP	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			2/26/19 18:14	TMP	G
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	88.3		%	62 - 133	SW846 8260B			2/26/19 18:14	TMP	G
4-Bromofluorobenzene (S)	102		%	79 - 114	SW846 8260B			2/26/19 18:14	TMP	G
Dibromofluoromethane (S)	92		%	78 - 116	SW846 8260B			2/26/19 18:14	TMP	G
Toluene-d8 (S)	93.6		%	76 - 127	SW846 8260B			2/26/19 18:14	TMP	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	36		mg/L	5	SM2320B-2011			2/28/19 04:31	MBW	B
Alkalinity, Total	36	3	mg/L	5	SM2320B-2011			2/28/19 04:31	MBW	B
Ammonia-N	0.174		mg/L	0.100	D6919-09			2/27/19 09:13	AK	A
Chemical Oxygen Demand (COD)	19		mg/L	15	EPA 410.4			2/28/19 13:55	AK	A
Chloride	10.9		mg/L	2.0	EPA 300.0			2/21/19 09:12	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			2/21/19 09:12	CHW	B
Nitrate-N	7.5		mg/L	0.20	EPA 300.0			2/21/19 09:12	CHW	B
pH	6.61	1	pH_Units		S4500HB-11			2/28/19 04:31	MBW	B
Phenolics	ND		mg/L	0.005	SW846 9066	2/26/19 12:00	RXB	2/27/19 16:02	RXB	F
Specific Conductance	261		umhos/cm	1	SW846 9050A			2/28/19 04:31	MBW	B
Sulfate	52.1		mg/L	2.0	EPA 300.0			2/21/19 09:12	CHW	B
Total Dissolved Solids	241	2	mg/L	5	S2540C-11			2/25/19 12:55	EXS	B
Total Organic Carbon (TOC)	1.0		mg/L	0.50	SW846 9060A			2/25/19 16:49	PAG	D
Turbidity	0.24		NTU	0.10	SM2130B-2011			2/21/19 05:15	MBW	B

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ANALYTICAL RESULTS

Workorder: 3017548 1ST QTR 2019 GWMP-FORM 19Q

Lab ID: **3017548003** Date Collected: 2/20/2019 12:58 Matrix: Ground Water

Sample ID: **FFMP015W** Date Received: 2/20/2019 14:35

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Calcium, Total	14.8		mg/L	0.11	SW846 6010C	2/22/19 15:55	AHI	3/6/19 15:40	SRT	J1
Iron, Total	ND		mg/L	0.067	SW846 6010C	2/22/19 15:55	AHI	3/6/19 15:40	SRT	J1
Magnesium, Total	9.8		mg/L	0.11	SW846 6010C	2/22/19 15:55	AHI	3/6/19 15:40	SRT	J1
Manganese, Total	0.0097		mg/L	0.0056	SW846 6010C	2/22/19 15:55	AHI	3/6/19 15:40	SRT	J1
Potassium, Total	1.9		mg/L	0.56	SW846 6010C	2/22/19 15:55	AHI	3/6/19 15:40	SRT	J1
Sodium, Total	21.7		mg/L	0.56	SW846 6010C	2/22/19 15:55	AHI	3/6/19 15:40	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	52.33		Feet		Field			2/20/19 12:59	BGS	C
Elev Top MW Casing above MSL	576.40		Feet		Field			2/20/19 12:59	BGS	C
Flow Rate	2.39		gal/min		Field			2/20/19 12:59	BGS	C
Ground Water Elevation	524.07		ft/MSL		Field			2/20/19 12:59	BGS	C
pH, Field (SM4500B)	5.79		pH_Units		Field			2/20/19 12:59	BGS	C
Sample Depth	135.00		Feet		Field			2/20/19 12:59	BGS	C
Specific Conductance, Field	334		umhos/cm	1	Field			2/20/19 12:59	BGS	C
Temperature	10.05		Deg. C		Field			2/20/19 12:59	BGS	C
Total Well Depth	149.90		Feet		Field			2/20/19 12:59	BGS	C
Volume in Water Column	143.43		Gallons		Field			2/20/19 12:59	BGS	C
Water Level After Purge	57.43		Feet		Field			2/20/19 12:59	BGS	C
Well Volumes Purged	1.18		Vol		Field			2/20/19 12:59	BGS	C

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Ms. Susan J Scherer
Project Coordinator

ANALYTICAL RESULTS

Workorder: 3017548 1ST QTR 2019 GWMP-FORM 19Q

PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
3017548001	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.				
3017548001	2	FFMP025W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
3017548002	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.				
3017548002	2	FFMP017W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
3017548003	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.				
3017548003	2	FFMP015W	S2540C-11	Total Dissolved Solids
The RPD associated with this sample was recovered at 12.5%. The RPD is outside method acceptance limits of 0-5%. The results used to calculate the RPD were 241 mg/L and 273 mg/L.				
3017548003	3	FFMP015W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				

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ANALYSIS - PREP METHOD CROSS REFERENCE TABLE

Workorder: 3017548 1ST QTR 2019 GWMP-FORM 19Q

Lab ID	Sample ID	Analysis Method	Prep Method
3017548001	FFMP025W	D6919-09	
3017548001	FFMP025W	EPA 300.0	
3017548001	FFMP025W	EPA 410.4	
3017548001	FFMP025W	Field	
3017548001	FFMP025W	S2540C-11	
3017548001	FFMP025W	S4500HB-11	
3017548001	FFMP025W	SM2130B-2011	
3017548001	FFMP025W	SM2320B-2011	
3017548001	FFMP025W	SW846 6010C	SW846 3015
3017548001	FFMP025W	SW846 8260B	
3017548001	FFMP025W	SW846 9050A	
3017548001	FFMP025W	SW846 9060A	
3017548001	FFMP025W	SW846 9066	420.4/9066
3017548002	FFMP017W	D6919-09	
3017548002	FFMP017W	EPA 300.0	
3017548002	FFMP017W	EPA 410.4	
3017548002	FFMP017W	Field	
3017548002	FFMP017W	S2540C-11	
3017548002	FFMP017W	S4500HB-11	
3017548002	FFMP017W	SM2130B-2011	
3017548002	FFMP017W	SM2320B-2011	
3017548002	FFMP017W	SW846 6010C	SW846 3015
3017548002	FFMP017W	SW846 8260B	
3017548002	FFMP017W	SW846 9050A	
3017548002	FFMP017W	SW846 9060A	
3017548002	FFMP017W	SW846 9066	420.4/9066
3017548003	FFMP015W	D6919-09	
3017548003	FFMP015W	EPA 300.0	
3017548003	FFMP015W	EPA 410.4	
3017548003	FFMP015W	Field	
3017548003	FFMP015W	S2540C-11	
3017548003	FFMP015W	S4500HB-11	
3017548003	FFMP015W	SM2130B-2011	
3017548003	FFMP015W	SM2320B-2011	
3017548003	FFMP015W	SW846 6010C	SW846 3015
3017548003	FFMP015W	SW846 8260B	
3017548003	FFMP015W	SW846 9050A	
3017548003	FFMP015W	SW846 9060A	
3017548003	FFMP015W	SW846 9066	420.4/9066

ALS Environmental

34 Dogwood Lane • Middletown, PA 17057 • 717.944.5541 • Fax: 717.944.1430

CHAIN OF CUSTODY/ REQUEST FOR ANALYSIS

Generated by ALS

COC

ALS (

* 3 0 1 7 5 4 8 *

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	AW	CG	---	---	PL	PL	PL	PL	
Container Size	40 ml	150 ml	40 ml	---	---	250 ml	120 ml	500 ml	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. FFMP025W	2/20/19	0939	G	GW	2	1	2	X	X	1	1	1	1	
2. FFMP017W	2/20/19	1121	G	GW	2	1	2	X	X	1	1	1	1	
3. FFMP015W	2/20/19	1258	G	GW	2	1	2	X	X	1	1	1	1	
4														
5														
6														
7														
8														
9														
10														

Receipt Information (completed by Receiving Lab)

Cooler Temp: 4°C Therm ID: 382

No. of Coolers: 1

	Y	N	Initial
Custody Seals Present?		X	SJS
(if present) Seals Intact?			
Received on Ice?	X		SJS
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	2-20-19	1435	2 [signature]	2/20/19	1435
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 - 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

301 Fulling Mill Road
Middletown, PA 17057
P: (717) 944-5541
F: (717) 944-1430

Condition of Sample Receipt Form

Client:	Work Order #:	Initials:	Date:
Lancaster County SWMA	3617548	LW	2-21-19

1. Were airbills / tracking numbers present and recorded?	(NONE)	YES	NO
Tracking number:			
2. Are Custody Seals on shipping containers intact?	(NONE)	YES	NO
3. Are Custody Seals on sample containers intact?	(NONE)	YES	NO
4. Is there a COC (Chain-of-Custody) present?		(YES)	NO
5. Are the COC and bottle labels complete, legible and in agreement?		(YES)	NO
5a. Does the COC contain sample locations?		(YES)	NO
5b. Does the COC contain date and time of sample collection for all samples?		(YES)	NO
5c. Does the COC contain sample collectors name?		(YES)	NO
5d. Does the COC note the type(s) of preservation for all bottles?		(YES)	NO
5e. Does the COC note the number of bottles submitted for each sample?		(YES)	NO
5f. Does the COC note the type of sample, composite or grab?		(YES)	NO
5g. Does the COC note the matrix of the sample(s)?		(YES)	NO
6. Are all aqueous samples requiring preservation preserved correctly?	N/A	(YES)	NO
7. Were all samples placed in the proper containers for the requested analyses, with sufficient volume?		(YES)	NO
8. Are all samples within holding times for the requested analyses?		(YES)	NO
9. Were all sample containers received intact and headspace free when required? (not broken, leaking, frozen, etc.)		(YES)	NO
10. Did we receive trip blanks (applies only for methods EPA 504, EPA 524.2 and 1631E (LL Hg)?	(N/A)	YES	NO
11. Were the samples received on ice?		(YES)	NO
12. Were sample temperatures measured at 0.0-6.0°C		(YES)	NO
13. Are the samples DW matrix ? If YES, fill out Reportable Drinking Water questions below		YES	(NO)
13a. Are the samples required for SDWA compliance reporting?	(N/A)	YES	NO
13b. Did the client provide a SDWA PWS ID#?	(N/A)	YES	NO
13c. Are all aqueous unpreserved SDWA samples pH 5-9?	(N/A)	YES	NO
13d. Did the client provide the SDWA sample location ID/Description?	(N/A)	YES	NO
13e. Did the client provide the SDWA sample type (D, E, R, C, P, S)?	(N/A)	YES	NO

Cooler #:	1							
Temperature (°C):	4							

Thermometer ID: 352

COMMENTS (Required for all NO responses above and any sample non-conformance):
GW matrix. LW 2-21-19

Rev. 1/10/2019

Lancaster County Solid Waste Management Authority

Frey Farm Landfill

Exceedence Report

Parameter Name	Units	Concentration	Criteria Conc	Qualifiers	Criteria
Location ID	**Sample Number**	**Sample Date**	**Sample Type**	**Sample Depth**	
FFMP002W	*3018009004*	*02/22/2019*	*GW*		
NITRATE-NITROGEN	mg/l	20.90	10.00		EPA-MCL
Location ID	**Sample Number**	**Sample Date**	**Sample Type**	**Sample Depth**	
FFMP028W	*3017246001*	*02/19/2019*	*GW*		
NITRATE-NITROGEN	mg/l	16.60	10.00		EPA-MCL
Location ID	**Sample Number**	**Sample Date**	**Sample Type**	**Sample Depth**	
FFMP02SW	*3017246003*	*02/19/2019*	*GW*		
NITRATE-NITROGEN	mg/l	14.60	10.00		EPA-MCL
Location ID	**Sample Number**	**Sample Date**	**Sample Type**	**Sample Depth**	
FFMP033W	*3018009006*	*02/22/2019*	*GW*		
NITRATE-NITROGEN	mg/l	10.80	10.00		EPA-MCL
Location ID	**Sample Number**	**Sample Date**	**Sample Type**	**Sample Depth**	
FFMP03AW	*3018009002*	*02/22/2019*	*GW*		
NITRATE-NITROGEN	mg/l	19.00	10.00		EPA-MCL

Lancaster County Solid Waste Management Authority

Frey Farm Landfill

Exceedence Report

Parameter Name	Units	Concentration	Criteria Conc	Qualifiers	Criteria
Location ID	**Sample Number**	**Sample Date**	**Sample Type**	**Sample Depth**	
FFMP002W	*3018009004*	*02/22/2019*	*GW*		
MANGANESE, TOTAL	mg/l	0.28	0.05		EPA-SMCL
Location ID	**Sample Number**	**Sample Date**	**Sample Type**	**Sample Depth**	
FFMP005W	*3017924005*	*02/21/2019*	*GW*		
MANGANESE, TOTAL	mg/l	0.11	0.05		EPA-SMCL
TDS (TOT. DISSOLVED SOLIDS)	mg/l	623.00	500.00		EPA-SMCL
Location ID	**Sample Number**	**Sample Date**	**Sample Type**	**Sample Depth**	
FFMP017W	*3017548002*	*02/20/2019*	*GW*		
CHLORIDE	mg/l	334.00	250.00		EPA-SMCL
MANGANESE, TOTAL	mg/l	0.62	0.05		EPA-SMCL
TDS (TOT. DISSOLVED SOLIDS)	mg/l	851.00	500.00		EPA-SMCL
Location ID	**Sample Number**	**Sample Date**	**Sample Type**	**Sample Depth**	
FFMP018W	*3017924003*	*02/21/2019*	*GW*		
MANGANESE, TOTAL	mg/l	0.36	0.05		EPA-SMCL
Location ID	**Sample Number**	**Sample Date**	**Sample Type**	**Sample Depth**	
FFMP02DW	*3017246002*	*02/19/2019*	*GW*		
CHLORIDE	mg/l	357.00	250.00		EPA-SMCL
IRON, TOTAL	mg/l	1.60	0.30		EPA-SMCL
MANGANESE, TOTAL	mg/l	0.48	0.05		EPA-SMCL
TDS (TOT. DISSOLVED SOLIDS)	mg/l	765.00	500.00		EPA-SMCL
Location ID	**Sample Number**	**Sample Date**	**Sample Type**	**Sample Depth**	
FFMP02SW	*3017246003*	*02/19/2019*	*GW*		
IRON, TOTAL	mg/l	0.40	0.30		EPA-SMCL
Location ID	**Sample Number**	**Sample Date**	**Sample Type**	**Sample Depth**	
FFMP031W	*3018009003*	*02/22/2019*	*GW*		
IRON, TOTAL	mg/l	3.80	0.30		EPA-SMCL
MANGANESE, TOTAL	mg/l	0.30	0.05		EPA-SMCL

Parameter Name	Units	Concentration	Criteria Conc	Qualifiers	Criteria
Location ID	**Sample Number**	**Sample Date**	**Sample Type**	**Sample Depth**	
FFMP032W	*3018009005*	*02/22/2019*	*GW*		
IRON, TOTAL	mg/l	5.90	0.30		EPA-SMCL
MANGANESE, TOTAL	mg/l	0.70	0.05		EPA-SMCL
Location ID	**Sample Number**	**Sample Date**	**Sample Type**	**Sample Depth**	
FFMP033W	*3018009006*	*02/22/2019*	*GW*		
IRON, TOTAL	mg/l	4.20	0.30		EPA-SMCL
MANGANESE, TOTAL	mg/l	0.60	0.05		EPA-SMCL
Location ID	**Sample Number**	**Sample Date**	**Sample Type**	**Sample Depth**	
FFMP03AW	*3018009002*	*02/22/2019*	*GW*		
MANGANESE, TOTAL	mg/l	0.26	0.05		EPA-SMCL
Location ID	**Sample Number**	**Sample Date**	**Sample Type**	**Sample Depth**	
FFMP04AW	*3018009001*	*02/22/2019*	*GW*		
CHLORIDE	mg/l	290.00	250.00		EPA-SMCL
MANGANESE, TOTAL	mg/l	0.26	0.05		EPA-SMCL
TDS (TOT. DISSOLVED SOLIDS)	mg/l	879.00	500.00		EPA-SMCL
Location ID	**Sample Number**	**Sample Date**	**Sample Type**	**Sample Depth**	
FFMP26RW	*3017924004*	*02/21/2019*	*GW*		
MANGANESE, TOTAL	mg/l	0.95	0.05		EPA-SMCL
TDS (TOT. DISSOLVED SOLIDS)	mg/l	539.00	500.00		EPA-SMCL
Location ID	**Sample Number**	**Sample Date**	**Sample Type**	**Sample Depth**	
FFMP30RW	*3017924006*	*02/21/2019*	*GW*		
MANGANESE, TOTAL	mg/l	1.00	0.05		EPA-SMCL