

October 13, 2017

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

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

Dear Ms. Sauls:

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

1. USEPA MCL's exceedance report; Samples 2, 2S, 3, 16, 25, 27 & 28 exceeded the primary standard for nitrate, samples are consistent with historic data the cause is attributed to agricultural impacts (as well 2 our up gradient well shows our highest concentrations). No other MCL's were exceeded.
2. USEPA SMCL's exceedance report; Samples 2, 2S, 2D, 3, 4, 17, 18, 26, 27, 30, 31 & 32) exceeded the secondary standard for manganese, Samples 2S, 2D, 27, 31 & 32 exceeded the secondary standard for iron, Samples 2S, 4, 5, 13, 17, 26, & 30 exceeded the secondary standard for total dissolved solids, and Samples 2S, 4, 17 & 30 exceeded the secondary standard for chlorides all samples are consistent with historic levels and exceedances are attributed to soil parent material, geologic conditions and historic land use. No other SMCL's were exceeded.
3. Toluene was detected in wells 31 (9.1ug/L) and 2D (2ug/L) levels are well below drinking water standards however this is the first time detected, source is unknown well casing where recently painted and these dedicated pumps were recently installed.
4. A copy of the field sampling data sheets for all locations.

5. FFMP033W Form 8

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

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

Respectfully Submitted,

A handwritten signature in black ink, appearing to read 'M. D. Reider'.

Mark D. Reider
Director of Environmental Compliance

Enclosures:

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

**COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT**



Date Prepared/Revised
10/12/2017

DEP USE ONLY

Date Received

**FORM 19
MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES**

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

General Reference: Section 273.284

Federal Regulations, Subtitle D: 258.54 and Appendix I to Part 258.

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Frey Farm Landfill

Facility 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

☒ Well ☐ Spring ☐ Stream ☐ Other

☐ Upgradient/Upstream ☒ 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: 36.6 ft

Measured from: ☐ Land Surface ☒ TOC

Casing Stickup: 2.20 ft

Elevation of Water Level: 525.70 ft./MSL

Sampling Depth: 85 ft

Volume of Water Column: 78.43 gal

Total Well Depth: 90 ft

Sampling Method: ☒ Pumped ☐ Bailed ☐ Grab

Well Purged: ☒ Yes ☐ No

Well Volumes Purged: 1.9

Sample Field Filtered (must be 0.45 micron)?: ☐ Yes ☒ No

Spring Flow Rate: ☐ gpm

Sample Date (mm/dd/yy): 8/22/2017

Sample Collection Time: 11:10

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS Environmental

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 2255841001 Final Lab Analysis CompletionDate: 9/16/2017

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

Comments:

I.D. No 101389

Monitoring Point No. FFMP30RW

Sample Date 8/22/2017

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****ANALYTES****1-Q. Inorganics (Enter all data in mg/l except as noted)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.104	D6919-09
BICARBONATE ALKALINITY	61	SM20-2320B
CALCIUM, TOTAL	71.2	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	7 ND	EPA 410.4
CHLORIDE	365	EPA 300
FLUORIDE	0.5 ND	EPA 300
IRON, TOTAL (ug/l)	80	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	20.9	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	4200	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	5	EPA 300
pH-FIELD (SU)	5.83	FIELD
pH-LAB (SU)	6.22	SM20-4500HB
POTASSIUM, TOTAL	8.4	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	143	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	1455	FIELD
SPEC. COND., LAB (umhos/cm)	1370	SW846 9050A
SULFATE	57.2	EPA 300
ALKALINITY	61	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	897	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	1.4	SW846 9060A
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	1.16	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 8/22/2017

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****2-Q. Organics (Enter all data in ug/l)**

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

T Please indicate detection limit if analyte is not detected.



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Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Frey Farm Landfill

Facility 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
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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: 37.22 ft

Measured from: Land Surface X TOC

Casing Stickup: 2.52 ft

Elevation of Water Level: 523.5 ft./MSL

Sampling Depth: 146 ft

Volume of Water Column:	388.16	gal
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Total Well Depth: 301.52 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 ☒ No ☐

Spring Flow Rate: _____ gpm

Sample Date (mm/dd/yy): 8/22/2017

Sample Collection Time: 12:32

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS Environmental

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 2255841002 Final Lab Analysis CompletionDate: 9/16/2017

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

Comments:

I.D. No 101389

Monitoring Point No. FFMP04AW

Sample Date 8/22/2017

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****ANALYTES****1-Q. Inorganics (Enter all data in mg/l except as noted)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	D6919-09
BICARBONATE ALKALINITY	205	SM20-2320B
CALCIUM, TOTAL	144	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	7 ND	EPA 410.4
CHLORIDE	277	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	67 ND	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	24.2	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	140	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	0.2	EPA 300
pH-FIELD (SU)	6.79	FIELD
pH-LAB (SU)	7.51	SM20-4500HB
POTASSIUM, TOTAL	2	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	80.6	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	1544	FIELD
SPEC. COND., LAB (umhos/cm)	1360	SW846 9050A
SULFATE	45.7	EPA 300
ALKALINITY	205	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	1060	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	1.2	SW846 9060A
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.55	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 8/22/2017

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****2-Q. Organics (Enter all data in ug/l)**

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

T Please indicate detection limit if analyte is not detected.



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Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Frey Farm Landfill

Facility 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
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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: 39.02 ft

Measured from: Land Surface X TOC

Casing Stickup: 2.00 ft

Elevation of Water Level: 438.28 ft./MSL

Sampling Depth: 55 ft

Volume of Water Column:	28.61	gal
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Total Well Depth: 58.5 ft

Sampling Method: ☒ Pumped ☐ Bailed ☐ Grab

Well Purged: X Yes No

Well Volumes Purged: 4.0

Sample Field Filtered (must be 0.45 micron)?: Yes ☒ No ☐

Spring Flow Rate: _____ gpm

Sample Date (mm/dd/yy): 8/22/2017

Sample Collection Time: 13:59

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS Environmental

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 2255841003 Final Lab Analysis CompletionDate: 9/16/2017

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

Comments:

I.D. No 101389

Monitoring Point No. FFMP029W

Sample Date 8/22/2017

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****ANALYTES****1-Q. Inorganics (Enter all data in mg/l except as noted)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	D6919-09
BICARBONATE ALKALINITY	15	SM20-2320B
CALCIUM, TOTAL	15.4	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	7 ND	EPA 410.4
CHLORIDE	66.7	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)	31	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	3.8	EPA 300
pH-FIELD (SU)	5.1	FIELD
pH-LAB (SU)	5.99	SM20-4500HB
POTASSIUM, TOTAL	2.1	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	22.2	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	354	FIELD
SPEC. COND., LAB (umhos/cm)	287	SW846 9050A
SULFATE	8.2	EPA 300
ALKALINITY	15	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	190	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	0.89	SW846 9060A
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.17	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 8/22/2017

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****2-Q. Organics (Enter all data in ug/l)**

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

T Please indicate detection limit if analyte is not detected.

**COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT**



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Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Frey Farm Landfill

Facility 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

☒ Well ☐ Spring ☐ Stream ☐ Other

☐ Upgradient/Upstream ☒ 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: 27.9 ft

Measured from: ☐ Land Surface ☒ TOC

Casing Stickup: 2.46 ft

Elevation of Water Level: 444.30 ft./MSL

Sampling Depth: 40 ft

Volume of Water Column: 15.36 gal

Total Well Depth: 51.43 ft

Sampling Method: ☒ Pumped ☐ Bailed ☐ Grab

Well Purged: ☒ Yes ☐ No

Well Volumes Purged: 3.7

Sample Field Filtered (must be 0.45 micron)?: ☐ Yes ☒ No

Spring Flow Rate: ☐ gpm

Sample Date (mm/dd/yy): 8/22/2017

Sample Collection Time: 14:26

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS Environmental

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 2255841004 Final Lab Analysis CompletionDate: 9/16/2017

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

Comments:

I.D. No 101389

Monitoring Point No. FFMP018W

Sample Date 8/22/2017

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****ANALYTES****1-Q. Inorganics (Enter all data in mg/l except as noted)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	D6919-09
BICARBONATE ALKALINITY	13	SM20-2320B
CALCIUM, TOTAL	31.6	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	7 ND	EPA 410.4
CHLORIDE	117	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	67 ND	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	16.6	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	260	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	5.5	EPA 300
pH-FIELD (SU)	5.07	FIELD
pH-LAB (SU)	5.88	SM20-4500HB
POTASSIUM, TOTAL	4	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	39.3	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	636	FIELD
SPEC. COND., LAB (umhos/cm)	570	SW846 9050A
SULFATE	47.5	EPA 300
ALKALINITY	13	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	394	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	1.4	SW846 9060A
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.1 ND	SM 2130B

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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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☐ Upgradient/Upstream ☒ Downgradient/Downstream

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Municipality: Manor Township

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

Depth to Water Level: 28.06 ft Measured from: ☐ Land Surface ☒ TOC

Casing Stickup: 1.79 ft Elevation of Water Level: 443.89 ft./MSL

Sampling Depth: 49 ft Volume of Water Column: 68.36 gal

Total Well Depth: 132.79 ft Sampling Method: ☒ Pumped ☐ Bailed ☐ Grab

Well Purged: ☒ Yes ☐ No Well Volumes Purged: 2.4

Sample Field Filtered (must be 0.45 micron)?: ☐ Yes ☒ No

Spring Flow Rate: gpm

Sample Date (mm/dd/yy): 8/22/2017 Sample Collection Time: 15:12

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS Environmental

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 2255841005 Final Lab Analysis Completion Date: 9/16/2017

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

Comments: _____

I.D. No 101389

Monitoring Point No. FFMP019W

Sample Date 8/22/2017

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****ANALYTES****1-Q. Inorganics (Enter all data in mg/l except as noted)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	D6919-09
BICARBONATE ALKALINITY	74	SM20-2320B
CALCIUM, TOTAL	56.7	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	7 ND	EPA 410.4
CHLORIDE	78.5	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	67 ND	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	5.5	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	5.6 ND	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	0.58	EPA 300
pH-FIELD (SU)	6.26	FIELD
pH-LAB (SU)	7.14	SM20-4500HB
POTASSIUM, TOTAL	0.89	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	9.7	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	484	FIELD
SPEC. COND., LAB (umhos/cm)	418	SW846 9050A
SULFATE	14.7	EPA 300
ALKALINITY	74	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	299	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	0.81	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 8/22/2017

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****2-Q. Organics (Enter all data in ug/l)**

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

T Please indicate detection limit if analyte is not detected.

**COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT**



Date Prepared/Revised
10/12/2017

DEP USE ONLY

Date Received

**FORM 19
MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES**

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

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

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Frey Farm Landfill

Facility 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

☒ Well ☐ Spring ☐ Stream ☐ Other

☒ 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: 66.02 ft

Measured from: ☐ Land Surface ☒ TOC

Casing Stickup: 2.38 ft

Elevation of Water Level: 546.64 ft./MSL

Sampling Depth: 130 ft

Volume of Water Column: 108.65 gal

Total Well Depth: 140 ft

Sampling Method: ☒ Pumped ☐ Bailed ☐ Grab

Well Purged: ☒ Yes ☐ No

Well Volumes Purged: 1.4

Sample Field Filtered (must be 0.45 micron)?: ☐ Yes ☒ No

Spring Flow Rate: ☐ gpm

Sample Date (mm/dd/yy): 8/23/2017

Sample Collection Time: 10:54

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS Environmental

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 2256328001 Final Lab Analysis Completion Date: 9/20/2017

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

Comments:

I.D. No 101389

Monitoring Point No. FFMP031W

Sample Date 8/23/2017

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****ANALYTES****1-Q. Inorganics (Enter all data in mg/l except as noted)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	D6919-09
BICARBONATE ALKALINITY	27	SM20-2320B
CALCIUM, TOTAL	20.4	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	12	EPA 410.4
CHLORIDE	23.4	EPA 300
FLUORIDE	0.34	EPA 300
IRON, TOTAL (ug/l)	7700	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	2.1	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	190	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	0.2 ND	EPA 300
pH-FIELD (SU)	8.13	FIELD
pH-LAB (SU)	7.42	SM20-4500HB
POTASSIUM, TOTAL	2.4	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	14.3	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	229	FIELD
SPEC. COND., LAB (umhos/cm)	180	SW846 9050A
SULFATE	33.2	EPA 300
ALKALINITY	27	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	137	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	5.2	SW846 9060A
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	26.4	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 8/23/2017

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****2-Q. Organics (Enter all data in ug/l)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHENE	1 ND	SW846 8260B
1,2-DICHLOROETHANE	1 ND	SW846 8260B
CIS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
TRANS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
ETHYLBENZENE	1 ND	SW846 8260B
METHYLENE CHLORIDE	1 ND	SW846 8260B
TETRACHLOROETHENE	1 ND	SW846 8260B
TOLUENE	9.1	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
10/12/2017

DEP USE ONLY

Date Received

**FORM 19
MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES**

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

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Frey Farm Landfill

Facility 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

☒ Well ☐ Spring ☐ Stream ☐ Other

☒ 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: 67.61 ft

Measured from: ☐ Land Surface ☒ TOC

Casing Stickup: 1.60 ft

Elevation of Water Level: 545.59 ft./MSL

Sampling Depth: 85 ft

Volume of Water Column: 149.79 gal

Total Well Depth: 169.6 ft

Sampling Method: ☒ Pumped ☐ Bailed ☐ Grab

Well Purged: ☒ Yes ☐ No

Well Volumes Purged: 0.8

Sample Field Filtered (must be 0.45 micron)?: ☐ Yes ☒ No

Spring Flow Rate: ☐ gpm

Sample Date (mm/dd/yy): 8/23/2017

Sample Collection Time: 11:28

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS Environmental

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 2256328002 Final Lab Analysis CompletionDate: 9/20/2017

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

Comments:

I.D. No 101389

Monitoring Point No. FFMP002W

Sample Date 8/23/2017

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****ANALYTES****1-Q. Inorganics (Enter all data in mg/l except as noted)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	D6919-09
BICARBONATE ALKALINITY	9	SM20-2320B
CALCIUM, TOTAL	22.6	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	7 ND	EPA 410.4
CHLORIDE	19.6	EPA 300
FLUORIDE	0.5 ND	EPA 300
IRON, TOTAL (ug/l)	67 ND	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	9.7	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	280	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	23.2	EPA 300
pH-FIELD (SU)	5.7	FIELD
pH-LAB (SU)	5.63	SM20-4500HB
POTASSIUM, TOTAL	1.4	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	14.6	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	356	FIELD
SPEC. COND., LAB (umhos/cm)	282	SW846 9050A
SULFATE	12.3	EPA 300
ALKALINITY	9	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	258	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	1.2	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. FFMP002W

Sample Date 8/23/2017

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****2-Q. Organics (Enter all data in ug/l)**

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

T Please indicate detection limit if analyte is not detected.

**COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT**



Date Prepared/Revised
10/12/2017

DEP USE ONLY

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**FORM 19
MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES**

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General Reference: Section 273.284

Federal Regulations, Subtitle D: 258.54 and Appendix I to Part 258.

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Frey Farm Landfill

Facility 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

☒ Well ☐ Spring ☐ Stream ☐ Other

☒ 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: 48.76 ft

Measured from: ☐ Land Surface ☒ TOC

Casing Stickup: 2.06 ft

Elevation of Water Level: 545.33 ft./MSL

Sampling Depth: 62 ft

Volume of Water Column: 38.54 gal

Total Well Depth: 75 ft

Sampling Method: ☒ Pumped ☐ Bailed ☐ Grab

Well Purged: ☒ Yes ☐ No

Well Volumes Purged: 1.0

Sample Field Filtered (must be 0.45 micron)?: ☐ Yes ☒ No

Spring Flow Rate: ☐ gpm

Sample Date (mm/dd/yy): 8/23/2017

Sample Collection Time: 14:56

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS Environmental

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 2256328003 Final Lab Analysis CompletionDate: 9/20/2017

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

Comments:

I.D. No 101389

Monitoring Point No. FFMP032W

Sample Date 8/23/2017

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****ANALYTES****1-Q. Inorganics (Enter all data in mg/l except as noted)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.614	D6919-09
BICARBONATE ALKALINITY	68	SM20-2320B
CALCIUM, TOTAL	18.3	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	7 ND	EPA 410.4
CHLORIDE	22.3	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	3800	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	5	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	530	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	1.2	EPA 300
pH-FIELD (SU)	6.68	FIELD
pH-LAB (SU)	7.28	SM20-4500HB
POTASSIUM, TOTAL	1.3	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	15.2	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	250	FIELD
SPEC. COND., LAB (umhos/cm)	190	SW846 9050A
SULFATE	2 ND	EPA 300
ALKALINITY	68	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	141	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	0.98	SW846 9060A
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	43	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 8/23/2017

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****2-Q. Organics (Enter all data in ug/l)**

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

T Please indicate detection limit if analyte is not detected.



Date Prepared/Revised
10/12/2017

DEP USE ONLY

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FORM 19
MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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General Reference: Section 273.284

Federal Regulations, Subtitle D: 258.54 and Appendix I to Part 258.

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Frey Farm Landfill

Facility ID (as issued by DEP): 101389

SECTION B. FACILITY INFORMATION

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

Monitoring Point Number: FFMP027W

X	Well	Spring	Stream	Other
---	------	--------	--------	-------

Upgradient/Upstream X Downgradient/Downstream

Location (County): Lancaster County

Municipality: Manor Township

Sampling Point: Latitude: 39 ° 57 ' 32.62 "

Longitude: 76° 27' 7.12"

Depth to Water Level: 22.59 ft

Measured from: Land Surface X TOC

Casing Stickup: 2.50 ft

Elevation of Water Level: 499.51 ft./MSL

Sampling Depth: 45 ft

Volume of Water Column:	41.72	gal
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Total Well Depth: 51 ft

Sampling Method: X Pumped Bailed Grab

Well Purged: X Yes No

Well Volumes Purged: 5.1

Sample Field Filtered (must be 0.45 micron)?: Yes ☒ No ☐

Spring Flow Rate: _____ gpm

Sample Date (mm/dd/yy): 8/23/2017

Sample Collection Time: 15:48

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS Environmental

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 2256328004 Final Lab Analysis CompletionDate: 9/20/2017

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

Comments:

I.D. No 101389

Monitoring Point No. FFMP027W

Sample Date 8/23/2017

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****ANALYTES****1-Q. Inorganics (Enter all data in mg/l except as noted)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	D6919-09
BICARBONATE ALKALINITY	11	SM20-2320B
CALCIUM, TOTAL	2150	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	7 ND	EPA 410.4
CHLORIDE	34	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	71800	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	476	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	2700	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	10.3	EPA 300
pH-FIELD (SU)	4.96	FIELD
pH-LAB (SU)	5.81	SM20-4500HB
POTASSIUM, TOTAL	2940	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	9000	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	288	FIELD
SPEC. COND., LAB (umhos/cm)	231	SW846 9050A
SULFATE	5.6	EPA 300
ALKALINITY	11	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	203	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	0.6	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. FFMP027W

Sample Date 8/23/2017

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****2-Q. Organics (Enter all data in ug/l)**

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

T Please indicate detection limit if analyte is not detected.

**COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT**



Date Prepared/Revised
10/12/2017

DEP USE ONLY

Date Received

**FORM 19
MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES**

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

General Reference: Section 273.284

Federal Regulations, Subtitle D: 258.54 and Appendix I to Part 258.

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Frey Farm Landfill

Facility 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

☒ Well ☐ Spring ☐ Stream ☐ Other

☐ Upgradient/Upstream ☒ 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: 9.26 ft

Measured from: ☐ Land Surface ☒ TOC

Casing Stickup: 2.50 ft

Elevation of Water Level: 455.74 ft./MSL

Sampling Depth: 50 ft

Volume of Water Column: gal

Total Well Depth: 60 ft

Sampling Method: ☒ Pumped ☐ Bailed ☐ Grab

Well Purged: ☒ Yes ☐ No

Well Volumes Purged: 2.1

Sample Field Filtered (must be 0.45 micron)?: ☐ Yes ☒ No

Spring Flow Rate: gpm

Sample Date (mm/dd/yy): 8/24/2017

Sample Collection Time: 10:07

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS Environmental

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 2256757001 Final Lab Analysis Completion Date: 9/18/2017

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

Comments:

I.D. No 101389

Monitoring Point No. FFMP028W

Sample Date 8/24/2017

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****ANALYTES****1-Q. Inorganics (Enter all data in mg/l except as noted)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.11	D6919-09
BICARBONATE ALKALINITY	28	SM20-2320B
CALCIUM, TOTAL	41.5	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	7 ND	EPA 410.4
CHLORIDE	90.9	EPA 300
FLUORIDE	0.5 ND	EPA 300
IRON, TOTAL (ug/l)	67 ND	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	18	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	12	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	18.2	EPA 300
pH-FIELD (SU)	5.49	FIELD
pH-LAB (SU)	5.92	SM20-4500HB
POTASSIUM, TOTAL	2.4	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	28.1	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	616	FIELD
SPEC. COND., LAB (umhos/cm)	538	SW846 9050A
SULFATE	22.4	EPA 300
ALKALINITY	28	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	340	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	1.7	SW846 9060A
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.12	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.

^T Please indicate detection limit if analyte is not detected.

** Total and dissolved analysis required only in conjunction with additional annual metals sampling (see page 4).

Remaining quarterly samples only require total metals analysis.

I.D. No 101389

Monitoring Point No. FFMP028W

Sample Date 8/24/2017

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****2-Q. Organics (Enter all data in ug/l)**

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

T Please indicate detection limit if analyte is not detected.



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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

Facility 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: 74.62 ft Measured from: Land Surface X TOC

Casing Stickup: 1.70 ft Elevation of Water Level: 462.78 ft./MSL

Sampling Depth:	135 ft	Volume of Water Column:	110.71 gal
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Total Well Depth: 150 ft Sampling Method: ☒ Pumped ☐ Bailed ☐ Grab

Well Purged: ☒ Yes ☐ No Well Volumes Purged: 1.1

Sample Field Filtered (must be 0.45 micron)?: Yes ☒ No ☐

Spring Flow Rate: _____ gpm

Sample Date (mm/dd/yy): 8/24/2017 Sample Collection Time: 11:32

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS Environmental

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 2256757002 Final Lab Analysis CompletionDate: 9/18/2017

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

Comments:

I.D. No 101389

Monitoring Point No. FFMP005W

Sample Date 8/24/2017

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****ANALYTES****1-Q. Inorganics (Enter all data in mg/l except as noted)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	D6919-09
BICARBONATE ALKALINITY	43	SM20-2320B
CALCIUM, TOTAL	76.9	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	7 ND	EPA 410.4
CHLORIDE	183	EPA 300
FLUORIDE	0.5 ND	EPA 300
IRON, TOTAL (ug/l)	67 ND	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	18	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	40	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	3.4	EPA 300
pH-FIELD (SU)	5.51	FIELD
pH-LAB (SU)	5.89	SM20-4500HB
POTASSIUM, TOTAL	2.3	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	42.4	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	910	FIELD
SPEC. COND., LAB (umhos/cm)	805	SW846 9050A
SULFATE	52.6	EPA 300
ALKALINITY	43	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	507	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	1.4	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 8/24/2017

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****2-Q. Organics (Enter all data in ug/l)**

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

T Please indicate detection limit if analyte is not detected.



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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

Facility 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
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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: 87.6 ft

Measured from: Land Surface X TOC

Casing Stickup: 3.30 ft

Elevation of Water Level: 459.80 ft./MSL

Sampling Depth: 105 ft

Volume of Water Column:	38.77	gal
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Total Well Depth: 114 ft

Sampling Method: X Pumped Bailed Grab

Well Purged: X Yes No

Well Volumes Purged: 1.3

Sample Field Filtered (must be 0.45 micron)?: Yes ☒ No ☐

Spring Flow Rate: _____ gpm

Sample Date (mm/dd/yy): 8/24/2017

Sample Collection Time: 12:29

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS Environmental

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 2256757003 Final Lab Analysis CompletionDate: 9/18/2017

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

Comments:

I.D. No 101389

Monitoring Point No. FFMP26RW

Sample Date 8/24/2017

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****ANALYTES****1-Q. Inorganics (Enter all data in mg/l except as noted)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	D6919-09
BICARBONATE ALKALINITY	40	SM20-2320B
CALCIUM, TOTAL	77.9	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	7 ND	EPA 410.4
CHLORIDE	226	EPA 300
FLUORIDE	0.5 ND	EPA 300
IRON, TOTAL (ug/l)	130	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	22.7	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	490	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	2.6	EPA 300
pH-FIELD (SU)	5.29	FIELD
pH-LAB (SU)	5.77	SM20-4500HB
POTASSIUM, TOTAL	8.1	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	64.5	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	1087	FIELD
SPEC. COND., LAB (umhos/cm)	969	SW846 9050A
SULFATE	71.5	EPA 300
ALKALINITY	40	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	626	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	1.8	SW846 9060A
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	1.15	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. FFMP26RW

Sample Date 8/24/2017

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****2-Q. Organics (Enter all data in ug/l)**

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

T Please indicate detection limit if analyte is not detected.



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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

Facility 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: 54.24 ft

Measured from: Land Surface X TOC

Casing Stickup: 1.20 ft

Elevation of Water Level: 536.66 ft./MSL

Sampling Depth: 130 ft

Volume of Water Column:	136.53	gal
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Total Well Depth: 147.2 ft

Sampling Method: ☒ Pumped ☐ Bailed ☐ Grab

Well Purged: X Yes No

Well Volumes Purged: 1.0

Sample Field Filtered (must be 0.45 micron)?: Yes ☒ No ☐

Spring Flow Rate: _____ gpm

Sample Date (mm/dd/yy): 8/24/2017

Sample Collection Time: 14:13

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS Environmental

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 2256757004 Final Lab Analysis CompletionDate: 9/18/2017

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

Comments:

I.D. No 101389

Monitoring Point No. FFMP03AW

Sample Date 8/24/2017

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****ANALYTES****1-Q. Inorganics (Enter all data in mg/l except as noted)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	D6919-09
BICARBONATE ALKALINITY	15	SM20-2320B
CALCIUM, TOTAL	17.2	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	7 ND	EPA 410.4
CHLORIDE	24.9	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	67 ND	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	12.1	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	220	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	20	EPA 300
pH-FIELD (SU)	4.87	FIELD
pH-LAB (SU)	5.59	SM20-4500HB
POTASSIUM, TOTAL	1.4	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	11.8	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	320	FIELD
SPEC. COND., LAB (umhos/cm)	252	SW846 9050A
SULFATE	3.2	EPA 300
ALKALINITY	15	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	146	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	1.3	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 8/24/2017

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****2-Q. Organics (Enter all data in ug/l)**

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

T Please indicate detection limit if analyte is not detected.



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MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Frey Farm Landfill

Facility 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: 60.94 ft

Measured from: Land Surface X TOC

Casing Stickup: 1.90 ft

Elevation of Water Level: 515.46 ft./MSL

Sampling Depth: 135 ft

Volume of Water Column:	129.18	gal
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Total Well Depth: 148.9 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 ☒ No ☐

Spring Flow Rate: _____ gpm

Sample Date (mm/dd/yy): 8/25/2017

Sample Collection Time: 11:35

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS Environmental

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 2257438001 Final Lab Analysis CompletionDate: 9/20/2017

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

Comments:

I.D. No 101389

Monitoring Point No. FFMP015W

Sample Date 8/25/2017

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****ANALYTES****1-Q. Inorganics (Enter all data in mg/l except as noted)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	D6919-09
BICARBONATE ALKALINITY	22	SM20-2320B
CALCIUM, TOTAL	9.4	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	7 ND	EPA 410.4
CHLORIDE	7.6	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	67 ND	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	6.7	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	6.4	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	6	EPA 300
pH-FIELD (SU)	5.59	FIELD
pH-LAB (SU)	6.38	SM20-4500HB
POTASSIUM, TOTAL	1.3	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	10.1	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	189	FIELD
SPEC. COND., LAB (umhos/cm)	149	SW846 9050A
SULFATE	27.4	EPA 300
ALKALINITY	22	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	135	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	1	SW846 9060A
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.12	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.

T Please indicate detection limit if analyte is not detected.

** Total and dissolved analysis required only in conjunction with additional annual metals sampling (see page 4).

Remaining quarterly samples only require total metals analysis.

I.D. No 101389

Monitoring Point No. FFMP015W

Sample Date 8/25/2017

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****2-Q. Organics (Enter all data in ug/l)**

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

T Please indicate detection limit if analyte is not detected.



Date Prepared/Revised
10/12/2017

DEP USE ONLY

Date Received

FORM 19
MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

General Reference: Section 273.284

Federal Regulations, Subtitle D: 258.54 and Appendix I to Part 258.

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Frey Farm Landfill

Facility ID (as issued by DEP): 101389

SECTION B. FACILITY INFORMATION

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

Monitoring Point Number: FFMP017W

X	Well	Spring	Stream	Other
---	------	--------	--------	-------

Upgradient/Upstream X Downgradient/Downstream

Location (County): Lancaster County

Municipality: Manor Township

Sampling Point: Latitude: 39 ° 57 ' 8.5 "

Longitude: 76 ° 27 ' 6.17 "

Depth to Water Level: 42.41 ft

Measured from: Land Surface X TOC

Casing Stickup: 2.00 ft

Elevation of Water Level: 438.29 ft./MSL

Sampling Depth: 135 ft

Volume of Water Column:	158.75	gal
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Total Well Depth: 150.5 ft

Sampling Method: ☒ Pumped ☐ Bailed ☐ Grab

Well Purged: X Yes No

Well Volumes Purged: 1.0

Sample Field Filtered (must be 0.45 micron)?: Yes ☒ No ☐

Spring Flow Rate: _____ gpm

Sample Date (mm/dd/yy): 8/25/2017

Sample Collection Time: 10:06

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS Environmental

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 2257438002 Final Lab Analysis CompletionDate: 9/20/2017

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

Comments:

I.D. No 101389

Monitoring Point No. FFMP017W

Sample Date 8/25/2017

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****ANALYTES****1-Q. Inorganics (Enter all data in mg/l except as noted)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	D6919-09
BICARBONATE ALKALINITY	44	SM20-2320B
CALCIUM, TOTAL	104	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	7 ND	EPA 410.4
CHLORIDE	373	EPA 300
FLUORIDE	0.24	EPA 300
IRON, TOTAL (ug/l)	67 ND	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	47	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	420	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	2.3	EPA 300
pH-FIELD (SU)	5.63	FIELD
pH-LAB (SU)	6.38	SM20-4500HB
POTASSIUM, TOTAL	4.7	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	75.5	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	1552	FIELD
SPEC. COND., LAB (umhos/cm)	1390	SW846 9050A
SULFATE	58	EPA 300
ALKALINITY	44	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	962	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	2.2	SW846 9060A
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.13	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 8/25/2017

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****2-Q. Organics (Enter all data in ug/l)**

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

T Please indicate detection limit if analyte is not detected.

**COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT**



Date Prepared/Revised
10/12/2017

DEP USE ONLY

Date Received

**FORM 19
MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES**

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

General Reference: Section 273.284

Federal Regulations, Subtitle D: 258.54 and Appendix I to Part 258.

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Frey Farm Landfill

Facility 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

☒ Well ☐ Spring ☐ Stream ☐ Other

☐ Upgradient/Upstream ☒ 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: 30.51 ft

Measured from: ☐ Land Surface ☒ TOC

Casing Stickup: 1.50 ft

Elevation of Water Level: 446.29 ft./MSL

Sampling Depth: 39 ft

Volume of Water Column: 13.94 gal

Total Well Depth: 40 ft

Sampling Method: ☒ Pumped ☐ Bailed ☐ Grab

Well Purged: ☒ Yes ☐ No

Well Volumes Purged: 3.5

Sample Field Filtered (must be 0.45 micron)?: ☐ Yes ☒ No

Spring Flow Rate: ☐ gpm

Sample Date (mm/dd/yy): 8/25/2017

Sample Collection Time: 13:15

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS Environmental

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 2257438003 Final Lab Analysis Completion Date: 9/20/2017

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

Comments:

I.D. No 101389

Monitoring Point No. FFMP025W

Sample Date 8/25/2017

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****ANALYTES****1-Q. Inorganics (Enter all data in mg/l except as noted)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	D6919-09
BICARBONATE ALKALINITY	16	SM20-2320B
CALCIUM, TOTAL	26.1	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	7	EPA 410.4
CHLORIDE	61.4	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	67 ND	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	13.8	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	15	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	16.1	EPA 300
pH-FIELD (SU)	5.17	FIELD
pH-LAB (SU)	6.16	SM20-4500HB
POTASSIUM, TOTAL	2.1	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	20.8	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	451	FIELD
SPEC. COND., LAB (umhos/cm)	389	SW846 9050A
SULFATE	10.2	EPA 300
ALKALINITY	16	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	275	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	1.3	SW846 9060A
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.66	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.

^T Please indicate detection limit if analyte is not detected.

** Total and dissolved analysis required only in conjunction with additional annual metals sampling (see page 4).

Remaining quarterly samples only require total metals analysis.

I.D. No 101389

Monitoring Point No. FFMP025W

Sample Date 8/25/2017

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****2-Q. Organics (Enter all data in ug/l)**

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

T Please indicate detection limit if analyte is not detected.



Date Prepared/Revised
10/12/2017

DEP USE ONLY

Date Received

FORM 19
MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Frey Farm Landfill

Facility ID (as issued by DEP): 101389

SECTION B. FACILITY INFORMATION

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

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

 Upgradient/Upstream X Downgradient/Downstream

Location (County): Lancaster County

Municipality: MANOR TOWNSHIP

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

Depth to Water Level:	15.51	ft	Measured from:	Land Surface	X	TOC
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Casing Stickup: ft Elevation of Water Level: 494.39 ft./MSL

Sampling Depth: 18 ft Volume of Water Column: gal

Total Well Depth: 25 ft Sampling Method: ☒ Pumped ☐ Bailed ☐ Grab

Well Purged: ☒ Yes ☐ No Well Volumes Purged: 3.2

Sample Field Filtered (must be 0.45 micron)?: Yes ☒ No ☐

Spring Flow Rate: _____ gpm

Sample Date (mm/dd/yy): 8/25/2017 Sample Collection Time: 14:11

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS Environmental

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 2257438004 Final Lab Analysis CompletionDate: 9/20/2017

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

Comments:

I.D. No 101389

Monitoring Point No. FFMP02SW

Sample Date 8/25/2017

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****ANALYTES****1-Q. Inorganics (Enter all data in mg/l except as noted)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	D6919-09
BICARBONATE ALKALINITY	17	SM20-2320B
CALCIUM, TOTAL	40.9	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	8	EPA 410.4
CHLORIDE	317	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	740	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	16.6	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	280	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	12	EPA 300
pH-FIELD (SU)	5.56	FIELD
pH-LAB (SU)	6.31	SM20-4500HB
POTASSIUM, TOTAL	6	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	156	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	1339	FIELD
SPEC. COND., LAB (umhos/cm)	1200	SW846 9050A
SULFATE	30.2	EPA 300
ALKALINITY	17	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	698	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	1.8	SW846 9060A
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	38.3	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. FFMP02SW

Sample Date 8/25/2017

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****2-Q. Organics (Enter all data in ug/l)**

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

T Please indicate detection limit if analyte is not detected.



Date Prepared/Revised
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FORM 19
MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Frey Farm Landfill

Facility 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:	15.42	ft	Measured from:	Land Surface	X	TOC
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Casing Stickup: ft Elevation of Water Level: 494.18 ft./MSL

Sampling Depth: 120 ft Volume of Water Column: gal

Total Well Depth: 152 ft Sampling Method: ☒ Pumped ☐ Bailed ☐ Grab

Well Purged: ☒ Yes ☐ No Well Volumes Purged: 0.6

Sample Field Filtered (must be 0.45 micron)?: Yes ☒ No ☐

Spring Flow Rate: _____ gpm

Sample Date (mm/dd/yy): 8/25/2017 Sample Collection Time: 15:43

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS Environmental

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 2257438005 Final Lab Analysis CompletionDate: 9/20/2017

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

Comments:

I.D. No 101389

Monitoring Point No. FFMP02DW

Sample Date 8/25/2017

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****ANALYTES****1-Q. Inorganics (Enter all data in mg/l except as noted)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	D6919-09
BICARBONATE ALKALINITY	129	SM20-2320B
CALCIUM, TOTAL	42.9	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	7 ND	EPA 410.4
CHLORIDE	55.1	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	510	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	8.9	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	260	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	0.2 ND	EPA 300
pH-FIELD (SU)	7.42	FIELD
pH-LAB (SU)	8.1	SM20-4500HB
POTASSIUM, TOTAL	1.5	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	43.1	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	539	FIELD
SPEC. COND., LAB (umhos/cm)	477	SW846 9050A
SULFATE	30.3	EPA 300
ALKALINITY	129	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	268	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	1.1	SW846 9060A
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	14.2	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. FFMP02DW

Sample Date 8/25/2017

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****2-Q. Organics (Enter all data in ug/l)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHANE	1 ND	SW846 8260B
1,1-DICHLOROETHENE	1 ND	SW846 8260B
1,2-DICHLOROETHANE	1 ND	SW846 8260B
CIS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
TRANS 1,2-DICHLOROETHENE	1 ND	SW846 8260B
ETHYLBENZENE	1 ND	SW846 8260B
METHYLENE CHLORIDE	1 ND	SW846 8260B
TETRACHLOROETHENE	1 ND	SW846 8260B
TOLUENE	2	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
10/12/2017

DEP USE ONLY

Date Received

**FORM 19
MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES**

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

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

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Frey Farm Landfill

Facility 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 ☒ Well ☐ Spring ☐ Stream ☐ Other
☐ Upgradient/Upstream ☒ 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: 27.6 ft Measured from: ☐ Land Surface ☒ TOC

Casing Stickup: 1.97 ft Elevation of Water Level: 447 ft./MSL

Sampling Depth: 135 ft Volume of Water Column: 179.47 gal

Total Well Depth: 149.8 ft Sampling Method: ☒ Pumped ☐ Bailed ☐ Grab

Well Purged: ☒ Yes ☐ No Well Volumes Purged: _____

Sample Field Filtered (must be 0.45 micron)?: ☐ Yes ☒ No

Spring Flow Rate: _____ gpm

Sample Date (mm/dd/yy): 8/25/2017 Sample Collection Time: 16:18

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS Environmental

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 2257438006 Final Lab Analysis Completion Date: 9/20/2017

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

Comments: _____

I.D. No 101389

Monitoring Point No. FFMP016W

Sample Date 8/25/2017

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****ANALYTES****1-Q. Inorganics (Enter all data in mg/l except as noted)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	D6919-09
BICARBONATE ALKALINITY	25	SM20-2320B
CALCIUM, TOTAL	31.6	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	7 ND	EPA 410.4
CHLORIDE	76.7	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	67 ND	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	15.2	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	35	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	16.2	EPA 300
pH-FIELD (SU)	6.01	FIELD
pH-LAB (SU)	6.34	SM20-4500HB
POTASSIUM, TOTAL	2	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	26.1	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	523	FIELD
SPEC. COND., LAB (umhos/cm)	459	SW846 9050A
SULFATE	13.5	EPA 300
ALKALINITY	25	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	355	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	1.3	SW846 9060A
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.32	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 8/25/2017

FORM 19**QUARTERLY AND ANNUAL WATER QUALITY ANALYSES****2-Q. Organics (Enter all data in ug/l)**

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

T Please indicate detection limit if analyte is not detected.

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



FORM 8
MUNICIPAL WASTE LANDFILLS
BASELINE GROUND WATER ANALYSES

Date Prepared/Revised
10/05/2017

DEP USE ONLY

Date Received

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

General Reference: Section 273.284

Federal Regulations, Subtitle D: 258.54 and Appendix I to Part 258.

An application for a municipal waste landfill shall contain a description of the chemical characteristics of each aquifer in the proposed permit area and adjacent area, based on at least two quarters of monitoring data, one of which shall include the season of the highest local groundwater levels. Submit separate forms for each sample analysis.

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Management Authority

Site Name: Frey Farm Landfill

Facility ID (as issued by DEP): 101389

SECTION B. FACILITY INFORMATION

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

Monitoring Point Number: FFMP033W ☒ Well ☐ Spring ☐ Stream ☐ Other
☐ Upgradient/Upstream ☒ 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: 18.2 ft Measured from: ☐ Land Surface ☒ TOC

Casing Stickup: 0.49 ft Elevation of Water Level: 498.32 ft./MSL

Sampling Depth: 79 ft Volume of Water Column: 114.26 gal

Total Well Depth: 96 ft Sampling Method: ☒ Pumped ☐ Bailed ☐ Grab

Well Purged: ☒ Yes ☐ No Well Volumes Purged: _____

Sample Field Filtered (must be 0.45 micron)?: ☒ Yes ☐ No

Spring Flow Rate: gpm

Sample Date (mm/dd/yy): 8/24/2017 Sample Collection Time: 15:54

Sample Collector's Name: Mr. Brian G Sh

Sample Collector's Affiliation: ALS Environmental

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Certification Number(s): 22-293

Lab Sample Number(s): 2256765001 Final Lab Analysis Completion Date: 9/18/2017

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

Comments: _____

I.D. No 101389

Monitoring Point No. FFMP033W

Sample Date 8/24/2017

FORM 8**1. Inorganics (Enter all data in mg/l except as noted)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.42	ASTM D6919-03
BICARBONATE ALKALINITY	38	SM20 2321
CALCIUM, TOTAL	21.2	EPA 200.7
CALCIUM, DISSOLVED	22.6	EPA 200.7
COD (CHEMICAL OXYGEN DEMAND)	7 ND	EPA 410.4
CHLORIDE	34.9	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL	5000	EPA 200.7
IRON, DISSOLVED	4600	EPA 200.7
MAGNESIUM, TOTAL	7.9	EPA 200.7
MAGNESIUM, DISSOLVED	8.3	EPA 200.7
MANGANESE, TOTAL	460	EPA 200.7
MANGANESE, DISSOLVED	480	EPA 200.7
NITRATE-NITROGEN	13	EPA 300
pH-FIELD	5.44	FIELD
pH-LAB	6.19	EPA 150.1
POTASSIUM, TOTAL	1.8	EPA 200.7
POTASSIUM, DISSOLVED	1.8	EPA 200.7
SODIUM, TOTAL	12.7	EPA 200.7
SODIUM, DISSOLVED	13.3	EPA 200.7
SPEC. COND., FIELD	359	FIELD
SPEC. COND., LAB	283	EPA 120.1
SULFATE	9.1	EPA 300
ALKALINITY	38	SM20 2320B
TDS (TOT. DISSOLVED SOLIDS)	195	SM20 2540C
TOC (TOTAL ORGANIC CARBON)	1.2	SM20 5310B
TOTAL PHENOLICS	5 ND	SW846 9066
TURBIDITY	6.25	SM 2130B

^T Please indicate detection limit if analyte is not detected.

I.D. No 101389

Monitoring Point No. FFMP033W

Sample Date 8/24/2017

FORM 8**2. Metals (Enter all data in ug/l)**

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
ARSENIC, TOTAL	3.3 ND	EPA 200.8
ARSENIC, DISSOLVED	3 ND	EPA 200.8
BARIUM, TOTAL	42	EPA 200.8
BARIUM, DISSOLVED	43	EPA 200.8
CADMIUM, TOTAL	1.1 ND	EPA 200.8
CADMIUM, DISSOLVED	1.1 ND	EPA 200.8
CHROMIUM, TOTAL	2.2 ND	EPA 200.8
CHROMIUM, DISSOLVED	2.2 ND	EPA 200.8
COPPER, TOTAL	5.6 ND	EPA 200.8
COPPER, DISSOLVED	5.6 ND	EPA 200.8
LEAD-FLAMELESS, TOTAL	2.2 ND	EPA 200.8
LEAD, DISSOLVED	2.2 ND	EPA 200.8
MERCURY, TOTAL	0.5 ND	EPA 200.8
MERCURY, DISSOLVED	0.5 ND	EPA 200.8
SELENIUM, TOTAL	5.6 ND	EPA 200.8
SELENIUM, DISSOLVED	5.6 ND	EPA 200.8
SILVER, TOTAL	2.2 ND	EPA 200.8
SILVER, DISSOLVED	2.2 ND	EPA 200.8
ZINC, TOTAL	5.6 ND	EPA 200.8
ZINC, DISSOLVED	5.6 ND	EPA 200.8

^T Please indicate detection limit if analyte is not detected.

I.D. No 101389

Monitoring Point No. FFMP033W

Sample Date 8/24/2017

FORM 8**3. Organics (Enter all data in ug/l)**

ANALYTE	VALUE ^T	ANALYSIS METHOD NUMBER
BENZENE	1 ND	EPA 524.2
BROMOFORM	1 ND	EPA 524.2
CARBON TETRACHLORIDE	1 ND	EPA 524.2
CHLOROBENZENE	1 ND	EPA 524.2
CHLOROETHANE	1 ND	EPA 524.2
3-CHLORO-1-PROPENE	1 ND	EPA 524.2
DIBROMOCHLOROMETHANE	1 ND	EPA 524.2
1,2-DIBROMOETHANE	1 ND	EPA 524.2
1,2-DICHLOROBENZENE	1 ND	EPA 524.2
1,3-DICHLOROBENZENE	1 ND	EPA 524.2
1,4-DICHLOROBENZENE	1 ND	EPA 524.2
DICHLORODIFLUOROMETHANE	1 ND	EPA 524.2
1,1-DICHLOROETHANE	1 ND	EPA 524.2
1,1-DICHLOROETHENE	1 ND	EPA 524.2
1,2-DICHLOROETHANE	1 ND	EPA 524.2
CIS 1,2-DICHLOROETHENE	1 ND	EPA 524.2
TRANS 1,2-DICHLOROETHENE	1 ND	EPA 524.2
1,2-DICHLOROPROPANE	1 ND	EPA 524.2
CIS 1,3-DICHLOROPROPENE	1 ND	EPA 524.2
TRANS 1,3-DICHLOROPROPENE	1 ND	EPA 524.2
ETHYLBENZENE	1 ND	EPA 524.2
BROMOMETHANE	1 ND	EPA 524.2
CHLOROMETHANE	1 ND	EPA 524.2
METHYLENE CHLORIDE	1 ND	EPA 524.2
2-BUTANONE (MEK)	10 ND	EPA 524.2
1,1,1,2-TETRACHLOROETHANE	1 ND	EPA 524.2
TETRACHLOROETHENE	1 ND	EPA 524.2
1,1,2,2-TETRACHLOROETHANE	1 ND	EPA 524.2
TOLUENE	1 ND	EPA 524.2
1,1,1-TRICHLOROETHANE	1 ND	EPA 524.2
1,1,2-TRICHLOROETHANE	1 ND	EPA 524.2
TRICHLOROETHENE	1 ND	EPA 524.2
TRICHLOROFLUOROMETHANE	1 ND	EPA 524.2
1,2,3-TRICHLOROPROPANE	2 ND	EPA 524.2
VINYL CHLORIDE	1 ND	EPA 524.2
XYLENES (TOTAL)	3 ND	EPA 524.2
4-METHYL-2-PENTANONE	5 ND	EPA 524.2

^T Please indicate detection limit if analyte is not detected.

I.D. No 101389

Monitoring Point No. FFMP033W

Sample Date 8/24/2017

FORM 8

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

SUBTITLE D - Add-On List - For Detection Zone Analytes (mg/l). When the MCLs (where established) of any analyte is exceeded in the detection zone (e.g. established cells) Form 50 monitoring, the following analytes must be monitored during the baseline groundwater analyses .

ORGANICS AND METALS

ANALYTE	VALUE ^T	ANALYSIS METHOD NUMBER
ACETONE	10 ND	EPA 524.2
ACRYLONITRILE	5 ND	EPA 524.2
BROMOCHLOROMETHANE (CHLOROBRO	1 ND	EPA 524.2
BROMODICHLOROMETHANE	1 ND	EPA 524.2
CARBON DISULFIDE	1 ND	EPA 524.2
CHLOROFORM	1 ND	EPA 524.2
1,2-DIBROMO-3-CHLOROPROPANE	7 ND	EPA 524.2
TRANS 1,4-DICHLORO-2-BUTENE	3 ND	EPA 524.2
2-HEXANONE	5 ND	EPA 524.2
DIBROMOMETHANE	1 ND	EPA 524.2
IODOMETHANE	1 ND	EPA 524.2
STYRENE	1 ND	EPA 524.2
VINYL ACETATE	5 ND	EPA 524.2
ANTIMONY	2.2 ND	EPA 200.8
BERYLLIUM	1.1 ND	EPA 200.8
COBALT	5.6 ND	SW846 6010B
NICKEL	5.6 ND	SW846 6010B
THALLIUM	1.1 ND	EPA 200.8
VANADIUM	2.2 ND	SW846 6010B

^T Please indicate detection limit if analyte is not detected.

I.D. No	101389
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Monitoring Point No. FFMP033W

Sample Date 8/24/2017

FORM 8

Qualitatively Identified Organic Compounds

List at least ten volatile organic compounds not otherwise identified in this section. Their identification should be based upon those compounds showing the greatest apparent concentration from the peaks of a mass spectrum of each sample. These ten compounds shall be identified but the concentration of each is not required.

[illegible]

September 19, 2017

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

Certificate of Analysis

Project Name:	2017-FREY FARM	Workorder:	2256765
Purchase Order:		Workorder ID:	3RD QTR 2017 FORM 8 FFMP033W

Dear Mr. Brown:

Enclosed are the analytical results for samples received by the laboratory on Thursday, August 24, 2017.

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

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

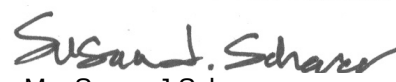
Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications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

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

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

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

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


Ms. Susan J Scherer
Project Coordinator

ALS Environmental Laboratory Locations Across North America

Canada: Burlington · Calgary · Centre of Excellence · Edmonton · Fort McMurray · Fort St. John · Grande Prairie · London · Mississauga · Richmond Hill · Saskatoon · Thunder Bay
Vancouver Waterloo · Winnipeg · Yellowknife **United States:** Cincinnati · Everett · Fort Collins · Holland · Houston · Middletown · Salt Lake City · Spring City · York **Mexico:** Monterrey

SAMPLE SUMMARY

Workorder: 2256765 3RD QTR 2017 FORM 8 FFMP033W

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
2256765001	FFMP033W	Ground Water	8/24/2017 15:54	8/24/2017 17:08	Mr. Brian G Shade

ALS Environmental Laboratory Locations Across North America

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Vancouver Waterloo · Winnipeg · Yellowknife **United States:** Cincinnati · Everett · Fort Collins · Holland · Houston · Middletown · Salt Lake City · Spring City · York **Mexico:** Monterrey

SAMPLE SUMMARY

Workorder: 2256765 3RD QTR 2017 FORM 8 FFMP033W

Notes

- Samples collected by ALS personnel are done so in accordance with the procedures set forth in the ALS Field Sampling Plan (20 - Field Services Sampling Plan).
- All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
- All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
- Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
- The Chain of Custody document is included as part of this report.
- All Library Search analytes should be regarded as tentative identifications based on the presumptive evidence of the mass spectra. Concentrations reported are estimated values.
- Parameters identified as "analyze immediately" require analysis within 15 minutes of collection. Any "analyze immediately" parameters not listed under the header "Field Parameters" are performed 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.

Standard Acronyms/Flags

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

ALS Environmental Laboratory Locations Across North America

Canada: Burlington · Calgary · Centre of Excellence · Edmonton · Fort McMurray · Fort St. John · Grande Prairie · London · Mississauga · Richmond Hill · Saskatoon · Thunder Bay
Vancouver Waterloo · Winnipeg · Yellowknife **United States:** Cincinnati · Everett · Fort Collins · Holland · Houston · Middletown · Salt Lake City · Spring City · York **Mexico:** Monterrey

ANALYTICAL RESULTS

Workorder: 2256765 3RD QTR 2017 FORM 8 FFMP033W

Lab ID: **2256765001**
Sample ID: **FFMP033W**

Date Collected: 8/24/2017 15:54 Matrix: Ground Water
Date Received: 8/24/2017 17:08

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	SW846 8260B			9/1/17 03:39	CPK	J
Acrylonitrile	ND		ug/L	5.0	SW846 8260B			9/1/17 03:39	CPK	J
Benzene	ND		ug/L	1.0	SW846 8260B			9/1/17 03:39	CPK	J
Bromochloromethane	ND		ug/L	1.0	SW846 8260B			9/1/17 03:39	CPK	J
Bromodichloromethane	ND		ug/L	1.0	SW846 8260B			9/1/17 03:39	CPK	J
Bromoform	ND		ug/L	1.0	SW846 8260B			9/1/17 03:39	CPK	J
Bromomethane	ND		ug/L	1.0	SW846 8260B			9/1/17 03:39	CPK	J
2-Butanone	ND		ug/L	10.0	SW846 8260B			9/1/17 03:39	CPK	J
Carbon Disulfide	ND		ug/L	1.0	SW846 8260B			9/1/17 03:39	CPK	J
Carbon Tetrachloride	ND		ug/L	1.0	SW846 8260B			9/1/17 03:39	CPK	J
Chlorobenzene	ND		ug/L	1.0	SW846 8260B			9/1/17 03:39	CPK	J
Chlorodibromomethane	ND		ug/L	1.0	SW846 8260B			9/1/17 03:39	CPK	J
Chloroethane	ND		ug/L	1.0	SW846 8260B			9/1/17 03:39	CPK	J
Chloroform	ND		ug/L	1.0	SW846 8260B			9/1/17 03:39	CPK	J
Chloromethane	ND		ug/L	1.0	SW846 8260B			9/1/17 03:39	CPK	J
3-Chloro-1-propene	ND		ug/L	1.0	SW846 8260B			9/1/17 03:39	CPK	J
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	SW846 8260B			9/1/17 03:39	CPK	J
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			9/1/17 03:39	CPK	J
Dibromomethane	ND		ug/L	1.0	SW846 8260B			9/1/17 03:39	CPK	J
trans-1,4-Dichloro-2-butene	ND		ug/L	3.0	SW846 8260B			9/1/17 03:39	CPK	J
1,2-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			9/1/17 03:39	CPK	J
1,3-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			9/1/17 03:39	CPK	J
1,4-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			9/1/17 03:39	CPK	J
Dichlorodifluoromethane	ND		ug/L	1.0	SW846 8260B			9/1/17 03:39	CPK	J
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			9/1/17 03:39	CPK	J
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			9/1/17 03:39	CPK	J
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			9/1/17 03:39	CPK	J
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			9/1/17 03:39	CPK	J
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			9/1/17 03:39	CPK	J
1,2-Dichloropropane	ND		ug/L	1.0	SW846 8260B			9/1/17 03:39	CPK	J
cis-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			9/1/17 03:39	CPK	J
trans-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			9/1/17 03:39	CPK	J
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			9/1/17 03:39	CPK	J
2-Hexanone	ND		ug/L	5.0	SW846 8260B			9/1/17 03:39	CPK	J
Iodomethane	ND		ug/L	1.0	SW846 8260B			9/1/17 03:39	CPK	J
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	SW846 8260B			9/1/17 03:39	CPK	J

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ANALYTICAL RESULTS

Workorder: 2256765 3RD QTR 2017 FORM 8 FFMP033W

Lab ID: **2256765001**
Sample ID: **FFMP033W**

Date Collected: 8/24/2017 15:54 Matrix: Ground Water
Date Received: 8/24/2017 17:08

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			9/1/17 03:39	CPK	J
Styrene	ND		ug/L	1.0	SW846 8260B			9/1/17 03:39	CPK	J
1,1,1,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			9/1/17 03:39	CPK	J
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			9/1/17 03:39	CPK	J
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			9/1/17 03:39	CPK	J
Toluene	ND		ug/L	1.0	SW846 8260B			9/1/17 03:39	CPK	J
Total Xylenes	ND		ug/L	3.0	SW846 8260B			9/1/17 03:39	CPK	J
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			9/1/17 03:39	CPK	J
1,1,2-Trichloroethane	ND		ug/L	1.0	SW846 8260B			9/1/17 03:39	CPK	J
Trichloroethene	ND		ug/L	1.0	SW846 8260B			9/1/17 03:39	CPK	J
Trichlorofluoromethane	ND		ug/L	1.0	SW846 8260B			9/1/17 03:39	CPK	J
1,2,3-Trichloropropane	ND		ug/L	2.0	SW846 8260B			9/1/17 03:39	CPK	J
Vinyl Acetate	ND		ug/L	5.0	SW846 8260B			9/1/17 03:39	CPK	J
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			9/1/17 03:39	CPK	J
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	115		%	62 - 133	SW846 8260B			9/1/17 03:39	CPK	J
4-Bromofluorobenzene (S)	100		%	79 - 114	SW846 8260B			9/1/17 03:39	CPK	J
Dibromofluoromethane (S)	96.8		%	78 - 116	SW846 8260B			9/1/17 03:39	CPK	J
Toluene-d8 (S)	98.2		%	76 - 127	SW846 8260B			9/1/17 03:39	CPK	J

LIBRARY SEARCH - VOLATILES

No TIC's Detected . Lib Search VOC 9/1/17 03:39 CPK J

WET CHEMISTRY

Alkalinity, Bicarbonate	38		mg/L	5	S2320B-97			8/27/17 14:32	MSA	B
Alkalinity, Total	38	1	mg/L	5	S2320B-97			8/27/17 14:32	MSA	B
Ammonia-nitrogen, Total	0.42		mg/L	0.10	S4500NH3D	9/11/17 18:00	CMM	9/18/17 12:30	C_W	
Chemical Oxygen Demand (COD)	ND		mg/L	7	EPA 410.4			8/30/17 18:49	AK	C
Chloride	34.9		mg/L	2.0	EPA 300.0			8/26/17 00:14	MBW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			8/26/17 00:14	MBW	B
Nitrate-N	13.0		mg/L	0.20	EPA 300.0			8/26/17 00:14	MBW	B
pH	6.19	2	pH_Units		S4500HB-11			8/27/17 14:32	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	9/6/17 00:00	JLG	9/6/17 09:48	JLG	I
Specific Conductance	283		umhos/cm	1	S2510B-97			8/27/17 14:32	MSA	B
Sulfate	9.1		mg/L	2.0	EPA 300.0			8/26/17 00:14	MBW	B
Total Dissolved Solids	195		mg/L	5	S2540C-11			8/30/17 21:28	JAS	B
Total Organic Carbon (TOC)	1.2		mg/L	0.50	S5310B-00			8/31/17 10:47	PAG	G
Turbidity	6.25		NTU	0.10	S2130B-01			8/26/17 06:00	MBW	B

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ANALYTICAL RESULTS

Workorder: 2256765 3RD QTR 2017 FORM 8 FFMP033W

Lab ID: **2256765001**
Sample ID: **FFMP033W**

Date Collected: 8/24/2017 15:54 Matrix: Ground Water
Date Received: 8/24/2017 17:08

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Antimony, Total	ND		mg/L	0.0022	SW846 6020A	8/29/17 06:50	LXC	8/29/17 11:15	ZMC	E1
Arsenic, Total	ND		mg/L	0.0033	SW846 6020A	8/29/17 06:50	LXC	8/29/17 11:15	ZMC	E1
Arsenic, Dissolved	ND		mg/L	0.0030	SW846 6020A	8/29/17 06:50	LXC	8/29/17 10:03	ZMC	D2
Barium, Total	0.042		mg/L	0.0056	SW846 6020A	8/29/17 06:50	LXC	8/29/17 11:15	ZMC	E1
Barium, Dissolved	0.043		mg/L	0.0056	SW846 6020A	8/29/17 06:50	LXC	8/29/17 10:03	ZMC	D2
Beryllium, Total	ND		mg/L	0.0011	SW846 6020A	8/29/17 06:50	LXC	8/29/17 11:15	ZMC	E1
Cadmium, Total	ND		mg/L	0.0011	SW846 6020A	8/29/17 06:50	LXC	8/29/17 11:15	ZMC	E1
Cadmium, Dissolved	ND		mg/L	0.0011	SW846 6020A	8/29/17 06:50	LXC	8/29/17 10:03	ZMC	D2
Calcium, Total	21.2		mg/L	0.11	SW846 6020A	8/29/17 06:50	LXC	8/29/17 11:15	ZMC	E1
Calcium, Dissolved	22.6		mg/L	0.11	SW846 6020A	8/29/17 06:50	LXC	8/29/17 10:03	ZMC	D2
Chromium, Total	ND		mg/L	0.0022	SW846 6020A	8/29/17 06:50	LXC	8/29/17 11:15	ZMC	E1
Chromium, Dissolved	ND		mg/L	0.0022	SW846 6020A	8/29/17 06:50	LXC	8/29/17 10:03	ZMC	D2
Cobalt, Total	ND		mg/L	0.0056	SW846 6020A	8/29/17 06:50	LXC	8/29/17 11:15	ZMC	E1
Copper, Total	ND		mg/L	0.0056	SW846 6020A	8/29/17 06:50	LXC	8/29/17 11:15	ZMC	E1
Copper, Dissolved	ND		mg/L	0.0056	SW846 6020A	8/29/17 06:50	LXC	8/29/17 10:03	ZMC	D2
Iron, Total	5.0		mg/L	0.056	SW846 6020A	8/29/17 06:50	LXC	8/29/17 11:15	ZMC	E1
Iron, Dissolved	4.6		mg/L	0.056	SW846 6020A	8/29/17 06:50	LXC	8/29/17 10:03	ZMC	D2
Lead, Total	ND		mg/L	0.0022	SW846 6020A	8/29/17 06:50	LXC	8/29/17 11:15	ZMC	E1
Lead, Dissolved	ND		mg/L	0.0022	SW846 6020A	8/29/17 06:50	LXC	8/29/17 10:03	ZMC	D2
Magnesium, Total	7.9		mg/L	0.11	SW846 6020A	8/29/17 06:50	LXC	8/29/17 11:15	ZMC	E1
Magnesium, Dissolved	8.3		mg/L	0.11	SW846 6020A	8/29/17 06:50	LXC	8/29/17 10:03	ZMC	D2
Manganese, Total	0.46		mg/L	0.0056	SW846 6020A	8/29/17 06:50	LXC	8/29/17 11:15	ZMC	E1
Manganese, Dissolved	0.48		mg/L	0.0056	SW846 6020A	8/29/17 06:50	LXC	8/29/17 10:03	ZMC	D2
Mercury, Total	ND		mg/L	0.00050	SW846 7470A	8/31/17 03:00	AXC	8/31/17 06:12	AXC	E2
Mercury, Dissolved	ND		mg/L	0.00050	SW846 7470A	8/29/17 00:00	AXC	8/29/17 06:04	AXC	D1
Nickel, Total	ND		mg/L	0.0056	SW846 6020A	8/29/17 06:50	LXC	8/29/17 11:15	ZMC	E1
Potassium, Total	1.8		mg/L	0.11	SW846 6020A	8/29/17 06:50	LXC	8/29/17 11:15	ZMC	E1
Potassium, Dissolved	1.8		mg/L	0.11	SW846 6020A	8/29/17 06:50	LXC	8/29/17 10:03	ZMC	D2
Selenium, Total	ND		mg/L	0.0056	SW846 6020A	8/29/17 06:50	LXC	8/29/17 11:15	ZMC	E1
Selenium, Dissolved	ND		mg/L	0.0056	SW846 6020A	8/29/17 06:50	LXC	8/29/17 10:03	ZMC	D2
Silver, Total	ND		mg/L	0.0022	SW846 6020A	8/29/17 06:50	LXC	8/29/17 11:15	ZMC	E1
Silver, Dissolved	ND		mg/L	0.0022	SW846 6020A	8/29/17 06:50	LXC	8/29/17 10:03	ZMC	D2
Sodium, Total	12.7		mg/L	0.11	SW846 6020A	8/29/17 06:50	LXC	8/29/17 11:15	ZMC	E1
Sodium, Dissolved	13.3		mg/L	0.11	SW846 6020A	8/29/17 06:50	LXC	8/29/17 10:03	ZMC	D2
Thallium, Total	ND		mg/L	0.0011	SW846 6020A	8/29/17 06:50	LXC	8/29/17 11:15	ZMC	E1
Vanadium, Total	ND		mg/L	0.0022	SW846 6020A	8/29/17 06:50	LXC	8/29/17 11:15	ZMC	E1
Zinc, Total	ND		mg/L	0.0056	SW846 6020A	8/29/17 06:50	LXC	8/29/17 11:15	ZMC	E1

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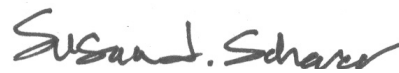
ANALYTICAL RESULTS

Workorder: 2256765 3RD QTR 2017 FORM 8 FFMP033W

Lab ID: **2256765001**
Sample ID: **FFMP033W**

Date Collected: 8/24/2017 15:54 Matrix: Ground Water
Date Received: 8/24/2017 17:08

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Zinc, Dissolved	ND		mg/L	0.0056	SW846 6020A	8/29/17 06:50	LXC	8/29/17 10:03	ZMC	D2
FIELD PARAMETERS										
Depth to Water Level	18.200		Feet		Field			8/22/17 15:54	BGS	F
Flow Rate	1.11		gal/min		Field			8/22/17 15:54	BGS	F
pH, Field (SM4500B)	5.440		pH_Units		Field			8/22/17 15:54	BGS	F
Sample Depth	79.000		Feet		Field			8/22/17 15:54	BGS	F
Specific Conductance, Field	359		umhos/cm	1	Field			8/22/17 15:54	BGS	F
Temperature	12.74		Deg. C		Field			8/22/17 15:54	BGS	F
Total Well Depth	100.000		Feet		Field			8/22/17 15:54	BGS	F
Volume in Water Column	120.246		Gallons		Field			8/22/17 15:54	BGS	F
Water Level After Purge	20.040		Feet		Field			8/22/17 15:54	BGS	F
Well Volumes Purged	0.64		Vol		Field			8/22/17 15:54	BGS	F


Ms. Susan J Scherer
Project Coordinator

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PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
2256765001	1	FFMP033W	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
2256765001	2	FFMP033W	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				

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September 19, 2017

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

Certificate of Analysis

Project Name: 2017-FREY FARM	Workorder: 2255841
Purchase Order:	Workorder ID: 3RD QTR 2017 GWMP-FORM 19Q

Dear Mr. Brown:

Enclosed are the analytical results for samples received by the laboratory on Tuesday, August 22, 2017.

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

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

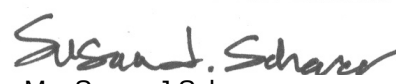
Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications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

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

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

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

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


Ms. Susan J Scherer
Project Coordinator

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SAMPLE SUMMARY

Workorder: 2255841 3RD QTR 2017 GWMP-FORM 19Q

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
2255841001	FFMP30RW	Ground Water	8/22/2017 11:10	8/22/2017 16:16	Mr. Brian G Shade
2255841002	FFMP04AW	Ground Water	8/22/2017 12:32	8/22/2017 16:16	Mr. Brian G Shade
2255841003	FFMP029W	Ground Water	8/22/2017 13:59	8/22/2017 16:16	Mr. Brian G Shade
2255841004	FFMP018W	Ground Water	8/22/2017 14:26	8/22/2017 16:16	Mr. Brian G Shade
2255841005	FFMP019W	Ground Water	8/22/2017 15:12	8/22/2017 16:16	Mr. Brian G Shade
2255841006	FIELD BLANK	Ground Water	8/22/2017 14:20	8/22/2017 16:16	Mr. Brian G Shade
2255841007	TRIP BLANK	Ground Water	8/22/2017 16:16	8/22/2017 16:16	Mr. Brian G Shade

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SAMPLE SUMMARY

Workorder: 2255841 3RD QTR 2017 GWMP-FORM 19Q

Notes

- Samples collected by ALS personnel are done so in accordance with the procedures set forth in the ALS Field Sampling Plan (20 - Field Services Sampling Plan).
- All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
- All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
- Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
- The Chain of Custody document is included as part of this report.
- All Library Search analytes should be regarded as tentative identifications based on the presumptive evidence of the mass spectra. Concentrations reported are estimated values.
- Parameters identified as "analyze immediately" require analysis within 15 minutes of collection. Any "analyze immediately" parameters not listed under the header "Field Parameters" are performed 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.

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: 2255841 3RD QTR 2017 GWMP-FORM 19Q

Lab ID: **2255841001**
Sample ID: **FFMP30RW**

Date Collected: 8/22/2017 11:10 Matrix: Ground Water
Date Received: 8/22/2017 16:16

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			8/28/17 04:30	CJG	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			8/28/17 04:30	CJG	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/28/17 04:30	CJG	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/28/17 04:30	CJG	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/28/17 04:30	CJG	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/28/17 04:30	CJG	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/28/17 04:30	CJG	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			8/28/17 04:30	CJG	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			8/28/17 04:30	CJG	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			8/28/17 04:30	CJG	G
Toluene	ND		ug/L	1.0	SW846 8260B			8/28/17 04:30	CJG	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			8/28/17 04:30	CJG	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			8/28/17 04:30	CJG	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			8/28/17 04:30	CJG	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			8/28/17 04:30	CJG	G
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	94.7		%	62 - 133	SW846 8260B			8/28/17 04:30	CJG	G
4-Bromofluorobenzene (S)	102		%	79 - 114	SW846 8260B			8/28/17 04:30	CJG	G
Dibromofluoromethane (S)	96.5		%	78 - 116	SW846 8260B			8/28/17 04:30	CJG	G
Toluene-d8 (S)	113		%	76 - 127	SW846 8260B			8/28/17 04:30	CJG	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	61		mg/L	5	S2320B-97			8/23/17 08:04	MSA	B
Alkalinity, Total	61	2	mg/L	5	S2320B-97			8/23/17 08:04	MSA	B
Ammonia-N	0.104		mg/L	0.100	D6919-09			9/16/17 22:20	JAM	A
Chemical Oxygen Demand (COD)	ND		mg/L	7	EPA 410.4			8/29/17 18:19	AK	A
Chloride	365		mg/L	5.0	EPA 300.0			8/23/17 07:20	CHW	B
Fluoride	ND		mg/L	0.50	EPA 300.0			8/23/17 07:20	CHW	B
Nitrate-N	5.0		mg/L	0.50	EPA 300.0			8/23/17 07:20	CHW	B
pH	6.22	1	pH_Units		S4500HB-11			8/23/17 08:04	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	8/31/17 00:00	JLG	9/6/17 09:48	JLG	F
Specific Conductance	1370		umhos/cm	1	SW846 9050A			8/23/17 08:04	MSA	B
Sulfate	57.2		mg/L	5.0	EPA 300.0			8/23/17 07:20	CHW	B
Total Dissolved Solids	897		mg/L	5	S2540C-11			8/28/17 19:53	JAS	B
Total Organic Carbon (TOC)	1.4		mg/L	0.50	SW846 9060A			8/29/17 10:29	PAG	D
Turbidity	1.16		NTU	0.10	S2130B-01			8/22/17 23:11	MSA	B

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ANALYTICAL RESULTS

Workorder: 2255841 3RD QTR 2017 GWMP-FORM 19Q

Lab ID: **2255841001**
Sample ID: **FFMP30RW**

Date Collected: 8/22/2017 11:10 Matrix: Ground Water
Date Received: 8/22/2017 16:16

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	71.2		mg/L	0.11	SW846 6010C	8/25/17 04:25	LXC	8/28/17 15:37	SRT	J1
Iron, Total	0.080		mg/L	0.067	SW846 6010C	8/25/17 04:25	LXC	8/28/17 15:37	SRT	J1
Magnesium, Total	20.9		mg/L	0.11	SW846 6010C	8/25/17 04:25	LXC	8/28/17 15:37	SRT	J1
Manganese, Total	4.2		mg/L	0.0056	SW846 6010C	8/25/17 04:25	LXC	8/28/17 15:37	SRT	J1
Potassium, Total	8.4		mg/L	0.56	SW846 6010C	8/25/17 04:25	LXC	8/28/17 15:37	SRT	J1
Sodium, Total	143		mg/L	0.56	SW846 6010C	8/25/17 04:25	LXC	8/28/17 15:37	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	36.600		Feet		Field			8/22/17 11:10	BGS	C
Elev Top MW Casing above MSL	562.30		Feet		Field			8/22/17 11:10	BGS	C
Flow Rate	2.23		gal/min		Field			8/22/17 11:10	BGS	C
Ground Water Elevation	525.700		ft/MSL		Field			8/22/17 11:10	BGS	C
pH, Field (SM4500B)	5.830		pH_Units		Field			8/22/17 11:10	BGS	C
Sample Depth	85.000		Feet		Field			8/22/17 11:10	BGS	C
Specific Conductance, Field	1455		umhos/cm	1	Field			8/22/17 11:10	BGS	C
Temperature	11.82		Deg. C		Field			8/22/17 11:10	BGS	C
Total Well Depth	94.200		Feet		Field			8/22/17 11:10	BGS	C
Volume in Water Column	84.672		Gallons		Field			8/22/17 11:10	BGS	C
Water Level After Purge	71.530		Feet		Field			8/22/17 11:10	BGS	C
Well Volumes Purged	1.85		Vol		Field			8/22/17 11:10	BGS	C



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ANALYTICAL RESULTS

Workorder: 2255841 3RD QTR 2017 GWMP-FORM 19Q

Lab ID: **2255841002**
Sample ID: **FFMP04AW**

Date Collected: 8/22/2017 12:32 Matrix: Ground Water
Date Received: 8/22/2017 16:16

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			8/28/17 04:49	CJG	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			8/28/17 04:49	CJG	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/28/17 04:49	CJG	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/28/17 04:49	CJG	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/28/17 04:49	CJG	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/28/17 04:49	CJG	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/28/17 04:49	CJG	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			8/28/17 04:49	CJG	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			8/28/17 04:49	CJG	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			8/28/17 04:49	CJG	G
Toluene	ND		ug/L	1.0	SW846 8260B			8/28/17 04:49	CJG	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			8/28/17 04:49	CJG	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			8/28/17 04:49	CJG	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			8/28/17 04:49	CJG	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			8/28/17 04:49	CJG	G
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	94.2		%	62 - 133	SW846 8260B			8/28/17 04:49	CJG	G
4-Bromofluorobenzene (S)	97.4		%	79 - 114	SW846 8260B			8/28/17 04:49	CJG	G
Dibromofluoromethane (S)	97.9		%	78 - 116	SW846 8260B			8/28/17 04:49	CJG	G
Toluene-d8 (S)	112		%	76 - 127	SW846 8260B			8/28/17 04:49	CJG	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	205		mg/L	5	S2320B-97			8/23/17 08:50	MSA	B
Alkalinity, Total	205	2	mg/L	5	S2320B-97			8/23/17 08:50	MSA	B
Ammonia-N	ND		mg/L	0.100	D6919-09			9/16/17 22:37	JAM	A
Chemical Oxygen Demand (COD)	ND		mg/L	7	EPA 410.4			8/29/17 18:19	AK	A
Chloride	277		mg/L	10.0	EPA 300.0			8/23/17 07:44	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			8/23/17 07:32	CHW	B
Nitrate-N	0.20		mg/L	0.20	EPA 300.0			8/23/17 07:32	CHW	B
pH	7.51	1	pH_Units		S4500HB-11			8/23/17 08:50	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	8/31/17 00:00	JLG	8/31/17 10:09	JLG	F
Specific Conductance	1360		umhos/cm	1	SW846 9050A			8/23/17 08:50	MSA	B
Sulfate	45.7		mg/L	2.0	EPA 300.0			8/23/17 07:32	CHW	B
Total Dissolved Solids	1060		mg/L	5	S2540C-11			8/28/17 19:53	JAS	B
Total Organic Carbon (TOC)	1.2		mg/L	0.50	SW846 9060A			8/29/17 10:29	PAG	D
Turbidity	0.55		NTU	0.10	S2130B-01			8/22/17 23:11	MSA	B

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ANALYTICAL RESULTS

Workorder: 2255841 3RD QTR 2017 GWMP-FORM 19Q

Lab ID: **2255841002**
Sample ID: **FFMP04AW**

Date Collected: 8/22/2017 12:32 Matrix: Ground Water
Date Received: 8/22/2017 16:16

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	144		mg/L	0.11	SW846 6010C	8/25/17 04:25	LXC	8/28/17 15:40	SRT	J1
Iron, Total	ND		mg/L	0.067	SW846 6010C	8/25/17 04:25	LXC	8/28/17 15:40	SRT	J1
Magnesium, Total	24.2		mg/L	0.11	SW846 6010C	8/25/17 04:25	LXC	8/28/17 15:40	SRT	J1
Manganese, Total	0.14		mg/L	0.0056	SW846 6010C	8/25/17 04:25	LXC	8/28/17 15:40	SRT	J1
Potassium, Total	2.0		mg/L	0.56	SW846 6010C	8/25/17 04:25	LXC	8/28/17 15:40	SRT	J1
Sodium, Total	80.6		mg/L	0.56	SW846 6010C	8/25/17 04:25	LXC	8/28/17 15:40	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	37.220		Feet		Field			8/22/17 12:32	BGS	C
Elev Top MW Casing above MSL	560.72		Feet		Field			8/22/17 12:32	BGS	C
Flow Rate	1.85		gal/min		Field			8/22/17 12:32	BGS	C
Ground Water Elevation	523.500		ft/MSL		Field			8/22/17 12:32	BGS	C
pH, Field (SM4500B)	6.790		pH_Units		Field			8/22/17 12:32	BGS	C
Sample Depth	146.000		Feet		Field			8/22/17 12:32	BGS	C
Specific Conductance, Field	1544		umhos/cm	1	Field			8/22/17 12:32	BGS	C
Temperature	13.46		Deg. C		Field			8/22/17 12:32	BGS	C
Total Well Depth	148.500		Feet		Field			8/22/17 12:32	BGS	C
Volume in Water Column	163.582		Gallons		Field			8/22/17 12:32	BGS	C
Water Level After Purge	83.310		Feet		Field			8/22/17 12:32	BGS	C
Well Volumes Purged	0.79		Vol		Field			8/22/17 12:32	BGS	C



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ANALYTICAL RESULTS

Workorder: 2255841 3RD QTR 2017 GWMP-FORM 19Q

Lab ID: **2255841003**

Date Collected: 8/22/2017 13:59

Matrix: Ground Water

Sample ID: **FFMP029W**

Date Received: 8/22/2017 16:16

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			8/28/17 05:07	CJG	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			8/28/17 05:07	CJG	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/28/17 05:07	CJG	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/28/17 05:07	CJG	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/28/17 05:07	CJG	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/28/17 05:07	CJG	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/28/17 05:07	CJG	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			8/28/17 05:07	CJG	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			8/28/17 05:07	CJG	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			8/28/17 05:07	CJG	G
Toluene	ND		ug/L	1.0	SW846 8260B			8/28/17 05:07	CJG	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			8/28/17 05:07	CJG	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			8/28/17 05:07	CJG	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			8/28/17 05:07	CJG	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			8/28/17 05:07	CJG	G
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	94		%	62 - 133	SW846 8260B			8/28/17 05:07	CJG	G
4-Bromofluorobenzene (S)	99.7		%	79 - 114	SW846 8260B			8/28/17 05:07	CJG	G
Dibromofluoromethane (S)	99.4		%	78 - 116	SW846 8260B			8/28/17 05:07	CJG	G
Toluene-d8 (S)	110		%	76 - 127	SW846 8260B			8/28/17 05:07	CJG	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	15		mg/L	5	S2320B-97			8/23/17 08:58	MSA	B
Alkalinity, Total	15	2	mg/L	5	S2320B-97			8/23/17 08:58	MSA	B
Ammonia-N	ND		mg/L	0.100	D6919-09			9/16/17 22:54	JAM	A
Chemical Oxygen Demand (COD)	ND		mg/L	7	EPA 410.4			8/29/17 18:19	AK	A
Chloride	66.7		mg/L	2.0	EPA 300.0			8/23/17 07:56	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			8/23/17 07:56	CHW	B
Nitrate-N	3.8		mg/L	0.20	EPA 300.0			8/23/17 07:56	CHW	B
pH	5.99	1	pH_Units		S4500HB-11			8/23/17 08:58	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	8/31/17 00:00	JLG	8/31/17 10:09	JLG	F
Specific Conductance	287		umhos/cm	1	SW846 9050A			8/23/17 08:58	MSA	B
Sulfate	8.2		mg/L	2.0	EPA 300.0			8/23/17 07:56	CHW	B
Total Dissolved Solids	190		mg/L	5	S2540C-11			8/28/17 19:53	JAS	B
Total Organic Carbon (TOC)	0.89		mg/L	0.50	SW846 9060A			8/29/17 10:29	PAG	D
Turbidity	0.17		NTU	0.10	S2130B-01			8/22/17 23:11	MSA	B

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ANALYTICAL RESULTS

Workorder: 2255841 3RD QTR 2017 GWMP-FORM 19Q

Lab ID: **2255841003**
Sample ID: **FFMP029W**

Date Collected: 8/22/2017 13:59 Matrix: Ground Water
Date Received: 8/22/2017 16:16

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	15.4		mg/L	0.11	SW846 6010C	8/25/17 04:25	LXC	8/28/17 15:44	SRT	J1
Iron, Total	ND		mg/L	0.067	SW846 6010C	8/25/17 04:25	LXC	8/28/17 15:44	SRT	J1
Magnesium, Total	9.8		mg/L	0.11	SW846 6010C	8/25/17 04:25	LXC	8/28/17 15:44	SRT	J1
Manganese, Total	0.031		mg/L	0.0056	SW846 6010C	8/25/17 04:25	LXC	8/28/17 15:44	SRT	J1
Potassium, Total	2.1		mg/L	0.56	SW846 6010C	8/25/17 04:25	LXC	8/28/17 15:44	SRT	J1
Sodium, Total	22.2		mg/L	0.56	SW846 6010C	8/25/17 04:25	LXC	8/28/17 15:44	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	39.020		Feet		Field			8/22/17 13:59	BGS	C
Elev Top MW Casing above MSL	477.30		Feet		Field			8/22/17 13:59	BGS	C
Flow Rate	2.52		gal/min		Field			8/22/17 13:59	BGS	C
Ground Water Elevation	438.280		ft/MSL		Field			8/22/17 13:59	BGS	C
pH, Field (SM4500B)	5.100		pH_Units		Field			8/22/17 13:59	BGS	C
Sample Depth	55.000		Feet		Field			8/22/17 13:59	BGS	C
Specific Conductance, Field	354		umhos/cm	1	Field			8/22/17 13:59	BGS	C
Temperature	12.58		Deg. C		Field			8/22/17 13:59	BGS	C
Total Well Depth	60.500		Feet		Field			8/22/17 13:59	BGS	C
Volume in Water Column	31.576		Gallons		Field			8/22/17 13:59	BGS	C
Water Level After Purge	75.750		Feet		Field			8/22/17 13:59	BGS	C
Well Volumes Purged	4.00		Vol		Field			8/22/17 13:59	BGS	C



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ANALYTICAL RESULTS

Workorder: 2255841 3RD QTR 2017 GWMP-FORM 19Q

Lab ID: **2255841004**
Sample ID: **FFMP018W**

Date Collected: 8/22/2017 14:26 Matrix: Ground Water
Date Received: 8/22/2017 16:16

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			8/28/17 05:25	CJG	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			8/28/17 05:25	CJG	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/28/17 05:25	CJG	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/28/17 05:25	CJG	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/28/17 05:25	CJG	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/28/17 05:25	CJG	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/28/17 05:25	CJG	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			8/28/17 05:25	CJG	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			8/28/17 05:25	CJG	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			8/28/17 05:25	CJG	G
Toluene	ND		ug/L	1.0	SW846 8260B			8/28/17 05:25	CJG	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			8/28/17 05:25	CJG	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			8/28/17 05:25	CJG	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			8/28/17 05:25	CJG	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			8/28/17 05:25	CJG	G
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	96.9		%	62 - 133	SW846 8260B			8/28/17 05:25	CJG	G
4-Bromofluorobenzene (S)	99.7		%	79 - 114	SW846 8260B			8/28/17 05:25	CJG	G
Dibromofluoromethane (S)	99.8		%	78 - 116	SW846 8260B			8/28/17 05:25	CJG	G
Toluene-d8 (S)	111		%	76 - 127	SW846 8260B			8/28/17 05:25	CJG	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	13		mg/L	5	S2320B-97			8/23/17 09:07	MSA	B
Alkalinity, Total	13	2	mg/L	5	S2320B-97			8/23/17 09:07	MSA	B
Ammonia-N	ND		mg/L	0.100	D6919-09			9/16/17 23:11	JAM	A
Chemical Oxygen Demand (COD)	ND		mg/L	7	EPA 410.4			8/29/17 18:19	AK	A
Chloride	117		mg/L	2.0	EPA 300.0			8/23/17 08:09	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			8/23/17 08:09	CHW	B
Nitrate-N	5.5		mg/L	0.20	EPA 300.0			8/23/17 08:09	CHW	B
pH	5.88	1	pH_Units		S4500HB-11			8/23/17 09:07	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	8/31/17 00:00	JLG	8/31/17 10:09	JLG	F
Specific Conductance	570		umhos/cm	1	SW846 9050A			8/23/17 09:07	MSA	B
Sulfate	47.5		mg/L	2.0	EPA 300.0			8/23/17 08:09	CHW	B
Total Dissolved Solids	394		mg/L	5	S2540C-11			8/28/17 19:53	JAS	B
Total Organic Carbon (TOC)	1.4		mg/L	0.50	SW846 9060A			8/29/17 10:29	PAG	D
Turbidity	ND		NTU	0.10	S2130B-01			8/22/17 23:11	MSA	B

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ANALYTICAL RESULTS

Workorder: 2255841 3RD QTR 2017 GWMP-FORM 19Q

Lab ID: **2255841004**
Sample ID: **FFMP018W**

Date Collected: 8/22/2017 14:26 Matrix: Ground Water
Date Received: 8/22/2017 16:16

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	31.6		mg/L	0.11	SW846 6010C	8/25/17 04:25	LXC	8/28/17 16:01	SRT	J1
Iron, Total	ND		mg/L	0.067	SW846 6010C	8/25/17 04:25	LXC	8/28/17 16:01	SRT	J1
Magnesium, Total	16.6		mg/L	0.11	SW846 6010C	8/25/17 04:25	LXC	8/28/17 16:01	SRT	J1
Manganese, Total	0.26		mg/L	0.0056	SW846 6010C	8/25/17 04:25	LXC	8/28/17 16:01	SRT	J1
Potassium, Total	4.0		mg/L	0.56	SW846 6010C	8/25/17 04:25	LXC	8/28/17 16:01	SRT	J1
Sodium, Total	39.3		mg/L	0.56	SW846 6010C	8/25/17 04:25	LXC	8/28/17 16:01	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	27.900		Feet		Field			8/25/17 14:26	BGS	C
Elev Top MW Casing above MSL	472.20		Feet		Field			8/25/17 14:26	BGS	C
Flow Rate	4.71		gal/min		Field			8/25/17 14:26	BGS	C
Ground Water Elevation	444.300		ft/MSL		Field			8/25/17 14:26	BGS	C
pH, Field (SM4500B)	5.070		pH_Units		Field			8/25/17 14:26	BGS	C
Sample Depth	40.000		Feet		Field			8/25/17 14:26	BGS	C
Specific Conductance, Field	636		umhos/cm	1	Field			8/25/17 14:26	BGS	C
Temperature	13.25		Deg. C		Field			8/25/17 14:26	BGS	C
Total Well Depth	51.460		Feet		Field			8/25/17 14:26	BGS	C
Volume in Water Column	15.314		Gallons		Field			8/25/17 14:26	BGS	C
Water Level After Purge	30.480		Feet		Field			8/25/17 14:26	BGS	C
Well Volumes Purged	3.69		Vol		Field			8/25/17 14:26	BGS	C



Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2255841 3RD QTR 2017 GWMP-FORM 19Q

Lab ID: **2255841005**

Date Collected: 8/22/2017 15:12

Matrix: Ground Water

Sample ID: **FFMP019W**

Date Received: 8/22/2017 16:16

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			8/28/17 05:43	CJG	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			8/28/17 05:43	CJG	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/28/17 05:43	CJG	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/28/17 05:43	CJG	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/28/17 05:43	CJG	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/28/17 05:43	CJG	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/28/17 05:43	CJG	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			8/28/17 05:43	CJG	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			8/28/17 05:43	CJG	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			8/28/17 05:43	CJG	G
Toluene	ND		ug/L	1.0	SW846 8260B			8/28/17 05:43	CJG	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			8/28/17 05:43	CJG	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			8/28/17 05:43	CJG	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			8/28/17 05:43	CJG	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			8/28/17 05:43	CJG	G
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	94.9		%	62 - 133	SW846 8260B			8/28/17 05:43	CJG	G
4-Bromofluorobenzene (S)	97.9		%	79 - 114	SW846 8260B			8/28/17 05:43	CJG	G
Dibromofluoromethane (S)	100		%	78 - 116	SW846 8260B			8/28/17 05:43	CJG	G
Toluene-d8 (S)	109		%	76 - 127	SW846 8260B			8/28/17 05:43	CJG	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	74		mg/L	5	S2320B-97			8/23/17 09:17	MSA	B
Alkalinity, Total	74	3	mg/L	5	S2320B-97			8/23/17 09:17	MSA	B
Ammonia-N	ND		mg/L	0.100	D6919-09			9/16/17 23:28	JAM	A
Chemical Oxygen Demand (COD)	ND		mg/L	7	EPA 410.4			8/29/17 18:19	AK	A
Chloride	78.5		mg/L	2.0	EPA 300.0			8/23/17 08:21	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			8/23/17 08:21	CHW	B
Nitrate-N	0.58		mg/L	0.20	EPA 300.0			8/23/17 08:21	CHW	B
pH	7.14	1	pH_Units		S4500HB-11			8/23/17 09:17	MSA	B
Phenolics	ND	2	mg/L	0.005	SW846 9066	8/31/17 00:00	JLG	8/31/17 10:09	JLG	F
Specific Conductance	418		umhos/cm	1	SW846 9050A			8/23/17 09:17	MSA	B
Sulfate	14.7		mg/L	2.0	EPA 300.0			8/23/17 08:21	CHW	B
Total Dissolved Solids	299		mg/L	5	S2540C-11			8/28/17 19:53	JAS	B
Total Organic Carbon (TOC)	0.81		mg/L	0.50	SW846 9060A			8/29/17 10:29	PAG	D
Turbidity	ND		NTU	0.10	S2130B-01			8/22/17 23:11	MSA	B

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ANALYTICAL RESULTS

Workorder: 2255841 3RD QTR 2017 GWMP-FORM 19Q

Lab ID: **2255841005**
Sample ID: **FFMP019W**

Date Collected: 8/22/2017 15:12 Matrix: Ground Water
Date Received: 8/22/2017 16:16

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	56.7		mg/L	0.11	SW846 6010C	8/25/17 04:25	LXC	8/28/17 16:05	SRT	J1
Iron, Total	ND		mg/L	0.067	SW846 6010C	8/25/17 04:25	LXC	8/28/17 16:05	SRT	J1
Magnesium, Total	5.5		mg/L	0.11	SW846 6010C	8/25/17 04:25	LXC	8/28/17 16:05	SRT	J1
Manganese, Total	ND		mg/L	0.0056	SW846 6010C	8/25/17 04:25	LXC	8/28/17 16:05	SRT	J1
Potassium, Total	0.89		mg/L	0.56	SW846 6010C	8/25/17 04:25	LXC	8/28/17 16:05	SRT	J1
Sodium, Total	9.7		mg/L	0.56	SW846 6010C	8/25/17 04:25	LXC	8/28/17 16:05	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	28.060		Feet		Field			8/25/17 15:12	BGS	C
Elev Top MW Casing above MSL	471.95		Feet		Field			8/25/17 15:12	BGS	C
Flow Rate	4.09		gal/min		Field			8/25/17 15:12	BGS	C
Ground Water Elevation	443.890		ft/MSL		Field			8/25/17 15:12	BGS	C
pH, Field (SM4500B)	6.260		pH_Units		Field			8/25/17 15:12	BGS	C
Sample Depth	49.000		Feet		Field			8/25/17 15:12	BGS	C
Specific Conductance, Field	484		umhos/cm	1	Field			8/25/17 15:12	BGS	C
Temperature	12.06		Deg. C		Field			8/25/17 15:12	BGS	C
Total Well Depth	132.790		Feet		Field			8/25/17 15:12	BGS	C
Volume in Water Column	68.075		Gallons		Field			8/25/17 15:12	BGS	C
Water Level After Purge	38.950		Feet		Field			8/25/17 15:12	BGS	C
Well Volumes Purged	2.40		Vol		Field			8/25/17 15:12	BGS	C



Ms. Susan J Scherer
Project Coordinator

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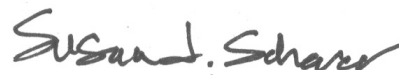
ANALYTICAL RESULTS

Workorder: 2255841 3RD QTR 2017 GWMP-FORM 19Q

Lab ID: **2255841006**
Sample ID: **FIELD BLANK**

Date Collected: 8/22/2017 14:20 Matrix: Ground Water
Date Received: 8/22/2017 16:16

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			8/27/17 23:23	CJG	A
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			8/27/17 23:23	CJG	A
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/27/17 23:23	CJG	A
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/27/17 23:23	CJG	A
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/27/17 23:23	CJG	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/27/17 23:23	CJG	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/27/17 23:23	CJG	A
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			8/27/17 23:23	CJG	A
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			8/27/17 23:23	CJG	A
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			8/27/17 23:23	CJG	A
Toluene	ND		ug/L	1.0	SW846 8260B			8/27/17 23:23	CJG	A
Total Xylenes	ND		ug/L	3.0	SW846 8260B			8/27/17 23:23	CJG	A
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			8/27/17 23:23	CJG	A
Trichloroethene	ND		ug/L	1.0	SW846 8260B			8/27/17 23:23	CJG	A
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			8/27/17 23:23	CJG	A
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	103		%	62 - 133	SW846 8260B			8/27/17 23:23	CJG	A
4-Bromofluorobenzene (S)	97.9		%	79 - 114	SW846 8260B			8/27/17 23:23	CJG	A
Dibromofluoromethane (S)	110		%	78 - 116	SW846 8260B			8/27/17 23:23	CJG	A
Toluene-d8 (S)	114		%	76 - 127	SW846 8260B			8/27/17 23:23	CJG	A



Ms. Susan J Scherer
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ANALYTICAL RESULTS

Workorder: 2255841 3RD QTR 2017 GWMP-FORM 19Q

Lab ID: **2255841007**
Sample ID: **TRIP BLANK**

Date Collected: 8/22/2017 16:16 Matrix: Ground Water
Date Received: 8/22/2017 16:16

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			8/27/17 23:41	CJG	A
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			8/27/17 23:41	CJG	A
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/27/17 23:41	CJG	A
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/27/17 23:41	CJG	A
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/27/17 23:41	CJG	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/27/17 23:41	CJG	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/27/17 23:41	CJG	A
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			8/27/17 23:41	CJG	A
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			8/27/17 23:41	CJG	A
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			8/27/17 23:41	CJG	A
Toluene	ND		ug/L	1.0	SW846 8260B			8/27/17 23:41	CJG	A
Total Xylenes	ND		ug/L	3.0	SW846 8260B			8/27/17 23:41	CJG	A
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			8/27/17 23:41	CJG	A
Trichloroethene	ND		ug/L	1.0	SW846 8260B			8/27/17 23:41	CJG	A
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			8/27/17 23:41	CJG	A
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	97.5		%	62 - 133	SW846 8260B			8/27/17 23:41	CJG	A
4-Bromofluorobenzene (S)	102		%	79 - 114	SW846 8260B			8/27/17 23:41	CJG	A
Dibromofluoromethane (S)	103		%	78 - 116	SW846 8260B			8/27/17 23:41	CJG	A
Toluene-d8 (S)	111		%	76 - 127	SW846 8260B			8/27/17 23:41	CJG	A



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PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
2255841001	1	FFMP30RW	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				
2255841001	2	FFMP30RW	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
2255841002	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.				
2255841002	2	FFMP04AW	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
2255841003	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.				
2255841003	2	FFMP029W	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
2255841004	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.				
2255841004	2	FFMP018W	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
2255841005	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.				
2255841005	2	FFMP019W	SW846 9066	Phenolics
The recovery of the Matrix Spike (MS) associated to this analyte was outside of the established control limits.				
2255841005	3	FFMP019W	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				

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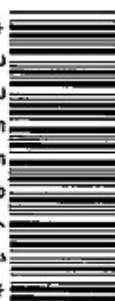
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ALS QU

[illegible]Cooler Temp: 4° Therm ID: 309

(If present) Soils intact? covering ground & adjacent?	☒ Yes ☐ No
---	--

CUCA Labels Completely Accurate?			
----------------------------------	--	--	--

Correct Sample Volumes?	☒	☐	☐
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Headspace Volume: ☐ ☒ ☐

10

[illegible]

☐ Composite Sampling ☐ Rental Equipment

Special Processing ☐ State Sampling Collected

Σ $\frac{\square}{\square}$

Lab	X		NC
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100

Tuesday, September 19, 2017 12:30:16 PM

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ALS

September 19, 2017

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

Certificate of Analysis

Project Name: 2017-FREY FARM	Workorder: 2256757
Purchase Order:	Workorder ID: 3RD QTR 2017 GWMP-FORM 19Q

Dear Mr. Brown:

Enclosed are the analytical results for samples received by the laboratory on Thursday, August 24, 2017.

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

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

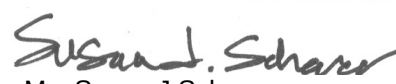
Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications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

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

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

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


Ms. Susan J Scherer
Project Coordinator

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SAMPLE SUMMARY

Workorder: 2256757 3RD QTR 2017 GWMP-FORM 19Q

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
2256757001	FFMP028W	Ground Water	8/24/2017 10:07	8/24/2017 17:08	Mr. Brian G Shade
2256757002	FFMP005W	Ground Water	8/24/2017 11:32	8/24/2017 17:08	Mr. Brian G Shade
2256757003	FFMP26RW	Ground Water	8/24/2017 12:29	8/24/2017 17:08	Mr. Brian G Shade
2256757004	FFMP03AW	Ground Water	8/24/2017 14:13	8/24/2017 17:08	Mr. Brian G Shade
2256757005	FIELD BLANK	Ground Water	8/24/2017 16:00	8/24/2017 17:08	Mr. Brian G Shade
2256757006	TRIP BLANK	Ground Water	8/24/2017 17:08	8/24/2017 17:08	Mr. Brian G Shade

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SAMPLE SUMMARY

Workorder: 2256757 3RD QTR 2017 GWMP-FORM 19Q

Notes

- Samples collected by ALS personnel are done so in accordance with the procedures set forth in the ALS Field Sampling Plan (20 - Field Services Sampling Plan).
- All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
- All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
- Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
- The Chain of Custody document is included as part of this report.
- All Library Search analytes should be regarded as tentative identifications based on the presumptive evidence of the mass spectra. Concentrations reported are estimated values.
- Parameters identified as "analyze immediately" require analysis within 15 minutes of collection. Any "analyze immediately" parameters not listed under the header "Field Parameters" are performed 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.

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: 2256757 3RD QTR 2017 GWMP-FORM 19Q

Lab ID: **2256757001**
Sample ID: **FFMP028W**

Date Collected: 8/24/2017 10:07 Matrix: Ground Water
Date Received: 8/24/2017 17:08

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			8/29/17 03:12	CJG	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			8/29/17 03:12	CJG	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/29/17 03:12	CJG	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/29/17 03:12	CJG	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/29/17 03:12	CJG	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/29/17 03:12	CJG	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/29/17 03:12	CJG	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			8/29/17 03:12	CJG	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			8/29/17 03:12	CJG	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			8/29/17 03:12	CJG	G
Toluene	ND		ug/L	1.0	SW846 8260B			8/29/17 03:12	CJG	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			8/29/17 03:12	CJG	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			8/29/17 03:12	CJG	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			8/29/17 03:12	CJG	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			8/29/17 03:12	CJG	G
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	82.3		%	62 - 133	SW846 8260B			8/29/17 03:12	CJG	G
4-Bromofluorobenzene (S)	118	2	%	79 - 114	SW846 8260B			8/29/17 03:12	CJG	G
Dibromofluoromethane (S)	87.3		%	78 - 116	SW846 8260B			8/29/17 03:12	CJG	G
Toluene-d8 (S)	108		%	76 - 127	SW846 8260B			8/29/17 03:12	CJG	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	28		mg/L	5	S2320B-97			8/27/17 13:23	MSA	B
Alkalinity, Total	28	3	mg/L	5	S2320B-97			8/27/17 13:23	MSA	I
Ammonia-nitrogen, Total	0.11		mg/L	0.10	S4500NH3D	9/11/17 18:00	CMM	9/18/17 12:30	C_W	
Chemical Oxygen Demand (COD)	ND		mg/L	7	EPA 410.4			8/30/17 18:49	AK	A
Chloride	90.9		mg/L	5.0	EPA 300.0			8/26/17 00:38	MBW	B
Fluoride	ND		mg/L	0.50	EPA 300.0			8/26/17 00:38	MBW	B
Nitrate-N	18.2		mg/L	0.50	EPA 300.0			8/26/17 00:38	MBW	B
pH	5.92	1	pH_Units		S4500HB-11			8/27/17 13:23	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	9/6/17 00:00	JLG	9/6/17 09:48	JLG	F
Specific Conductance	538		umhos/cm	1	SW846 9050A			8/27/17 13:23	MSA	B
Sulfate	22.4		mg/L	5.0	EPA 300.0			8/26/17 00:38	MBW	B
Total Dissolved Solids	340		mg/L	5	S2540C-11			8/30/17 21:28	JAS	B
Total Organic Carbon (TOC)	1.7		mg/L	0.50	SW846 9060A			8/31/17 10:47	PAG	D
Turbidity	0.12		NTU	0.10	S2130B-01			8/26/17 06:00	MBW	B

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ANALYTICAL RESULTS

Workorder: 2256757 3RD QTR 2017 GWMP-FORM 19Q

Lab ID: **2256757001**
Sample ID: **FFMP028W**

Date Collected: 8/24/2017 10:07 Matrix: Ground Water
Date Received: 8/24/2017 17:08

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	41.5		mg/L	0.11	SW846 6010C	8/30/17 05:30	LXC	9/6/17 13:26	SRT	J1
Iron, Total	ND		mg/L	0.067	SW846 6010C	8/30/17 05:30	LXC	9/6/17 13:26	SRT	J1
Magnesium, Total	18.0		mg/L	0.11	SW846 6010C	8/30/17 05:30	LXC	9/6/17 13:26	SRT	J1
Manganese, Total	0.012		mg/L	0.0056	SW846 6010C	8/30/17 05:30	LXC	9/6/17 13:26	SRT	J1
Potassium, Total	2.4		mg/L	0.56	SW846 6010C	8/30/17 05:30	LXC	9/6/17 13:26	SRT	J1
Sodium, Total	28.1		mg/L	0.56	SW846 6010C	8/30/17 05:30	LXC	9/6/17 13:26	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	9.260		Feet		Field			8/24/17 10:07	BGS	C
Elev Top MW Casing above MSL	465.00		Feet		Field			8/24/17 10:07	BGS	C
Flow Rate	2.25		gal/min		Field			8/24/17 10:07	BGS	C
Ground Water Elevation	455.740		ft/MSL		Field			8/24/17 10:07	BGS	C
pH, Field (SM4500B)	5.490		pH_Units		Field			8/24/17 10:07	BGS	C
Sample Depth	50.000		Feet		Field			8/24/17 10:07	BGS	C
Specific Conductance, Field	616		umhos/cm	1	Field			8/24/17 10:07	BGS	C
Temperature	11.01		Deg. C		Field			8/24/17 10:07	BGS	C
Total Well Depth	60.000		Feet		Field			8/24/17 10:07	BGS	C
Volume in Water Column	74.588		Gallons		Field			8/24/17 10:07	BGS	C
Water Level After Purge	22.560		Feet		Field			8/24/17 10:07	BGS	C
Well Volumes Purged	2.11		Vol		Field			8/24/17 10:07	BGS	C



Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2256757 3RD QTR 2017 GWMP-FORM 19Q

Lab ID: **2256757002**
Sample ID: **FFMP005W**

Date Collected: 8/24/2017 11:32 Matrix: Ground Water
Date Received: 8/24/2017 17:08

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			8/29/17 03:34	CJG	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			8/29/17 03:34	CJG	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/29/17 03:34	CJG	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/29/17 03:34	CJG	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/29/17 03:34	CJG	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/29/17 03:34	CJG	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/29/17 03:34	CJG	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			8/29/17 03:34	CJG	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			8/29/17 03:34	CJG	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			8/29/17 03:34	CJG	G
Toluene	ND		ug/L	1.0	SW846 8260B			8/29/17 03:34	CJG	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			8/29/17 03:34	CJG	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			8/29/17 03:34	CJG	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			8/29/17 03:34	CJG	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			8/29/17 03:34	CJG	G
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	82.4		%	62 - 133	SW846 8260B			8/29/17 03:34	CJG	G
4-Bromofluorobenzene (S)	119	2	%	79 - 114	SW846 8260B			8/29/17 03:34	CJG	G
Dibromofluoromethane (S)	85.4		%	78 - 116	SW846 8260B			8/29/17 03:34	CJG	G
Toluene-d8 (S)	108		%	76 - 127	SW846 8260B			8/29/17 03:34	CJG	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	43		mg/L	5	S2320B-97			8/27/17 13:32	MSA	B
Alkalinity, Total	43	3	mg/L	5	S2320B-97			8/27/17 13:32	MSA	I
Ammonia-nitrogen, Total	ND		mg/L	0.10	S4500NH3D	9/11/17 18:00	CMM	9/18/17 12:30	C_W	
Chemical Oxygen Demand (COD)	ND		mg/L	7	EPA 410.4			8/30/17 18:49	AK	A
Chloride	183		mg/L	5.0	EPA 300.0			8/26/17 00:50	MBW	B
Fluoride	ND		mg/L	0.50	EPA 300.0			8/26/17 00:50	MBW	B
Nitrate-N	3.4		mg/L	0.50	EPA 300.0			8/26/17 00:50	MBW	B
pH	5.89	1	pH_Units		S4500HB-11			8/27/17 13:32	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	9/6/17 00:00	JLG	9/6/17 09:48	JLG	F
Specific Conductance	805		umhos/cm	1	SW846 9050A			8/27/17 13:32	MSA	B
Sulfate	52.6		mg/L	5.0	EPA 300.0			8/26/17 00:50	MBW	B
Total Dissolved Solids	507		mg/L	5	S2540C-11			8/30/17 21:28	JAS	B
Total Organic Carbon (TOC)	1.4		mg/L	0.50	SW846 9060A			8/31/17 10:47	PAG	D
Turbidity	ND		NTU	0.10	S2130B-01			8/26/17 06:00	MBW	B

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ANALYTICAL RESULTS

Workorder: 2256757 3RD QTR 2017 GWMP-FORM 19Q

Lab ID: **2256757002**
Sample ID: **FFMP005W**

Date Collected: 8/24/2017 11:32 Matrix: Ground Water
Date Received: 8/24/2017 17:08

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	76.9		mg/L	0.11	SW846 6010C	8/30/17 05:30	LXC	9/6/17 13:29	SRT	J1
Iron, Total	ND		mg/L	0.067	SW846 6010C	8/30/17 05:30	LXC	9/6/17 13:29	SRT	J1
Magnesium, Total	18.0		mg/L	0.11	SW846 6010C	8/30/17 05:30	LXC	9/6/17 13:29	SRT	J1
Manganese, Total	0.040		mg/L	0.0056	SW846 6010C	8/30/17 05:30	LXC	9/6/17 13:29	SRT	J1
Potassium, Total	2.3		mg/L	0.56	SW846 6010C	8/30/17 05:30	LXC	9/6/17 13:29	SRT	J1
Sodium, Total	42.4		mg/L	0.56	SW846 6010C	8/30/17 05:30	LXC	9/6/17 13:29	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	74.620		Feet		Field			8/24/17 11:32	BGS	C
Elev Top MW Casing above MSL	537.40		Feet		Field			8/24/17 11:32	BGS	C
Flow Rate	2.11		gal/min		Field			8/24/17 11:32	BGS	C
Ground Water Elevation	462.780		ft/MSL		Field			8/24/17 11:32	BGS	C
pH, Field (SM4500B)	5.510		pH_Units		Field			8/24/17 11:32	BGS	C
Sample Depth	135.000		Feet		Field			8/24/17 11:32	BGS	C
Specific Conductance, Field	910		umhos/cm	1	Field			8/24/17 11:32	BGS	C
Temperature	11.57		Deg. C		Field			8/24/17 11:32	BGS	C
Total Well Depth	149.700		Feet		Field			8/24/17 11:32	BGS	C
Volume in Water Column	110.368		Gallons		Field			8/24/17 11:32	BGS	C
Water Level After Purge	100.160		Feet		Field			8/24/17 11:32	BGS	C
Well Volumes Purged	1.15		Vol		Field			8/24/17 11:32	BGS	C



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Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2256757 3RD QTR 2017 GWMP-FORM 19Q

Lab ID: **2256757003**
Sample ID: **FFMP26RW**

Date Collected: 8/24/2017 12:29 Matrix: Ground Water
Date Received: 8/24/2017 17:08

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			8/29/17 03:56	CJG	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			8/29/17 03:56	CJG	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/29/17 03:56	CJG	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/29/17 03:56	CJG	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/29/17 03:56	CJG	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/29/17 03:56	CJG	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/29/17 03:56	CJG	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			8/29/17 03:56	CJG	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			8/29/17 03:56	CJG	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			8/29/17 03:56	CJG	G
Toluene	ND		ug/L	1.0	SW846 8260B			8/29/17 03:56	CJG	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			8/29/17 03:56	CJG	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			8/29/17 03:56	CJG	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			8/29/17 03:56	CJG	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			8/29/17 03:56	CJG	G
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	84.3		%	62 - 133	SW846 8260B			8/29/17 03:56	CJG	G
4-Bromofluorobenzene (S)	116	3	%	79 - 114	SW846 8260B			8/29/17 03:56	CJG	G
Dibromofluoromethane (S)	87.7		%	78 - 116	SW846 8260B			8/29/17 03:56	CJG	G
Toluene-d8 (S)	107		%	76 - 127	SW846 8260B			8/29/17 03:56	CJG	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	40		mg/L	5	S2320B-97			8/27/17 13:40	MSA	B
Alkalinity, Total	40	4	mg/L	5	S2320B-97			8/27/17 13:40	MSA	I
Ammonia-nitrogen, Total	ND		mg/L	0.10	S4500NH3D	9/11/17 18:00	CMM	9/18/17 12:30	C_W	
Chemical Oxygen Demand (COD)	ND		mg/L	7	EPA 410.4			8/30/17 18:49	AK	A
Chloride	226		mg/L	5.0	EPA 300.0			8/25/17 09:19	MBW	B
Fluoride	ND		mg/L	0.50	EPA 300.0			8/25/17 09:19	MBW	B
Nitrate-N	2.6		mg/L	0.50	EPA 300.0			8/25/17 09:19	MBW	B
pH	5.77	1	pH_Units		S4500HB-11			8/27/17 13:40	MSA	B
Phenolics	ND	2	mg/L	0.005	SW846 9066	9/6/17 00:00	JLG	9/6/17 09:48	JLG	F
Specific Conductance	969		umhos/cm	1	SW846 9050A			8/27/17 13:40	MSA	B
Sulfate	71.5		mg/L	5.0	EPA 300.0			8/25/17 09:19	MBW	B
Total Dissolved Solids	626		mg/L	5	S2540C-11			8/30/17 21:28	JAS	B
Total Organic Carbon (TOC)	1.8		mg/L	0.50	SW846 9060A			8/31/17 10:47	PAG	D
Turbidity	1.15		NTU	0.10	S2130B-01			8/26/17 06:00	MBW	B

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ANALYTICAL RESULTS

Workorder: 2256757 3RD QTR 2017 GWMP-FORM 19Q

Lab ID: **2256757003**
Sample ID: **FFMP26RW**

Date Collected: 8/24/2017 12:29 Matrix: Ground Water
Date Received: 8/24/2017 17:08

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	77.9		mg/L	0.11	SW846 6010C	8/30/17 05:30	LXC	9/6/17 13:33	SRT	J1
Iron, Total	0.13		mg/L	0.067	SW846 6010C	8/30/17 05:30	LXC	9/6/17 13:33	SRT	J1
Magnesium, Total	22.7		mg/L	0.11	SW846 6010C	8/30/17 05:30	LXC	9/6/17 13:33	SRT	J1
Manganese, Total	0.49		mg/L	0.0056	SW846 6010C	8/30/17 05:30	LXC	9/6/17 13:33	SRT	J1
Potassium, Total	8.1		mg/L	0.56	SW846 6010C	8/30/17 05:30	LXC	9/6/17 13:33	SRT	J1
Sodium, Total	64.5		mg/L	0.56	SW846 6010C	8/30/17 05:30	LXC	9/6/17 13:33	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	87.600		Feet		Field			8/24/17 12:29	BGS	C
Elev Top MW Casing above MSL	547.40		Feet		Field			8/24/17 12:29	BGS	C
Flow Rate	1.70		gal/min		Field			8/24/17 12:29	BGS	C
Ground Water Elevation	459.800		ft/MSL		Field			8/24/17 12:29	BGS	C
pH, Field (SM4500B)	5.290		pH_Units		Field			8/24/17 12:29	BGS	C
Sample Depth	105.000		Feet		Field			8/24/17 12:29	BGS	C
Specific Conductance, Field	1087		umhos/cm	1	Field			8/24/17 12:29	BGS	C
Temperature	12.42		Deg. C		Field			8/24/17 12:29	BGS	C
Total Well Depth	118.300		Feet		Field			8/24/17 12:29	BGS	C
Volume in Water Column	45.129		Gallons		Field			8/24/17 12:29	BGS	C
Water Level After Purge	100.310		Feet		Field			8/24/17 12:29	BGS	C
Well Volumes Purged	1.32		Vol		Field			8/24/17 12:29	BGS	C



Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2256757 3RD QTR 2017 GWMP-FORM 19Q

Lab ID: **2256757004**
Sample ID: **FFMP03AW**

Date Collected: 8/24/2017 14:13 Matrix: Ground Water
Date Received: 8/24/2017 17:08

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			8/29/17 04:18	CJG	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			8/29/17 04:18	CJG	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/29/17 04:18	CJG	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/29/17 04:18	CJG	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/29/17 04:18	CJG	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/29/17 04:18	CJG	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/29/17 04:18	CJG	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			8/29/17 04:18	CJG	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			8/29/17 04:18	CJG	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			8/29/17 04:18	CJG	G
Toluene	ND		ug/L	1.0	SW846 8260B			8/29/17 04:18	CJG	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			8/29/17 04:18	CJG	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			8/29/17 04:18	CJG	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			8/29/17 04:18	CJG	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			8/29/17 04:18	CJG	G
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	82.5		%	62 - 133	SW846 8260B			8/29/17 04:18	CJG	G
4-Bromofluorobenzene (S)	118	2	%	79 - 114	SW846 8260B			8/29/17 04:18	CJG	G
Dibromofluoromethane (S)	88.3		%	78 - 116	SW846 8260B			8/29/17 04:18	CJG	G
Toluene-d8 (S)	106		%	76 - 127	SW846 8260B			8/29/17 04:18	CJG	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	15		mg/L	5	S2320B-97			8/27/17 13:48	MSA	B
Alkalinity, Total	15	3	mg/L	5	S2320B-97			8/27/17 13:48	MSA	I
Ammonia-nitrogen, Total	ND		mg/L	0.10	S4500NH3D	9/11/17 18:00	CMM	9/18/17 12:30	C_W	
Chemical Oxygen Demand (COD)	ND		mg/L	7	EPA 410.4			8/30/17 18:49	AK	A
Chloride	24.9		mg/L	2.0	EPA 300.0			8/25/17 09:31	MBW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			8/25/17 09:31	MBW	B
Nitrate-N	20.0		mg/L	0.20	EPA 300.0			8/25/17 09:31	MBW	B
pH	5.59	1	pH_Units		S4500HB-11			8/27/17 13:48	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	9/6/17 00:00	JLG	9/6/17 09:48	JLG	F
Specific Conductance	252		umhos/cm	1	SW846 9050A			8/27/17 13:48	MSA	B
Sulfate	3.2		mg/L	2.0	EPA 300.0			8/25/17 09:31	MBW	B
Total Dissolved Solids	146		mg/L	5	S2540C-11			8/30/17 21:28	JAS	B
Total Organic Carbon (TOC)	1.3		mg/L	0.50	SW846 9060A			8/31/17 10:47	PAG	D
Turbidity	ND		NTU	0.10	S2130B-01			8/26/17 06:00	MBW	B

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ANALYTICAL RESULTS

Workorder: 2256757 3RD QTR 2017 GWMP-FORM 19Q

Lab ID: **2256757004**
Sample ID: **FFMP03AW**

Date Collected: 8/24/2017 14:13 Matrix: Ground Water
Date Received: 8/24/2017 17:08

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	17.2		mg/L	0.11	SW846 6010C	8/30/17 05:30	LXC	9/6/17 13:37	SRT	J1
Iron, Total	ND		mg/L	0.067	SW846 6010C	8/30/17 05:30	LXC	9/6/17 13:37	SRT	J1
Magnesium, Total	12.1		mg/L	0.11	SW846 6010C	8/30/17 05:30	LXC	9/6/17 13:37	SRT	J1
Manganese, Total	0.22		mg/L	0.0056	SW846 6010C	8/30/17 05:30	LXC	9/6/17 13:37	SRT	J1
Potassium, Total	1.4		mg/L	0.56	SW846 6010C	8/30/17 05:30	LXC	9/6/17 13:37	SRT	J1
Sodium, Total	11.8		mg/L	0.56	SW846 6010C	8/30/17 05:30	LXC	9/6/17 13:37	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	54.240		Feet		Field			8/24/17 14:13	BGS	C
Elev Top MW Casing above MSL	590.90		Feet		Field			8/24/17 14:13	BGS	C
Flow Rate	1.92		gal/min		Field			8/24/17 14:13	BGS	C
Ground Water Elevation	536.660		ft/MSL		Field			8/24/17 14:13	BGS	C
pH, Field (SM4500B)	4.870		pH_Units		Field			8/24/17 14:13	BGS	C
Sample Depth	130.000		Feet		Field			8/24/17 14:13	BGS	C
Specific Conductance, Field	320		umhos/cm	1	Field			8/24/17 14:13	BGS	C
Temperature	12.05		Deg. C		Field			8/24/17 14:13	BGS	C
Total Well Depth	148.400		Feet		Field			8/24/17 14:13	BGS	C
Volume in Water Column	138.415		Gallons		Field			8/24/17 14:13	BGS	C
Water Level After Purge	87.940		Feet		Field			8/24/17 14:13	BGS	C
Well Volumes Purged	0.97		Vol		Field			8/24/17 14:13	BGS	C



Ms. Susan J Scherer
Project Coordinator

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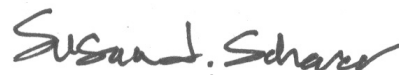
ANALYTICAL RESULTS

Workorder: 2256757 3RD QTR 2017 GWMP-FORM 19Q

Lab ID: **2256757005**
Sample ID: **FIELD BLANK**

Date Collected: 8/24/2017 16:00 Matrix: Ground Water
Date Received: 8/24/2017 17:08

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			8/28/17 22:28	CJG	A
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			8/28/17 22:28	CJG	A
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/28/17 22:28	CJG	A
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/28/17 22:28	CJG	A
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/28/17 22:28	CJG	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/28/17 22:28	CJG	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/28/17 22:28	CJG	A
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			8/28/17 22:28	CJG	A
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			8/28/17 22:28	CJG	A
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			8/28/17 22:28	CJG	A
Toluene	ND		ug/L	1.0	SW846 8260B			8/28/17 22:28	CJG	A
Total Xylenes	ND		ug/L	3.0	SW846 8260B			8/28/17 22:28	CJG	A
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			8/28/17 22:28	CJG	A
Trichloroethene	ND		ug/L	1.0	SW846 8260B			8/28/17 22:28	CJG	A
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			8/28/17 22:28	CJG	A
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	92.8		%	62 - 133	SW846 8260B			8/28/17 22:28	CJG	A
4-Bromofluorobenzene (S)	111		%	79 - 114	SW846 8260B			8/28/17 22:28	CJG	A
Dibromofluoromethane (S)	89.4		%	78 - 116	SW846 8260B			8/28/17 22:28	CJG	A
Toluene-d8 (S)	109		%	76 - 127	SW846 8260B			8/28/17 22:28	CJG	A



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ANALYTICAL RESULTS

Workorder: 2256757 3RD QTR 2017 GWMP-FORM 19Q

Lab ID: **2256757006**
Sample ID: **TRIP BLANK**

Date Collected: 8/24/2017 17:08 Matrix: Ground Water
Date Received: 8/24/2017 17:08

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			8/31/17 23:38	CPK	A
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			8/31/17 23:38	CPK	A
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/31/17 23:38	CPK	A
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/31/17 23:38	CPK	A
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/31/17 23:38	CPK	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/31/17 23:38	CPK	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/31/17 23:38	CPK	A
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			8/31/17 23:38	CPK	A
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			8/31/17 23:38	CPK	A
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			8/31/17 23:38	CPK	A
Toluene	ND		ug/L	1.0	SW846 8260B			8/31/17 23:38	CPK	A
Total Xylenes	ND		ug/L	3.0	SW846 8260B			8/31/17 23:38	CPK	A
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			8/31/17 23:38	CPK	A
Trichloroethene	ND		ug/L	1.0	SW846 8260B			8/31/17 23:38	CPK	A
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			8/31/17 23:38	CPK	A
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	113		%	62 - 133	SW846 8260B			8/31/17 23:38	CPK	A
4-Bromofluorobenzene (S)	102		%	79 - 114	SW846 8260B			8/31/17 23:38	CPK	A
Dibromofluoromethane (S)	97.8		%	78 - 116	SW846 8260B			8/31/17 23:38	CPK	A
Toluene-d8 (S)	103		%	76 - 127	SW846 8260B			8/31/17 23:38	CPK	A



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PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
2256757001	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.				
2256757001	2	FFMP028W	SW846 8260B	4-Bromofluorobenzene
The surrogate 4-Bromofluorobenzene for method SW846 8260B was outside of control limits. The % Recovery was reported as 118 and the control limits were 79 to 114. This result was reported at a dilution of 1.				
2256757001	3	FFMP028W	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
2256757002	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.				
2256757002	2	FFMP005W	SW846 8260B	4-Bromofluorobenzene
The surrogate 4-Bromofluorobenzene for method SW846 8260B was outside of control limits. The % Recovery was reported as 119 and the control limits were 79 to 114. This result was reported at a dilution of 1.				
2256757002	3	FFMP005W	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
2256757003	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.				
2256757003	2	FFMP26RW	SW846 9066	Phenolics
The recovery of the Matrix Spike (MS) associated to this analyte was outside of the established control limits.				
2256757003	3	FFMP26RW	SW846 8260B	4-Bromofluorobenzene
The surrogate 4-Bromofluorobenzene for method SW846 8260B was outside of control limits. The % Recovery was reported as 116 and the control limits were 79 to 114. This result was reported at a dilution of 1.				
2256757003	4	FFMP26RW	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
2256757004	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.				
2256757004	2	FFMP03AW	SW846 8260B	4-Bromofluorobenzene
The surrogate 4-Bromofluorobenzene for method SW846 8260B was outside of control limits. The % Recovery was reported as 118 and the control limits were 79 to 114. This result was reported at a dilution of 1.				
2256757004	3	FFMP03AW	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				

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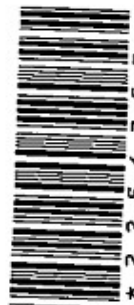
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CHAIN OF CUSTODY/
REQUEST FOR ANALYSIS
ALL SHADED AREAS MUST BE COMPLETED BY THE CLIENT /
SAMPLER. INSTRUCTIONS ON THE BACK.

Generated by ALS

COC 1
ALS 1

1 of 1



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 ☒ Normal-Standard TAT is 10-12 business days.
☐ Rush-Subject to ALS approval and surcharges.

Date Required: _____ Approved By: _____

Email? ☒ Y mreider@LCSWMA.com

Fax? ☒ Y No.: (717) 397-9973

Sample Description/Location (as it will appear on the lab report)	Sample Date	Time
1. FFMP020W	8-24-17	1007
2. FFMP005W	1132	
3. FFMP060W	1229	
4. FFMP030W	1413	
5. Field Blank	1600	
6. Trip Blank	1808	
7.		
8.		
9.		
10.		

Project Comments:

LOGGED BY (signature):

REVIEWED BY (signature):

Relinquished By / Company Name

Date

Time

Received By / Company Name

Date

Time

1. *Mark Reider* *ALS* *8-24-17* *1708* *1708*

3. *8-24-17* *1708*

5. *8-24-17* *1708*

7. *8-24-17* *1708*

9. *8-24-17* *1708*

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

ANALYSES/METHOD REQUESTED

Field Measurements	Enter Number of Containers Per Sample or Field Results Below.	PH, Cl, SPC, F, SO4, TDS, NO3	Metals: Fe, Mn, Na, Ca, K, Mg	NH3-N, COD	Alkalinity Bicarbonate
TOC	2	1	2	1	1
O-H	1	1	1	1	1
VOC - Form 190	1	1	1	1	1
Sample Depth for AUX Data	1	1	1	1	1

Matrix: G or C

ALS Field Services: ☐ Pickup ☐ Labor

☐ Composite Sampling ☐ Rental Equipment

☐ Other:

State Samples Collected In: ☐ NY ☐ NJ ☒ PA ☐ NC

Special Processing: ☐ USACE ☐ Navy ☐ Sample Disposal: ☐ Lab ☒ Special

Reportable to PADEP? ☐ Yes ☐ No

PWSID #

EDDS: Format Type

ALS Environmental Shipping Address: 34 Dogwood Lane, Middletown, PA 17057

Rev 8/04

September 27, 2017

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

Certificate of Analysis

Revised Report - 9/27/2017 6:28:41 PM - See workorder comment section for explanation

Project Name:	2017-FREY FARM	Workorder:	2257438
Purchase Order:		Workorder ID:	3RD QTR 2017 GWMP-FORM 19Q

Dear Mr. Brown:

Enclosed are the analytical results for samples received by the laboratory on Friday, August 25, 2017.

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

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

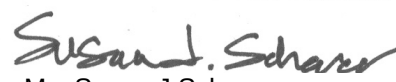
Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications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

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

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

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


Ms. Susan J Scherer
Project Coordinator

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SAMPLE SUMMARY

Workorder: 2257438 3RD QTR 2017 GWMP-FORM 19Q

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
2257438001	FFMP015W	Ground Water	8/25/2017 11:35	8/25/2017 17:55	Mr. Brian G Shade
2257438002	FFMP017W	Ground Water	8/25/2017 10:06	8/25/2017 17:55	Mr. Brian G Shade
2257438003	FFMP025W	Ground Water	8/25/2017 13:15	8/25/2017 17:55	Mr. Brian G Shade
2257438004	FFMP02SW	Ground Water	8/25/2017 14:11	8/25/2017 17:55	Mr. Brian G Shade
2257438005	FFMP02DW	Ground Water	8/25/2017 15:43	8/25/2017 17:55	Mr. Brian G Shade
2257438006	FFMP016W	Ground Water	8/25/2017 16:18	8/25/2017 17:55	Mr. Brian G Shade
2257438007	FIELD BLANK	Ground Water	8/25/2017 16:30	8/25/2017 17:55	Mr. Brian G Shade
2257438008	TRIP BLANK	Ground Water	8/25/2017 17:55	8/25/2017 17:55	Mr. Brian G Shade

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SAMPLE SUMMARY

Workorder: 2257438 3RD QTR 2017 GWMP-FORM 19Q

Notes

- Samples collected by ALS personnel are done so in accordance with the procedures set forth in the ALS Field Sampling Plan (20 - Field Services Sampling Plan).
- All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
- All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
- Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
- The Chain of Custody document is included as part of this report.
- All Library Search analytes should be regarded as tentative identifications based on the presumptive evidence of the mass spectra. Concentrations reported are estimated values.
- Parameters identified as "analyze immediately" require analysis within 15 minutes of collection. Any "analyze immediately" parameters not listed under the header "Field Parameters" are performed 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.

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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PROJECT SUMMARY

Workorder: 2257438 3RD QTR 2017 GWMP-FORM 19Q

Workorder Comments

This certificate of analysis was modified to correct the sample ID on ALS#2257438004 based on the chain of custody and emails from Dan Brown on 09/08/17 and 09/27/17. SJS 09/27/17

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ANALYTICAL RESULTS

Workorder: 2257438 3RD QTR 2017 GWMP-FORM 19Q

Lab ID: **2257438001**
Sample ID: **FFMP015W**

Date Collected: 8/25/2017 11:35 Matrix: Ground Water
Date Received: 8/25/2017 17:55

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			9/1/17 12:47	TMP	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			9/1/17 12:47	TMP	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			9/1/17 12:47	TMP	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			9/1/17 12:47	TMP	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			9/1/17 12:47	TMP	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			9/1/17 12:47	TMP	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			9/1/17 12:47	TMP	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			9/1/17 12:47	TMP	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			9/1/17 12:47	TMP	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			9/1/17 12:47	TMP	G
Toluene	ND		ug/L	1.0	SW846 8260B			9/1/17 12:47	TMP	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			9/1/17 12:47	TMP	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			9/1/17 12:47	TMP	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			9/1/17 12:47	TMP	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			9/1/17 12:47	TMP	G
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	98.7		%	62 - 133	SW846 8260B			9/1/17 12:47	TMP	G
4-Bromofluorobenzene (S)	99.6		%	79 - 114	SW846 8260B			9/1/17 12:47	TMP	G
Dibromofluoromethane (S)	105		%	78 - 116	SW846 8260B			9/1/17 12:47	TMP	G
Toluene-d8 (S)	111		%	76 - 127	SW846 8260B			9/1/17 12:47	TMP	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	22		mg/L	5	S2320B-97			8/30/17 16:29	MSA	B
Alkalinity, Total	22	2	mg/L	5	S2320B-97			8/30/17 16:29	MSA	B
Ammonia-nitrogen, Total	ND		mg/L	0.10	S4500NH3D	9/14/17 13:50	CMM	9/20/17 13:22	C_W	
Chemical Oxygen Demand (COD)	ND		mg/L	7	EPA 410.4			9/1/17 17:10	AK	A
Chloride	7.6		mg/L	2.0	EPA 300.0			8/26/17 23:44	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			8/26/17 23:44	CHW	B
Nitrate-N	6.0		mg/L	0.20	EPA 300.0			8/26/17 23:44	CHW	B
pH	6.38	1	pH_Units		S4500HB-11			8/30/17 16:29	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	9/6/17 00:00	JLG	9/6/17 09:48	JLG	F
Specific Conductance	149		umhos/cm	1	SW846 9050A			8/30/17 16:29	MSA	B
Sulfate	27.4		mg/L	2.0	EPA 300.0			8/26/17 23:44	CHW	B
Total Dissolved Solids	135		mg/L	5	S2540C-11			9/1/17 14:57	VXF	B
Total Organic Carbon (TOC)	1.0		mg/L	0.50	SW846 9060A			9/6/17 12:07	PAG	D
Turbidity	0.12		NTU	0.10	S2130B-01			8/26/17 06:00	MBW	B

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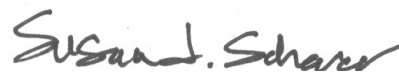
ANALYTICAL RESULTS

Workorder: 2257438 3RD QTR 2017 GWMP-FORM 19Q

Lab ID: **2257438001**
Sample ID: **FFMP015W**

Date Collected: 8/25/2017 11:35 Matrix: Ground Water
Date Received: 8/25/2017 17:55

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	9.4		mg/L	0.11	SW846 6010C	8/30/17 05:30	LXC	9/6/17 13:40	SRT	J1
Iron, Total	ND		mg/L	0.067	SW846 6010C	8/30/17 05:30	LXC	9/6/17 13:40	SRT	J1
Magnesium, Total	6.7		mg/L	0.11	SW846 6010C	8/30/17 05:30	LXC	9/6/17 13:40	SRT	J1
Manganese, Total	0.0064		mg/L	0.0056	SW846 6010C	8/30/17 05:30	LXC	9/6/17 13:40	SRT	J1
Potassium, Total	1.3		mg/L	0.56	SW846 6010C	8/30/17 05:30	LXC	9/6/17 13:40	SRT	J1
Sodium, Total	10.1		mg/L	0.56	SW846 6010C	8/30/17 05:30	LXC	9/6/17 13:40	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	60.940		Feet		Field			8/25/17 11:35	BGS	C
Elev Top MW Casing above MSL	576.40		Feet		Field			8/25/17 11:35	BGS	C
Flow Rate	1.92		gal/min		Field			8/25/17 11:35	BGS	C
Ground Water Elevation	515.460		ft/MSL		Field			8/25/17 11:35	BGS	C
pH, Field (SM4500B)	5.590		pH_Units		Field			8/25/17 11:35	BGS	C
Sample Depth	135.000		Feet		Field			8/25/17 11:35	BGS	C
Specific Conductance, Field	189		umhos/cm	1	Field			8/25/17 11:35	BGS	C
Temperature	12.15		Deg. C		Field			8/25/17 11:35	BGS	C
Total Well Depth	149.900		Feet		Field			8/25/17 11:35	BGS	C
Volume in Water Column	130.771		Gallons		Field			8/25/17 11:35	BGS	C
Water Level After Purge	104.830		Feet		Field			8/25/17 11:35	BGS	C
Well Volumes Purged	0.88		Vol		Field			8/25/17 11:35	BGS	C



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Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2257438 3RD QTR 2017 GWMP-FORM 19Q

Lab ID: **2257438002**

Date Collected: 8/25/2017 10:06

Matrix: Ground Water

Sample ID: **FFMP017W**

Date Received: 8/25/2017 17:55

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			9/1/17 13:05	TMP	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			9/1/17 13:05	TMP	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			9/1/17 13:05	TMP	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			9/1/17 13:05	TMP	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			9/1/17 13:05	TMP	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			9/1/17 13:05	TMP	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			9/1/17 13:05	TMP	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			9/1/17 13:05	TMP	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			9/1/17 13:05	TMP	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			9/1/17 13:05	TMP	G
Toluene	ND		ug/L	1.0	SW846 8260B			9/1/17 13:05	TMP	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			9/1/17 13:05	TMP	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			9/1/17 13:05	TMP	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			9/1/17 13:05	TMP	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			9/1/17 13:05	TMP	G
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	102		%	62 - 133	SW846 8260B			9/1/17 13:05	TMP	G
4-Bromofluorobenzene (S)	103		%	79 - 114	SW846 8260B			9/1/17 13:05	TMP	G
Dibromofluoromethane (S)	107		%	78 - 116	SW846 8260B			9/1/17 13:05	TMP	G
Toluene-d8 (S)	116		%	76 - 127	SW846 8260B			9/1/17 13:05	TMP	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	44		mg/L	5	S2320B-97			8/30/17 16:38	MSA	B
Alkalinity, Total	44	3	mg/L	5	S2320B-97			8/30/17 16:38	MSA	B
Ammonia-nitrogen, Total	ND		mg/L	0.10	S4500NH3D	9/14/17 13:50	CMM	9/20/17 13:22	C_W	
Chemical Oxygen Demand (COD)	ND		mg/L	7	EPA 410.4			9/1/17 17:10	AK	A
Chloride	373		mg/L	5.0	EPA 300.0			8/30/17 05:42	MBW	B
Fluoride	0.24		mg/L	0.20	EPA 300.0			8/26/17 23:57	CHW	B
Nitrate-N	2.3		mg/L	0.20	EPA 300.0			8/26/17 23:57	CHW	B
pH	6.38	1	pH_Units		S4500HB-11			8/30/17 16:38	MSA	B
Phenolics	ND	2	mg/L	0.005	SW846 9066	9/6/17 00:00	JLG	9/6/17 09:48	JLG	F
Specific Conductance	1390		umhos/cm	1	SW846 9050A			8/30/17 16:38	MSA	B
Sulfate	58.0		mg/L	2.0	EPA 300.0			8/26/17 23:57	CHW	B
Total Dissolved Solids	962		mg/L	5	S2540C-11			9/1/17 14:57	VXF	B
Total Organic Carbon (TOC)	2.2		mg/L	0.50	SW846 9060A			9/6/17 12:07	PAG	D
Turbidity	0.13		NTU	0.10	S2130B-01			8/26/17 06:00	MBW	B

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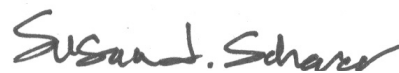
ANALYTICAL RESULTS

Workorder: 2257438 3RD QTR 2017 GWMP-FORM 19Q

Lab ID: **2257438002**
Sample ID: **FFMP017W**

Date Collected: 8/25/2017 10:06 Matrix: Ground Water
Date Received: 8/25/2017 17:55

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	104		mg/L	0.11	SW846 6010C	8/30/17 05:30	LXC	9/6/17 13:51	SRT	J1
Iron, Total	ND		mg/L	0.067	SW846 6010C	8/30/17 05:30	LXC	9/6/17 13:51	SRT	J1
Magnesium, Total	47.0		mg/L	0.11	SW846 6010C	8/30/17 05:30	LXC	9/6/17 13:51	SRT	J1
Manganese, Total	0.42		mg/L	0.0056	SW846 6010C	8/30/17 05:30	LXC	9/6/17 13:51	SRT	J1
Potassium, Total	4.7		mg/L	0.56	SW846 6010C	8/30/17 05:30	LXC	9/6/17 13:51	SRT	J1
Sodium, Total	75.5		mg/L	0.56	SW846 6010C	8/30/17 05:30	LXC	9/6/17 13:51	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	42.410		Feet		Field			8/25/17 10:06	BGS	C
Elev Top MW Casing above MSL	480.70		Feet		Field			8/25/17 10:06	BGS	C
Flow Rate	2.23		gal/min		Field			8/25/17 10:06	BGS	C
Ground Water Elevation	438.290		ft/MSL		Field			8/25/17 10:06	BGS	C
pH, Field (SM4500B)	5.630		pH_Units		Field			8/25/17 10:06	BGS	C
Sample Depth	135.000		Feet		Field			8/25/17 10:06	BGS	C
Specific Conductance, Field	1552		umhos/cm	1	Field			8/25/17 10:06	BGS	C
Temperature	10.79		Deg. C		Field			8/25/17 10:06	BGS	C
Total Well Depth	150.500		Feet		Field			8/25/17 10:06	BGS	C
Volume in Water Column	158.892		Gallons		Field			8/25/17 10:06	BGS	C
Water Level After Purge	49.820		Feet		Field			8/25/17 10:06	BGS	C
Well Volumes Purged	0.98		Vol		Field			8/25/17 10:06	BGS	C



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ANALYTICAL RESULTS

Workorder: 2257438 3RD QTR 2017 GWMP-FORM 19Q

Lab ID: **2257438003**
Sample ID: **FFMP025W**

Date Collected: 8/25/2017 13:15 Matrix: Ground Water
Date Received: 8/25/2017 17:55

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			9/1/17 13:23	TMP	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			9/1/17 13:23	TMP	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			9/1/17 13:23	TMP	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			9/1/17 13:23	TMP	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			9/1/17 13:23	TMP	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			9/1/17 13:23	TMP	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			9/1/17 13:23	TMP	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			9/1/17 13:23	TMP	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			9/1/17 13:23	TMP	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			9/1/17 13:23	TMP	G
Toluene	ND		ug/L	1.0	SW846 8260B			9/1/17 13:23	TMP	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			9/1/17 13:23	TMP	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			9/1/17 13:23	TMP	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			9/1/17 13:23	TMP	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			9/1/17 13:23	TMP	G
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	103		%	62 - 133	SW846 8260B			9/1/17 13:23	TMP	G
4-Bromofluorobenzene (S)	103		%	79 - 114	SW846 8260B			9/1/17 13:23	TMP	G
Dibromofluoromethane (S)	108		%	78 - 116	SW846 8260B			9/1/17 13:23	TMP	G
Toluene-d8 (S)	114		%	76 - 127	SW846 8260B			9/1/17 13:23	TMP	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	16		mg/L	5	S2320B-97			8/30/17 16:48	MSA	B
Alkalinity, Total	16	2	mg/L	5	S2320B-97			8/30/17 16:48	MSA	B
Ammonia-nitrogen, Total	ND		mg/L	0.10	S4500NH3D	9/14/17 13:50	CMM	9/20/17 13:22	C_W	
Chemical Oxygen Demand (COD)	7		mg/L	7	EPA 410.4			9/1/17 17:10	AK	A
Chloride	61.4		mg/L	2.0	EPA 300.0			8/27/17 00:10	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			8/27/17 00:10	CHW	B
Nitrate-N	16.1		mg/L	0.20	EPA 300.0			8/27/17 00:10	CHW	B
pH	6.16	1	pH_Units		S4500HB-11			8/30/17 16:48	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	9/6/17 00:00	JLG	9/6/17 09:48	JLG	F
Specific Conductance	389		umhos/cm	1	SW846 9050A			8/30/17 16:48	MSA	B
Sulfate	10.2		mg/L	2.0	EPA 300.0			8/27/17 00:10	CHW	B
Total Dissolved Solids	275		mg/L	5	S2540C-11			9/1/17 14:57	VXF	B
Total Organic Carbon (TOC)	1.3		mg/L	0.50	SW846 9060A			9/6/17 12:07	PAG	D
Turbidity	0.66		NTU	0.10	S2130B-01			8/26/17 06:00	MBW	B

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ANALYTICAL RESULTS

Workorder: 2257438 3RD QTR 2017 GWMP-FORM 19Q

Lab ID: **2257438003**
Sample ID: **FFMP025W**

Date Collected: 8/25/2017 13:15 Matrix: Ground Water
Date Received: 8/25/2017 17:55

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	26.1		mg/L	0.11	SW846 6010C	8/30/17 05:30	LXC	9/6/17 13:54	SRT	J1
Iron, Total	ND		mg/L	0.067	SW846 6010C	8/30/17 05:30	LXC	9/6/17 13:54	SRT	J1
Magnesium, Total	13.8		mg/L	0.11	SW846 6010C	8/30/17 05:30	LXC	9/6/17 13:54	SRT	J1
Manganese, Total	0.015		mg/L	0.0056	SW846 6010C	8/30/17 05:30	LXC	9/6/17 13:54	SRT	J1
Potassium, Total	2.1		mg/L	0.56	SW846 6010C	8/30/17 05:30	LXC	9/6/17 13:54	SRT	J1
Sodium, Total	20.8		mg/L	0.56	SW846 6010C	8/30/17 05:30	LXC	9/6/17 13:54	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	30.510		Feet		Field			8/23/17 13:15	BGS	C
Elev Top MW Casing above MSL	476.80		Feet		Field			8/23/17 13:15	BGS	C
Flow Rate	1.86		gal/min		Field			8/23/17 13:15	BGS	C
Ground Water Elevation	446.290		ft/MSL		Field			8/23/17 13:15	BGS	C
pH, Field (SM4500B)	5.170		pH_Units		Field			8/23/17 13:15	BGS	C
Sample Depth	39.000		Feet		Field			8/23/17 13:15	BGS	C
Specific Conductance, Field	451		umhos/cm	1	Field			8/23/17 13:15	BGS	C
Temperature	11.08		Deg. C		Field			8/23/17 13:15	BGS	C
Total Well Depth	41.500		Feet		Field			8/23/17 13:15	BGS	C
Volume in Water Column	16.155		Gallons		Field			8/23/17 13:15	BGS	C
Water Level After Purge	33.000		Feet		Field			8/23/17 13:15	BGS	C
Well Volumes Purged	3.45		Vol		Field			8/23/17 13:15	BGS	C



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ANALYTICAL RESULTS

Workorder: 2257438 3RD QTR 2017 GWMP-FORM 19Q

Lab ID: **2257438004**
Sample ID: **FFMP02SW**

Date Collected: 8/25/2017 14:11 Matrix: Ground Water
Date Received: 8/25/2017 17:55

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			9/1/17 13:41	TMP	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			9/1/17 13:41	TMP	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			9/1/17 13:41	TMP	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			9/1/17 13:41	TMP	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			9/1/17 13:41	TMP	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			9/1/17 13:41	TMP	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			9/1/17 13:41	TMP	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			9/1/17 13:41	TMP	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			9/1/17 13:41	TMP	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			9/1/17 13:41	TMP	G
Toluene	ND		ug/L	1.0	SW846 8260B			9/1/17 13:41	TMP	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			9/1/17 13:41	TMP	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			9/1/17 13:41	TMP	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			9/1/17 13:41	TMP	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			9/1/17 13:41	TMP	G
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	100		%	62 - 133	SW846 8260B			9/1/17 13:41	TMP	G
4-Bromofluorobenzene (S)	100		%	79 - 114	SW846 8260B			9/1/17 13:41	TMP	G
Dibromofluoromethane (S)	106		%	78 - 116	SW846 8260B			9/1/17 13:41	TMP	G
Toluene-d8 (S)	112		%	76 - 127	SW846 8260B			9/1/17 13:41	TMP	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	17		mg/L	5	S2320B-97			8/30/17 16:58	MSA	B
Alkalinity, Total	17	2	mg/L	5	S2320B-97			8/30/17 16:58	MSA	B
Ammonia-nitrogen, Total	ND		mg/L	0.10	S4500NH3D	9/14/17 13:50	CMM	9/20/17 13:22	C_W	
Chemical Oxygen Demand (COD)	8		mg/L	7	EPA 410.4			9/1/17 17:10	AK	A
Chloride	317		mg/L	5.0	EPA 300.0			8/30/17 06:56	MBW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			8/27/17 00:23	CHW	B
Nitrate-N	12.0		mg/L	0.20	EPA 300.0			8/27/17 00:23	CHW	B
pH	6.31	1	pH_Units		S4500HB-11			8/30/17 16:58	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	9/6/17 00:00	JLG	9/6/17 09:48	JLG	F
Specific Conductance	1200		umhos/cm	1	SW846 9050A			8/30/17 16:58	MSA	B
Sulfate	30.2		mg/L	2.0	EPA 300.0			8/27/17 00:23	CHW	B
Total Dissolved Solids	698		mg/L	5	S2540C-11			9/1/17 14:57	VXF	B
Total Organic Carbon (TOC)	1.8		mg/L	0.50	SW846 9060A			9/6/17 12:07	PAG	D
Turbidity	38.3		NTU	0.10	S2130B-01			8/26/17 06:00	MBW	B

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ANALYTICAL RESULTS

Workorder: 2257438 3RD QTR 2017 GWMP-FORM 19Q

Lab ID: **2257438004**
Sample ID: **FFMP02SW**

Date Collected: 8/25/2017 14:11 Matrix: Ground Water
Date Received: 8/25/2017 17:55

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	40.9		mg/L	0.11	SW846 6010C	8/30/17 05:30	LXC	9/6/17 13:58	SRT	J1
Iron, Total	0.74		mg/L	0.067	SW846 6010C	8/30/17 05:30	LXC	9/6/17 13:58	SRT	J1
Magnesium, Total	16.6		mg/L	0.11	SW846 6010C	8/30/17 05:30	LXC	9/6/17 13:58	SRT	J1
Manganese, Total	0.28		mg/L	0.0056	SW846 6010C	8/30/17 05:30	LXC	9/6/17 13:58	SRT	J1
Potassium, Total	6.0		mg/L	0.56	SW846 6010C	8/30/17 05:30	LXC	9/6/17 13:58	SRT	J1
Sodium, Total	156		mg/L	0.56	SW846 6010C	8/30/17 05:30	LXC	9/6/17 13:58	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	15.510		Feet		Field			8/25/17 14:11	BGS	C
Elev Top MW Casing above MSL	509.90		Feet		Field			8/25/17 14:11	BGS	C
Flow Rate	0.49		gal/min		Field			8/25/17 14:11	BGS	C
Ground Water Elevation	494.390		ft/MSL		Field			8/25/17 14:11	BGS	C
pH, Field (SM4500B)	5.560		pH_Units		Field			8/25/17 14:11	BGS	C
Sample Depth	18.000		Feet		Field			8/25/17 14:11	BGS	C
Specific Conductance, Field	1339		umhos/cm	1	Field			8/25/17 14:11	BGS	C
Temperature	19.08		Deg. C		Field			8/25/17 14:11	BGS	C
Total Well Depth	22.700		Feet		Field			8/25/17 14:11	BGS	C
Volume in Water Column	4.674		Gallons		Field			8/25/17 14:11	BGS	C
Water Level After Purge	75.000		Feet		Field			8/25/17 14:11	BGS	C
Well Volumes Purged	3.15		Vol		Field			8/25/17 14:11	BGS	C



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ANALYTICAL RESULTS

Workorder: 2257438 3RD QTR 2017 GWMP-FORM 19Q

Lab ID: **2257438005**

Date Collected: 8/25/2017 15:43

Matrix: Ground Water

Sample ID: **FFMP02DW**

Date Received: 8/25/2017 17:55

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			9/1/17 13:59	TMP	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			9/1/17 13:59	TMP	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			9/1/17 13:59	TMP	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			9/1/17 13:59	TMP	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			9/1/17 13:59	TMP	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			9/1/17 13:59	TMP	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			9/1/17 13:59	TMP	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			9/1/17 13:59	TMP	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			9/1/17 13:59	TMP	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			9/1/17 13:59	TMP	G
Toluene	2.0		ug/L	1.0	SW846 8260B			9/1/17 13:59	TMP	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			9/1/17 13:59	TMP	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			9/1/17 13:59	TMP	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			9/1/17 13:59	TMP	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			9/1/17 13:59	TMP	G
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	100		%	62 - 133	SW846 8260B			9/1/17 13:59	TMP	G
4-Bromofluorobenzene (S)	105		%	79 - 114	SW846 8260B			9/1/17 13:59	TMP	G
Dibromofluoromethane (S)	105		%	78 - 116	SW846 8260B			9/1/17 13:59	TMP	G
Toluene-d8 (S)	114		%	76 - 127	SW846 8260B			9/1/17 13:59	TMP	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	129		mg/L	5	S2320B-97			8/30/17 17:50	MSA	B
Alkalinity, Total	129	2	mg/L	5	S2320B-97			8/30/17 17:50	MSA	B
Ammonia-nitrogen, Total	ND		mg/L	0.10	S4500NH3D	9/14/17 13:50	CMM	9/20/17 13:22	C_W	
Chemical Oxygen Demand (COD)	ND		mg/L	7	EPA 410.4			9/1/17 17:10	AK	A
Chloride	55.1		mg/L	2.0	EPA 300.0			8/27/17 00:36	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			8/27/17 00:36	CHW	B
Nitrate-N	ND		mg/L	0.20	EPA 300.0			8/27/17 00:36	CHW	B
pH	8.10	1	pH_Units		S4500HB-11			8/30/17 17:50	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	9/6/17 00:00	JLG	9/6/17 09:48	JLG	F
Specific Conductance	477		umhos/cm	1	SW846 9050A			8/30/17 17:50	MSA	B
Sulfate	30.3		mg/L	2.0	EPA 300.0			8/27/17 00:36	CHW	B
Total Dissolved Solids	268		mg/L	5	S2540C-11			9/1/17 14:57	VXF	B
Total Organic Carbon (TOC)	1.1		mg/L	0.50	SW846 9060A			9/6/17 12:07	PAG	D
Turbidity	14.2		NTU	0.10	S2130B-01			8/26/17 06:00	MBW	B

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ANALYTICAL RESULTS

Workorder: 2257438 3RD QTR 2017 GWMP-FORM 19Q

Lab ID: **2257438005**
Sample ID: **FFMP02DW**

Date Collected: 8/25/2017 15:43 Matrix: Ground Water
Date Received: 8/25/2017 17:55

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	42.9		mg/L	0.11	SW846 6010C	8/30/17 05:30	LXC	9/6/17 14:02	SRT	J1
Iron, Total	0.51		mg/L	0.067	SW846 6010C	8/30/17 05:30	LXC	9/6/17 14:02	SRT	J1
Magnesium, Total	8.9		mg/L	0.11	SW846 6010C	8/30/17 05:30	LXC	9/6/17 14:02	SRT	J1
Manganese, Total	0.26		mg/L	0.0056	SW846 6010C	8/30/17 05:30	LXC	9/6/17 14:02	SRT	J1
Potassium, Total	1.5		mg/L	0.56	SW846 6010C	8/30/17 05:30	LXC	9/6/17 14:02	SRT	J1
Sodium, Total	43.1		mg/L	0.56	SW846 6010C	8/30/17 05:30	LXC	9/6/17 14:02	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	15.420		Feet		Field			8/25/17 15:43	BGS	C
Elev Top MW Casing above MSL	509.60		Feet		Field			8/25/17 15:43	BGS	C
Flow Rate	1.63		gal/min		Field			8/25/17 15:43	BGS	C
Ground Water Elevation	494.180		ft/MSL		Field			8/25/17 15:43	BGS	C
pH, Field (SM4500B)	7.420		pH_Units		Field			8/25/17 15:43	BGS	C
Sample Depth	120.000		Feet		Field			8/25/17 15:43	BGS	C
Specific Conductance, Field	539		umhos/cm	1	Field			8/25/17 15:43	BGS	C
Temperature	13.96		Deg. C		Field			8/25/17 15:43	BGS	C
Total Well Depth	153.000		Feet		Field			8/25/17 15:43	BGS	C
Volume in Water Column	202.243		Gallons		Field			8/25/17 15:43	BGS	C
Water Level After Purge	57.040		Feet		Field			8/25/17 15:43	BGS	C
Well Volumes Purged	0.60		Vol		Field			8/25/17 15:43	BGS	C



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ANALYTICAL RESULTS

Workorder: 2257438 3RD QTR 2017 GWMP-FORM 19Q

Lab ID: **2257438006**
Sample ID: **FFMP016W**

Date Collected: 8/25/2017 16:18 Matrix: Ground Water
Date Received: 8/25/2017 17:55

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			9/1/17 14:17	TMP	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			9/1/17 14:17	TMP	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			9/1/17 14:17	TMP	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			9/1/17 14:17	TMP	G
1,1-Dichloroethene	ND	2	ug/L	1.0	SW846 8260B			9/1/17 14:17	TMP	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			9/1/17 14:17	TMP	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			9/1/17 14:17	TMP	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			9/1/17 14:17	TMP	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			9/1/17 14:17	TMP	G
Tetrachloroethene	ND	3,4	ug/L	1.0	SW846 8260B			9/1/17 14:17	TMP	G
Toluene	ND		ug/L	1.0	SW846 8260B			9/1/17 14:17	TMP	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			9/1/17 14:17	TMP	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			9/1/17 14:17	TMP	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			9/1/17 14:17	TMP	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			9/1/17 14:17	TMP	G
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	100		%	62 - 133	SW846 8260B			9/1/17 14:17	TMP	G
4-Bromofluorobenzene (S)	100		%	79 - 114	SW846 8260B			9/1/17 14:17	TMP	G
Dibromofluoromethane (S)	106		%	78 - 116	SW846 8260B			9/1/17 14:17	TMP	G
Toluene-d8 (S)	113		%	76 - 127	SW846 8260B			9/1/17 14:17	TMP	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	25		mg/L	5	S2320B-97			8/30/17 18:00	MSA	B
Alkalinity, Total	25	5	mg/L	5	S2320B-97			8/30/17 18:00	MSA	B
Ammonia-nitrogen, Total	ND		mg/L	0.10	S4500NH3D	9/14/17 13:50	CMM	9/20/17 13:22	C_W	
Chemical Oxygen Demand (COD)	ND		mg/L	7	EPA 410.4			9/1/17 17:10	AK	A
Chloride	76.7		mg/L	2.0	EPA 300.0			8/27/17 01:01	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			8/27/17 01:01	CHW	B
Nitrate-N	16.2		mg/L	0.20	EPA 300.0			8/27/17 01:01	CHW	B
pH	6.34	1	pH_Units		S4500HB-11			8/30/17 18:00	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	9/6/17 00:00	JLG	9/6/17 09:48	JLG	F
Specific Conductance	459		umhos/cm	1	SW846 9050A			8/30/17 18:00	MSA	B
Sulfate	13.5		mg/L	2.0	EPA 300.0			8/27/17 01:01	CHW	B
Total Dissolved Solids	355		mg/L	5	S2540C-11			9/1/17 14:57	VXF	B
Total Organic Carbon (TOC)	1.3		mg/L	0.50	SW846 9060A			9/6/17 12:07	PAG	D
Turbidity	0.32		NTU	0.10	S2130B-01			8/26/17 06:00	MBW	B

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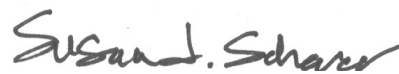
ANALYTICAL RESULTS

Workorder: 2257438 3RD QTR 2017 GWMP-FORM 19Q

Lab ID: **2257438006**
Sample ID: **FFMP016W**

Date Collected: 8/25/2017 16:18 Matrix: Ground Water
Date Received: 8/25/2017 17:55

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	31.6		mg/L	0.11	SW846 6010C	8/30/17 05:30	LXC	9/6/17 14:05	SRT	J1
Iron, Total	ND		mg/L	0.067	SW846 6010C	8/30/17 05:30	LXC	9/6/17 14:05	SRT	J1
Magnesium, Total	15.2		mg/L	0.11	SW846 6010C	8/30/17 05:30	LXC	9/6/17 14:05	SRT	J1
Manganese, Total	0.035		mg/L	0.0056	SW846 6010C	8/30/17 05:30	LXC	9/6/17 14:05	SRT	J1
Potassium, Total	2.0		mg/L	0.56	SW846 6010C	8/30/17 05:30	LXC	9/6/17 14:05	SRT	J1
Sodium, Total	26.1		mg/L	0.56	SW846 6010C	8/30/17 05:30	LXC	9/6/17 14:05	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	27.600		Feet		Field			8/25/17 16:18	BGS	C
Elev Top MW Casing above MSL	474.60		Feet		Field			8/25/17 16:18	BGS	C
Ground Water Elevation	447.000		ft/MSL		Field			8/25/17 16:18	BGS	C
pH, Field (SM4500B)	6.010		pH_Units		Field			8/25/17 16:18	BGS	C
Sample Depth	135.000		Feet		Field			8/25/17 16:18	BGS	C
Specific Conductance, Field	523		umhos/cm	1	Field			8/25/17 16:18	BGS	C
Temperature	12.19		Deg. C		Field			8/25/17 16:18	BGS	C
Total Well Depth	149.800		Feet		Field			8/25/17 16:18	BGS	C
Volume in Water Column	318.942		Gallons		Field			8/25/17 16:18	BGS	C


Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2257438 3RD QTR 2017 GWMP-FORM 19Q

Lab ID: **2257438007**
Sample ID: **FIELD BLANK**

Date Collected: 8/25/2017 16:30 Matrix: Ground Water
Date Received: 8/25/2017 17:55

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			9/1/17 16:24	TMP	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			9/1/17 16:24	TMP	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			9/1/17 16:24	TMP	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			9/1/17 16:24	TMP	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			9/1/17 16:24	TMP	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			9/1/17 16:24	TMP	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			9/1/17 16:24	TMP	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			9/1/17 16:24	TMP	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			9/1/17 16:24	TMP	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			9/1/17 16:24	TMP	G
Toluene	ND		ug/L	1.0	SW846 8260B			9/1/17 16:24	TMP	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			9/1/17 16:24	TMP	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			9/1/17 16:24	TMP	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			9/1/17 16:24	TMP	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			9/1/17 16:24	TMP	G
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	98.2		%	62 - 133	SW846 8260B			9/1/17 16:24	TMP	G
4-Bromofluorobenzene (S)	98.5		%	79 - 114	SW846 8260B			9/1/17 16:24	TMP	G
Dibromofluoromethane (S)	107		%	78 - 116	SW846 8260B			9/1/17 16:24	TMP	G
Toluene-d8 (S)	116		%	76 - 127	SW846 8260B			9/1/17 16:24	TMP	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	ND		mg/L	5	S2320B-97			8/30/17 18:10	MSA	B
Alkalinity, Total	ND	2	mg/L	5	S2320B-97			8/30/17 18:10	MSA	B
Ammonia-nitrogen, Total	ND		mg/L	0.10	S4500NH3D	9/14/17 13:50	CMM	9/20/17 13:22	C_W	
Chemical Oxygen Demand (COD)	ND		mg/L	7	EPA 410.4			9/1/17 17:10	AK	A
Chloride	ND		mg/L	1.0	EPA 300.0			8/27/17 00:48	CHW	B
Fluoride	ND		mg/L	0.10	EPA 300.0			8/27/17 00:48	CHW	B
Nitrate-N	ND		mg/L	0.10	EPA 300.0			8/27/17 00:48	CHW	B
pH	6.26	1	pH_Units		S4500HB-11			8/30/17 18:10	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	9/6/17 00:00	JLG	9/6/17 09:48	JLG	F
Specific Conductance	ND		umhos/cm	1	SW846 9050A			9/1/17 01:54	MSA	B
Sulfate	ND		mg/L	1.0	EPA 300.0			8/27/17 00:48	CHW	B
Total Dissolved Solids	ND	3	mg/L	5	S2540C-11			9/5/17 20:45	JAS	B
Total Organic Carbon (TOC)	ND		mg/L	0.50	SW846 9060A			9/6/17 12:07	PAG	D
Turbidity	ND		NTU	0.10	S2130B-01			8/26/17 06:00	MBW	B

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ANALYTICAL RESULTS

Workorder: 2257438 3RD QTR 2017 GWMP-FORM 19Q

Lab ID: **2257438007**
Sample ID: **FIELD BLANK**

Date Collected: 8/25/2017 16:30 Matrix: Ground Water
Date Received: 8/25/2017 17:55

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	ND		mg/L	0.11	SW846 6010C	8/30/17 05:30	LXC	9/6/17 14:09	SRT	J1
Iron, Total	ND		mg/L	0.067	SW846 6010C	8/30/17 05:30	LXC	9/6/17 14:09	SRT	J1
Magnesium, Total	ND		mg/L	0.11	SW846 6010C	8/30/17 05:30	LXC	9/6/17 14:09	SRT	J1
Manganese, Total	ND		mg/L	0.0056	SW846 6010C	8/30/17 05:30	LXC	9/6/17 14:09	SRT	J1
Potassium, Total	ND		mg/L	0.56	SW846 6010C	8/30/17 05:30	LXC	9/6/17 14:09	SRT	J1
Sodium, Total	ND		mg/L	0.56	SW846 6010C	8/30/17 05:30	LXC	9/6/17 14:09	SRT	J1


Ms. Susan J Scherer
Project Coordinator

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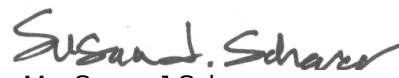
ANALYTICAL RESULTS

Workorder: 2257438 3RD QTR 2017 GWMP-FORM 19Q

Lab ID: **2257438008**
Sample ID: **TRIP BLANK**

Date Collected: 8/25/2017 17:55 Matrix: Ground Water
Date Received: 8/25/2017 17:55

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			9/1/17 16:06	TMP	A
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			9/1/17 16:06	TMP	A
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			9/1/17 16:06	TMP	A
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			9/1/17 16:06	TMP	A
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			9/1/17 16:06	TMP	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			9/1/17 16:06	TMP	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			9/1/17 16:06	TMP	A
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			9/1/17 16:06	TMP	A
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			9/1/17 16:06	TMP	A
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			9/1/17 16:06	TMP	A
Toluene	ND		ug/L	1.0	SW846 8260B			9/1/17 16:06	TMP	A
Total Xylenes	ND		ug/L	3.0	SW846 8260B			9/1/17 16:06	TMP	A
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			9/1/17 16:06	TMP	A
Trichloroethene	ND		ug/L	1.0	SW846 8260B			9/1/17 16:06	TMP	A
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			9/1/17 16:06	TMP	A
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	98.8		%	62 - 133	SW846 8260B			9/1/17 16:06	TMP	A
4-Bromofluorobenzene (S)	103		%	79 - 114	SW846 8260B			9/1/17 16:06	TMP	A
Dibromofluoromethane (S)	105		%	78 - 116	SW846 8260B			9/1/17 16:06	TMP	A
Toluene-d8 (S)	115		%	76 - 127	SW846 8260B			9/1/17 16:06	TMP	A


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PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
2257438001	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.				
2257438001	2	FFMP015W	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
2257438002	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.				
2257438002	2	FFMP017W	SW846 9066	Phenolics
The recovery of the Matrix Spike (MS) associated to this analyte was outside of the established control limits.				
2257438002	3	FFMP017W	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
2257438003	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.				
2257438003	2	FFMP025W	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
2257438004	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.				
2257438004	2	FFMP02SW	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
2257438005	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.				
2257438005	2	FFMP02DW	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
2257438006	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.				
2257438006	2	FFMP016W	SW846 8260B	1,1-Dichloroethene
The QC sample type MSD for method SW846 8260B was outside the control limits for the analyte 1,1-Dichloroethene. The % Recovery was reported as 130 and the control limits were 63 to 128.				
2257438006	3	FFMP016W	SW846 8260B	Tetrachloroethene
The QC sample type MS for method SW846 8260B was outside the control limits for the analyte Tetrachloroethene. The % Recovery was reported as 129 and the control limits were 72 to 124.				
2257438006	4	FFMP016W	SW846 8260B	Tetrachloroethene
The QC sample type MSD for method SW846 8260B was outside the control limits for the analyte Tetrachloroethene. The % Recovery was reported as 130 and the control limits were 72 to 124.				
2257438006	5	FFMP016W	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
2257438007	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.				
2257438007	2	FIELD BLANK	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				

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ANALYTICAL RESULTS

Workorder: 2257438 3RD QTR 2017 GWMP-FORM 19Q

2257438007	3	FIELD BLANK	S2540C-11	Total Dissolved Solids
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The sample was originally run within hold time, but required further analysis that exceeded hold time.

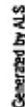
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||| Estimated | are = mcd@cam.ac.uk | tel = +44 (0)207 648 6800 | fax = +44 (0)207 648 6801 | www.mcd@cam.ac.uk

CHAIN OF CUSTODY/
REQUEST FOR ANALYSIS

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

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

Client Name: Lancaster County Solid Waste MA		AG	AN	CG	PL	PL	PL	PL					
		Container Type											
Address: 1299 Harrisburg Pike, P.O. Box 4424 Lancaster, PA 17604		Container Size	500 ml	40 ml	—	500 ml	500 ml	500 ml					
		Preservative	HCl	H ₂ SO ₄	HCl	H ₂ SO ₄	HNO ₃	None					
Contact: Mark Reider		Analyses/Method Requested											
Phone#: (717) 735-0193		Turb.	pH, Cl, SPC, F, SO ₄ , TDS, NO ₃ .	Metals: Fe, Mn, Na, Ca, K, Mg	NH _{3-N} , COD	Sample Depth for AUX Data	VOC - Form 19Q	Field Measurements					
Project Name#: Frey Farm Quarterly (GWMP)		Alkalinity Bicarbonate											
Bill To: Lancaster County Solid Waste MA													
TAT ☒ Normal Standard TAT is 10-12 business days. ☐ Rush Subject to ALS approval and surcharges.													
Date Required: _____ Approved By: _____													
Email? ☒ Y ☐ N mreider@LC-SWMA.com													
Fax? ☒ Y ☐ N No.: (717) 397-9973													
Sample Description / Location (as it will appear on the lab report)	Sample Date	Time	G or C	** Matrix	TOC	O-OH	VOC - Form 19Q	Field Measurements	Sample Depth for AUX Data	NH _{3-N} , COD	Metals: Fe, Mn, Na, Ca, K, Mg	pH, Cl, SPC, F, SO ₄ , TDS, NO ₃ .	Alkalinity Bicarbonate
1. FF-MP010W	8-25-17	1135	G GW	X	2	1	2	X	X	1	1	1	1
2. FF-MP017W		1006											
3. FF-MP025W		1215											
4. FF-MP02SW		1411											
5. FF-MP02DW		1543											
6. FF-MP016W		1618											
7 Field Blank		1630											
8 Trip Blank		1758	L										
9													
10													
Project Comments: FF-MP01R-DKX		LOGGED BY (signature): [Signature]		DATE: 8/25/17		TIME: 2021							
Reviewed by (signature): [Signature]		REVIEWED BY (signature): [Signature]		DATE: 8/25/17		TIME: 1755							
Relinquished By Company Name	Date	Time	Received By / Company Name	Date	Time								
[Signature] ALB	8-25-17	1755	gml ALS	8/25	1755								
3													
5													
7													
9													

* G=Grab; C=Composite **Matrix - A=Air; DW=Drinking Water; GW=Groundwater; OI=Oil; OL=Other Liquid; SL=Suds; SW=Waste; WW=Wastewater

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

Rev 8/04

ALS

September 22, 2017

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

Certificate of Analysis

Project Name: 2017-FREY FARM	Workorder: 2256328
Purchase Order:	Workorder ID: 3RD QTR 2017 GWMP-FORM 19Q

Dear Mr. Brown:

Enclosed are the analytical results for samples received by the laboratory on Wednesday, August 23, 2017.

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

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

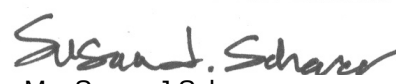
Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications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

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

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

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

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


Ms. Susan J Scherer
Project Coordinator

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SAMPLE SUMMARY

Workorder: 2256328 3RD QTR 2017 GWMP-FORM 19Q

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
2256328001	FFMP031W	Ground Water	8/23/2017 10:54	8/23/2017 16:50	Mr. Brian G Shade
2256328002	FFMP002W	Ground Water	8/23/2017 11:28	8/23/2017 16:50	Mr. Brian G Shade
2256328003	FFMP032W	Ground Water	8/23/2017 14:56	8/23/2017 16:50	Mr. Brian G Shade
2256328004	FFMP027W	Ground Water	8/23/2017 15:48	8/23/2017 16:50	Mr. Brian G Shade
2256328005	FIELD BLANK	Ground Water	8/23/2017 15:50	8/23/2017 16:50	Mr. Brian G Shade
2256328006	TRIP BLANK	Ground Water	8/23/2017 16:50	8/23/2017 16:50	Mr. Brian G Shade

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SAMPLE SUMMARY

Workorder: 2256328 3RD QTR 2017 GWMP-FORM 19Q

Notes

- Samples collected by ALS personnel are done so in accordance with the procedures set forth in the ALS Field Sampling Plan (20 - Field Services Sampling Plan).
- All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
- All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
- Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
- The Chain of Custody document is included as part of this report.
- All Library Search analytes should be regarded as tentative identifications based on the presumptive evidence of the mass spectra. Concentrations reported are estimated values.
- Parameters identified as "analyze immediately" require analysis within 15 minutes of collection. Any "analyze immediately" parameters not listed under the header "Field Parameters" are performed 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.

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: 2256328 3RD QTR 2017 GWMP-FORM 19Q

Lab ID: **2256328001**
Sample ID: **FFMP031W**

Date Collected: 8/23/2017 10:54 Matrix: Ground Water
Date Received: 8/23/2017 16:50

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			8/31/17 18:47	TMP	H
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			8/31/17 18:47	TMP	H
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/31/17 18:47	TMP	H
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/31/17 18:47	TMP	H
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/31/17 18:47	TMP	H
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/31/17 18:47	TMP	H
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/31/17 18:47	TMP	H
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			8/31/17 18:47	TMP	H
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			8/31/17 18:47	TMP	H
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			8/31/17 18:47	TMP	H
Toluene	9.1		ug/L	1.0	SW846 8260B			8/31/17 18:47	TMP	H
Total Xylenes	ND		ug/L	3.0	SW846 8260B			8/31/17 18:47	TMP	H
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			8/31/17 18:47	TMP	H
Trichloroethene	ND		ug/L	1.0	SW846 8260B			8/31/17 18:47	TMP	H
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			8/31/17 18:47	TMP	H
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	101		%	62 - 133	SW846 8260B			8/31/17 18:47	TMP	H
4-Bromofluorobenzene (S)	101		%	79 - 114	SW846 8260B			8/31/17 18:47	TMP	H
Dibromofluoromethane (S)	106		%	78 - 116	SW846 8260B			8/31/17 18:47	TMP	H
Toluene-d8 (S)	117		%	76 - 127	SW846 8260B			8/31/17 18:47	TMP	H
WET CHEMISTRY										
Alkalinity, Bicarbonate	27		mg/L	5	S2320B-97			8/25/17 03:20	MSA	B
Alkalinity, Total	27	4	mg/L	5	S2320B-97			8/25/17 03:20	MSA	B
Ammonia-N	ND		mg/L	0.100	D6919-09			9/20/17 10:57	JAM	A
Chemical Oxygen Demand (COD)	12		mg/L	7	EPA 410.4			8/29/17 18:19	AK	A
Chloride	23.4		mg/L	2.0	EPA 300.0			8/25/17 03:37	MBW	B
Fluoride	0.34		mg/L	0.20	EPA 300.0			8/25/17 03:37	MBW	B
Nitrate-N	ND		mg/L	0.20	EPA 300.0			8/25/17 03:37	MBW	B
pH	7.42	1	pH_Units		S4500HB-11			8/25/17 03:20	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	9/6/17 00:00	JLG	9/6/17 09:48	JLG	F
Specific Conductance	180		umhos/cm	1	SW846 9050A			8/25/17 03:20	MSA	B
Sulfate	33.2		mg/L	2.0	EPA 300.0			8/25/17 03:37	MBW	B
Total Dissolved Solids	137	2	mg/L	5	S2540C-11			8/28/17 21:00	JAS	B
Total Organic Carbon (TOC)	5.2		mg/L	0.50	SW846 9060A			9/8/17 05:05	PAG	D
Turbidity	26.4		NTU	0.10	S2130B-01			8/24/17 22:18	MSA	B

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ANALYTICAL RESULTS

Workorder: 2256328 3RD QTR 2017 GWMP-FORM 19Q

Lab ID: **2256328001**
Sample ID: **FFMP031W**

Date Collected: 8/23/2017 10:54 Matrix: Ground Water
Date Received: 8/23/2017 16:50

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	20.4		mg/L	0.11	SW846 6010C	8/29/17 04:25	LXC	9/6/17 13:06	SRT	J1
Iron, Total	7.7		mg/L	0.067	SW846 6010C	8/29/17 04:25	LXC	9/6/17 13:06	SRT	J1
Magnesium, Total	2.1		mg/L	0.11	SW846 6010C	8/29/17 04:25	LXC	9/6/17 13:06	SRT	J1
Manganese, Total	0.19		mg/L	0.0056	SW846 6010C	8/29/17 04:25	LXC	9/6/17 13:06	SRT	J1
Potassium, Total	2.4		mg/L	0.56	SW846 6010C	8/29/17 04:25	LXC	9/6/17 13:06	SRT	J1
Sodium, Total	14.3		mg/L	0.56	SW846 6010C	8/29/17 04:25	LXC	9/6/17 13:06	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	66.020		Feet		Field			8/23/17 10:54	BGS	C
Elev Top MW Casing above MSL	612.66		Feet		Field			8/23/17 10:54	BGS	C
Flow Rate	2.41		gal/min		Field			8/23/17 10:54	BGS	C
Ground Water Elevation	546.640		ft/MSL		Field			8/23/17 10:54	BGS	C
pH, Field (SM4500B)	8.130		pH_Units		Field			8/23/17 10:54	BGS	C
Sample Depth	130.000		Feet		Field			8/23/17 10:54	BGS	C
Specific Conductance, Field	229		umhos/cm	1	Field			8/23/17 10:54	BGS	C
Temperature	13.81		Deg. C		Field			8/23/17 10:54	BGS	C
Total Well Depth	142.700		Feet		Field			8/23/17 10:54	BGS	C
Volume in Water Column	112.720		Gallons		Field			8/23/17 10:54	BGS	C
Water Level After Purge	81.290		Feet		Field			8/23/17 10:54	BGS	C
Well Volumes Purged	1.39		Vol		Field			8/23/17 10:54	BGS	C



Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2256328 3RD QTR 2017 GWMP-FORM 19Q

Lab ID: **2256328002**
Sample ID: **FFMP002W**

Date Collected: 8/23/2017 11:28 Matrix: Ground Water
Date Received: 8/23/2017 16:50

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			8/28/17 16:40	DD	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			8/28/17 16:40	DD	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/28/17 16:40	DD	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/28/17 16:40	DD	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/28/17 16:40	DD	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/28/17 16:40	DD	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/28/17 16:40	DD	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			8/28/17 16:40	DD	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			8/28/17 16:40	DD	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			8/28/17 16:40	DD	G
Toluene	ND		ug/L	1.0	SW846 8260B			8/28/17 16:40	DD	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			8/28/17 16:40	DD	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			8/28/17 16:40	DD	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			8/28/17 16:40	DD	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			8/28/17 16:40	DD	G
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	96.9		%	62 - 133	SW846 8260B			8/28/17 16:40	DD	G
4-Bromofluorobenzene (S)	110		%	79 - 114	SW846 8260B			8/28/17 16:40	DD	G
Dibromofluoromethane (S)	96.6		%	78 - 116	SW846 8260B			8/28/17 16:40	DD	G
Toluene-d8 (S)	117		%	76 - 127	SW846 8260B			8/28/17 16:40	DD	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	9		mg/L	5	S2320B-97			8/25/17 04:37	MSA	B
Alkalinity, Total	9	2	mg/L	5	S2320B-97			8/25/17 04:37	MSA	B
Ammonia-N	ND		mg/L	0.100	D6919-09			9/20/17 11:16	JAM	A
Chemical Oxygen Demand (COD)	ND		mg/L	7	EPA 410.4			8/29/17 18:19	AK	A
Chloride	19.6		mg/L	5.0	EPA 300.0			8/24/17 22:08	CHW	B
Fluoride	ND		mg/L	0.50	EPA 300.0			8/24/17 22:08	CHW	B
Nitrate-N	23.2		mg/L	0.50	EPA 300.0			8/24/17 22:08	CHW	B
pH	5.63	1	pH_Units		S4500HB-11			8/25/17 04:37	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	9/6/17 00:00	JLG	9/6/17 09:48	JLG	F
Specific Conductance	282		umhos/cm	1	SW846 9050A			8/25/17 04:37	MSA	B
Sulfate	12.3		mg/L	5.0	EPA 300.0			8/24/17 22:08	CHW	B
Total Dissolved Solids	258		mg/L	5	S2540C-11			8/28/17 21:00	JAS	B
Total Organic Carbon (TOC)	1.2		mg/L	0.50	SW846 9060A			8/29/17 10:29	PAG	D
Turbidity	ND		NTU	0.10	S2130B-01			8/24/17 22:18	MSA	B

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ANALYTICAL RESULTS

Workorder: 2256328 3RD QTR 2017 GWMP-FORM 19Q

Lab ID: **2256328002**

Date Collected: 8/23/2017 11:28

Matrix: Ground Water

Sample ID: **FFMP002W**

Date Received: 8/23/2017 16:50

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	22.6		mg/L	0.11	SW846 6010C	8/29/17 04:25	LXC	9/6/17 13:10	SRT	J1
Iron, Total	ND		mg/L	0.067	SW846 6010C	8/29/17 04:25	LXC	9/6/17 13:10	SRT	J1
Magnesium, Total	9.7		mg/L	0.11	SW846 6010C	8/29/17 04:25	LXC	9/6/17 13:10	SRT	J1
Manganese, Total	0.28		mg/L	0.0056	SW846 6010C	8/29/17 04:25	LXC	9/6/17 13:10	SRT	J1
Potassium, Total	1.4		mg/L	0.56	SW846 6010C	8/29/17 04:25	LXC	9/6/17 13:10	SRT	J1
Sodium, Total	14.6		mg/L	0.56	SW846 6010C	8/29/17 04:25	LXC	9/6/17 13:10	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	67.610		Feet		Field			8/23/17 11:28	BGS	C
Elev Top MW Casing above MSL	613.20		Feet		Field			8/23/17 11:28	BGS	C
Flow Rate	1.23		gal/min		Field			8/23/17 11:28	BGS	C
Ground Water Elevation	545.590		ft/MSL		Field			8/23/17 11:28	BGS	C
pH, Field (SM4500B)	5.700		pH_Units		Field			8/23/17 11:28	BGS	C
Sample Depth	85.000		Feet		Field			8/23/17 11:28	BGS	C
Specific Conductance, Field	356		umhos/cm	1	Field			8/23/17 11:28	BGS	C
Temperature	12.98		Deg. C		Field			8/23/17 11:28	BGS	C
Total Well Depth	90.020		Feet		Field			8/23/17 11:28	BGS	C
Volume in Water Column	32.943		Gallons		Field			8/23/17 11:28	BGS	C
Water Level After Purge	80.290		Feet		Field			8/23/17 11:28	BGS	C
Well Volumes Purged	0.75		Vol		Field			8/23/17 11:28	BGS	C



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ANALYTICAL RESULTS

Workorder: 2256328 3RD QTR 2017 GWMP-FORM 19Q

Lab ID: **2256328003**

Date Collected: 8/23/2017 14:56

Matrix: Ground Water

Sample ID: **FFMP032W**

Date Received: 8/23/2017 16:50

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			8/28/17 17:02	DD	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			8/28/17 17:02	DD	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/28/17 17:02	DD	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/28/17 17:02	DD	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/28/17 17:02	DD	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/28/17 17:02	DD	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/28/17 17:02	DD	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			8/28/17 17:02	DD	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			8/28/17 17:02	DD	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			8/28/17 17:02	DD	G
Toluene	ND		ug/L	1.0	SW846 8260B			8/28/17 17:02	DD	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			8/28/17 17:02	DD	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			8/28/17 17:02	DD	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			8/28/17 17:02	DD	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			8/28/17 17:02	DD	G
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	97.4		%	62 - 133	SW846 8260B			8/28/17 17:02	DD	G
4-Bromofluorobenzene (S)	126	3	%	79 - 114	SW846 8260B			8/28/17 17:02	DD	G
Dibromofluoromethane (S)	92.3		%	78 - 116	SW846 8260B			8/28/17 17:02	DD	G
Toluene-d8 (S)	106		%	76 - 127	SW846 8260B			8/28/17 17:02	DD	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	68		mg/L	5	S2320B-97			8/25/17 05:25	MSA	B
Alkalinity, Total	68	4	mg/L	5	S2320B-97			8/25/17 05:25	MSA	B
Ammonia-N	0.614		mg/L	0.100	D6919-09			9/20/17 11:34	JAM	A
Chemical Oxygen Demand (COD)	ND		mg/L	7	EPA 410.4			8/29/17 18:19	AK	A
Chloride	22.3		mg/L	2.0	EPA 300.0			8/24/17 22:21	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			8/24/17 22:21	CHW	B
Nitrate-N	1.2		mg/L	0.20	EPA 300.0			8/24/17 22:21	CHW	B
pH	7.28	1	pH_Units		S4500HB-11			8/25/17 05:25	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	9/6/17 00:00	JLG	9/6/17 09:48	JLG	F
Specific Conductance	190		umhos/cm	1	SW846 9050A			8/25/17 05:25	MSA	B
Sulfate	ND		mg/L	2.0	EPA 300.0			8/24/17 22:21	CHW	B
Total Dissolved Solids	141	2	mg/L	5	S2540C-11			8/28/17 21:00	JAS	B
Total Organic Carbon (TOC)	0.98		mg/L	0.50	SW846 9060A			8/29/17 10:29	PAG	D
Turbidity	43.0		NTU	0.10	S2130B-01			8/24/17 22:18	MSA	B

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ANALYTICAL RESULTS

Workorder: 2256328 3RD QTR 2017 GWMP-FORM 19Q

Lab ID: **2256328003**
Sample ID: **FFMP032W**

Date Collected: 8/23/2017 14:56 Matrix: Ground Water
Date Received: 8/23/2017 16:50

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	18.3		mg/L	0.11	SW846 6010C	8/29/17 04:25	LXC	9/6/17 13:14	SRT	J1
Iron, Total	3.8		mg/L	0.067	SW846 6010C	8/29/17 04:25	LXC	9/6/17 13:14	SRT	J1
Magnesium, Total	5.0		mg/L	0.11	SW846 6010C	8/29/17 04:25	LXC	9/6/17 13:14	SRT	J1
Manganese, Total	0.53		mg/L	0.0056	SW846 6010C	8/29/17 04:25	LXC	9/6/17 13:14	SRT	J1
Potassium, Total	1.3		mg/L	0.56	SW846 6010C	8/29/17 04:25	LXC	9/6/17 13:14	SRT	J1
Sodium, Total	15.2		mg/L	0.56	SW846 6010C	8/29/17 04:25	LXC	9/6/17 13:14	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	48.760		Feet		Field			8/23/17 14:56	BGS	C
Elev Top MW Casing above MSL	594.09		Feet		Field			8/23/17 14:56	BGS	C
Flow Rate	1.48		gal/min		Field			8/23/17 14:56	BGS	C
Ground Water Elevation	545.330		ft/MSL		Field			8/23/17 14:56	BGS	C
pH, Field (SM4500B)	6.680		pH_Units		Field			8/23/17 14:56	BGS	C
Sample Depth	62.000		Feet		Field			8/23/17 14:56	BGS	C
Specific Conductance, Field	250		umhos/cm	1	Field			8/23/17 14:56	BGS	C
Temperature	13.37		Deg. C		Field			8/23/17 14:56	BGS	C
Total Well Depth	77.600		Feet		Field			8/23/17 14:56	BGS	C
Volume in Water Column	42.395		Gallons		Field			8/23/17 14:56	BGS	C
Water Level After Purge	59.200		Feet		Field			8/23/17 14:56	BGS	C
Well Volumes Purged	1.01		Vol		Field			8/23/17 14:56	BGS	C



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Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2256328 3RD QTR 2017 GWMP-FORM 19Q

Lab ID: **2256328004**
Sample ID: **FFMP027W**

Date Collected: 8/23/2017 15:48 Matrix: Ground Water
Date Received: 8/23/2017 16:50

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			8/28/17 17:23	DD	G
1,2-Dibromoethane	ND	4	ug/L	1.0	SW846 8260B			8/28/17 17:23	DD	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/28/17 17:23	DD	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/28/17 17:23	DD	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/28/17 17:23	DD	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/28/17 17:23	DD	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/28/17 17:23	DD	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			8/28/17 17:23	DD	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			8/28/17 17:23	DD	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			8/28/17 17:23	DD	G
Toluene	ND	2,3	ug/L	1.0	SW846 8260B			8/28/17 17:23	DD	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			8/28/17 17:23	DD	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			8/28/17 17:23	DD	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			8/28/17 17:23	DD	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			8/28/17 17:23	DD	G
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	97.3		%	62 - 133	SW846 8260B			8/28/17 17:23	DD	G
4-Bromofluorobenzene (S)	109		%	79 - 114	SW846 8260B			8/28/17 17:23	DD	G
Dibromofluoromethane (S)	91.1		%	78 - 116	SW846 8260B			8/28/17 17:23	DD	G
Toluene-d8 (S)	96.8		%	76 - 127	SW846 8260B			8/28/17 17:23	DD	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	11		mg/L	5	S2320B-97			8/25/17 05:34	MSA	B
Alkalinity, Total	11	5	mg/L	5	S2320B-97			8/25/17 05:34	MSA	B
Ammonia-N	ND		mg/L	0.100	D6919-09			9/20/17 11:53	JAM	A
Chemical Oxygen Demand (COD)	ND		mg/L	7	EPA 410.4			8/29/17 18:19	AK	A
Chloride	34.0		mg/L	2.0	EPA 300.0			8/24/17 22:34	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			8/24/17 22:34	CHW	B
Nitrate-N	10.3		mg/L	0.20	EPA 300.0			8/24/17 22:34	CHW	B
pH	5.81	1	pH_Units		S4500HB-11			8/25/17 05:34	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	9/6/17 00:00	JLG	9/6/17 09:48	JLG	F
Specific Conductance	231		umhos/cm	1	SW846 9050A			8/25/17 05:34	MSA	B
Sulfate	5.6		mg/L	2.0	EPA 300.0			8/24/17 22:34	CHW	B
Total Dissolved Solids	203		mg/L	5	S2540C-11			8/28/17 21:00	JAS	B
Total Organic Carbon (TOC)	0.60		mg/L	0.50	SW846 9060A			8/29/17 10:29	PAG	D
Turbidity	0.11		NTU	0.10	S2130B-01			8/24/17 22:18	MSA	B

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ANALYTICAL RESULTS

Workorder: 2256328 3RD QTR 2017 GWMP-FORM 19Q

Lab ID: **2256328004**
Sample ID: **FFMP027W**

Date Collected: 8/23/2017 15:48 Matrix: Ground Water
Date Received: 8/23/2017 16:50

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	2150		mg/L	2.2	SW846 6010C	8/29/17 04:25	LXC	9/6/17 20:17	SRT	J1
Iron, Total	71.8		mg/L	1.3	SW846 6010C	8/29/17 04:25	LXC	9/6/17 20:17	SRT	J1
Magnesium, Total	476		mg/L	2.2	SW846 6010C	8/29/17 04:25	LXC	9/6/17 20:17	SRT	J1
Manganese, Total	2.7		mg/L	0.11	SW846 6010C	8/29/17 04:25	LXC	9/6/17 20:17	SRT	J1
Potassium, Total	2940		mg/L	11.1	SW846 6010C	8/29/17 04:25	LXC	9/6/17 20:17	SRT	J1
Sodium, Total	9000		mg/L	11.1	SW846 6010C	8/29/17 04:25	LXC	9/6/17 20:17	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	22.590		Feet		Field			8/23/17 15:48	BGS	C
Elev Top MW Casing above MSL	522.10		Feet		Field			8/23/17 15:48	BGS	C
Flow Rate	5.83		gal/min		Field			8/23/17 15:48	BGS	C
Ground Water Elevation	499.510		ft/MSL		Field			8/23/17 15:48	BGS	C
pH, Field (SM4500B)	4.960		pH_Units		Field			8/23/17 15:48	BGS	C
Sample Depth	45.000		Feet		Field			8/23/17 15:48	BGS	C
Specific Conductance, Field	288		umhos/cm	1	Field			8/23/17 15:48	BGS	C
Temperature	13.92		Deg. C		Field			8/23/17 15:48	BGS	C
Total Well Depth	53.500		Feet		Field			8/23/17 15:48	BGS	C
Volume in Water Column	45.438		Gallons		Field			8/23/17 15:48	BGS	C
Water Level After Purge	23.290		Feet		Field			8/23/17 15:48	BGS	C
Well Volumes Purged	5.13		Vol		Field			8/23/17 15:48	BGS	C



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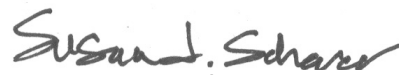
ANALYTICAL RESULTS

Workorder: 2256328 3RD QTR 2017 GWMP-FORM 19Q

Lab ID: **2256328005**
Sample ID: **FIELD BLANK**

Date Collected: 8/23/2017 15:50 Matrix: Ground Water
Date Received: 8/23/2017 16:50

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			8/28/17 15:34	DD	A
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			8/28/17 15:34	DD	A
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/28/17 15:34	DD	A
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/28/17 15:34	DD	A
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/28/17 15:34	DD	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/28/17 15:34	DD	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/28/17 15:34	DD	A
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			8/28/17 15:34	DD	A
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			8/28/17 15:34	DD	A
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			8/28/17 15:34	DD	A
Toluene	ND		ug/L	1.0	SW846 8260B			8/28/17 15:34	DD	A
Total Xylenes	ND		ug/L	3.0	SW846 8260B			8/28/17 15:34	DD	A
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			8/28/17 15:34	DD	A
Trichloroethene	ND		ug/L	1.0	SW846 8260B			8/28/17 15:34	DD	A
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			8/28/17 15:34	DD	A
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	96.7		%	62 - 133	SW846 8260B			8/28/17 15:34	DD	A
4-Bromofluorobenzene (S)	107		%	79 - 114	SW846 8260B			8/28/17 15:34	DD	A
Dibromofluoromethane (S)	91.3		%	78 - 116	SW846 8260B			8/28/17 15:34	DD	A
Toluene-d8 (S)	102		%	76 - 127	SW846 8260B			8/28/17 15:34	DD	A



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ANALYTICAL RESULTS

Workorder: 2256328 3RD QTR 2017 GWMP-FORM 19Q

Lab ID: **2256328006**
Sample ID: **TRIP BLANK**

Date Collected: 8/23/2017 16:50 Matrix: Ground Water
Date Received: 8/23/2017 16:50

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			8/28/17 15:56	DD	A
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			8/28/17 15:56	DD	A
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/28/17 15:56	DD	A
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/28/17 15:56	DD	A
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/28/17 15:56	DD	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/28/17 15:56	DD	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/28/17 15:56	DD	A
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			8/28/17 15:56	DD	A
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			8/28/17 15:56	DD	A
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			8/28/17 15:56	DD	A
Toluene	ND		ug/L	1.0	SW846 8260B			8/28/17 15:56	DD	A
Total Xylenes	ND		ug/L	3.0	SW846 8260B			8/28/17 15:56	DD	A
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			8/28/17 15:56	DD	A
Trichloroethene	ND		ug/L	1.0	SW846 8260B			8/28/17 15:56	DD	A
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			8/28/17 15:56	DD	A
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	94.8		%	62 - 133	SW846 8260B			8/28/17 15:56	DD	A
4-Bromofluorobenzene (S)	107		%	79 - 114	SW846 8260B			8/28/17 15:56	DD	A
Dibromofluoromethane (S)	93.8		%	78 - 116	SW846 8260B			8/28/17 15:56	DD	A
Toluene-d8 (S)	104		%	76 - 127	SW846 8260B			8/28/17 15:56	DD	A



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PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
2256328001	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.				
2256328001	2	FFMP031W	S2540C-11	Total Dissolved Solids
The method blank associated with this analyte had a result of 20 mg/L. Criteria states that the method blank should be less than 5 mg/L.				
2256328001	4	FFMP031W	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
2256328002	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.				
2256328002	2	FFMP002W	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
2256328003	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.				
2256328003	2	FFMP032W	S2540C-11	Total Dissolved Solids
The method blank associated with this analyte had a result of 20 mg/L. Criteria states that the method blank should be less than 5 mg/L.				
2256328003	3	FFMP032W	SW846 8260B	4-Bromofluorobenzene
The surrogate 4-Bromofluorobenzene for method SW846 8260B was outside of control limits. The % Recovery was reported as 126 and the control limits were 79 to 114. This result was reported at a dilution of 1.				
2256328003	4	FFMP032W	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
2256328004	1	FFMP027W	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				
2256328004	2	FFMP027W	SW846 8260B	Toluene
The QC sample type MS for method SW846 8260B was outside the control limits for the analyte Toluene. The % Recovery was reported as 137 and the control limits were 80 to 125.				
2256328004	3	FFMP027W	SW846 8260B	Toluene
The QC sample type MSD for method SW846 8260B was outside the control limits for the analyte Toluene. The RPD was reported as 39.5 and the upper control limit is 20.				
2256328004	4	FFMP027W	SW846 8260B	1,2-Dibromoethane
The QC sample type MSD for method SW846 8260B was outside the control limits for the analyte 1,2-Dibromoethane. The RPD was reported as 23.3 and the upper control limit is 19.				
2256328004	5	FFMP027W	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				

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CHAIN OF CUSTODY/ REQUEST FOR ANALYSIS

Generated by ALS

1 of 1

2 2 5 6 3 2 8 *

COCLABELS MUST BE COMPLETED BY RECEIVING LAB

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 ☒ Normal-Standard TAT is 10-12 business days.

☐ Rush-Subject to ALS approval and surcharges.

Date Required: Approved By:

Email: ☒ Y mreider@LCSWMA.com

Fax: ☒ Y No: (717) 397-9973

Sample Description/Location (as it will appear on the lab report)

Sample Date

Time

1. FFMP031W 8-23-17 10:54

2. FFMP002W 8-23-17 14:28

3. FFMP032W 8-23-17 14:56

4. FFMP033W 8-23-17 15:48

5. Field Blank 8-23-17 15:50

6. Trip Blank 8-23-17 16:50

7

8

9

10

Project Comments:

LOGGED BY (signature):

REVIEWED BY (signature):

Date Time

Relinquished By / Company Name

1. *Red Hake* 8-23-17 16:50

3

5

7

9

State Samples Collected In

USACE ☐ Navy ☐ PA ☒ NC ☐

Special Processing

USACE ☐ Navy ☐ PA ☒ NC ☐

ALS Field Services: ☐ Pickup ☐ Labor ☐ Composite Sampling ☐ Rental Equipment ☐ Other:

Standard ☐ CLP-like ☐ USACE ☐ Reportable to PADEP? Yes ☐ No ☒ PWSID # EDDS: Format Type