

January 2, 2019

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

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

Dear Ms. Sauls:

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

1. USEPA MCL's exceedance report; Samples 2, 3A, 16, 28, & 33W exceeded the primary standard for nitrate, samples are consistent with historic data the cause is attributed to agricultural impacts. No other MCL's were exceeded.
2. USEPA SMCL's exceedance report; Samples 2W, 2DW, 3AW, 4AW, 5W, 17W, 18W, 26RW, 30RW, 31W, 32W, 33W exceeded the secondary standard for manganese, Samples 2DW, 2SW, 31W, 32W & 33W exceeded the secondary standard for iron, Samples 2DW, 4AW, 5W, 17W & 26RW exceeded the secondary standard for total dissolved solids, and Samples 2DW, 5W, & 17W exceeded the secondary standard for chlorides all samples are consistent with historic levels and exceedances are attributed to soil parent material, geologic conditions and historic land use. ARM reviews the site historic Chloride issues annually and has assessed the causes. No other SMCL's were exceeded.
3. A copy of the field sampling data sheets for all locations.

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

Rethink. Recover. Renew.



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

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

www.lcswma.org

Respectfully Submitted,

A handwritten signature in black ink, appearing to read "Nick Rogers", written in a cursive style.

Nick Rogers
Environmental Compliance Manager

Enclosures:

cc: Mark Reider, Dan Brown, Bob Eshbach, Jeff Musser, Jordan Gallagher
Ed Rawski, Randy Weiss (PADEP)



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

Date Prepared/Revised
12/28/2018

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: FFMP029W Well Spring Stream Other
 Upgradient/Upstream 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: 34.88 ft Measured from: Land Surface TOC

Casing Stickup: 2.00 ft Elevation of Water Level: 442.42 ft./MSL

Sampling Depth: 55 ft Volume of Water Column: 34.69 gal

Total Well Depth: 58.5 ft Sampling Method: Pumped Bailed Grab

Well Purged: Yes No Well Volumes Purged: 2.5

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

Spring Flow Rate: gpm

Sample Date (mm/dd/yy): 11/16/2018 Sample Collection Time: 10:01

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3001068001 Final Lab Analysis CompletionDate: 12/1/2018

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

Comments: _____

I.D. No 101389

Monitoring Point No. FFMP029W

Sample Date 11/16/2018

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	0.123	D6919-09
BICARBONATE ALKALINITY	9	SM20-2320B
CALCIUM, TOTAL	4.9	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	26.2	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	94	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	4.5	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	19	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	2.8	EPA 300
pH-FIELD (SU)	4.74	FIELD
pH-LAB (SU)	6.11	SM20-4500HB
POTASSIUM, TOTAL	1.5	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	11.5	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	142	FIELD
SPEC. COND., LAB (umhos/cm)	126	SW846 9050A
SULFATE	2 ND	EPA 300
ALKALINITY	9	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	104	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	0.5 ND	SW846 9060A
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.88	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.

T Please indicate detection limit if analyte is not detected.

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

Remaining quarterly samples only require total metals analysis.

I.D. No 101389

Monitoring Point No. FFMP029W

Sample Date 11/16/2018

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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General Reference: Section 273.284
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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: FFMP26RW Well Spring Stream Other
 Upgradient/Upstream 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: 59.68 ft Measured from: Land Surface TOC

Casing Stickup: 3.30 ft Elevation of Water Level: 487.72 ft./MSL

Sampling Depth: 105 ft Volume of Water Column: 79.78 gal

Total Well Depth: 114 ft Sampling Method: Pumped Bailed Grab

Well Purged: Yes No Well Volumes Purged: 1.8

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

Spring Flow Rate: gpm

Sample Date (mm/dd/yy): 11/16/2018 Sample Collection Time: 11:20

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3001068002 Final Lab Analysis CompletionDate: 12/2/2018

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

Comments: _____

I.D. No 101389

Monitoring Point No. FFMP26RW

Sample Date 11/16/2018

FORM 19
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES
ANALYTES

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

ANALYTE	VALUE ^T	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	D6919-09
BICARBONATE ALKALINITY	39	SM20-2320B
CALCIUM, TOTAL	86	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	184	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	67 ND	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	20.5	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	890	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	1.8	EPA 300
pH-FIELD (SU)	5.21	FIELD
pH-LAB (SU)	6.27	SM20-4500HB
POTASSIUM, TOTAL	10.2	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	66.3	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	1046	FIELD
SPEC. COND., LAB (umhos/cm)	1080	SW846 9050A
SULFATE	70.1	EPA 300
ALKALINITY	39	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	676	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	2	SW846 9060A
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.19	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.

T Please indicate detection limit if analyte is not detected.

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

I.D. No 101389

Monitoring Point No. FFMP26RW

Sample Date 11/16/2018

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^o 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: 64 ft Measured from: Land Surface TOC

Casing Stickup: 2.38 ft Elevation of Water Level: 548.66 ft./MSL

Sampling Depth: 130 ft Volume of Water Column: 111.62 gal

Total Well Depth: 140 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): 11/16/2018 Sample Collection Time: 12:40

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3001068003 Final Lab Analysis Completion Date: 12/2/2018

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

Comments: _____

I.D. No 101389

Monitoring Point No. FFMP031W

Sample Date 11/16/2018

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	0.579	D6919-09
BICARBONATE ALKALINITY	52	SM20-2320B
CALCIUM, TOTAL	34.3	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	23.6	EPA 300
FLUORIDE	0.24	EPA 300
IRON, TOTAL (ug/l)	2300	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	3.5	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	280	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	0.2 ND	EPA 300
pH-FIELD (SU)	7.98	FIELD
pH-LAB (SU)	7.37	SM20-4500HB
POTASSIUM, TOTAL	1.5	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	9.5	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	282	FIELD
SPEC. COND., LAB (umhos/cm)	251	SW846 9050A
SULFATE	39.5	EPA 300
ALKALINITY	52	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	307	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	0.72	SW846 9060A
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	8.32	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. FFMP031W

Sample Date 11/16/2018

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

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

T Please indicate detection limit if analyte is not detected.



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DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

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QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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General Reference: Section 273.284
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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: 58.61 ft Measured from: Land Surface TOC

Casing Stickup: 1.60 ft Elevation of Water Level: 554.59 ft./MSL

Sampling Depth: 85 ft Volume of Water Column: 163.01 gal

Total Well Depth: 169.6 ft Sampling Method: Pumped Bailed Grab

Well Purged: Yes No Well Volumes Purged: 0.7

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

Spring Flow Rate: gpm

Sample Date (mm/dd/yy): 11/16/2018 Sample Collection Time: 13:28

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3001068004 Final Lab Analysis Completion Date: 12/2/2018

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

Comments: _____

I.D. No 101389

Monitoring Point No. FFMP002W

Sample Date 11/16/2018

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	0.12	D6919-09
BICARBONATE ALKALINITY	5 ND	SM20-2320B
CALCIUM, TOTAL	23.1	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	22.7	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	110	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	8.9	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	270	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	26	EPA 300
pH-FIELD (SU)	5.19	FIELD
pH-LAB (SU)	5.43	SM20-4500HB
POTASSIUM, TOTAL	1.2	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	14.4	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	220	FIELD
SPEC. COND., LAB (umhos/cm)	292	SW846 9050A
SULFATE	7.9	EPA 300
ALKALINITY	5 ND	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	135	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	0.74	SW846 9060A
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.11	SM 2130B

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I.D. No 101389

Monitoring Point No. FFMP002W

Sample Date 11/16/2018

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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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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: 48.63 ft Measured from: Land Surface TOC

Casing Stickup: 2.06 ft Elevation of Water Level: 545.46 ft./MSL

Sampling Depth: 62 ft Volume of Water Column: 38.73 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): 11/16/2018 Sample Collection Time: 14:19

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3001068005 Final Lab Analysis CompletionDate: 12/2/2018

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

Comments: _____

I.D. No 101389

Monitoring Point No. FFMP032W

Sample Date 11/16/2018

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	0.709	D6919-09
BICARBONATE ALKALINITY	78	SM20-2320B
CALCIUM, TOTAL	15.1	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	22.1	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	14300	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	4.9	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	680	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	0.2	EPA 300
pH-FIELD (SU)	6.67	FIELD
pH-LAB (SU)	7.16	SM20-4500HB
POTASSIUM, TOTAL	1.7	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	15.2	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	217	FIELD
SPEC. COND., LAB (umhos/cm)	185	SW846 9050A
SULFATE	2 ND	EPA 300
ALKALINITY	78	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	113	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	0.86	SW846 9060A
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	11.3	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. FFMP032W

Sample Date 11/16/2018

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

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

T Please indicate detection limit if analyte is not detected.



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

Date Prepared/Revised
12/28/2018

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 Well Spring Stream Other
 Upgradient/Upstream 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: 35.48 ft Measured from: Land Surface TOC

Casing Stickup: 2.00 ft Elevation of Water Level: 445.22 ft./MSL

Sampling Depth: 135 ft Volume of Water Column: 168.92 gal

Total Well Depth: 150.5 ft Sampling Method: Pumped Bailed Grab

Well Purged: 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): 11/19/2018 Sample Collection Time: 11:26

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3001349001 Final Lab Analysis CompletionDate: 12/2/2018

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

Comments: _____

I.D. No 101389

Monitoring Point No. FFMP017W

Sample Date 11/19/2018

FORM 19
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES
ANALYTES

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

ANALYTE	VALUE ^T	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	D6919-09
BICARBONATE ALKALINITY	53	SM20-2320B
CALCIUM, TOTAL	86.1	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	333	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	67 ND	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	37.7	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	540	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	2.1	EPA 300
pH-FIELD (SU)	5.36	FIELD
pH-LAB (SU)	6.61	SM20-4500HB
POTASSIUM, TOTAL	5.5	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	75.8	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	1273	FIELD
SPEC. COND., LAB (umhos/cm)	1320	SW846 9050A
SULFATE	55.2	EPA 300
ALKALINITY	53	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	696	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	2.1	SW846 9060A
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.22	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.

T Please indicate detection limit if analyte is not detected.

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

I.D. No 101389

Monitoring Point No. FFMP017W

Sample Date 11/19/2018

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

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

T Please indicate detection limit if analyte is not detected.



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

Date Prepared/Revised
12/28/2018

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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: FFMP015W Well Spring Stream Other
 Upgradient/Upstream 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: 54.72 ft Measured from: Land Surface TOC

Casing Stickup: 1.90 ft Elevation of Water Level: 521.68 ft./MSL

Sampling Depth: 135 ft Volume of Water Column: 138.32 gal

Total Well Depth: 148.9 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): 11/19/2018 Sample Collection Time: 13:30

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3001349002 Final Lab Analysis Completion Date: 12/2/2018

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

Comments: _____

I.D. No 101389

Monitoring Point No. FFMP015W

Sample Date 11/19/2018

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	0.602	D6919-09
BICARBONATE ALKALINITY	17	SM20-2320B
CALCIUM, TOTAL	8.2	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	11.4	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	67 ND	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	9.6	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	43	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	7.5	EPA 300
pH-FIELD (SU)	5.17	FIELD
pH-LAB (SU)	6.35	SM20-4500HB
POTASSIUM, TOTAL	2	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	22.5	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	261	FIELD
SPEC. COND., LAB (umhos/cm)	242	SW846 9050A
SULFATE	52.3	EPA 300
ALKALINITY	17	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	62	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	0.9	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. FFMP015W

Sample Date 11/19/2018

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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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 Well Spring Stream Other
 Upgradient/Upstream 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: 47.88 ft Measured from: Land Surface TOC

Casing Stickup: 1.20 ft Elevation of Water Level: 543.02 ft./MSL

Sampling Depth: 130 ft Volume of Water Column: 145.87 gal

Total Well Depth: 147.2 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): 11/19/2018 Sample Collection Time: 14:59

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3001349003 Final Lab Analysis CompletionDate: 12/2/2018

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

Comments: _____

I.D. No 101389

Monitoring Point No. FFMP03AW

Sample Date 11/19/2018

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	16.2	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	27.2	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	67 ND	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	11.5	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	270	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	20	EPA 300
pH-FIELD (SU)	4.96	FIELD
pH-LAB (SU)	6.01	SM20-4500HB
POTASSIUM, TOTAL	1.4	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	12.1	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	292	FIELD
SPEC. COND., LAB (umhos/cm)	271	SW846 9050A
SULFATE	2.8	EPA 300
ALKALINITY	16	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	111	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	1.7	SW846 9060A
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.1 ND	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.

T Please indicate detection limit if analyte is not detected.

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

I.D. No 101389

Monitoring Point No. FFMP03AW

Sample Date 11/19/2018

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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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: 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: 26.5 ft Measured from: Land Surface TOC

Casing Stickup: 2.20 ft Elevation of Water Level: 535.8 ft./MSL

Sampling Depth: 85 ft Volume of Water Column: 93.26 gal

Total Well Depth: 90 ft Sampling Method: Pumped Bailed Grab

Well Purged: Yes No Well Volumes Purged: 1.5

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

Spring Flow Rate: gpm

Sample Date (mm/dd/yy): 11/20/2018 Sample Collection Time: 14:46

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3001515001 Final Lab Analysis CompletionDate: 12/5/2018

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

Comments: _____

I.D. No 101389

Monitoring Point No. FFMP30RW

Sample Date 11/20/2018

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	23	SM20-2320B
CALCIUM, TOTAL	11.8	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	73.8	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	67 ND	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	9.9	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	430	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	4.7	EPA 300
pH-FIELD (SU)	4.89	FIELD
pH-LAB (SU)	5.69	SM20-4500HB
POTASSIUM, TOTAL	1.4	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	36.5	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	366	FIELD
SPEC. COND., LAB (umhos/cm)	334	SW846 9050A
SULFATE	21.6	EPA 300
ALKALINITY	23	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	350	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	0.95	SW846 9060A
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.34	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.

T Please indicate detection limit if analyte is not detected.

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

I.D. No 101389

Monitoring Point No. FFMP30RW

Sample Date 11/20/2018

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

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

T Please indicate detection limit if analyte is not detected.



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

Date Prepared/Revised
12/28/2018

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: FFMP04AW Well Spring Stream Other
 Upgradient/Upstream 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: 29.88 ft Measured from: Land Surface TOC

Casing Stickup: 2.52 ft Elevation of Water Level: 530.84 ft./MSL

Sampling Depth: 146 ft Volume of Water Column: 398.94 gal

Total Well Depth: 301.52 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): 11/20/2018 Sample Collection Time: 15:55

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3001515002 Final Lab Analysis Completion Date: 12/5/2018

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

Comments: _____

I.D. No 101389

Monitoring Point No. FFMP04AW

Sample Date 11/20/2018

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	150	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	56.6	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	67 ND	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	25.2	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	170	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	6.9	EPA 300
pH-FIELD (SU)	6.6	FIELD
pH-LAB (SU)	7.26	SM20-4500HB
POTASSIUM, TOTAL	2.1	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	83.1	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	1436	FIELD
SPEC. COND., LAB (umhos/cm)	1470	SW846 9050A
SULFATE	6.1	EPA 300
ALKALINITY	205	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	1590	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	1.2	SW846 9060A
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.33	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.

T Please indicate detection limit if analyte is not detected.

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

I.D. No 101389

Monitoring Point No. FFMP04AW

Sample Date 11/20/2018

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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12/28/2018

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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 Well Spring Stream Other
 Upgradient/Upstream 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: 48.22 ft Measured from: Land Surface TOC

Casing Stickup: 1.70 ft Elevation of Water Level: 489.18 ft./MSL

Sampling Depth: 135 ft Volume of Water Column: 149.48 gal

Total Well Depth: 150 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): 11/21/2018 Sample Collection Time: 9:37

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3002137001 Final Lab Analysis CompletionDate: 12/6/2018

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

Comments: _____

I.D. No 101389

Monitoring Point No. FFMP005W

Sample Date 11/21/2018

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	50	SM20-2320B
CALCIUM, TOTAL	89.3	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	251	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	67 ND	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	23.1	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	85	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	3.2	EPA 300
pH-FIELD (SU)	5.11	FIELD
pH-LAB (SU)	5.96	SM20-4500HB
POTASSIUM, TOTAL	3	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	63.1	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	1243	FIELD
SPEC. COND., LAB (umhos/cm)	1110	SW846 9050A
SULFATE	73.7	EPA 300
ALKALINITY	50	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	655	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	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. FFMP005W

Sample Date 11/21/2018

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
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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: 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: 23.42 ft Measured from: Land Surface TOC

Casing Stickup: 2.46 ft Elevation of Water Level: 448.78 ft./MSL

Sampling Depth: 40 ft Volume of Water Column: 18.28 gal

Total Well Depth: 51.43 ft Sampling Method: Pumped Bailed Grab

Well Purged: Yes No Well Volumes Purged: 3.3

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

Spring Flow Rate: gpm

Sample Date (mm/dd/yy): 11/21/2018 Sample Collection Time: 10:10

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3002137002 Final Lab Analysis Completion Date: 12/6/2018

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

Comments: _____

I.D. No 101389

Monitoring Point No. FFMP018W

Sample Date 11/21/2018

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	0.273	D6919-09
BICARBONATE ALKALINITY	30	SM20-2320B
CALCIUM, TOTAL	34.8	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	114	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)	450	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	4.7	EPA 300
pH-FIELD (SU)	5.29	FIELD
pH-LAB (SU)	6.26	SM20-4500HB
POTASSIUM, TOTAL	8.2	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	40.3	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	610	FIELD
SPEC. COND., LAB (umhos/cm)	612	SW846 9050A
SULFATE	42.4	EPA 300
ALKALINITY	30	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	367	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	2.1	SW846 9060A
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.26	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.

T Please indicate detection limit if analyte is not detected.

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

Remaining quarterly samples only require total metals analysis.

I.D. No 101389

Monitoring Point No. FFMP018W

Sample Date 11/21/2018

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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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: FFMP019W Well Spring Stream Other
 Upgradient/Upstream Downgradient/Downstream

Location (County): Lancaster County

Municipality: Manor Township

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

Depth to Water Level: 24.15 ft Measured from: Land Surface TOC

Casing Stickup: 1.79 ft Elevation of Water Level: 447.80 ft./MSL

Sampling Depth: 49 ft Volume of Water Column: 70.91 gal

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

Well Purged: Yes No Well Volumes Purged: 2.5

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

Spring Flow Rate: gpm

Sample Date (mm/dd/yy): 11/21/2018 Sample Collection Time: 10:57

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3002137003 Final Lab Analysis CompletionDate: 12/6/2018

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

Comments: _____

I.D. No 101389

Monitoring Point No. FFMP019W

Sample Date 11/21/2018

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	73	SM20-2320B
CALCIUM, TOTAL	54.6	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	72.8	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	67 ND	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	5.3	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	5.6 ND	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	0.4	EPA 300
pH-FIELD (SU)	5.9	FIELD
pH-LAB (SU)	6.94	SM20-4500HB
POTASSIUM, TOTAL	0.97	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	9.7	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	433	FIELD
SPEC. COND., LAB (umhos/cm)	431	SW846 9050A
SULFATE	15.1	EPA 300
ALKALINITY	73	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	253	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	0.79	SW846 9060A
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.1 ND	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.

T Please indicate detection limit if analyte is not detected.

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

Remaining quarterly samples only require total metals analysis.

I.D. No 101389

Monitoring Point No. FFMP019W

Sample Date 11/21/2018

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: FFMP02DW Well Spring Stream Other
 Upgradient/Upstream 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: 17.85 ft Measured from: Land Surface TOC

Casing Stickup: _____ ft Elevation of Water Level: 491.75 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: 1.0

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

Spring Flow Rate: _____ gpm

Sample Date (mm/dd/yy): 11/21/2018 Sample Collection Time: 12:40

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3002137004 Final Lab Analysis CompletionDate: 12/6/2018

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

Comments: _____

I.D. No 101389

Monitoring Point No. FFMP02DW

Sample Date 11/21/2018

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	0.131	D6919-09
BICARBONATE ALKALINITY	110	SM20-2320B
CALCIUM, TOTAL	119	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	362	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	850	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	19.6	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	520	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	4.6	EPA 300
pH-FIELD (SU)	6.87	FIELD
pH-LAB (SU)	7.6	SM20-4500HB
POTASSIUM, TOTAL	1.9	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	101	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	1441	FIELD
SPEC. COND., LAB (umhos/cm)	1450	SW846 9050A
SULFATE	32.6	EPA 300
ALKALINITY	110	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	834	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	1.8	SW846 9060A
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	5.34	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.

T Please indicate detection limit if analyte is not detected.

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

I.D. No 101389

Monitoring Point No. FFMP02DW

Sample Date 11/21/2018

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

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

T Please indicate detection limit if analyte is not detected.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT



Date Prepared/Revised
12/28/2018

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: FFMP02SW Well Spring Stream Other
 Upgradient/Upstream Downgradient/Downstream

Location (County): Lancaster County Municipality: MANOR TOWNSHIP

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

Depth to Water Level: 13.85 ft Measured from: Land Surface TOC

Casing Stickup: _____ ft Elevation of Water Level: 496.05 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: 1.0

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

Spring Flow Rate: _____ gpm

Sample Date (mm/dd/yy): 11/21/2018 Sample Collection Time: 13:05

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3002137005 Final Lab Analysis CompletionDate: 12/6/2018

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

Comments: _____

I.D. No 101389

Monitoring Point No. FFMP02SW

Sample Date 11/21/2018

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	35	SM20-2320B
CALCIUM, TOTAL	14.2	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	16	EPA 410.4
CHLORIDE	27.6	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	520	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	5	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	16	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	9.9	EPA 300
pH-FIELD (SU)	5.37	FIELD
pH-LAB (SU)	6.08	SM20-4500HB
POTASSIUM, TOTAL	6.3	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	30.2	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	311	FIELD
SPEC. COND., LAB (umhos/cm)	279	SW846 9050A
SULFATE	28.9	EPA 300
ALKALINITY	35	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	190	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	4.9	SW846 9060A
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	15.7	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.

T Please indicate detection limit if analyte is not detected.

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

Remaining quarterly samples only require total metals analysis.

I.D. No 101389

Monitoring Point No. FFMP02SW

Sample Date 11/21/2018

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

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

T Please indicate detection limit if analyte is not detected.



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

Date Prepared/Revised
12/28/2018

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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: 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: 16.61 ft Measured from: Land Surface TOC

Casing Stickup: 0.49 ft Elevation of Water Level: 499.91 ft./MSL

Sampling Depth: 79 ft Volume of Water Column: 116.60 gal

Total Well Depth: 96 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): 11/21/2018 Sample Collection Time: 14:44

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3002137006 Final Lab Analysis CompletionDate: 12/6/2018

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

Comments: _____

I.D. No 101389

Monitoring Point No. FFMP033W

Sample Date 11/21/2018

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	0.515	D6919-09
BICARBONATE ALKALINITY	45	SM20-2320B
CALCIUM, TOTAL	25.1	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	38.4	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	4500	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	8.5	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	690	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	10.5	EPA 300
pH-FIELD (SU)	5.51	FIELD
pH-LAB (SU)	6.22	SM20-4500HB
POTASSIUM, TOTAL	1.5	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	13.1	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	338	FIELD
SPEC. COND., LAB (umhos/cm)	303	SW846 9050A
SULFATE	8	EPA 300
ALKALINITY	45	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	258	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	1	SW846 9060A
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	7.08	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.

T Please indicate detection limit if analyte is not detected.

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

I.D. No 101389

Monitoring Point No. FFMP033W

Sample Date 11/21/2018

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
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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: 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: 3.56 ft Measured from: Land Surface TOC

Casing Stickup: 2.50 ft Elevation of Water Level: 461.44 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: 2.4

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

Spring Flow Rate: _____ gpm

Sample Date (mm/dd/yy): 11/21/2018 Sample Collection Time: 16:46

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3002137007 Final Lab Analysis CompletionDate: 12/6/2018

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

Comments: _____

I.D. No 101389

Monitoring Point No. FFMP028W

Sample Date 11/21/2018

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	31	SM20-2320B
CALCIUM, TOTAL	40	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	79.7	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	67 ND	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	17.2	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	9.9	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	19.8	EPA 300
pH-FIELD (SU)	5.15	FIELD
pH-LAB (SU)	6	SM20-4500HB
POTASSIUM, TOTAL	2.3	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	27.5	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	569	FIELD
SPEC. COND., LAB (umhos/cm)	567	SW846 9050A
SULFATE	23.5	EPA 300
ALKALINITY	31	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	370	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	1.3	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 11/21/2018

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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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: 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: 20.6 ft Measured from: Land Surface TOC

Casing Stickup: 1.50 ft Elevation of Water Level: 456.2 ft./MSL

Sampling Depth: 39 ft Volume of Water Column: 28.49 gal

Total Well Depth: 40 ft Sampling Method: Pumped Bailed Grab

Well Purged: Yes No Well Volumes Purged: 4.1

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

Spring Flow Rate: gpm

Sample Date (mm/dd/yy): 11/21/2018 Sample Collection Time: 15:29

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3002137008 Final Lab Analysis Completion Date: 12/6/2018

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

Comments: _____

I.D. No 101389

Monitoring Point No. FFMP025W

Sample Date 11/21/2018

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	58	SM20-2320B
CALCIUM, TOTAL	28.9	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	56.7	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	67 ND	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	15.3	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	5.6 ND	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	2.6	EPA 300
pH-FIELD (SU)	5.58	FIELD
pH-LAB (SU)	6.47	SM20-4500HB
POTASSIUM, TOTAL	1.9	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	22.5	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	437	FIELD
SPEC. COND., LAB (umhos/cm)	432	SW846 9050A
SULFATE	49.7	EPA 300
ALKALINITY	58	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	274	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	1.9	SW846 9060A
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.69	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.

T Please indicate detection limit if analyte is not detected.

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

I.D. No 101389

Monitoring Point No. FFMP025W

Sample Date 11/21/2018

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: 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: 18.32 ft Measured from: Land Surface TOC

Casing Stickup: 1.97 ft Elevation of Water Level: 456.28 ft./MSL

Sampling Depth: 135 ft Volume of Water Column: 193.10 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): 11/21/2018 Sample Collection Time: 17:07

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3002137009 Final Lab Analysis Completion Date: 12/6/2018

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

Comments: _____

I.D. No 101389

Monitoring Point No. FFMP016W

Sample Date 11/21/2018

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	27.3	SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	109	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	67 ND	SW846 6010C
IRON, DISSOLVED (ug/l)		SW846 6010C
MAGNESIUM, TOTAL	13.4	SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)	7.9	SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	12.3	EPA 300
pH-FIELD (SU)	5.34	FIELD
pH-LAB (SU)	6.23	SM20-4500HB
POTASSIUM, TOTAL	2	SW846 6010C
POTASSIUM, DISSOLVED		SW846 6010C
SODIUM, TOTAL	20.9	SW846 6010C
SODIUM, DISSOLVED		SW846 6010C
SPEC. COND., FIELD (umhos/cm)	470	FIELD
SPEC. COND., LAB (umhos/cm)	374	SW846 9050A
SULFATE	67.8	EPA 300
ALKALINITY	43	SM20-2320B
TDS (TOT. DISSOLVED SOLIDS)	192	SM20-2540C
TOC (TOTAL ORGANIC CARBON)	1.9	SW846 9060A
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	2.64	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.

T Please indicate detection limit if analyte is not detected.

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

I.D. No 101389

Monitoring Point No. FFMP016W

Sample Date 11/21/2018

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.

December 6, 2018

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

Certificate of Analysis

Project Name:	FREY FARM	Workorder:	3001068
Purchase Order:	PO1000126	Workorder ID:	4TH QTR 2018 GWMP-FORM 19Q

Dear Mr. Brown:

Enclosed are the analytical results for samples received by the laboratory on Friday, November 16, 2018.

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

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

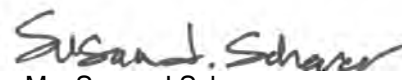
Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications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

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

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

CC: Mr. Nicholas Rogers , Ms. Jordan Gallagher , Mr. Jeff Musser

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


Ms. Susan J Scherer
Project Coordinator

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SAMPLE SUMMARY

Workorder: 3001068 4TH QTR 2018 GWMP-FORM 19Q

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
3001068001	FFMP029W	Ground Water	11/16/2018 10:01	11/16/2018 15:28	Mr. Brian G Shade
3001068002	FFMP26RW	Ground Water	11/16/2018 11:20	11/16/2018 15:28	Mr. Brian G Shade
3001068003	FFMP031W	Ground Water	11/16/2018 12:40	11/16/2018 15:28	Mr. Brian G Shade
3001068004	FFMP002W	Ground Water	11/16/2018 13:28	11/16/2018 15:28	Mr. Brian G Shade
3001068005	FFMP032W	Ground Water	11/16/2018 14:19	11/16/2018 15:28	Mr. Brian G Shade

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SAMPLE SUMMARY

Workorder: 3001068 4TH QTR 2018 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.
- An Analysis-Prep Method Cross Reference Table is included after Analytical Results & Qualifiers section in this report.

Standard Acronyms/Flags

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

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ANALYTICAL RESULTS

Workorder: 3001068 4TH QTR 2018 GWMP-FORM 19Q

Lab ID: **3001068001** Date Collected: 11/16/2018 10:01 Matrix: Ground Water
Sample ID: **FFMP029W** Date Received: 11/16/2018 15:28

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			11/26/18 05:39	PDK	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			11/26/18 05:39	PDK	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			11/26/18 05:39	PDK	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			11/26/18 05:39	PDK	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			11/26/18 05:39	PDK	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			11/26/18 05:39	PDK	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			11/26/18 05:39	PDK	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			11/26/18 05:39	PDK	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			11/26/18 05:39	PDK	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			11/26/18 05:39	PDK	G
Toluene	ND		ug/L	1.0	SW846 8260B			11/26/18 05:39	PDK	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			11/26/18 05:39	PDK	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			11/26/18 05:39	PDK	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			11/26/18 05:39	PDK	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			11/26/18 05:39	PDK	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			11/26/18 05:39	PDK	G
4-Bromofluorobenzene (S)	99.9		%	79 - 114	SW846 8260B			11/26/18 05:39	PDK	G
Dibromofluoromethane (S)	102		%	78 - 116	SW846 8260B			11/26/18 05:39	PDK	G
Toluene-d8 (S)	96.7		%	76 - 127	SW846 8260B			11/26/18 05:39	PDK	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	9		mg/L	5	SM2320B-2011			11/21/18 14:54	MSA	B
Alkalinity, Total	9	2	mg/L	5	SM2320B-2011			11/21/18 14:54	MSA	B
Ammonia-N	0.123		mg/L	0.100	D6919-09			11/27/18 20:52	NJA	A
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			11/30/18 18:22	AK	A
Chloride	26.2		mg/L	2.0	EPA 300.0			11/17/18 17:46	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			11/17/18 17:46	CHW	B
Nitrate-N	2.8		mg/L	0.20	EPA 300.0			11/17/18 17:46	CHW	B
pH	6.11	1	pH_Units		S4500HB-11			11/21/18 14:54	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	11/28/18 15:55	C_D	11/29/18 06:28	C_D	F
Specific Conductance	126		umhos/cm	1	SW846 9050A			11/21/18 14:54	MSA	B
Sulfate	ND		mg/L	2.0	EPA 300.0			11/17/18 17:46	CHW	B
Total Dissolved Solids	104		mg/L	5	S2540C-11			11/21/18 13:35	EXS	B
Total Organic Carbon (TOC)	ND		mg/L	0.50	SW846 9060A			12/1/18 19:36	PAG	D
Turbidity	0.88		NTU	0.10	SM2130B-2011			11/17/18 09:28	MSA	B

ALS Environmental Laboratory Locations Across North America

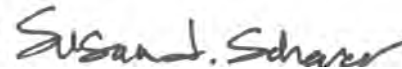
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ANALYTICAL RESULTS

Workorder: 3001068 4TH QTR 2018 GWMP-FORM 19Q

Lab ID: **3001068001** Date Collected: 11/16/2018 10:01 Matrix: Ground Water
Sample ID: **FFMP029W** Date Received: 11/16/2018 15:28

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	4.9		mg/L	0.11	SW846 6010C	11/21/18 12:45	AHI	11/27/18 19:11	SRT	J1
Iron, Total	0.094		mg/L	0.067	SW846 6010C	11/21/18 12:45	AHI	11/27/18 19:11	SRT	J1
Magnesium, Total	4.5		mg/L	0.11	SW846 6010C	11/21/18 12:45	AHI	11/27/18 19:11	SRT	J1
Manganese, Total	0.019		mg/L	0.0056	SW846 6010C	11/21/18 12:45	AHI	11/27/18 19:11	SRT	J1
Potassium, Total	1.5		mg/L	0.56	SW846 6010C	11/21/18 12:45	AHI	11/27/18 19:11	SRT	J1
Sodium, Total	11.5		mg/L	0.56	SW846 6010C	11/21/18 12:45	AHI	11/27/18 19:11	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	34.88		Feet		Field			11/16/18 10:01	BGS	C
Elev Top MW Casing above MSL	477.30		Feet		Field			11/16/18 10:01	BGS	C
Flow Rate	2.35		gal/min		Field			11/16/18 10:01	BGS	C
Ground Water Elevation	442.42		ft/MSL		Field			11/16/18 10:01	BGS	C
pH, Field (SM4500B)	4.74		pH_Units		Field			11/16/18 10:01	BGS	C
Sample Depth	55.00		Feet		Field			11/16/18 10:01	BGS	C
Specific Conductance, Field	142		umhos/cm	1	Field			11/16/18 10:01	BGS	C
Temperature	11.94		Deg. C		Field			11/16/18 10:01	BGS	C
Total Well Depth	60.50		Feet		Field			11/16/18 10:01	BGS	C
Volume in Water Column	37.66		Gallons		Field			11/16/18 10:01	BGS	C
Water Level After Purge	42.06		Feet		Field			11/16/18 10:01	BGS	C
Well Volumes Purged	2.50		Vol		Field			11/16/18 10:01	BGS	C



Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 3001068 4TH QTR 2018 GWMP-FORM 19Q

Lab ID: **3001068002** Date Collected: 11/16/2018 11:20 Matrix: Ground Water
Sample ID: **FFMP26RW** Date Received: 11/16/2018 15:28

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			11/26/18 06:01	PDK	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			11/26/18 06:01	PDK	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			11/26/18 06:01	PDK	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			11/26/18 06:01	PDK	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			11/26/18 06:01	PDK	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			11/26/18 06:01	PDK	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			11/26/18 06:01	PDK	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			11/26/18 06:01	PDK	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			11/26/18 06:01	PDK	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			11/26/18 06:01	PDK	G
Toluene	ND		ug/L	1.0	SW846 8260B			11/26/18 06:01	PDK	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			11/26/18 06:01	PDK	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			11/26/18 06:01	PDK	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			11/26/18 06:01	PDK	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			11/26/18 06:01	PDK	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)	107		%	62 - 133	SW846 8260B			11/26/18 06:01	PDK	G
4-Bromofluorobenzene (S)	102		%	79 - 114	SW846 8260B			11/26/18 06:01	PDK	G
Dibromofluoromethane (S)	104		%	78 - 116	SW846 8260B			11/26/18 06:01	PDK	G
Toluene-d8 (S)	97.6		%	76 - 127	SW846 8260B			11/26/18 06:01	PDK	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	39		mg/L	5	SM2320B-2011			11/21/18 15:03	MSA	B
Alkalinity, Total	39	2	mg/L	5	SM2320B-2011			11/21/18 15:03	MSA	B
Ammonia-N	ND		mg/L	0.100	D6919-09			11/27/18 21:05	NJA	A
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			11/30/18 18:22	AK	A
Chloride	184		mg/L	2.0	EPA 300.0			11/17/18 18:03	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			11/17/18 18:03	CHW	B
Nitrate-N	1.8		mg/L	0.20	EPA 300.0			11/17/18 18:03	CHW	B
pH	6.27	1	pH_Units		S4500HB-11			11/21/18 15:03	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	11/28/18 15:55	C_D	11/29/18 06:28	C_D	F
Specific Conductance	1080		umhos/cm	1	SW846 9050A			11/21/18 15:03	MSA	B
Sulfate	70.1		mg/L	2.0	EPA 300.0			11/17/18 18:03	CHW	B
Total Dissolved Solids	676		mg/L	5	S2540C-11			11/21/18 13:35	EXS	B
Total Organic Carbon (TOC)	2.0		mg/L	0.50	SW846 9060A			12/2/18 01:04	PAG	D
Turbidity	0.19		NTU	0.10	SM2130B-2011			11/17/18 09:28	MSA	B

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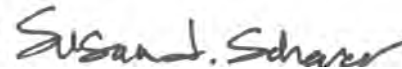
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ANALYTICAL RESULTS

Workorder: 3001068 4TH QTR 2018 GWMP-FORM 19Q

Lab ID: **3001068002** Date Collected: 11/16/2018 11:20 Matrix: Ground Water
Sample ID: **FFMP26RW** Date Received: 11/16/2018 15:28

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	86.0		mg/L	0.11	SW846 6010C	11/21/18 12:45	AHI	11/27/18 19:14	SRT	J1
Iron, Total	ND		mg/L	0.067	SW846 6010C	11/21/18 12:45	AHI	11/27/18 19:14	SRT	J1
Magnesium, Total	20.5		mg/L	0.11	SW846 6010C	11/21/18 12:45	AHI	11/27/18 19:14	SRT	J1
Manganese, Total	0.89		mg/L	0.0056	SW846 6010C	11/21/18 12:45	AHI	11/27/18 19:14	SRT	J1
Potassium, Total	10.2		mg/L	0.56	SW846 6010C	11/21/18 12:45	AHI	11/27/18 19:14	SRT	J1
Sodium, Total	66.3		mg/L	0.56	SW846 6010C	11/21/18 12:45	AHI	11/27/18 19:14	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	59.68		Feet		Field			11/16/18 11:20	BGS	C
Elev Top MW Casing above MSL	547.40		Feet		Field			11/16/18 11:20	BGS	C
Flow Rate	2.52		gal/min		Field			11/16/18 11:20	BGS	C
Ground Water Elevation	487.72		ft/MSL		Field			11/16/18 11:20	BGS	C
pH, Field (SM4500B)	5.21		pH_Units		Field			11/16/18 11:20	BGS	C
Sample Depth	105.00		Feet		Field			11/16/18 11:20	BGS	C
Specific Conductance, Field	1046		umhos/cm	1	Field			11/16/18 11:20	BGS	C
Temperature	11.56		Deg. C		Field			11/16/18 11:20	BGS	C
Total Well Depth	118.30		Feet		Field			11/16/18 11:20	BGS	C
Volume in Water Column	86.17		Gallons		Field			11/16/18 11:20	BGS	C
Water Level After Purge	76.58		Feet		Field			11/16/18 11:20	BGS	C
Well Volumes Purged	1.76		Vol		Field			11/16/18 11:20	BGS	C



Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 3001068 4TH QTR 2018 GWMP-FORM 19Q

 Lab ID: **3001068003** Date Collected: 11/16/2018 12:40 Matrix: Ground Water
 Sample ID: **FFMP031W** Date Received: 11/16/2018 15:28

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			11/26/18 06:24	PDK	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			11/26/18 06:24	PDK	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			11/26/18 06:24	PDK	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			11/26/18 06:24	PDK	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			11/26/18 06:24	PDK	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			11/26/18 06:24	PDK	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			11/26/18 06:24	PDK	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			11/26/18 06:24	PDK	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			11/26/18 06:24	PDK	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			11/26/18 06:24	PDK	G
Toluene	ND		ug/L	1.0	SW846 8260B			11/26/18 06:24	PDK	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			11/26/18 06:24	PDK	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			11/26/18 06:24	PDK	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			11/26/18 06:24	PDK	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			11/26/18 06:24	PDK	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)	105		%	62 - 133	SW846 8260B			11/26/18 06:24	PDK	G
4-Bromofluorobenzene (S)	102		%	79 - 114	SW846 8260B			11/26/18 06:24	PDK	G
Dibromofluoromethane (S)	101		%	78 - 116	SW846 8260B			11/26/18 06:24	PDK	G
Toluene-d8 (S)	97.3		%	76 - 127	SW846 8260B			11/26/18 06:24	PDK	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	52		mg/L	5	SM2320B-2011			11/21/18 15:49	MSA	B
Alkalinity, Total	52	2	mg/L	5	SM2320B-2011			11/21/18 15:49	MSA	B
Ammonia-N	0.579		mg/L	0.100	D6919-09			11/27/18 21:44	NJA	A
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			11/30/18 18:22	AK	A
Chloride	23.6		mg/L	2.0	EPA 300.0			11/17/18 18:19	CHW	B
Fluoride	0.24		mg/L	0.20	EPA 300.0			11/17/18 18:19	CHW	B
Nitrate-N	ND		mg/L	0.20	EPA 300.0			11/17/18 18:19	CHW	B
pH	7.37	1	pH_Units		S4500HB-11			11/21/18 15:49	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	11/28/18 15:55	C_D	11/29/18 06:28	C_D	F
Specific Conductance	251		umhos/cm	1	SW846 9050A			11/21/18 15:49	MSA	B
Sulfate	39.5		mg/L	2.0	EPA 300.0			11/17/18 18:19	CHW	B
Total Dissolved Solids	307		mg/L	5	S2540C-11			11/21/18 13:35	EXS	B
Total Organic Carbon (TOC)	0.72		mg/L	0.50	SW846 9060A			12/2/18 01:04	PAG	D
Turbidity	8.32		NTU	0.10	SM2130B-2011			11/17/18 09:28	MSA	B

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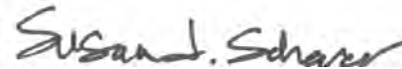
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ANALYTICAL RESULTS

Workorder: 3001068 4TH QTR 2018 GWMP-FORM 19Q

Lab ID: **3001068003** Date Collected: 11/16/2018 12:40 Matrix: Ground Water
Sample ID: **FFMP031W** Date Received: 11/16/2018 15:28

Parameters	Results	Flag	Units	RDL	Method	Prepared By	Analyzed By	Cntr
METALS								
Calcium, Total	34.3		mg/L	0.11	SW846 6010C	11/21/18 12:45 AHI	11/27/18 19:18 SRT	J1
Iron, Total	2.3		mg/L	0.067	SW846 6010C	11/21/18 12:45 AHI	11/27/18 19:18 SRT	J1
Magnesium, Total	3.5		mg/L	0.11	SW846 6010C	11/21/18 12:45 AHI	11/27/18 19:18 SRT	J1
Manganese, Total	0.28		mg/L	0.0056	SW846 6010C	11/21/18 12:45 AHI	11/27/18 19:18 SRT	J1
Potassium, Total	1.5		mg/L	0.56	SW846 6010C	11/21/18 12:45 AHI	11/27/18 19:18 SRT	J1
Sodium, Total	9.5		mg/L	0.56	SW846 6010C	11/21/18 12:45 AHI	11/27/18 19:18 SRT	J1
FIELD PARAMETERS								
Depth to Water Level	64.00		Feet		Field		11/16/18 12:40 BGS	C
Elev Top MW Casing above MSL	612.66		Feet		Field		11/16/18 12:40 BGS	C
Flow Rate	2.07		gal/min		Field		11/16/18 12:40 BGS	C
Ground Water Elevation	548.66		ft/MSL		Field		11/16/18 12:40 BGS	C
pH, Field (SM4500B)	7.98		pH_Units		Field		11/16/18 12:40 BGS	C
Sample Depth	130.00		Feet		Field		11/16/18 12:40 BGS	C
Specific Conductance, Field	282		umhos/cm	1	Field		11/16/18 12:40 BGS	C
Temperature	11.56		Deg. C		Field		11/16/18 12:40 BGS	C
Total Well Depth	142.70		Feet		Field		11/16/18 12:40 BGS	C
Volume in Water Column	115.69		Gallons		Field		11/16/18 12:40 BGS	C
Water Level After Purge	106.58		Feet		Field		11/16/18 12:40 BGS	C
Well Volumes Purged	1.00		Vol		Field		11/16/18 12:40 BGS	C



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ANALYTICAL RESULTS

Workorder: 3001068 4TH QTR 2018 GWMP-FORM 19Q

Lab ID: **3001068004** Date Collected: 11/16/2018 13:28 Matrix: Ground Water
Sample ID: **FFMP002W** Date Received: 11/16/2018 15:28

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			11/26/18 06:47	PDK	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			11/26/18 06:47	PDK	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			11/26/18 06:47	PDK	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			11/26/18 06:47	PDK	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			11/26/18 06:47	PDK	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			11/26/18 06:47	PDK	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			11/26/18 06:47	PDK	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			11/26/18 06:47	PDK	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			11/26/18 06:47	PDK	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			11/26/18 06:47	PDK	G
Toluene	ND		ug/L	1.0	SW846 8260B			11/26/18 06:47	PDK	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			11/26/18 06:47	PDK	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			11/26/18 06:47	PDK	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			11/26/18 06:47	PDK	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			11/26/18 06:47	PDK	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)	104		%	62 - 133	SW846 8260B			11/26/18 06:47	PDK	G
4-Bromofluorobenzene (S)	99.8		%	79 - 114	SW846 8260B			11/26/18 06:47	PDK	G
Dibromofluoromethane (S)	103		%	78 - 116	SW846 8260B			11/26/18 06:47	PDK	G
Toluene-d8 (S)	96.4		%	76 - 127	SW846 8260B			11/26/18 06:47	PDK	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	ND		mg/L	5	SM2320B-2011			11/21/18 15:58	MSA	B
Alkalinity, Total	ND	2	mg/L	5	SM2320B-2011			11/21/18 15:58	MSA	B
Ammonia-N	0.120		mg/L	0.100	D6919-09			11/27/18 21:18	NJA	A
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			11/30/18 18:22	AK	A
Chloride	22.7		mg/L	2.0	EPA 300.0			11/17/18 18:36	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			11/17/18 18:36	CHW	B
Nitrate-N	26.0	3	mg/L	0.50	EPA 300.0			11/27/18 04:15	CHW	B
pH	5.43	1	pH_Units		S4500HB-11			11/21/18 15:58	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	11/28/18 15:55	C_D	11/29/18 06:28	C_D	F
Specific Conductance	292		umhos/cm	1	SW846 9050A			11/21/18 15:58	MSA	B
Sulfate	7.9		mg/L	2.0	EPA 300.0			11/17/18 18:36	CHW	B
Total Dissolved Solids	135		mg/L	5	S2540C-11			11/21/18 13:35	EXS	B
Total Organic Carbon (TOC)	0.74		mg/L	0.50	SW846 9060A			12/2/18 01:04	PAG	D
Turbidity	0.11		NTU	0.10	SM2130B-2011			11/17/18 09:28	MSA	B

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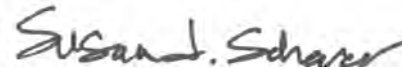
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ANALYTICAL RESULTS

Workorder: 3001068 4TH QTR 2018 GWMP-FORM 19Q

Lab ID: **3001068004** Date Collected: 11/16/2018 13:28 Matrix: Ground Water
Sample ID: **FFMP002W** Date Received: 11/16/2018 15:28

Parameters	Results	Flag	Units	RDL	Method	Prepared By	Analyzed By	Cntr	
METALS									
Calcium, Total	23.1		mg/L	0.11	SW846 6010C	11/21/18 12:45 AHI	11/27/18 19:22 SRT	J1	
Iron, Total	0.11		mg/L	0.067	SW846 6010C	11/21/18 12:45 AHI	11/27/18 19:22 SRT	J1	
Magnesium, Total	8.9		mg/L	0.11	SW846 6010C	11/21/18 12:45 AHI	11/27/18 19:22 SRT	J1	
Manganese, Total	0.27		mg/L	0.0056	SW846 6010C	11/21/18 12:45 AHI	11/27/18 19:22 SRT	J1	
Potassium, Total	1.2		mg/L	0.56	SW846 6010C	11/21/18 12:45 AHI	11/27/18 19:22 SRT	J1	
Sodium, Total	14.4		mg/L	0.56	SW846 6010C	11/21/18 12:45 AHI	11/27/18 19:22 SRT	J1	
FIELD PARAMETERS									
Depth to Water Level	58.61		Feet		Field		11/16/18 13:28 BGS	C	
Elev Top MW Casing above MSL	613.20		Feet		Field		11/16/18 13:28 BGS	C	
Flow Rate	1.56		gal/min		Field		11/16/18 13:28 BGS	C	
Ground Water Elevation	554.59		ft/MSL		Field		11/16/18 13:28 BGS	C	
pH, Field (SM4500B)	5.19		pH_Units		Field		11/16/18 13:28 BGS	C	
Sample Depth	85.00		Feet		Field		11/16/18 13:28 BGS	C	
Specific Conductance, Field	220		umhos/cm	1	Field		11/16/18 13:28 BGS	C	
Temperature	8.58		Deg. C		Field		11/16/18 13:28 BGS	C	
Total Well Depth	90.02		Feet		Field		11/16/18 13:28 BGS	C	
Volume in Water Column	46.17		Gallons		Field		11/16/18 13:28 BGS	C	
Water Level After Purge	78.71		Feet		Field		11/16/18 13:28 BGS	C	
Well Volumes Purged	0.67		Vol		Field		11/16/18 13:28 BGS	C	



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ANALYTICAL RESULTS

Workorder: 3001068 4TH QTR 2018 GWMP-FORM 19Q

Lab ID: **3001068005** Date Collected: 11/16/2018 14:19 Matrix: Ground Water
Sample ID: **FFMP032W** Date Received: 11/16/2018 15:28

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			11/26/18 07:10	PDK	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			11/26/18 07:10	PDK	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			11/26/18 07:10	PDK	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			11/26/18 07:10	PDK	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			11/26/18 07:10	PDK	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			11/26/18 07:10	PDK	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			11/26/18 07:10	PDK	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			11/26/18 07:10	PDK	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			11/26/18 07:10	PDK	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			11/26/18 07:10	PDK	G
Toluene	ND		ug/L	1.0	SW846 8260B			11/26/18 07:10	PDK	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			11/26/18 07:10	PDK	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			11/26/18 07:10	PDK	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			11/26/18 07:10	PDK	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			11/26/18 07:10	PDK	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)	104		%	62 - 133	SW846 8260B			11/26/18 07:10	PDK	G
4-Bromofluorobenzene (S)	101		%	79 - 114	SW846 8260B			11/26/18 07:10	PDK	G
Dibromofluoromethane (S)	103		%	78 - 116	SW846 8260B			11/26/18 07:10	PDK	G
Toluene-d8 (S)	96.7		%	76 - 127	SW846 8260B			11/26/18 07:10	PDK	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	78		mg/L	5	SM2320B-2011			11/21/18 16:08	MSA	B
Alkalinity, Total	78	2	mg/L	5	SM2320B-2011			11/21/18 16:08	MSA	B
Ammonia-N	0.709		mg/L	0.100	D6919-09			11/27/18 21:31	NJA	A
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			11/30/18 18:22	AK	A
Chloride	22.1		mg/L	2.0	EPA 300.0			11/17/18 18:52	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			11/17/18 18:52	CHW	B
Nitrate-N	0.20		mg/L	0.20	EPA 300.0			11/17/18 18:52	CHW	B
pH	7.16	1	pH_Units		S4500HB-11			11/21/18 16:08	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	11/28/18 15:55	C_D	11/29/18 06:28	C_D	F
Specific Conductance	185		umhos/cm	1	SW846 9050A			11/21/18 16:08	MSA	B
Sulfate	ND		mg/L	2.0	EPA 300.0			11/17/18 18:52	CHW	B
Total Dissolved Solids	113		mg/L	5	S2540C-11			11/21/18 13:35	EXS	B
Total Organic Carbon (TOC)	0.86		mg/L	0.50	SW846 9060A			12/2/18 01:04	PAG	D
Turbidity	11.3		NTU	0.10	SM2130B-2011			11/17/18 09:28	MSA	B

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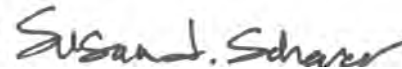
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ANALYTICAL RESULTS

Workorder: 3001068 4TH QTR 2018 GWMP-FORM 19Q

Lab ID: **3001068005** Date Collected: 11/16/2018 14:19 Matrix: Ground Water
Sample ID: **FFMP032W** Date Received: 11/16/2018 15:28

Parameters	Results	Flag	Units	RDL	Method	Prepared By	Analyzed By	Cntr
METALS								
Calcium, Total	15.1		mg/L	0.11	SW846 6010C	11/21/18 12:45 AHI	11/27/18 19:25 SRT	J1
Iron, Total	14.3		mg/L	0.067	SW846 6010C	11/21/18 12:45 AHI	11/27/18 19:25 SRT	J1
Magnesium, Total	4.9		mg/L	0.11	SW846 6010C	11/21/18 12:45 AHI	11/27/18 19:25 SRT	J1
Manganese, Total	0.68		mg/L	0.0056	SW846 6010C	11/21/18 12:45 AHI	11/27/18 19:25 SRT	J1
Potassium, Total	1.7		mg/L	0.56	SW846 6010C	11/21/18 12:45 AHI	11/27/18 19:25 SRT	J1
Sodium, Total	15.2		mg/L	0.56	SW846 6010C	11/21/18 12:45 AHI	11/27/18 19:25 SRT	J1
FIELD PARAMETERS								
Depth to Water Level	48.63		Feet		Field		11/16/18 14:19 BGS	C
Elev Top MW Casing above MSL	594.09		Feet		Field		11/16/18 14:19 BGS	C
Flow Rate	0.90		gal/min		Field		11/16/18 14:19 BGS	C
Ground Water Elevation	545.46		ft/MSL		Field		11/16/18 14:19 BGS	C
pH, Field (SM4500B)	6.67		pH_Units		Field		11/16/18 14:19 BGS	C
Sample Depth	62.00		Feet		Field		11/16/18 14:19 BGS	C
Specific Conductance, Field	217		umhos/cm	1	Field		11/16/18 14:19 BGS	C
Temperature	9.80		Deg. C		Field		11/16/18 14:19 BGS	C
Total Well Depth	77.60		Feet		Field		11/16/18 14:19 BGS	C
Volume in Water Column	42.59		Gallons		Field		11/16/18 14:19 BGS	C
Water Level After Purge	56.24		Feet		Field		11/16/18 14:19 BGS	C
Well Volumes Purged	1.00		Vol		Field		11/16/18 14:19 BGS	C



Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 3001068 4TH QTR 2018 GWMP-FORM 19Q

PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
3001068001	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.				
3001068001	2	FFMP029W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
3001068002	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.				
3001068002	2	FFMP26RW	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
3001068003	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.				
3001068003	2	FFMP031W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
3001068004	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.				
3001068004	2	FFMP002W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
3001068004	3	FFMP002W	EPA 300.0	Nitrate-N
The sample was originally run within hold time, but required further analysis that exceeded hold time.				
3001068005	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.				
3001068005	2	FFMP032W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				

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ANALYSIS - PREP METHOD CROSS REFERENCE TABLE

Workorder: 3001068 4TH QTR 2018 GWMP-FORM 19Q

Lab ID	Sample ID	Analysis Method	Prep Method
3001068001	FFMP029W	D6919-09	
3001068001	FFMP029W	EPA 300.0	
3001068001	FFMP029W	EPA 410.4	
3001068001	FFMP029W	Field	
3001068001	FFMP029W	S2540C-11	
3001068001	FFMP029W	S4500HB-11	
3001068001	FFMP029W	SM2130B-2011	
3001068001	FFMP029W	SM2320B-2011	
3001068001	FFMP029W	SW846 6010C	SW846 3015
3001068001	FFMP029W	SW846 8260B	
3001068001	FFMP029W	SW846 9050A	
3001068001	FFMP029W	SW846 9060A	
3001068001	FFMP029W	SW846 9066	420.4/9066
3001068002	FFMP26RW	D6919-09	
3001068002	FFMP26RW	EPA 300.0	
3001068002	FFMP26RW	EPA 410.4	
3001068002	FFMP26RW	Field	
3001068002	FFMP26RW	S2540C-11	
3001068002	FFMP26RW	S4500HB-11	
3001068002	FFMP26RW	SM2130B-2011	
3001068002	FFMP26RW	SM2320B-2011	
3001068002	FFMP26RW	SW846 6010C	SW846 3015
3001068002	FFMP26RW	SW846 8260B	
3001068002	FFMP26RW	SW846 9050A	
3001068002	FFMP26RW	SW846 9060A	
3001068002	FFMP26RW	SW846 9066	420.4/9066
3001068003	FFMP031W	D6919-09	
3001068003	FFMP031W	EPA 300.0	
3001068003	FFMP031W	EPA 410.4	
3001068003	FFMP031W	Field	
3001068003	FFMP031W	S2540C-11	
3001068003	FFMP031W	S4500HB-11	
3001068003	FFMP031W	SM2130B-2011	
3001068003	FFMP031W	SM2320B-2011	
3001068003	FFMP031W	SW846 6010C	SW846 3015
3001068003	FFMP031W	SW846 8260B	
3001068003	FFMP031W	SW846 9050A	
3001068003	FFMP031W	SW846 9060A	
3001068003	FFMP031W	SW846 9066	420.4/9066
3001068004	FFMP002W	D6919-09	
3001068004	FFMP002W	EPA 300.0	
3001068004	FFMP002W	EPA 410.4	
3001068004	FFMP002W	Field	
3001068004	FFMP002W	S2540C-11	
3001068004	FFMP002W	S4500HB-11	
3001068004	FFMP002W	SM2130B-2011	

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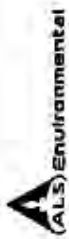
ANALYSIS - PREP METHOD CROSS REFERENCE TABLE

Workorder: 3001068 4TH QTR 2018 GWMP-FORM 19Q

Lab ID	Sample ID	Analysis Method	Prep Method
3001068004	FFMP002W	SM2320B-2011	
3001068004	FFMP002W	SW846 6010C	SW846 3015
3001068004	FFMP002W	SW846 8260B	
3001068004	FFMP002W	SW846 9050A	
3001068004	FFMP002W	SW846 9060A	
3001068004	FFMP002W	SW846 9066	420.4/9066
3001068005	FFMP032W	D6919-09	
3001068005	FFMP032W	EPA 300.0	
3001068005	FFMP032W	EPA 410.4	
3001068005	FFMP032W	Field	
3001068005	FFMP032W	S2540C-11	
3001068005	FFMP032W	S4500HB-11	
3001068005	FFMP032W	SM2130B-2011	
3001068005	FFMP032W	SM2320B-2011	
3001068005	FFMP032W	SW846 6010C	SW846 3015
3001068005	FFMP032W	SW846 8260B	
3001068005	FFMP032W	SW846 9050A	
3001068005	FFMP032W	SW846 9060A	
3001068005	FFMP032W	SW846 9066	420.4/9066

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Generated by ALS

**CHAIN OF CUSTODY/
REQUEST FOR ANALYSIS**

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

Client Name: Lancaster County Solid Waste MA

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

Lancaster, PA 17604

Contact: Mark Reider

Phone#: (717) 735-0193

Project Name#: Frey Farm Quarterly (GWMP)

Bill To: Lancaster County Solid Waste MA

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

Date Required: _____ Approved By: _____

Email? X-Y mreider@LCSWMA.com

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

Sample Description/Location (as it will appear on the lab report)	Sample Date	Time	Matrix	TOC	COH	VOC - Form 190	Field Measurements	Sample Depth for AUX Data	NH3-N, COD	Metals: Fe, Mn, Na, Ca, K, Mg	PH, CI, SPC, F, SO4, TDS, NO3, Turb.	Alkalinity Bicarbonate
1. FFMP029W	11/16/18	1001	G GW	2	1	2	X	X	1	1	1	1
2. FFMP026RW	11/20											
3. FFMP031W	12/40											
4. FFMP022W	13/20											
5. FFMP022N	14/19											
6.												
7.												
8.												
9.												
10.												

Project Comments:

Relinquished By / Company Name
 [Signature] ALS

Date	Time	Received By / Company Name
11/16/18	1520	[Signature]
	4	
	6	
	8	
	10	

LOGGED BY (signature): [Signature]
 REVIEWED BY (signature): [Signature]

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

ANALYSES/METHOD REQUESTED

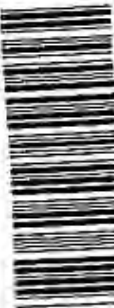
Enter Number of Containers Per Sample or Field Results Below.

Cooler Temp: 10 Therm ID: H53
 No. of Coolers: Y N Initial
 Custody Seals Present? Y N
 (if present) Seals Intact? Y N
 Received on Ice? Y N
 COC Labels Complete/Accurate? Y N
 Cont. in Good Cond.? Y N
 Correct Containers? Y N
 Correct Sample Volumes? Y N
 Correct Preservation? Y N
 Headspace/Volatiles? Y N
 Courier/Tracking #: _____
 Sample/COC Comments: _____

ALS Field Services: Pickup Labor
 Composite_Sampling Rental_Equipment
 Other: _____

Special Processing: USACE Navy
 State Samples Collected In: NY NJ PA NC

Reportable to PADEP? Yes No
 PWSID #: _____
 EDDS: Formal Type: _____



3 0 0 1 0 6 8 *
 by Receiving Lab

1 of 1

December 14, 2018

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

Certificate of Analysis

Project Name:	FREY FARM	Workorder:	3002137
Purchase Order:	PO1000126	Workorder ID:	4TH QTR 2018 GWMP-FORM 19Q

Dear Mr. Brown:

Enclosed are the analytical results for samples received by the laboratory on Wednesday, November 21, 2018.

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

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

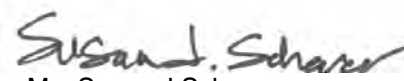
Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications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

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

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

CC: Mr. Nicholas Rogers , Ms. Jordan Gallagher , Mr. Jeff Musser

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


Ms. Susan J Scherer
Project Coordinator

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SAMPLE SUMMARY

Workorder: 3002137 4TH QTR 2018 GWMP-FORM 19Q

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
3002137001	FFMP005W	Ground Water	11/21/2018 09:37	11/21/2018 18:41	Mr. Brian G Shade
3002137002	FFMP018W	Ground Water	11/21/2018 10:10	11/21/2018 18:41	Mr. Brian G Shade
3002137003	FFMP019W	Ground Water	11/21/2018 10:57	11/21/2018 18:41	Mr. Brian G Shade
3002137004	FFMP02DW	Ground Water	11/21/2018 12:40	11/21/2018 18:41	Mr. Brian G Shade
3002137005	FFMP02SW	Ground Water	11/21/2018 13:05	11/21/2018 18:41	Mr. Brian G Shade
3002137006	FFMP033W	Ground Water	11/21/2018 14:44	11/21/2018 18:41	Mr. Brian G Shade
3002137007	FFMP028W	Ground Water	11/21/2018 16:46	11/21/2018 18:41	Mr. Brian G Shade
3002137008	FFMP025W	Ground Water	11/21/2018 15:29	11/21/2018 18:41	Mr. Brian G Shade
3002137009	FFMP016W	Ground Water	11/21/2018 17:07	11/21/2018 18:41	Mr. Brian G Shade
3002137010	TRIP BLANK	Ground Water	11/21/2018 17:07	11/21/2018 18:41	Mr. Brian G Shade
3002137011	FIELD BLANK	Ground Water	11/21/2018 17:20	11/21/2018 18:41	Mr. Brian G Shade

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SAMPLE SUMMARY

Workorder: 3002137 4TH QTR 2018 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.
- An Analysis-Prep Method Cross Reference Table is included after Analytical Results & Qualifiers section in this report.

Standard Acronyms/Flags

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

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ANALYTICAL RESULTS

Workorder: 3002137 4TH QTR 2018 GWMP-FORM 19Q

 Lab ID: **3002137001** Date Collected: 11/21/2018 09:37 Matrix: Ground Water
 Sample ID: **FFMP005W** Date Received: 11/21/2018 18:41

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			11/30/18 03:48	PDK	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			11/30/18 03:48	PDK	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			11/30/18 03:48	PDK	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			11/30/18 03:48	PDK	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			11/30/18 03:48	PDK	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			11/30/18 03:48	PDK	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			11/30/18 03:48	PDK	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			11/30/18 03:48	PDK	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			11/30/18 03:48	PDK	G
Tetrachloroethene	ND	2	ug/L	1.0	SW846 8260B			11/30/18 03:48	PDK	G
Toluene	ND		ug/L	1.0	SW846 8260B			11/30/18 03:48	PDK	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			11/30/18 03:48	PDK	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			11/30/18 03:48	PDK	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			11/30/18 03:48	PDK	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			11/30/18 03:48	PDK	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)	78.2		%	62 - 133	SW846 8260B			11/30/18 03:48	PDK	G
4-Bromofluorobenzene (S)	111		%	79 - 114	SW846 8260B			11/30/18 03:48	PDK	G
Dibromofluoromethane (S)	81.7		%	78 - 116	SW846 8260B			11/30/18 03:48	PDK	G
Toluene-d8 (S)	88.8		%	76 - 127	SW846 8260B			11/30/18 03:48	PDK	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	50		mg/L	5	SM2320B-2011			11/28/18 11:42	MSA	B
Alkalinity, Total	50	3	mg/L	5	SM2320B-2011			11/28/18 11:42	MSA	B
Ammonia-N	ND		mg/L	0.100	D6919-09			12/4/18 07:31	NJA	A
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			12/6/18 18:18	AK	A
Chloride	251		mg/L	5.0	EPA 300.0			11/29/18 05:53	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			11/22/18 14:51	CHW	B
Nitrate-N	3.2		mg/L	0.20	EPA 300.0			11/22/18 14:51	CHW	B
pH	5.96	1	pH_Units		S4500HB-11			11/28/18 11:42	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	11/30/18 15:59	C_D	12/3/18 14:10	C_D	F
Specific Conductance	1110		umhos/cm	1	SW846 9050A			11/28/18 11:42	MSA	B
Sulfate	73.7		mg/L	2.0	EPA 300.0			11/22/18 14:51	CHW	B
Total Dissolved Solids	655	4	mg/L	5	S2540C-11			12/3/18 16:45	EXS	B
Total Organic Carbon (TOC)	3.0		mg/L	0.50	SW846 9060A			12/6/18 15:02	PAG	D
Turbidity	ND		NTU	0.10	SM2130B-2011			11/22/18 07:50	MBW	B

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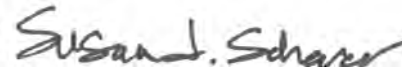
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ANALYTICAL RESULTS

Workorder: 3002137 4TH QTR 2018 GWMP-FORM 19Q

Lab ID: **3002137001** Date Collected: 11/21/2018 09:37 Matrix: Ground Water
 Sample ID: **FFMP005W** Date Received: 11/21/2018 18:41

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	89.3		mg/L	0.11	SW846 6010C	11/28/18 15:00	BMK	12/4/18 18:25	SRT	J1
Iron, Total	ND		mg/L	0.067	SW846 6010C	11/28/18 15:00	BMK	12/4/18 18:25	SRT	J1
Magnesium, Total	23.1		mg/L	0.11	SW846 6010C	11/28/18 15:00	BMK	12/4/18 18:25	SRT	J1
Manganese, Total	0.085		mg/L	0.0056	SW846 6010C	11/28/18 15:00	BMK	12/4/18 18:25	SRT	J1
Potassium, Total	3.0		mg/L	0.56	SW846 6010C	11/28/18 15:00	BMK	12/4/18 18:25	SRT	J1
Sodium, Total	63.1		mg/L	0.56	SW846 6010C	11/28/18 15:00	BMK	12/4/18 18:25	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	48.22		Feet		Field			11/21/18 09:36	BGS	C
Elev Top MW Casing above MSL	537.40		Feet		Field			11/21/18 09:36	BGS	C
Flow Rate	1.89		gal/min		Field			11/21/18 09:36	BGS	C
Ground Water Elevation	489.18		ft/MSL		Field			11/21/18 09:36	BGS	C
pH, Field (SM4500B)	5.11		pH_Units		Field			11/21/18 09:36	BGS	C
Sample Depth	135.00		Feet		Field			11/21/18 09:36	BGS	C
Specific Conductance, Field	1243		umhos/cm	1	Field			11/21/18 09:36	BGS	C
Temperature	11.24		Deg. C		Field			11/21/18 09:36	BGS	C
Total Well Depth	149.70		Feet		Field			11/21/18 09:36	BGS	C
Volume in Water Column	149.18		Gallons		Field			11/21/18 09:36	BGS	C
Water Level After Purge	88.76		Feet		Field			11/21/18 09:36	BGS	C
Well Volumes Purged	0.76		Vol		Field			11/21/18 09:36	BGS	C



Ms. Susan J Scherer
 Project Coordinator

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ANALYTICAL RESULTS

Workorder: 3002137 4TH QTR 2018 GWMP-FORM 19Q

 Lab ID: **3002137002** Date Collected: 11/21/2018 10:10 Matrix: Ground Water
 Sample ID: **FFMP018W** Date Received: 11/21/2018 18:41

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			11/30/18 04:10	PDK	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			11/30/18 04:10	PDK	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			11/30/18 04:10	PDK	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			11/30/18 04:10	PDK	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			11/30/18 04:10	PDK	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			11/30/18 04:10	PDK	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			11/30/18 04:10	PDK	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			11/30/18 04:10	PDK	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			11/30/18 04:10	PDK	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			11/30/18 04:10	PDK	G
Toluene	ND		ug/L	1.0	SW846 8260B			11/30/18 04:10	PDK	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			11/30/18 04:10	PDK	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			11/30/18 04:10	PDK	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			11/30/18 04:10	PDK	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			11/30/18 04:10	PDK	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)	80.5		%	62 - 133	SW846 8260B			11/30/18 04:10	PDK	G
4-Bromofluorobenzene (S)	112		%	79 - 114	SW846 8260B			11/30/18 04:10	PDK	G
Dibromofluoromethane (S)	83.8		%	78 - 116	SW846 8260B			11/30/18 04:10	PDK	G
Toluene-d8 (S)	89.5		%	76 - 127	SW846 8260B			11/30/18 04:10	PDK	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	30		mg/L	5	SM2320B-2011			11/28/18 11:50	MSA	B
Alkalinity, Total	30	2	mg/L	5	SM2320B-2011			11/28/18 11:50	MSA	B
Ammonia-N	0.273		mg/L	0.100	D6919-09			12/4/18 07:46	NJA	A
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			12/6/18 18:18	AK	A
Chloride	114		mg/L	2.0	EPA 300.0			11/22/18 15:03	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			11/22/18 15:03	CHW	B
Nitrate-N	4.7		mg/L	0.20	EPA 300.0			11/22/18 15:03	CHW	B
pH	6.26	1	pH_Units		S4500HB-11			11/28/18 11:50	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	11/30/18 15:59	C_D	12/3/18 14:10	C_D	F
Specific Conductance	612		umhos/cm	1	SW846 9050A			11/28/18 11:50	MSA	B
Sulfate	42.4		mg/L	2.0	EPA 300.0			11/22/18 15:03	CHW	B
Total Dissolved Solids	367	3	mg/L	5	S2540C-11			12/3/18 16:45	EXS	B
Total Organic Carbon (TOC)	2.1		mg/L	0.50	SW846 9060A			12/6/18 15:02	PAG	D
Turbidity	0.26		NTU	0.10	SM2130B-2011			11/22/18 07:25	MBW	B

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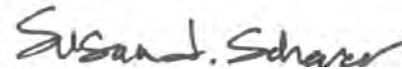
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ANALYTICAL RESULTS

Workorder: 3002137 4TH QTR 2018 GWMP-FORM 19Q

Lab ID: **3002137002** Date Collected: 11/21/2018 10:10 Matrix: Ground Water
 Sample ID: **FFMP018W** Date Received: 11/21/2018 18:41

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	34.8		mg/L	0.11	SW846 6010C	11/28/18 15:00	BMK	12/4/18 18:29	SRT	J1
Iron, Total	ND		mg/L	0.067	SW846 6010C	11/28/18 15:00	BMK	12/4/18 18:29	SRT	J1
Magnesium, Total	15.2		mg/L	0.11	SW846 6010C	11/28/18 15:00	BMK	12/4/18 18:29	SRT	J1
Manganese, Total	0.45		mg/L	0.0056	SW846 6010C	11/28/18 15:00	BMK	12/4/18 18:29	SRT	J1
Potassium, Total	8.2		mg/L	0.56	SW846 6010C	11/28/18 15:00	BMK	12/4/18 18:29	SRT	J1
Sodium, Total	40.3		mg/L	0.56	SW846 6010C	11/28/18 15:00	BMK	12/4/18 18:29	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	23.42		Feet		Field			11/21/18 10:10	BGS	C
Elev Top MW Casing above MSL	472.20		Feet		Field			11/21/18 10:10	BGS	C
Flow Rate	5.00		gal/min		Field			11/21/18 10:10	BGS	C
Ground Water Elevation	448.78		ft/MSL		Field			11/21/18 10:10	BGS	C
pH, Field (SM4500B)	5.29		pH_Units		Field			11/21/18 10:10	BGS	C
Sample Depth	40.00		Feet		Field			11/21/18 10:10	BGS	C
Specific Conductance, Field	610		umhos/cm	1	Field			11/21/18 10:10	BGS	C
Temperature	11.28		Deg. C		Field			11/21/18 10:10	BGS	C
Total Well Depth	51.46		Feet		Field			11/21/18 10:10	BGS	C
Volume in Water Column	18.23		Gallons		Field			11/21/18 10:10	BGS	C
Water Level After Purge	28.19		Feet		Field			11/21/18 10:10	BGS	C
Well Volumes Purged	3.29		Vol		Field			11/21/18 10:10	BGS	C



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ANALYTICAL RESULTS

Workorder: 3002137 4TH QTR 2018 GWMP-FORM 19Q

Lab ID: **3002137003** Date Collected: 11/21/2018 10:57 Matrix: Ground Water
Sample ID: **FFMP019W** Date Received: 11/21/2018 18:41

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			11/30/18 04:32	PDK	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			11/30/18 04:32	PDK	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			11/30/18 04:32	PDK	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			11/30/18 04:32	PDK	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			11/30/18 04:32	PDK	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			11/30/18 04:32	PDK	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			11/30/18 04:32	PDK	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			11/30/18 04:32	PDK	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			11/30/18 04:32	PDK	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			11/30/18 04:32	PDK	G
Toluene	ND		ug/L	1.0	SW846 8260B			11/30/18 04:32	PDK	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			11/30/18 04:32	PDK	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			11/30/18 04:32	PDK	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			11/30/18 04:32	PDK	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			11/30/18 04:32	PDK	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)	81.5		%	62 - 133	SW846 8260B			11/30/18 04:32	PDK	G
4-Bromofluorobenzene (S)	111		%	79 - 114	SW846 8260B			11/30/18 04:32	PDK	G
Dibromofluoromethane (S)	84.8		%	78 - 116	SW846 8260B			11/30/18 04:32	PDK	G
Toluene-d8 (S)	90.4		%	76 - 127	SW846 8260B			11/30/18 04:32	PDK	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	73		mg/L	5	SM2320B-2011			11/28/18 12:00	MSA	B
Alkalinity, Total	73	2	mg/L	5	SM2320B-2011			11/28/18 12:00	MSA	B
Ammonia-N	ND		mg/L	0.100	D6919-09			12/4/18 08:01	NJA	A
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			12/4/18 17:40	AK	A
Chloride	72.8		mg/L	2.0	EPA 300.0			11/22/18 15:15	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			11/22/18 15:15	CHW	B
Nitrate-N	0.40		mg/L	0.20	EPA 300.0			11/22/18 15:15	CHW	B
pH	6.94	1	pH_Units		S4500HB-11			11/28/18 12:00	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	11/30/18 15:59	C_D	12/3/18 14:10	C_D	F
Specific Conductance	431		umhos/cm	1	SW846 9050A			11/28/18 12:00	MSA	B
Sulfate	15.1		mg/L	2.0	EPA 300.0			11/22/18 15:15	CHW	B
Total Dissolved Solids	253	3	mg/L	5	S2540C-11			12/3/18 16:45	EXS	B
Total Organic Carbon (TOC)	0.79		mg/L	0.50	SW846 9060A			12/6/18 15:02	PAG	D
Turbidity	ND		NTU	0.10	SM2130B-2011			11/22/18 07:25	MBW	B

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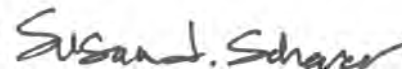
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ANALYTICAL RESULTS

Workorder: 3002137 4TH QTR 2018 GWMP-FORM 19Q

Lab ID: **3002137003** Date Collected: 11/21/2018 10:57 Matrix: Ground Water
Sample ID: **FFMP019W** Date Received: 11/21/2018 18:41

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	54.6		mg/L	0.11	SW846 6010C	11/28/18 15:00	BMK	12/4/18 18:32	SRT	J1
Iron, Total	ND		mg/L	0.067	SW846 6010C	11/28/18 15:00	BMK	12/4/18 18:32	SRT	J1
Magnesium, Total	5.3		mg/L	0.11	SW846 6010C	11/28/18 15:00	BMK	12/4/18 18:32	SRT	J1
Manganese, Total	ND		mg/L	0.0056	SW846 6010C	11/28/18 15:00	BMK	12/4/18 18:32	SRT	J1
Potassium, Total	0.97		mg/L	0.56	SW846 6010C	11/28/18 15:00	BMK	12/4/18 18:32	SRT	J1
Sodium, Total	9.7		mg/L	0.56	SW846 6010C	11/28/18 15:00	BMK	12/4/18 18:32	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	24.15		Feet		Field			11/21/18 10:57	BGS	C
Elev Top MW Casing above MSL	471.95		Feet		Field			11/21/18 10:57	BGS	C
Flow Rate	4.41		gal/min		Field			11/21/18 10:57	BGS	C
Ground Water Elevation	447.80		ft/MSL		Field			11/21/18 10:57	BGS	C
pH, Field (SM4500B)	5.90		pH_Units		Field			11/21/18 10:57	BGS	C
Sample Depth	49.00		Feet		Field			11/21/18 10:57	BGS	C
Specific Conductance, Field	433		umhos/cm	1	Field			11/21/18 10:57	BGS	C
Temperature	11.25		Deg. C		Field			11/21/18 10:57	BGS	C
Total Well Depth	132.79		Feet		Field			11/21/18 10:57	BGS	C
Volume in Water Column	70.62		Gallons		Field			11/21/18 10:57	BGS	C
Water Level After Purge	33.56		Feet		Field			11/21/18 10:57	BGS	C
Well Volumes Purged	2.50		Vol		Field			11/21/18 10:57	BGS	C



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ANALYTICAL RESULTS

Workorder: 3002137 4TH QTR 2018 GWMP-FORM 19Q

Lab ID: **3002137004** Date Collected: 11/21/2018 12:40 Matrix: Ground Water
Sample ID: **FFMP02DW** Date Received: 11/21/2018 18:41

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			11/30/18 04:54	PDK	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			11/30/18 04:54	PDK	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			11/30/18 04:54	PDK	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			11/30/18 04:54	PDK	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			11/30/18 04:54	PDK	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			11/30/18 04:54	PDK	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			11/30/18 04:54	PDK	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			11/30/18 04:54	PDK	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			11/30/18 04:54	PDK	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			11/30/18 04:54	PDK	G
Toluene	ND		ug/L	1.0	SW846 8260B			11/30/18 04:54	PDK	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			11/30/18 04:54	PDK	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			11/30/18 04:54	PDK	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			11/30/18 04:54	PDK	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			11/30/18 04:54	PDK	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)	82.2		%	62 - 133	SW846 8260B			11/30/18 04:54	PDK	G
4-Bromofluorobenzene (S)	113		%	79 - 114	SW846 8260B			11/30/18 04:54	PDK	G
Dibromofluoromethane (S)	85		%	78 - 116	SW846 8260B			11/30/18 04:54	PDK	G
Toluene-d8 (S)	88.7		%	76 - 127	SW846 8260B			11/30/18 04:54	PDK	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	110		mg/L	5	SM2320B-2011			11/28/18 12:10	MSA	B
Alkalinity, Total	110	2	mg/L	5	SM2320B-2011			11/28/18 12:10	MSA	B
Ammonia-N	0.131		mg/L	0.100	D6919-09			12/4/18 08:16	NJA	A
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			12/4/18 17:40	AK	A
Chloride	362		mg/L	5.0	EPA 300.0			11/29/18 07:12	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			11/22/18 15:28	CHW	B
Nitrate-N	4.6		mg/L	0.20	EPA 300.0			11/22/18 15:28	CHW	B
pH	7.60	1	pH_Units		S4500HB-11			11/28/18 12:10	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	11/30/18 15:59	C_D	12/3/18 14:10	C_D	F
Specific Conductance	1450		umhos/cm	1	SW846 9050A			11/28/18 12:10	MSA	B
Sulfate	32.6		mg/L	2.0	EPA 300.0			11/22/18 15:28	CHW	B
Total Dissolved Solids	834	3	mg/L	5	S2540C-11			12/3/18 16:45	EXS	B
Total Organic Carbon (TOC)	1.8		mg/L	0.50	SW846 9060A			12/6/18 15:02	PAG	D
Turbidity	5.34		NTU	0.10	SM2130B-2011			11/22/18 07:50	MBW	B

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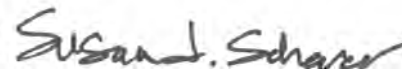
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ANALYTICAL RESULTS

Workorder: 3002137 4TH QTR 2018 GWMP-FORM 19Q

Lab ID: **3002137004** Date Collected: 11/21/2018 12:40 Matrix: Ground Water
 Sample ID: **FFMP02DW** Date Received: 11/21/2018 18:41

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	119		mg/L	0.11	SW846 6010C	11/28/18 15:00	BMK	12/4/18 18:36	SRT	J1
Iron, Total	0.85		mg/L	0.067	SW846 6010C	11/28/18 15:00	BMK	12/4/18 18:36	SRT	J1
Magnesium, Total	19.6		mg/L	0.11	SW846 6010C	11/28/18 15:00	BMK	12/4/18 18:36	SRT	J1
Manganese, Total	0.52		mg/L	0.0056	SW846 6010C	11/28/18 15:00	BMK	12/4/18 18:36	SRT	J1
Potassium, Total	1.9		mg/L	0.56	SW846 6010C	11/28/18 15:00	BMK	12/4/18 18:36	SRT	J1
Sodium, Total	101		mg/L	0.56	SW846 6010C	11/28/18 15:00	BMK	12/4/18 18:36	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	17.85		Feet		Field			11/21/18 12:40	BGS	C
Elev Top MW Casing above MSL	509.60		Feet		Field			11/21/18 12:40	BGS	C
Flow Rate	1.09		gal/min		Field			11/21/18 12:40	BGS	C
Ground Water Elevation	491.75		ft/MSL		Field			11/21/18 12:40	BGS	C
pH, Field (SM4500B)	6.87		pH_Units		Field			11/21/18 12:40	BGS	C
Sample Depth	120.00		Feet		Field			11/21/18 12:40	BGS	C
Specific Conductance, Field	1441		umhos/cm	1	Field			11/21/18 12:40	BGS	C
Temperature	9.50		Deg. C		Field			11/21/18 12:40	BGS	C
Total Well Depth	153.00		Feet		Field			11/21/18 12:40	BGS	C
Volume in Water Column	198.67		Gallons		Field			11/21/18 12:40	BGS	C
Water Level After Purge	34.35		Feet		Field			11/21/18 12:40	BGS	C
Well Volumes Purged	1.00		Vol		Field			11/21/18 12:40	BGS	C



Ms. Susan J Scherer
 Project Coordinator

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ANALYTICAL RESULTS

Workorder: 3002137 4TH QTR 2018 GWMP-FORM 19Q

Lab ID: **3002137005** Date Collected: 11/21/2018 13:05 Matrix: Ground Water
Sample ID: **FFMP02SW** Date Received: 11/21/2018 18:41

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			11/30/18 05:15	PDK	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			11/30/18 05:15	PDK	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			11/30/18 05:15	PDK	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			11/30/18 05:15	PDK	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			11/30/18 05:15	PDK	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			11/30/18 05:15	PDK	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			11/30/18 05:15	PDK	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			11/30/18 05:15	PDK	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			11/30/18 05:15	PDK	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			11/30/18 05:15	PDK	G
Toluene	ND		ug/L	1.0	SW846 8260B			11/30/18 05:15	PDK	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			11/30/18 05:15	PDK	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			11/30/18 05:15	PDK	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			11/30/18 05:15	PDK	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			11/30/18 05:15	PDK	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)	81.7		%	62 - 133	SW846 8260B			11/30/18 05:15	PDK	G
4-Bromofluorobenzene (S)	113		%	79 - 114	SW846 8260B			11/30/18 05:15	PDK	G
Dibromofluoromethane (S)	83.7		%	78 - 116	SW846 8260B			11/30/18 05:15	PDK	G
Toluene-d8 (S)	88.9		%	76 - 127	SW846 8260B			11/30/18 05:15	PDK	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	35		mg/L	5	SM2320B-2011			11/28/18 12:19	MSA	B
Alkalinity, Total	35	2	mg/L	5	SM2320B-2011			11/28/18 12:19	MSA	B
Ammonia-N	0.104		mg/L	0.100	D6919-09			12/4/18 08:30	NJA	A
Chemical Oxygen Demand (COD)	16		mg/L	15	EPA 410.4			12/4/18 17:40	AK	A
Chloride	27.6		mg/L	2.0	EPA 300.0			11/22/18 15:40	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			11/22/18 15:40	CHW	B
Nitrate-N	9.9		mg/L	0.20	EPA 300.0			11/22/18 15:40	CHW	B
pH	6.08	1	pH_Units		S4500HB-11			11/28/18 12:19	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	11/30/18 15:59	C_D	12/3/18 14:10	C_D	F
Specific Conductance	279		umhos/cm	1	SW846 9050A			11/28/18 12:19	MSA	B
Sulfate	28.9		mg/L	2.0	EPA 300.0			11/22/18 15:40	CHW	B
Total Dissolved Solids	190	3,4	mg/L	5	S2540C-11			12/3/18 18:25	EXS	B
Total Organic Carbon (TOC)	4.9		mg/L	0.50	SW846 9060A			12/6/18 15:02	PAG	D
Turbidity	15.7		NTU	0.10	SM2130B-2011			11/22/18 07:50	MBW	B

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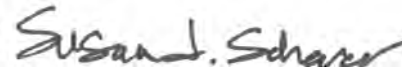
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ANALYTICAL RESULTS

Workorder: 3002137 4TH QTR 2018 GWMP-FORM 19Q

Lab ID: **3002137005** Date Collected: 11/21/2018 13:05 Matrix: Ground Water
Sample ID: **FFMP02SW** Date Received: 11/21/2018 18:41

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	14.2		mg/L	0.11	SW846 6010C	11/28/18 15:00	BMK	12/4/18 18:40	SRT	J1
Iron, Total	0.52		mg/L	0.067	SW846 6010C	11/28/18 15:00	BMK	12/4/18 18:40	SRT	J1
Magnesium, Total	5.0		mg/L	0.11	SW846 6010C	11/28/18 15:00	BMK	12/4/18 18:40	SRT	J1
Manganese, Total	0.016		mg/L	0.0056	SW846 6010C	11/28/18 15:00	BMK	12/4/18 18:40	SRT	J1
Potassium, Total	6.3		mg/L	0.56	SW846 6010C	11/28/18 15:00	BMK	12/4/18 18:40	SRT	J1
Sodium, Total	30.2		mg/L	0.56	SW846 6010C	11/28/18 15:00	BMK	12/4/18 18:40	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	13.85		Feet		Field			11/21/18 13:05	BGS	C
Elev Top MW Casing above MSL	509.90		Feet		Field			11/21/18 13:05	BGS	C
Flow Rate	0.50		gal/min		Field			11/21/18 13:05	BGS	C
Ground Water Elevation	496.05		ft/MSL		Field			11/21/18 13:05	BGS	C
pH, Field (SM4500B)	5.37		pH_Units		Field			11/21/18 13:05	BGS	C
Sample Depth	18.00		Feet		Field			11/21/18 13:05	BGS	C
Specific Conductance, Field	311		umhos/cm	1	Field			11/21/18 13:05	BGS	C
Temperature	13.68		Deg. C		Field			11/21/18 13:05	BGS	C
Total Well Depth	22.70		Feet		Field			11/21/18 13:05	BGS	C
Volume in Water Column	5.75		Gallons		Field			11/21/18 13:05	BGS	C
Water Level After Purge	17.01		Feet		Field			11/21/18 13:05	BGS	C
Well Volumes Purged	1.04		Vol		Field			11/21/18 13:05	BGS	C



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ANALYTICAL RESULTS

Workorder: 3002137 4TH QTR 2018 GWMP-FORM 19Q

 Lab ID: **3002137006** Date Collected: 11/21/2018 14:44 Matrix: Ground Water
 Sample ID: **FFMP033W** Date Received: 11/21/2018 18:41

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			11/30/18 05:37	PDK	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			11/30/18 05:37	PDK	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			11/30/18 05:37	PDK	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			11/30/18 05:37	PDK	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			11/30/18 05:37	PDK	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			11/30/18 05:37	PDK	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			11/30/18 05:37	PDK	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			11/30/18 05:37	PDK	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			11/30/18 05:37	PDK	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			11/30/18 05:37	PDK	G
Toluene	ND		ug/L	1.0	SW846 8260B			11/30/18 05:37	PDK	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			11/30/18 05:37	PDK	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			11/30/18 05:37	PDK	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			11/30/18 05:37	PDK	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			11/30/18 05:37	PDK	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)	78.4		%	62 - 133	SW846 8260B			11/30/18 05:37	PDK	G
4-Bromofluorobenzene (S)	110		%	79 - 114	SW846 8260B			11/30/18 05:37	PDK	G
Dibromofluoromethane (S)	81.2		%	78 - 116	SW846 8260B			11/30/18 05:37	PDK	G
Toluene-d8 (S)	89.6		%	76 - 127	SW846 8260B			11/30/18 05:37	PDK	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	45		mg/L	5	SM2320B-2011			11/28/18 12:27	MSA	B
Alkalinity, Total	45	2	mg/L	5	SM2320B-2011			11/28/18 12:27	MSA	B
Ammonia-N	0.515		mg/L	0.100	D6919-09			12/4/18 08:45	NJA	A
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			12/4/18 17:40	AK	A
Chloride	38.4		mg/L	2.0	EPA 300.0			11/22/18 15:52	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			11/22/18 15:52	CHW	B
Nitrate-N	10.5		mg/L	0.20	EPA 300.0			11/22/18 15:52	CHW	B
pH	6.22	1	pH_Units		S4500HB-11			11/28/18 12:27	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	11/30/18 15:59	C_D	12/3/18 14:10	C_D	F
Specific Conductance	303		umhos/cm	1	SW846 9050A			11/28/18 12:27	MSA	B
Sulfate	8.0		mg/L	2.0	EPA 300.0			11/22/18 15:52	CHW	B
Total Dissolved Solids	258		mg/L	5	S2540C-11			11/28/18 18:00	EXS	B
Total Organic Carbon (TOC)	1.0		mg/L	0.50	SW846 9060A			12/6/18 15:02	PAG	D
Turbidity	7.08		NTU	0.10	SM2130B-2011			11/22/18 07:50	MBW	B

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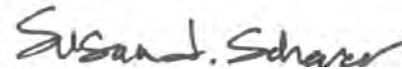
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ANALYTICAL RESULTS

Workorder: 3002137 4TH QTR 2018 GWMP-FORM 19Q

Lab ID: **3002137006** Date Collected: 11/21/2018 14:44 Matrix: Ground Water
 Sample ID: **FFMP033W** Date Received: 11/21/2018 18:41

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	25.1		mg/L	0.11	SW846 6010C	11/28/18 15:00	BMK	12/4/18 18:44	SRT	J1
Iron, Total	4.5		mg/L	0.067	SW846 6010C	11/28/18 15:00	BMK	12/4/18 18:44	SRT	J1
Magnesium, Total	8.5		mg/L	0.11	SW846 6010C	11/28/18 15:00	BMK	12/4/18 18:44	SRT	J1
Manganese, Total	0.69		mg/L	0.0056	SW846 6010C	11/28/18 15:00	BMK	12/4/18 18:44	SRT	J1
Potassium, Total	1.5		mg/L	0.56	SW846 6010C	11/28/18 15:00	BMK	12/4/18 18:44	SRT	J1
Sodium, Total	13.1		mg/L	0.56	SW846 6010C	11/28/18 15:00	BMK	12/4/18 18:44	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	16.61		Feet		Field			11/21/18 13:44	BGS	C
Elev Top MW Casing above MSL	516.52		Feet		Field			11/21/18 13:44	BGS	C
Flow Rate	1.47		gal/min		Field			11/21/18 13:44	BGS	C
Ground Water Elevation	499.91		ft/MSL		Field			11/21/18 13:44	BGS	C
pH, Field (SM4500B)	5.51		pH_Units		Field			11/21/18 13:44	BGS	C
Sample Depth	79.00		Feet		Field			11/21/18 13:44	BGS	C
Specific Conductance, Field	338		umhos/cm	1	Field			11/21/18 13:44	BGS	C
Temperature	12.13		Deg. C		Field			11/21/18 13:44	BGS	C
Total Well Depth	100.00		Feet		Field			11/21/18 13:44	BGS	C
Volume in Water Column	122.58		Gallons		Field			11/21/18 13:44	BGS	C
Water Level After Purge	22.20		Feet		Field			11/21/18 13:44	BGS	C
Well Volumes Purged	1.01		Vol		Field			11/21/18 13:44	BGS	C



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ANALYTICAL RESULTS

Workorder: 3002137 4TH QTR 2018 GWMP-FORM 19Q

Lab ID:	3002137007	Date Collected:	11/21/2018 16:46	Matrix:	Ground Water
Sample ID:	FFMP028W	Date Received:	11/21/2018 18:41		

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			11/30/18 05:59	PDK	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			11/30/18 05:59	PDK	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			11/30/18 05:59	PDK	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			11/30/18 05:59	PDK	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			11/30/18 05:59	PDK	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			11/30/18 05:59	PDK	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			11/30/18 05:59	PDK	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			11/30/18 05:59	PDK	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			11/30/18 05:59	PDK	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			11/30/18 05:59	PDK	G
Toluene	ND		ug/L	1.0	SW846 8260B			11/30/18 05:59	PDK	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			11/30/18 05:59	PDK	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			11/30/18 05:59	PDK	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			11/30/18 05:59	PDK	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			11/30/18 05:59	PDK	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)	80.6		%	62 - 133	SW846 8260B			11/30/18 05:59	PDK	G
4-Bromofluorobenzene (S)	110		%	79 - 114	SW846 8260B			11/30/18 05:59	PDK	G
Dibromofluoromethane (S)	84.3		%	78 - 116	SW846 8260B			11/30/18 05:59	PDK	G
Toluene-d8 (S)	90		%	76 - 127	SW846 8260B			11/30/18 05:59	PDK	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	31		mg/L	5	SM2320B-2011			11/28/18 12:36	MSA	B
Alkalinity, Total	31	3	mg/L	5	SM2320B-2011			11/28/18 12:36	MSA	B
Ammonia-N	ND		mg/L	0.100	D6919-09			12/4/18 09:00	NJA	A
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			12/4/18 17:40	AK	A
Chloride	79.7		mg/L	2.0	EPA 300.0			11/22/18 16:04	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			11/22/18 16:04	CHW	B
Nitrate-N	19.8		mg/L	0.20	EPA 300.0			11/22/18 16:04	CHW	B
pH	6.00	1	pH_Units		S4500HB-11			11/28/18 12:36	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	11/30/18 15:59	C_D	12/3/18 14:10	C_D	F
Specific Conductance	567		umhos/cm	1	SW846 9050A			11/28/18 12:36	MSA	B
Sulfate	23.5		mg/L	2.0	EPA 300.0			11/22/18 16:04	CHW	B
Total Dissolved Solids	370	2	mg/L	5	S2540C-11			11/28/18 18:00	EXS	B
Total Organic Carbon (TOC)	1.3		mg/L	0.50	SW846 9060A			12/6/18 15:02	PAG	D
Turbidity	0.12		NTU	0.10	SM2130B-2011			11/22/18 07:50	MBW	B

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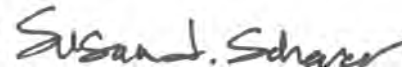
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ANALYTICAL RESULTS

Workorder: 3002137 4TH QTR 2018 GWMP-FORM 19Q

Lab ID: **3002137007** Date Collected: 11/21/2018 16:46 Matrix: Ground Water
Sample ID: **FFMP028W** Date Received: 11/21/2018 18:41

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	40.0		mg/L	0.11	SW846 6010C	11/28/18 15:00	BMK	12/4/18 18:48	SRT	J1
Iron, Total	ND		mg/L	0.067	SW846 6010C	11/28/18 15:00	BMK	12/4/18 18:48	SRT	J1
Magnesium, Total	17.2		mg/L	0.11	SW846 6010C	11/28/18 15:00	BMK	12/4/18 18:48	SRT	J1
Manganese, Total	0.0099		mg/L	0.0056	SW846 6010C	11/28/18 15:00	BMK	12/4/18 18:48	SRT	J1
Potassium, Total	2.3		mg/L	0.56	SW846 6010C	11/28/18 15:00	BMK	12/4/18 18:48	SRT	J1
Sodium, Total	27.5		mg/L	0.56	SW846 6010C	11/28/18 15:00	BMK	12/4/18 18:48	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	3.56		Feet		Field			11/21/18 16:46	BGS	C
Elev Top MW Casing above MSL	465.00		Feet		Field			11/21/18 16:46	BGS	C
Flow Rate	3.26		gal/min		Field			11/21/18 16:46	BGS	C
Ground Water Elevation	461.44		ft/MSL		Field			11/21/18 16:46	BGS	C
pH, Field (SM4500B)	5.15		pH_Units		Field			11/21/18 16:46	BGS	C
Sample Depth	50.00		Feet		Field			11/21/18 16:46	BGS	C
Specific Conductance, Field	569		umhos/cm	1	Field			11/21/18 16:46	BGS	C
Temperature	10.73		Deg. C		Field			11/21/18 16:46	BGS	C
Total Well Depth	60.00		Feet		Field			11/21/18 16:46	BGS	C
Volume in Water Column	82.97		Gallons		Field			11/21/18 16:46	BGS	C
Water Level After Purge	38.00		Feet		Field			11/21/18 16:46	BGS	C
Well Volumes Purged	2.36		Vol		Field			11/21/18 16:46	BGS	C



Ms. Susan J Scherer
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ANALYTICAL RESULTS

Workorder: 3002137 4TH QTR 2018 GWMP-FORM 19Q

 Lab ID: **3002137008** Date Collected: 11/21/2018 15:29 Matrix: Ground Water
 Sample ID: **FFMP025W** Date Received: 11/21/2018 18:41

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			11/30/18 06:21	PDK	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			11/30/18 06:21	PDK	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			11/30/18 06:21	PDK	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			11/30/18 06:21	PDK	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			11/30/18 06:21	PDK	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			11/30/18 06:21	PDK	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			11/30/18 06:21	PDK	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			11/30/18 06:21	PDK	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			11/30/18 06:21	PDK	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			11/30/18 06:21	PDK	G
Toluene	ND		ug/L	1.0	SW846 8260B			11/30/18 06:21	PDK	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			11/30/18 06:21	PDK	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			11/30/18 06:21	PDK	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			11/30/18 06:21	PDK	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			11/30/18 06:21	PDK	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)	81.5		%	62 - 133	SW846 8260B			11/30/18 06:21	PDK	G
4-Bromofluorobenzene (S)	113		%	79 - 114	SW846 8260B			11/30/18 06:21	PDK	G
Dibromofluoromethane (S)	83.5		%	78 - 116	SW846 8260B			11/30/18 06:21	PDK	G
Toluene-d8 (S)	90.9		%	76 - 127	SW846 8260B			11/30/18 06:21	PDK	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	58		mg/L	5	SM2320B-2011			11/28/18 12:45	MSA	I
Alkalinity, Total	58	2	mg/L	5	SM2320B-2011			11/28/18 12:45	MSA	I
Ammonia-N	ND		mg/L	0.100	D6919-09			12/4/18 09:15	NJA	A
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			12/6/18 18:18	AK	A
Chloride	56.7		mg/L	2.0	EPA 300.0			11/22/18 16:17	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			11/22/18 16:17	CHW	B
Nitrate-N	2.6		mg/L	0.20	EPA 300.0			11/22/18 16:17	CHW	B
pH	6.47	1	pH_Units		S4500HB-11			11/28/18 12:45	MSA	I
Phenolics	ND		mg/L	0.005	SW846 9066	11/30/18 15:59	C_D	12/3/18 14:10	C_D	F
Specific Conductance	432		umhos/cm	1	SW846 9050A			11/28/18 12:45	MSA	I
Sulfate	49.7		mg/L	2.0	EPA 300.0			11/22/18 16:17	CHW	B
Total Dissolved Solids	274		mg/L	5	S2540C-11			11/28/18 18:00	EXS	B
Total Organic Carbon (TOC)	1.9		mg/L	0.50	SW846 9060A			12/6/18 20:11	PAG	D
Turbidity	0.69		NTU	0.10	SM2130B-2011			11/22/18 07:50	MBW	B

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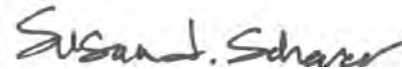
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ANALYTICAL RESULTS

Workorder: 3002137 4TH QTR 2018 GWMP-FORM 19Q

Lab ID: **3002137008** Date Collected: 11/21/2018 15:29 Matrix: Ground Water
 Sample ID: **FFMP025W** Date Received: 11/21/2018 18:41

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	28.9		mg/L	0.11	SW846 6010C	11/28/18 15:00	BMK	12/4/18 18:51	SRT	J1
Iron, Total	ND		mg/L	0.067	SW846 6010C	11/28/18 15:00	BMK	12/4/18 18:51	SRT	J1
Magnesium, Total	15.3		mg/L	0.11	SW846 6010C	11/28/18 15:00	BMK	12/4/18 18:51	SRT	J1
Manganese, Total	ND		mg/L	0.0056	SW846 6010C	11/28/18 15:00	BMK	12/4/18 18:51	SRT	J1
Potassium, Total	1.9		mg/L	0.56	SW846 6010C	11/28/18 15:00	BMK	12/4/18 18:51	SRT	J1
Sodium, Total	22.5		mg/L	0.56	SW846 6010C	11/28/18 15:00	BMK	12/4/18 18:51	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	20.60		Feet		Field			11/21/18 15:29	BGS	C
Elev Top MW Casing above MSL	476.80		Feet		Field			11/21/18 15:29	BGS	C
Flow Rate	4.20		gal/min		Field			11/21/18 15:29	BGS	C
Ground Water Elevation	456.20		ft/MSL		Field			11/21/18 15:29	BGS	C
pH, Field (SM4500B)	5.58		pH_Units		Field			11/21/18 15:29	BGS	C
Sample Depth	39.00		Feet		Field			11/21/18 15:29	BGS	C
Specific Conductance, Field	437		umhos/cm	1	Field			11/21/18 15:29	BGS	C
Temperature	11.50		Deg. C		Field			11/21/18 15:29	BGS	C
Total Well Depth	41.50		Feet		Field			11/21/18 15:29	BGS	C
Volume in Water Column	30.72		Gallons		Field			11/21/18 15:29	BGS	C
Water Level After Purge	21.25		Feet		Field			11/21/18 15:29	BGS	C
Well Volumes Purged	4.10		Vol		Field			11/21/18 15:29	BGS	C



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ANALYTICAL RESULTS

Workorder: 3002137 4TH QTR 2018 GWMP-FORM 19Q

 Lab ID: **3002137009** Date Collected: 11/21/2018 17:07 Matrix: Ground Water
 Sample ID: **FFMP016W** Date Received: 11/21/2018 18:41

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			11/30/18 06:43	PDK	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			11/30/18 06:43	PDK	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			11/30/18 06:43	PDK	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			11/30/18 06:43	PDK	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			11/30/18 06:43	PDK	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			11/30/18 06:43	PDK	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			11/30/18 06:43	PDK	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			11/30/18 06:43	PDK	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			11/30/18 06:43	PDK	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			11/30/18 06:43	PDK	G
Toluene	ND		ug/L	1.0	SW846 8260B			11/30/18 06:43	PDK	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			11/30/18 06:43	PDK	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			11/30/18 06:43	PDK	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			11/30/18 06:43	PDK	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			11/30/18 06:43	PDK	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)	80.6		%	62 - 133	SW846 8260B			11/30/18 06:43	PDK	G
4-Bromofluorobenzene (S)	111		%	79 - 114	SW846 8260B			11/30/18 06:43	PDK	G
Dibromofluoromethane (S)	82.3		%	78 - 116	SW846 8260B			11/30/18 06:43	PDK	G
Toluene-d8 (S)	89		%	76 - 127	SW846 8260B			11/30/18 06:43	PDK	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	43		mg/L	5	SM2320B-2011			11/28/18 13:27	MSA	B
Alkalinity, Total	43	2	mg/L	5	SM2320B-2011			11/28/18 13:27	MSA	B
Ammonia-N	ND		mg/L	0.100	D6919-09			12/4/18 09:59	NJA	A
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			12/6/18 18:18	AK	A
Chloride	109		mg/L	2.0	EPA 300.0			11/22/18 17:30	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			11/22/18 17:30	CHW	B
Nitrate-N	12.3		mg/L	0.20	EPA 300.0			11/22/18 17:30	CHW	B
pH	6.23	1	pH_Units		S4500HB-11			11/28/18 13:27	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	11/30/18 15:59	C_D	12/3/18 14:10	C_D	F
Specific Conductance	374		umhos/cm	1	SW846 9050A			11/28/18 13:27	MSA	B
Sulfate	67.8		mg/L	2.0	EPA 300.0			11/22/18 17:30	CHW	B
Total Dissolved Solids	192		mg/L	5	S2540C-11			11/28/18 18:00	EXS	B
Total Organic Carbon (TOC)	1.9		mg/L	0.50	SW846 9060A			12/6/18 20:11	PAG	D
Turbidity	2.64		NTU	0.10	SM2130B-2011			11/22/18 07:50	MBW	B

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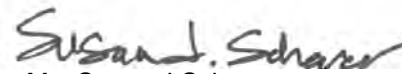
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ANALYTICAL RESULTS

Workorder: 3002137 4TH QTR 2018 GWMP-FORM 19Q

Lab ID: **3002137009** Date Collected: 11/21/2018 17:07 Matrix: Ground Water
Sample ID: **FFMP016W** Date Received: 11/21/2018 18:41

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	27.3		mg/L	0.11	SW846 6010C	11/28/18 15:00	BMK	12/4/18 18:55	SRT	J1
Iron, Total	ND		mg/L	0.067	SW846 6010C	11/28/18 15:00	BMK	12/4/18 18:55	SRT	J1
Magnesium, Total	13.4		mg/L	0.11	SW846 6010C	11/28/18 15:00	BMK	12/4/18 18:55	SRT	J1
Manganese, Total	0.0079		mg/L	0.0056	SW846 6010C	11/28/18 15:00	BMK	12/4/18 18:55	SRT	J1
Potassium, Total	2.0		mg/L	0.56	SW846 6010C	11/28/18 15:00	BMK	12/4/18 18:55	SRT	J1
Sodium, Total	20.9		mg/L	0.56	SW846 6010C	11/28/18 15:00	BMK	12/4/18 18:55	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	18.32		Feet		Field			11/21/18 15:27	BGS	C
Elev Top MW Casing above MSL	474.60		Feet		Field			11/21/18 15:27	BGS	C
Flow Rate	14.00		gal/min		Field			11/21/18 15:27	BGS	C
Ground Water Elevation	456.28		ft/MSL		Field			11/21/18 15:27	BGS	C
pH, Field (SM4500B)	5.34		pH_Units		Field			11/21/18 15:27	BGS	C
Sample Depth	135.00		Feet		Field			11/21/18 15:27	BGS	C
Specific Conductance, Field	470		umhos/cm	1	Field			11/21/18 15:27	BGS	C
Temperature	12.78		Deg. C		Field			11/21/18 15:27	BGS	C
Total Well Depth	149.80		Feet		Field			11/21/18 15:27	BGS	C
Volume in Water Column	343.16		Gallons		Field			11/21/18 15:27	BGS	C



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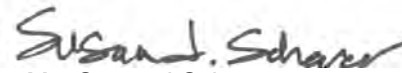
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ANALYTICAL RESULTS

Workorder: 3002137 4TH QTR 2018 GWMP-FORM 19Q

Lab ID: **3002137010** Date Collected: 11/21/2018 17:07 Matrix: Ground Water
Sample ID: **TRIP BLANK** Date Received: 11/21/2018 18:41

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			11/30/18 00:10	PDK	A
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			11/30/18 00:10	PDK	A
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			11/30/18 00:10	PDK	A
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			11/30/18 00:10	PDK	A
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			11/30/18 00:10	PDK	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			11/30/18 00:10	PDK	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			11/30/18 00:10	PDK	A
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			11/30/18 00:10	PDK	A
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			11/30/18 00:10	PDK	A
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			11/30/18 00:10	PDK	A
Toluene	ND		ug/L	1.0	SW846 8260B			11/30/18 00:10	PDK	A
Total Xylenes	ND		ug/L	3.0	SW846 8260B			11/30/18 00:10	PDK	A
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			11/30/18 00:10	PDK	A
Trichloroethene	ND		ug/L	1.0	SW846 8260B			11/30/18 00:10	PDK	A
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			11/30/18 00:10	PDK	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)	76.1		%	62 - 133	SW846 8260B			11/30/18 00:10	PDK	A
4-Bromofluorobenzene (S)	112		%	79 - 114	SW846 8260B			11/30/18 00:10	PDK	A
Dibromofluoromethane (S)	79		%	78 - 116	SW846 8260B			11/30/18 00:10	PDK	A
Toluene-d8 (S)	89.8		%	76 - 127	SW846 8260B			11/30/18 00:10	PDK	A



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ANALYTICAL RESULTS

Workorder: 3002137 4TH QTR 2018 GWMP-FORM 19Q

Lab ID: **3002137011** Date Collected: 11/21/2018 17:20 Matrix: Ground Water
Sample ID: **FIELD BLANK** Date Received: 11/21/2018 18:41

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			11/30/18 00:53	PDK	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			11/30/18 00:53	PDK	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			11/30/18 00:53	PDK	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			11/30/18 00:53	PDK	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			11/30/18 00:53	PDK	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			11/30/18 00:53	PDK	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			11/30/18 00:53	PDK	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			11/30/18 00:53	PDK	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			11/30/18 00:53	PDK	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			11/30/18 00:53	PDK	G
Toluene	ND		ug/L	1.0	SW846 8260B			11/30/18 00:53	PDK	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			11/30/18 00:53	PDK	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			11/30/18 00:53	PDK	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			11/30/18 00:53	PDK	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			11/30/18 00:53	PDK	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)	79.2		%	62 - 133	SW846 8260B			11/30/18 00:53	PDK	G
4-Bromofluorobenzene (S)	111		%	79 - 114	SW846 8260B			11/30/18 00:53	PDK	G
Dibromofluoromethane (S)	82.7		%	78 - 116	SW846 8260B			11/30/18 00:53	PDK	G
Toluene-d8 (S)	90.4		%	76 - 127	SW846 8260B			11/30/18 00:53	PDK	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	ND		mg/L	5	SM2320B-2011			11/28/18 13:36	MSA	B
Alkalinity, Total	ND	2	mg/L	5	SM2320B-2011			11/28/18 13:36	MSA	B
Ammonia-N	ND		mg/L	0.100	D6919-09			12/4/18 10:14	NJA	A
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			12/5/18 17:30	AK	A
Chloride	ND		mg/L	1.0	EPA 300.0			11/22/18 17:42	CHW	B
Fluoride	ND		mg/L	0.10	EPA 300.0			11/22/18 17:42	CHW	B
Nitrate-N	ND		mg/L	0.10	EPA 300.0			11/22/18 17:42	CHW	B
pH	6.17	1	pH_Units		S4500HB-11			11/28/18 13:36	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	11/30/18 15:59	C_D	12/3/18 14:10	C_D	F
Specific Conductance	2		umhos/cm	1	SW846 9050A			11/30/18 03:56	MSA	B
Sulfate	ND		mg/L	1.0	EPA 300.0			11/22/18 17:42	CHW	B
Total Dissolved Solids	ND	3	mg/L	5	S2540C-11			12/3/18 18:25	EXS	B
Total Organic Carbon (TOC)	ND		mg/L	0.50	SW846 9060A			12/6/18 20:11	PAG	D
Turbidity	ND		NTU	0.10	SM2130B-2011			11/22/18 07:50	MBW	B

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ANALYTICAL RESULTS

Workorder: 3002137 4TH QTR 2018 GWMP-FORM 19Q

Lab ID: **3002137011** Date Collected: 11/21/2018 17:20 Matrix: Ground Water
 Sample ID: **FIELD BLANK** Date Received: 11/21/2018 18:41

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	ND		mg/L	0.11	SW846 6010C	11/28/18 15:00	BMK	12/4/18 18:59	SRT	J1
Iron, Total	ND		mg/L	0.067	SW846 6010C	11/28/18 15:00	BMK	12/4/18 18:59	SRT	J1
Magnesium, Total	ND		mg/L	0.11	SW846 6010C	11/28/18 15:00	BMK	12/4/18 18:59	SRT	J1
Manganese, Total	ND		mg/L	0.0056	SW846 6010C	11/28/18 15:00	BMK	12/4/18 18:59	SRT	J1
Potassium, Total	ND		mg/L	0.56	SW846 6010C	11/28/18 15:00	BMK	12/4/18 18:59	SRT	J1
Sodium, Total	ND		mg/L	0.56	SW846 6010C	11/28/18 15:00	BMK	12/4/18 18:59	SRT	J1

Susan J. Scherer
 Ms. Susan J Scherer
 Project Coordinator

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ANALYTICAL RESULTS

Workorder: 3002137 4TH QTR 2018 GWMP-FORM 19Q

PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
3002137001	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.				
3002137001	2	FFMP005W	SW846 8260B	Tetrachloroethene
The QC sample type LCS for method SW846 8260B was outside the control limits for the analyte Tetrachloroethene. The % Recovery was reported as 142 and the control limits were 72 to 124.				
3002137001	3	FFMP005W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
3002137001	4	FFMP005W	S2540C-11	Total Dissolved Solids
The sample was originally run within hold time, but required further analysis that exceeded hold time.				
3002137002	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.				
3002137002	2	FFMP018W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
3002137002	3	FFMP018W	S2540C-11	Total Dissolved Solids
The sample was originally run within hold time, but required further analysis that exceeded hold time.				
3002137003	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.				
3002137003	2	FFMP019W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
3002137003	3	FFMP019W	S2540C-11	Total Dissolved Solids
The sample was originally run within hold time, but required further analysis that exceeded hold time.				
3002137004	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.				
3002137004	2	FFMP02DW	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
3002137004	3	FFMP02DW	S2540C-11	Total Dissolved Solids
The sample was originally run within hold time, but required further analysis that exceeded hold time.				
3002137005	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.				
3002137005	2	FFMP02SW	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
3002137005	3	FFMP02SW	S2540C-11	Total Dissolved Solids
The sample was originally run within hold time, but required further analysis that exceeded hold time.				
3002137005	4	FFMP02SW	S2540C-11	Total Dissolved Solids
The RPD associated with this sample was recovered at 13.5%. The RPD is outside method acceptance limits of 0-5%. The results used to calculate the RPD were 190 mg/L and 166 mg/L.				

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ANALYTICAL RESULTS

Workorder: 3002137 4TH QTR 2018 GWMP-FORM 19Q

3002137006	1	FFMP033W	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				
3002137006	2	FFMP033W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
3002137007	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.				
3002137007	2	FFMP028W	S2540C-11	Total Dissolved Solids
The RPD associated with this sample was recovered at 11%. The RPD is outside method acceptance limits of 0-5%. The results used to calculate the RPD were 370 mg/L and 332 mg/L.				
3002137007	3	FFMP028W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
3002137008	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.				
3002137008	2	FFMP025W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
3002137009	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.				
3002137009	2	FFMP016W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
3002137011	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.				
3002137011	2	FIELD BLANK	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
3002137011	3	FIELD BLANK	S2540C-11	Total Dissolved Solids
The sample was originally run within hold time, but required further analysis that exceeded hold time.				

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ANALYSIS - PREP METHOD CROSS REFERENCE TABLE

Workorder: 3002137 4TH QTR 2018 GWMP-FORM 19Q

Lab ID	Sample ID	Analysis Method	Prep Method
3002137001	FFMP005W	D6919-09	
3002137001	FFMP005W	EPA 300.0	
3002137001	FFMP005W	EPA 410.4	
3002137001	FFMP005W	Field	
3002137001	FFMP005W	S2540C-11	
3002137001	FFMP005W	S4500HB-11	
3002137001	FFMP005W	SM2130B-2011	
3002137001	FFMP005W	SM2320B-2011	
3002137001	FFMP005W	SW846 6010C	SW846 3015
3002137001	FFMP005W	SW846 8260B	
3002137001	FFMP005W	SW846 9050A	
3002137001	FFMP005W	SW846 9060A	
3002137001	FFMP005W	SW846 9066	420.4/9066
3002137002	FFMP018W	D6919-09	
3002137002	FFMP018W	EPA 300.0	
3002137002	FFMP018W	EPA 410.4	
3002137002	FFMP018W	Field	
3002137002	FFMP018W	S2540C-11	
3002137002	FFMP018W	S4500HB-11	
3002137002	FFMP018W	SM2130B-2011	
3002137002	FFMP018W	SM2320B-2011	
3002137002	FFMP018W	SW846 6010C	SW846 3015
3002137002	FFMP018W	SW846 8260B	
3002137002	FFMP018W	SW846 9050A	
3002137002	FFMP018W	SW846 9060A	
3002137002	FFMP018W	SW846 9066	420.4/9066
3002137003	FFMP019W	D6919-09	
3002137003	FFMP019W	EPA 300.0	
3002137003	FFMP019W	EPA 410.4	
3002137003	FFMP019W	Field	
3002137003	FFMP019W	S2540C-11	
3002137003	FFMP019W	S4500HB-11	
3002137003	FFMP019W	SM2130B-2011	
3002137003	FFMP019W	SM2320B-2011	
3002137003	FFMP019W	SW846 6010C	SW846 3015
3002137003	FFMP019W	SW846 8260B	
3002137003	FFMP019W	SW846 9050A	
3002137003	FFMP019W	SW846 9060A	
3002137003	FFMP019W	SW846 9066	420.4/9066
3002137004	FFMP02DW	D6919-09	
3002137004	FFMP02DW	EPA 300.0	
3002137004	FFMP02DW	EPA 410.4	
3002137004	FFMP02DW	Field	
3002137004	FFMP02DW	S2540C-11	
3002137004	FFMP02DW	S4500HB-11	
3002137004	FFMP02DW	SM2130B-2011	

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ANALYSIS - PREP METHOD CROSS REFERENCE TABLE

Workorder: 3002137 4TH QTR 2018 GWMP-FORM 19Q

Lab ID	Sample ID	Analysis Method	Prep Method
3002137004	FFMP02DW	SM2320B-2011	
3002137004	FFMP02DW	SW846 6010C	SW846 3015
3002137004	FFMP02DW	SW846 8260B	
3002137004	FFMP02DW	SW846 9050A	
3002137004	FFMP02DW	SW846 9060A	
3002137004	FFMP02DW	SW846 9066	420.4/9066
3002137005	FFMP02SW	D6919-09	
3002137005	FFMP02SW	EPA 300.0	
3002137005	FFMP02SW	EPA 410.4	
3002137005	FFMP02SW	Field	
3002137005	FFMP02SW	S2540C-11	
3002137005	FFMP02SW	S4500HB-11	
3002137005	FFMP02SW	SM2130B-2011	
3002137005	FFMP02SW	SM2320B-2011	
3002137005	FFMP02SW	SW846 6010C	SW846 3015
3002137005	FFMP02SW	SW846 8260B	
3002137005	FFMP02SW	SW846 9050A	
3002137005	FFMP02SW	SW846 9060A	
3002137005	FFMP02SW	SW846 9066	420.4/9066
3002137006	FFMP033W	D6919-09	
3002137006	FFMP033W	EPA 300.0	
3002137006	FFMP033W	EPA 410.4	
3002137006	FFMP033W	Field	
3002137006	FFMP033W	S2540C-11	
3002137006	FFMP033W	S4500HB-11	
3002137006	FFMP033W	SM2130B-2011	
3002137006	FFMP033W	SM2320B-2011	
3002137006	FFMP033W	SW846 6010C	SW846 3015
3002137006	FFMP033W	SW846 8260B	
3002137006	FFMP033W	SW846 9050A	
3002137006	FFMP033W	SW846 9060A	
3002137006	FFMP033W	SW846 9066	420.4/9066
3002137007	FFMP028W	D6919-09	
3002137007	FFMP028W	EPA 300.0	
3002137007	FFMP028W	EPA 410.4	
3002137007	FFMP028W	Field	
3002137007	FFMP028W	S2540C-11	
3002137007	FFMP028W	S4500HB-11	
3002137007	FFMP028W	SM2130B-2011	
3002137007	FFMP028W	SM2320B-2011	
3002137007	FFMP028W	SW846 6010C	SW846 3015
3002137007	FFMP028W	SW846 8260B	
3002137007	FFMP028W	SW846 9050A	
3002137007	FFMP028W	SW846 9060A	
3002137007	FFMP028W	SW846 9066	420.4/9066
3002137008	FFMP025W	D6919-09	

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ANALYSIS - PREP METHOD CROSS REFERENCE TABLE

Workorder: 3002137 4TH QTR 2018 GWMP-FORM 19Q

Lab ID	Sample ID	Analysis Method	Prep Method
3002137008	FFMP025W	EPA 300.0	
3002137008	FFMP025W	EPA 410.4	
3002137008	FFMP025W	Field	
3002137008	FFMP025W	S2540C-11	
3002137008	FFMP025W	S4500HB-11	
3002137008	FFMP025W	SM2130B-2011	
3002137008	FFMP025W	SM2320B-2011	
3002137008	FFMP025W	SW846 6010C	SW846 3015
3002137008	FFMP025W	SW846 8260B	
3002137008	FFMP025W	SW846 9050A	
3002137008	FFMP025W	SW846 9060A	
3002137008	FFMP025W	SW846 9066	420.4/9066
3002137009	FFMP016W	D6919-09	
3002137009	FFMP016W	EPA 300.0	
3002137009	FFMP016W	EPA 410.4	
3002137009	FFMP016W	Field	
3002137009	FFMP016W	S2540C-11	
3002137009	FFMP016W	S4500HB-11	
3002137009	FFMP016W	SM2130B-2011	
3002137009	FFMP016W	SM2320B-2011	
3002137009	FFMP016W	SW846 6010C	SW846 3015
3002137009	FFMP016W	SW846 8260B	
3002137009	FFMP016W	SW846 9050A	
3002137009	FFMP016W	SW846 9060A	
3002137009	FFMP016W	SW846 9066	420.4/9066
3002137010	TRIP BLANK	SW846 8260B	
3002137011	FIELD BLANK	D6919-09	
3002137011	FIELD BLANK	EPA 300.0	
3002137011	FIELD BLANK	EPA 410.4	
3002137011	FIELD BLANK	S2540C-11	
3002137011	FIELD BLANK	S4500HB-11	
3002137011	FIELD BLANK	SM2130B-2011	
3002137011	FIELD BLANK	SM2320B-2011	
3002137011	FIELD BLANK	SW846 6010C	SW846 3015
3002137011	FIELD BLANK	SW846 8260B	
3002137011	FIELD BLANK	SW846 9050A	
3002137011	FIELD BLANK	SW846 9060A	
3002137011	FIELD BLANK	SW846 9066	420.4/9066

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34 Dogwood Lane • Middletown, PA 17057 • 717-944-5541 • Fax: 717-944-1430
 Client Name: Lancaster County Solid Waste MA
 Address: 1299 Harrisburg Pike, P.O. Box 4424
 Lancaster, PA 17604

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

Generated by ALS



1 of 2

Container Type: AG 40 ml H2SO4 HCl HNO3 H2SO4 HCl H2SO4 HCl
 Container Size: 500 ml 500 ml 500 ml 500 ml 500 ml 500 ml 500 ml 500 ml
 Preservative: HCl H2SO4 HCl HNO3 H2SO4 HCl H2SO4 HCl
 PL PL PL PL PL PL PL PL
 500 ml 1L 500 ml None
 None

Project Name: Frey Farm Quarterly (GWMF)
 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: Y M D W T F
 Email: Y M D W T F
 Fax: Y M D W T F

Sample Description/Location (as it will appear on the lab report)	Sample Date	Time	Matrix	TOC	O-H	VOC - Form 190	Field Measurements	Sample Depth for AUX Data	NH3-N, COD	Metals: Fe, Mn, Na, Ca, K, Mg	PH, Cl, SPC, F, SO4, TDS, NO3	Alkalinity Bicarbonate	Sample/COC Comments
1. FFMP005W	11-24-18	0937	G GW	2	1	2	X	X	1	1	1	1	
2. FFMP018W		1010											
3. FFMP019W		1057											
4. FFMP020W		1240											
5. FFMP025W		1305											
6. FFMP032W		1444											
7. FFMP028W		1646											
8. FFMP025W		1529											
9. FFMP016W		1707											
10. Trip Blank		1841											

Project Comments: *Handwritten notes and signatures*

Relinquished By / Company Name: *ALS* Date: *11-21-18* Time: *1341*

Received By / Company Name: *Jens* Date: *11-21-18* Time: *1351*

LOGGED BY (signature): _____ REVIEWED BY (signature): _____

State Samples Collected In: NY NJ PA NC

Special Processing: USACE Navy Other: _____

ALS Field Services: Pickup Labor Composite_Sampling Rental_Equipment Other: _____



1-34 Dogwood Lane • Middleburg, PA 17057 • Phone: 717-344-5511 • Fax: 717-344-1430

**CHAIN OF CUSTODY/
REQUEST FOR ANALYSIS**
**ALL SHADED AREAS MUST BE COMPLETED BY THE CLIENT/
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COC #: 2 of 21
ALS Quote #:

Client Name: Lancaster County Solid Waste MA
Address: 1299 Harnsburg 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

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

Date Required: _____ **Approved By:** _____
Email? **mreider@LCSWMA.com**
Fax? **Y No: (717) 397-9973**

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

Receipt Information (completed by Receiving Lab)
Cooler Temp: 4.1 Therm ID: 505
No. of Coolers: 1 Y N Initial SR
Custody Seals Present?
(If present) Seals Intact?
Received on Ice?
COCLabets Complete/Accurate?
Cont. In Good Cond.?
Correct Containers?
Correct Sample Volumes?
Correct Preservation?
Heavy Metals/Volatiles?

ANALYSES/METHOD REQUESTED

Field Measurements	Sample Depth for AUX Data	NH3-N, COD	Metals: Fe, Mn, Na, Ca, K, Mg	PH, Cl, SPC, F, SO4, TDS, NO3, Turb.	Alkalinity Bicarbonate
VOC - Form 190					
O-OH					
TOC					

Enter Number of Containers Per Sample or Field Results Below.

G or C	**Matrix	TOC	O-OH	VOC - Form 190	Field Measurements	Sample Depth for AUX Data	NH3-N, COD	Metals: Fe, Mn, Na, Ca, K, Mg	PH, Cl, SPC, F, SO4, TDS, NO3, Turb.	Alkalinity Bicarbonate
1	G GW	2	1	2	X	X	1	1	1	1
2										
3										
4										
5										
6										
7										
8										
9										
10										

Sample Description/Location (as it will appear on the lab report)
1 - Field Blank **Date** 12-14-18 **Time** 1720

Project Comments:

LOGGED BY (signature): _____ **Date** _____ **Time** _____

REVIEWED BY (signature): _____ **Date** _____ **Time** _____

Relinquished By / Company Name: Mark Reider ALS **Date** 12-14-18 **Time** 1841

Received By / Company Name: Jane [Signature] **Date** _____ **Time** _____

ALS Field Services: Pickup Labor
 Composite_Sampling Rental_Equipment
 Other:

Special Processing: USACE Navy
State Samples Collected In: NY NJ PA NC

Reportable to PADEP? Yes No
Sample Disposal: Lab Special
PWSID # _____
EDDS: Format Type _____

* G=Grab; C=Composite **Matrix - Al=Air; DW=Drinking Water; GW=Groundwater; OI=Oil; OL=Other Liquid; SL=Sludge; SO=Soil; WP=Wipe; WW=Wastewater
ALS ENVIRONMENTAL SHIPPING ADDRESS: 34 DOGWOOD LANE, MIDDLETOWN, PA 17057 Rev B104



December 6, 2018

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

Certificate of Analysis

Project Name:	FREY FARM	Workorder:	3001349
Purchase Order:	PO1000126	Workorder ID:	4TH QTR 2018 GWMP-FORM 19Q

Dear Mr. Brown:

Enclosed are the analytical results for samples received by the laboratory on Monday, November 19, 2018.

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

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

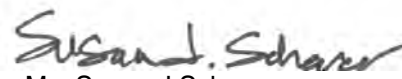
Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications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

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

CC: Mr. Nicholas Rogers , Ms. Jordan Gallagher , Mr. Jeff Musser

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


Ms. Susan J Scherer
Project Coordinator

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SAMPLE SUMMARY

Workorder: 3001349 4TH QTR 2018 GWMP-FORM 19Q

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
3001349001	FFMP017W	Ground Water	11/19/2018 11:26	11/19/2018 17:15	Collected by Client
3001349002	FFMP015W	Ground Water	11/19/2018 13:30	11/19/2018 17:15	Collected by Client
3001349003	FFMP03AW	Ground Water	11/19/2018 14:59	11/19/2018 17:15	Collected by Client
3001349004	FIELD BLANK	Ground Water	11/19/2018 16:40	11/19/2018 17:15	Collected by Client
3001349005	TRIP BLANK	Ground Water	11/19/2018 17:15	11/19/2018 17:15	Collected by Client

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SAMPLE SUMMARY

Workorder: 3001349 4TH QTR 2018 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.
- An Analysis-Prep Method Cross Reference Table is included after Analytical Results & Qualifiers section in this report.

Standard Acronyms/Flags

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

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ANALYTICAL RESULTS

Workorder: 3001349 4TH QTR 2018 GWMP-FORM 19Q

Lab ID: **3001349001** Date Collected: 11/19/2018 11:26 Matrix: Ground Water
Sample ID: **FFMP017W** Date Received: 11/19/2018 17:15

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			11/27/18 14:57	DD	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			11/27/18 14:57	DD	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			11/27/18 14:57	DD	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			11/27/18 14:57	DD	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			11/27/18 14:57	DD	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			11/27/18 14:57	DD	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			11/27/18 14:57	DD	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			11/27/18 14:57	DD	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			11/27/18 14:57	DD	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			11/27/18 14:57	DD	G
Toluene	ND		ug/L	1.0	SW846 8260B			11/27/18 14:57	DD	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			11/27/18 14:57	DD	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			11/27/18 14:57	DD	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			11/27/18 14:57	DD	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			11/27/18 14:57	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)	84.1		%	62 - 133	SW846 8260B			11/27/18 14:57	DD	G
4-Bromofluorobenzene (S)	110		%	79 - 114	SW846 8260B			11/27/18 14:57	DD	G
Dibromofluoromethane (S)	84.5		%	78 - 116	SW846 8260B			11/27/18 14:57	DD	G
Toluene-d8 (S)	91.5		%	76 - 127	SW846 8260B			11/27/18 14:57	DD	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	53		mg/L	5	SM2320B-2011			11/21/18 21:00	MSA	B
Alkalinity, Total	53	2	mg/L	5	SM2320B-2011			11/21/18 21:00	MSA	B
Ammonia-N	ND		mg/L	0.100	D6919-09			11/28/18 15:29	NJA	A
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			12/1/18 15:31	AK	A
Chloride	333		mg/L	5.0	EPA 300.0			11/21/18 06:16	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			11/20/18 07:14	CHW	B
Nitrate-N	2.1		mg/L	0.20	EPA 300.0			11/20/18 07:14	CHW	B
pH	6.61	1	pH_Units		S4500HB-11			11/21/18 21:00	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	11/28/18 15:55	C_D	11/29/18 06:28	C_D	F
Specific Conductance	1320		umhos/cm	1	SW846 9050A			11/21/18 21:00	MSA	B
Sulfate	55.2		mg/L	2.0	EPA 300.0			11/20/18 07:14	CHW	B
Total Dissolved Solids	696		mg/L	5	S2540C-11			11/26/18 17:35	EXS	B
Total Organic Carbon (TOC)	2.1		mg/L	0.50	SW846 9060A			12/2/18 01:04	PAG	D
Turbidity	0.22		NTU	0.10	SM2130B-2011			11/21/18 07:19	MSA	B

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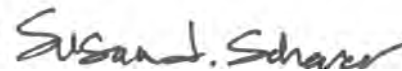
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ANALYTICAL RESULTS

Workorder: 3001349 4TH QTR 2018 GWMP-FORM 19Q

Lab ID: **3001349001** Date Collected: 11/19/2018 11:26 Matrix: Ground Water
Sample ID: **FFMP017W** Date Received: 11/19/2018 17:15

Parameters	Results	Flag	Units	RDL	Method	Prepared By	Analyzed By	Cntr
METALS								
Calcium, Total	86.1		mg/L	0.11	SW846 6010C	11/26/18 12:50 BMK	11/28/18 16:18 SRT	J1
Iron, Total	ND		mg/L	0.067	SW846 6010C	11/26/18 12:50 BMK	11/28/18 16:18 SRT	J1
Magnesium, Total	37.7		mg/L	0.11	SW846 6010C	11/26/18 12:50 BMK	11/28/18 16:18 SRT	J1
Manganese, Total	0.54		mg/L	0.0056	SW846 6010C	11/26/18 12:50 BMK	11/28/18 16:18 SRT	J1
Potassium, Total	5.5		mg/L	0.56	SW846 6010C	11/26/18 12:50 BMK	11/28/18 16:18 SRT	J1
Sodium, Total	75.8		mg/L	0.56	SW846 6010C	11/26/18 12:50 BMK	11/28/18 16:18 SRT	J1
FIELD PARAMETERS								
Depth to Water Level	35.48		Feet		Field		11/19/18 11:26 BGS	C
Elev Top MW Casing above MSL	480.70		Feet		Field		11/19/18 11:26 BGS	C
Flow Rate	2.25		gal/min		Field		11/19/18 11:26 BGS	C
Ground Water Elevation	445.22		ft/MSL		Field		11/19/18 11:26 BGS	C
pH, Field (SM4500B)	5.36		pH_Units		Field		11/19/18 11:26 BGS	C
Sample Depth	135.00		Feet		Field		11/19/18 11:26 BGS	C
Specific Conductance, Field	1273		umhos/cm	1	Field		11/19/18 11:26 BGS	C
Temperature	10.40		Deg. C		Field		11/19/18 11:26 BGS	C
Total Well Depth	150.50		Feet		Field		11/19/18 11:26 BGS	C
Volume in Water Column	169.08		Gallons		Field		11/19/18 11:26 BGS	C
Water Level After Purge	42.21		Feet		Field		11/19/18 11:26 BGS	C
Well Volumes Purged	1.33		Vol		Field		11/19/18 11:26 BGS	C



Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 3001349 4TH QTR 2018 GWMP-FORM 19Q

Lab ID: **3001349002**

Date Collected: 11/19/2018 13:30

Matrix: Ground Water

Sample ID: **FFMP015W**

Date Received: 11/19/2018 17:15

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			11/27/18 15:20	DD	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			11/27/18 15:20	DD	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			11/27/18 15:20	DD	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			11/27/18 15:20	DD	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			11/27/18 15:20	DD	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			11/27/18 15:20	DD	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			11/27/18 15:20	DD	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			11/27/18 15:20	DD	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			11/27/18 15:20	DD	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			11/27/18 15:20	DD	G
Toluene	ND		ug/L	1.0	SW846 8260B			11/27/18 15:20	DD	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			11/27/18 15:20	DD	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			11/27/18 15:20	DD	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			11/27/18 15:20	DD	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			11/27/18 15:20	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)	85.4		%	62 - 133	SW846 8260B			11/27/18 15:20	DD	G
4-Bromofluorobenzene (S)	108		%	79 - 114	SW846 8260B			11/27/18 15:20	DD	G
Dibromofluoromethane (S)	83.3		%	78 - 116	SW846 8260B			11/27/18 15:20	DD	G
Toluene-d8 (S)	91.6		%	76 - 127	SW846 8260B			11/27/18 15:20	DD	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	17		mg/L	5	SM2320B-2011			11/21/18 21:08	MSA	B
Alkalinity, Total	17	3	mg/L	5	SM2320B-2011			11/21/18 21:08	MSA	B
Ammonia-N	0.602		mg/L	0.100	D6919-09			11/28/18 15:44	NJA	A
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			12/1/18 15:31	AK	A
Chloride	11.4		mg/L	2.0	EPA 300.0			11/20/18 07:27	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			11/20/18 07:27	CHW	B
Nitrate-N	7.5		mg/L	0.20	EPA 300.0			11/20/18 07:27	CHW	B
pH	6.35	1	pH_Units		S4500HB-11			11/21/18 21:08	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	11/28/18 15:55	C_D	11/29/18 06:28	C_D	F
Specific Conductance	242		umhos/cm	1	SW846 9050A			11/21/18 21:08	MSA	B
Sulfate	52.3		mg/L	2.0	EPA 300.0			11/20/18 07:27	CHW	B
Total Dissolved Solids	62	2	mg/L	5	S2540C-11			11/26/18 18:15	EXS	B
Total Organic Carbon (TOC)	0.90		mg/L	0.50	SW846 9060A			12/2/18 03:26	PAG	D
Turbidity	ND		NTU	0.10	SM2130B-2011			11/21/18 07:19	MSA	B

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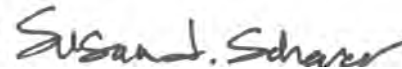
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ANALYTICAL RESULTS

Workorder: 3001349 4TH QTR 2018 GWMP-FORM 19Q

Lab ID: **3001349002** Date Collected: 11/19/2018 13:30 Matrix: Ground Water
Sample ID: **FFMP015W** Date Received: 11/19/2018 17:15

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	8.2		mg/L	0.11	SW846 6010C	11/26/18 12:50	BMK	11/28/18 16:22	SRT	J1
Iron, Total	ND		mg/L	0.067	SW846 6010C	11/26/18 12:50	BMK	11/28/18 16:22	SRT	J1
Magnesium, Total	9.6		mg/L	0.11	SW846 6010C	11/26/18 12:50	BMK	11/28/18 16:22	SRT	J1
Manganese, Total	0.043		mg/L	0.0056	SW846 6010C	11/26/18 12:50	BMK	11/28/18 16:22	SRT	J1
Potassium, Total	2.0		mg/L	0.56	SW846 6010C	11/26/18 12:50	BMK	11/28/18 16:22	SRT	J1
Sodium, Total	22.5		mg/L	0.56	SW846 6010C	11/26/18 12:50	BMK	11/28/18 16:22	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	54.72		Feet		Field			11/19/18 13:30	BGS	C
Elev Top MW Casing above MSL	576.40		Feet		Field			11/19/18 13:30	BGS	C
Flow Rate	2.11		gal/min		Field			11/19/18 13:30	BGS	C
Ground Water Elevation	521.68		ft/MSL		Field			11/19/18 13:30	BGS	C
pH, Field (SM4500B)	5.17		pH_Units		Field			11/19/18 13:30	BGS	C
Sample Depth	135.00		Feet		Field			11/19/18 13:30	BGS	C
Specific Conductance, Field	261		umhos/cm	1	Field			11/19/18 13:30	BGS	C
Temperature	12.27		Deg. C		Field			11/19/18 13:30	BGS	C
Total Well Depth	149.90		Feet		Field			11/19/18 13:30	BGS	C
Volume in Water Column	139.91		Gallons		Field			11/19/18 13:30	BGS	C
Water Level After Purge	92.14		Feet		Field			11/19/18 13:30	BGS	C
Well Volumes Purged	0.99		Vol		Field			11/19/18 13:30	BGS	C



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ANALYTICAL RESULTS

Workorder: 3001349 4TH QTR 2018 GWMP-FORM 19Q

Lab ID: 3001349003 **Date Collected:** 11/19/2018 14:59 **Matrix:** Ground Water
Sample ID: FFMP03AW **Date Received:** 11/19/2018 17:15

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			11/27/18 15:41	DD	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			11/27/18 15:41	DD	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			11/27/18 15:41	DD	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			11/27/18 15:41	DD	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			11/27/18 15:41	DD	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			11/27/18 15:41	DD	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			11/27/18 15:41	DD	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			11/27/18 15:41	DD	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			11/27/18 15:41	DD	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			11/27/18 15:41	DD	G
Toluene	ND		ug/L	1.0	SW846 8260B			11/27/18 15:41	DD	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			11/27/18 15:41	DD	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			11/27/18 15:41	DD	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			11/27/18 15:41	DD	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			11/27/18 15:41	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)	82.9		%	62 - 133	SW846 8260B			11/27/18 15:41	DD	G
4-Bromofluorobenzene (S)	109		%	79 - 114	SW846 8260B			11/27/18 15:41	DD	G
Dibromofluoromethane (S)	83.5		%	78 - 116	SW846 8260B			11/27/18 15:41	DD	G
Toluene-d8 (S)	92.7		%	76 - 127	SW846 8260B			11/27/18 15:41	DD	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	16		mg/L	5	SM2320B-2011			11/21/18 21:18	MSA	B
Alkalinity, Total	16	2	mg/L	5	SM2320B-2011			11/21/18 21:18	MSA	B
Ammonia-N	ND		mg/L	0.100	D6919-09			11/28/18 15:59	NJA	A
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			12/1/18 15:31	AK	A
Chloride	27.2		mg/L	2.0	EPA 300.0			11/20/18 07:40	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			11/20/18 07:40	CHW	B
Nitrate-N	20.0		mg/L	0.20	EPA 300.0			11/20/18 07:40	CHW	B
pH	6.01	1	pH_Units		S4500HB-11			11/21/18 21:18	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	11/28/18 15:55	C_D	11/29/18 06:28	C_D	F
Specific Conductance	271		umhos/cm	1	SW846 9050A			11/21/18 21:18	MSA	B
Sulfate	2.8		mg/L	2.0	EPA 300.0			11/20/18 07:40	CHW	B
Total Dissolved Solids	111		mg/L	5	S2540C-11			11/26/18 18:15	EXS	B
Total Organic Carbon (TOC)	1.7		mg/L	0.50	SW846 9060A			12/2/18 03:26	PAG	D
Turbidity	ND		NTU	0.10	SM2130B-2011			11/21/18 07:19	MSA	B

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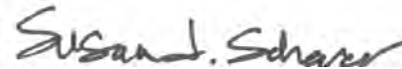
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ANALYTICAL RESULTS

Workorder: 3001349 4TH QTR 2018 GWMP-FORM 19Q

Lab ID: **3001349003** Date Collected: 11/19/2018 14:59 Matrix: Ground Water
Sample ID: **FFMP03AW** Date Received: 11/19/2018 17:15

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	16.2		mg/L	0.11	SW846 6010C	11/26/18 12:50	BMK	11/28/18 16:26	SRT	J1
Iron, Total	ND		mg/L	0.067	SW846 6010C	11/26/18 12:50	BMK	11/28/18 16:26	SRT	J1
Magnesium, Total	11.5		mg/L	0.11	SW846 6010C	11/26/18 12:50	BMK	11/28/18 16:26	SRT	J1
Manganese, Total	0.27		mg/L	0.0056	SW846 6010C	11/26/18 12:50	BMK	11/28/18 16:26	SRT	J1
Potassium, Total	1.4		mg/L	0.56	SW846 6010C	11/26/18 12:50	BMK	11/28/18 16:26	SRT	J1
Sodium, Total	12.1		mg/L	0.56	SW846 6010C	11/26/18 12:50	BMK	11/28/18 16:26	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	47.88		Feet		Field			11/19/18 14:59	BGS	C
Elev Top MW Casing above MSL	590.90		Feet		Field			11/19/18 14:59	BGS	C
Flow Rate	2.21		gal/min		Field			11/19/18 14:59	BGS	C
Ground Water Elevation	543.02		ft/MSL		Field			11/19/18 14:59	BGS	C
pH, Field (SM4500B)	4.96		pH_Units		Field			11/19/18 14:59	BGS	C
Sample Depth	130.00		Feet		Field			11/19/18 14:59	BGS	C
Specific Conductance, Field	292		umhos/cm	1	Field			11/19/18 14:59	BGS	C
Temperature	11.08		Deg. C		Field			11/19/18 14:59	BGS	C
Total Well Depth	148.40		Feet		Field			11/19/18 14:59	BGS	C
Volume in Water Column	147.76		Gallons		Field			11/19/18 14:59	BGS	C
Water Level After Purge	85.21		Feet		Field			11/19/18 14:59	BGS	C
Well Volumes Purged	1.00		Vol		Field			11/19/18 14:59	BGS	C



Ms. Susan J Scherer
Project Coordinator

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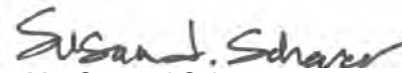
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ANALYTICAL RESULTS

Workorder: 3001349 4TH QTR 2018 GWMP-FORM 19Q

Lab ID: **3001349004** Date Collected: 11/19/2018 16:40 Matrix: Ground Water
Sample ID: **FIELD BLANK** Date Received: 11/19/2018 17:15

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			11/27/18 16:03	DD	A
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			11/27/18 16:03	DD	A
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			11/27/18 16:03	DD	A
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			11/27/18 16:03	DD	A
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			11/27/18 16:03	DD	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			11/27/18 16:03	DD	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			11/27/18 16:03	DD	A
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			11/27/18 16:03	DD	A
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			11/27/18 16:03	DD	A
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			11/27/18 16:03	DD	A
Toluene	ND		ug/L	1.0	SW846 8260B			11/27/18 16:03	DD	A
Total Xylenes	ND		ug/L	3.0	SW846 8260B			11/27/18 16:03	DD	A
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			11/27/18 16:03	DD	A
Trichloroethene	ND		ug/L	1.0	SW846 8260B			11/27/18 16:03	DD	A
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			11/27/18 16:03	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)	83.3		%	62 - 133	SW846 8260B			11/27/18 16:03	DD	A
4-Bromofluorobenzene (S)	110		%	79 - 114	SW846 8260B			11/27/18 16:03	DD	A
Dibromofluoromethane (S)	81.3		%	78 - 116	SW846 8260B			11/27/18 16:03	DD	A
Toluene-d8 (S)	89.6		%	76 - 127	SW846 8260B			11/27/18 16:03	DD	A



Ms. Susan J Scherer
Project Coordinator

ALS Environmental Laboratory Locations Across North America

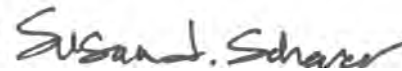
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ANALYTICAL RESULTS

Workorder: 3001349 4TH QTR 2018 GWMP-FORM 19Q

Lab ID: **3001349005** Date Collected: 11/19/2018 17:15 Matrix: Ground Water
Sample ID: **TRIP BLANK** Date Received: 11/19/2018 17:15

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			11/27/18 16:25	DD	A
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			11/27/18 16:25	DD	A
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			11/27/18 16:25	DD	A
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			11/27/18 16:25	DD	A
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			11/27/18 16:25	DD	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			11/27/18 16:25	DD	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			11/27/18 16:25	DD	A
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			11/27/18 16:25	DD	A
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			11/27/18 16:25	DD	A
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			11/27/18 16:25	DD	A
Toluene	ND		ug/L	1.0	SW846 8260B			11/27/18 16:25	DD	A
Total Xylenes	ND		ug/L	3.0	SW846 8260B			11/27/18 16:25	DD	A
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			11/27/18 16:25	DD	A
Trichloroethene	ND		ug/L	1.0	SW846 8260B			11/27/18 16:25	DD	A
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			11/27/18 16:25	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)	83.5		%	62 - 133	SW846 8260B			11/27/18 16:25	DD	A
4-Bromofluorobenzene (S)	108		%	79 - 114	SW846 8260B			11/27/18 16:25	DD	A
Dibromofluoromethane (S)	81.5		%	78 - 116	SW846 8260B			11/27/18 16:25	DD	A
Toluene-d8 (S)	90.6		%	76 - 127	SW846 8260B			11/27/18 16:25	DD	A



Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 3001349 4TH QTR 2018 GWMP-FORM 19Q

PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
3001349001	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.				
3001349001	2	FFMP017W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
3001349002	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.				
3001349002	2	FFMP015W	S2540C-11	Total Dissolved Solids
The method blank associated with this analyte had a result of 9 mg/L. Criteria states that the method blank should be less than 5 mg/L.				
3001349002	3	FFMP015W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
3001349003	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.				
3001349003	2	FFMP03AW	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				

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ANALYSIS - PREP METHOD CROSS REFERENCE TABLE

Workorder: 3001349 4TH QTR 2018 GWMP-FORM 19Q

Lab ID	Sample ID	Analysis Method	Prep Method
3001349001	FFMP017W	D6919-09	
3001349001	FFMP017W	EPA 300.0	
3001349001	FFMP017W	EPA 410.4	
3001349001	FFMP017W	Field	
3001349001	FFMP017W	S2540C-11	
3001349001	FFMP017W	S4500HB-11	
3001349001	FFMP017W	SM2130B-2011	
3001349001	FFMP017W	SM2320B-2011	
3001349001	FFMP017W	SW846 6010C	SW846 3015
3001349001	FFMP017W	SW846 8260B	
3001349001	FFMP017W	SW846 9050A	
3001349001	FFMP017W	SW846 9060A	
3001349001	FFMP017W	SW846 9066	420.4/9066
3001349002	FFMP015W	D6919-09	
3001349002	FFMP015W	EPA 300.0	
3001349002	FFMP015W	EPA 410.4	
3001349002	FFMP015W	Field	
3001349002	FFMP015W	S2540C-11	
3001349002	FFMP015W	S4500HB-11	
3001349002	FFMP015W	SM2130B-2011	
3001349002	FFMP015W	SM2320B-2011	
3001349002	FFMP015W	SW846 6010C	SW846 3015
3001349002	FFMP015W	SW846 8260B	
3001349002	FFMP015W	SW846 9050A	
3001349002	FFMP015W	SW846 9060A	
3001349002	FFMP015W	SW846 9066	420.4/9066
3001349003	FFMP03AW	D6919-09	
3001349003	FFMP03AW	EPA 300.0	
3001349003	FFMP03AW	EPA 410.4	
3001349003	FFMP03AW	Field	
3001349003	FFMP03AW	S2540C-11	
3001349003	FFMP03AW	S4500HB-11	
3001349003	FFMP03AW	SM2130B-2011	
3001349003	FFMP03AW	SM2320B-2011	
3001349003	FFMP03AW	SW846 6010C	SW846 3015
3001349003	FFMP03AW	SW846 8260B	
3001349003	FFMP03AW	SW846 9050A	
3001349003	FFMP03AW	SW846 9060A	
3001349003	FFMP03AW	SW846 9066	420.4/9066
3001349004	FIELD BLANK	SW846 8260B	
3001349005	TRIP BLANK	SW846 8260B	

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1 of 1



3 5 0 0 1 3 4 9 *

**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 • Tel: 717-944-1128 • Fax: 717-944-1428
 Client Name: Lancaster County Solid Waste MA
 Address: 1299 Harnsburg 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

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

Y	N	Initial
<input checked="" type="checkbox"/>	<input type="checkbox"/>	AS
<input checked="" type="checkbox"/>	<input type="checkbox"/>	SS
<input checked="" type="checkbox"/>	<input type="checkbox"/>	W

Cooler Temp: 10.1 C Therm ID: 403
 No. of Coolers: _____
 Custody Seals Present? _____
 (if present) Seals Intact? _____
 Received on Ice? _____
 COC Labels Complete/Accurate? _____
 Cont. in Good Cond.? _____
 Correct Containers? _____
 Correct Sample Volumes? _____
 Correct Preservation? _____
 Headspace/Volatiles? _____
 Courier/Tracking #: _____

Field Measurements	Sample Depth for AUX Data	NH3-N, COD	Metals: Fe, Mn, Na, Ca, K, Mg	pH, Cl, Spc, F, SO4, TDS, NO3	Alkalinity Bicarbonate
VOC - Form 190					
O-H					
TOC					

Enter Number of Containers Per Sample or Fluid Results Below.	Matrix	G	GW	2	X	1	1	1
1	FFMP017W	1	1	1	1	1	1	1
2	FFMP015W	1	1	1	1	1	1	1
3	FFMP03AW	1	1	1	1	1	1	1
4	Field Blank	1	1	1	1	1	1	1
5	Trip Blank	1	1	1	1	1	1	1
6								
7								
8								
9								
10								

ALS Field Services: Pickup Labor
 Composite_Sampling Rental_Equipment
 Other: _____

Deliverables	Standard	CLP-like	USACE	Special Processing	State Samples Collected In
Reportable to PADEP?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	USACE <input type="checkbox"/> Navy <input type="checkbox"/>	NY <input type="checkbox"/> NJ <input type="checkbox"/> PA <input checked="" type="checkbox"/> NC <input type="checkbox"/>
Yes <input type="checkbox"/>	Sample Disposal				
PWSID #	Lab <input checked="" type="checkbox"/> Special <input type="checkbox"/>				
EDDS: Format Type					

LOGGED BY (signature):	REVIEWED BY (signature):	Date	Time	Received By / Company Name	Date	Time
		11/16/18	17:15	Mark Reider ALS	11/16/18	17:15

* G=Grab, C=Composite **Matrix - A=Air, DW=Drinking Water, GW=Groundwater, O=Oil, OL=Other Liquid, SL=Sludge, SO=Soil, WP=Wipe, WW=Wastewater
 ALS ENVIRONMENTAL SHIPPING ADDRESS: 34 DOGWOOD LANE, MIDDLETOWN, PA 17057
 Rev 8/04

December 6, 2018

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

Certificate of Analysis

Project Name:	FREY FARM	Workorder:	3001515
Purchase Order:	PO1000126	Workorder ID:	4TH QTR 2018 GWMP-FORM 19Q

Dear Mr. Brown:

Enclosed are the analytical results for samples received by the laboratory on Tuesday, November 20, 2018.

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

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

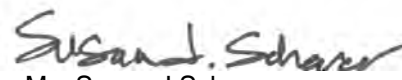
Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications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

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

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

CC: Mr. Nicholas Rogers , Ms. Jordan Gallagher , Mr. Jeff Musser

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



Ms. Susan J Scherer
Project Coordinator

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SAMPLE SUMMARY

Workorder: 3001515 4TH QTR 2018 GWMP-FORM 19Q

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
3001515001	FFMP30RW	Ground Water	11/20/2018 14:46	11/20/2018 17:44	Mr. Brian G Shade
3001515002	FFMP04AW	Ground Water	11/20/2018 15:55	11/20/2018 17:44	Mr. Brian G Shade
3001515003	FIELD BLANK	Water	11/20/2018 16:20	11/20/2018 17:44	Mr. Brian G Shade
3001515004	TRIP BLANK	Water	11/20/2018 17:44	11/20/2018 17:44	Mr. Brian G Shade

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SAMPLE SUMMARY

Workorder: 3001515 4TH QTR 2018 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.
- An Analysis-Prep Method Cross Reference Table is included after Analytical Results & Qualifiers section in this report.

Standard Acronyms/Flags

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

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ANALYTICAL RESULTS

Workorder: 3001515 4TH QTR 2018 GWMP-FORM 19Q

Lab ID: **3001515001** Date Collected: 11/20/2018 14:46 Matrix: Ground Water
Sample ID: **FFMP30RW** Date Received: 11/20/2018 17:44

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			11/29/18 09:24	PDK	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			11/29/18 09:24	PDK	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			11/29/18 09:24	PDK	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			11/29/18 09:24	PDK	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			11/29/18 09:24	PDK	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			11/29/18 09:24	PDK	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			11/29/18 09:24	PDK	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			11/29/18 09:24	PDK	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			11/29/18 09:24	PDK	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			11/29/18 09:24	PDK	G
Toluene	ND		ug/L	1.0	SW846 8260B			11/29/18 09:24	PDK	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			11/29/18 09:24	PDK	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			11/29/18 09:24	PDK	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			11/29/18 09:24	PDK	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			11/29/18 09:24	PDK	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			11/29/18 09:24	PDK	G
4-Bromofluorobenzene (S)	104		%	79 - 114	SW846 8260B			11/29/18 09:24	PDK	G
Dibromofluoromethane (S)	95.5		%	78 - 116	SW846 8260B			11/29/18 09:24	PDK	G
Toluene-d8 (S)	93.7		%	76 - 127	SW846 8260B			11/29/18 09:24	PDK	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	23		mg/L	5	SM2320B-2011			11/22/18 07:02	MBW	B
Alkalinity, Total	23	3	mg/L	5	SM2320B-2011			11/22/18 07:02	MBW	B
Ammonia-N	ND		mg/L	0.100	D6919-09			11/29/18 01:07	CMM	A
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			12/1/18 15:31	AK	A
Chloride	73.8		mg/L	2.0	EPA 300.0			11/21/18 15:05	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			11/21/18 15:05	CHW	B
Nitrate-N	4.7		mg/L	0.20	EPA 300.0			11/21/18 15:05	CHW	B
pH	5.69	1	pH_Units		S4500HB-11			11/22/18 07:02	MBW	B
Phenolics	ND		mg/L	0.005	SW846 9066	11/28/18 15:56	C_D	11/29/18 06:28	C_D	F
Specific Conductance	334		umhos/cm	1	SW846 9050A			11/22/18 07:02	MBW	B
Sulfate	21.6		mg/L	2.0	EPA 300.0			11/21/18 15:05	CHW	B
Total Dissolved Solids	350	2	mg/L	5	S2540C-11			11/27/18 12:35	EXS	B
Total Organic Carbon (TOC)	0.95		mg/L	0.50	SW846 9060A			12/5/18 06:49	PAG	D
Turbidity	0.34		NTU	0.10	SM2130B-2011			11/22/18 07:05	MBW	B

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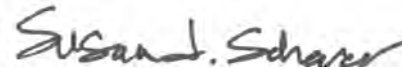
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ANALYTICAL RESULTS

Workorder: 3001515 4TH QTR 2018 GWMP-FORM 19Q

Lab ID: **3001515001** Date Collected: 11/20/2018 14:46 Matrix: Ground Water
Sample ID: **FFMP30RW** Date Received: 11/20/2018 17:44

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	11.8		mg/L	0.11	SW846 6010C	11/28/18 14:30	BMK	11/29/18 19:45	SRT	J1
Iron, Total	ND		mg/L	0.067	SW846 6010C	11/28/18 14:30	BMK	11/29/18 19:45	SRT	J1
Magnesium, Total	9.9		mg/L	0.11	SW846 6010C	11/28/18 14:30	BMK	11/29/18 19:45	SRT	J1
Manganese, Total	0.43		mg/L	0.0056	SW846 6010C	11/28/18 14:30	BMK	11/29/18 19:45	SRT	J1
Potassium, Total	1.4		mg/L	0.56	SW846 6010C	11/28/18 14:30	BMK	11/29/18 19:45	SRT	J1
Sodium, Total	36.5		mg/L	0.56	SW846 6010C	11/28/18 14:30	BMK	11/29/18 19:45	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	26.50		Feet		Field			11/20/18 14:46	BGS	C
Elev Top MW Casing above MSL	562.30		Feet		Field			11/20/18 14:46	BGS	C
Flow Rate	2.44		gal/min		Field			11/20/18 14:46	BGS	C
Ground Water Elevation	535.80		ft/MSL		Field			11/20/18 14:46	BGS	C
pH, Field (SM4500B)	4.89		pH_Units		Field			11/20/18 14:46	BGS	C
Sample Depth	85.00		Feet		Field			11/20/18 14:46	BGS	C
Specific Conductance, Field	366		umhos/cm	1	Field			11/20/18 14:46	BGS	C
Temperature	10.85		Deg. C		Field			11/20/18 14:46	BGS	C
Total Well Depth	94.20		Feet		Field			11/20/18 14:46	BGS	C
Volume in Water Column	99.52		Gallons		Field			11/20/18 14:46	BGS	C
Water Level After Purge	28.41		Feet		Field			11/20/18 14:46	BGS	C
Well Volumes Purged	1.47		Vol		Field			11/20/18 14:46	BGS	C



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ANALYTICAL RESULTS

Workorder: 3001515 4TH QTR 2018 GWMP-FORM 19Q

 Lab ID: **3001515002** Date Collected: 11/20/2018 15:55 Matrix: Ground Water
 Sample ID: **FFMP04AW** Date Received: 11/20/2018 17:44

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			11/29/18 09:47	PDK	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			11/29/18 09:47	PDK	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			11/29/18 09:47	PDK	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			11/29/18 09:47	PDK	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			11/29/18 09:47	PDK	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			11/29/18 09:47	PDK	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			11/29/18 09:47	PDK	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			11/29/18 09:47	PDK	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			11/29/18 09:47	PDK	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			11/29/18 09:47	PDK	G
Toluene	ND		ug/L	1.0	SW846 8260B			11/29/18 09:47	PDK	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			11/29/18 09:47	PDK	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			11/29/18 09:47	PDK	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			11/29/18 09:47	PDK	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			11/29/18 09:47	PDK	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)	101		%	62 - 133	SW846 8260B			11/29/18 09:47	PDK	G
4-Bromofluorobenzene (S)	104		%	79 - 114	SW846 8260B			11/29/18 09:47	PDK	G
Dibromofluoromethane (S)	95.9		%	78 - 116	SW846 8260B			11/29/18 09:47	PDK	G
Toluene-d8 (S)	94.7		%	76 - 127	SW846 8260B			11/29/18 09:47	PDK	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	205		mg/L	5	SM2320B-2011			11/22/18 07:12	MBW	B
Alkalinity, Total	205	2	mg/L	5	SM2320B-2011			11/22/18 07:12	MBW	B
Ammonia-N	ND		mg/L	0.100	D6919-09			11/29/18 01:22	CMM	A
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			12/1/18 15:31	AK	A
Chloride	56.6		mg/L	2.0	EPA 300.0			11/21/18 15:19	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			11/21/18 15:19	CHW	B
Nitrate-N	6.9		mg/L	0.20	EPA 300.0			11/21/18 15:19	CHW	B
pH	7.26	1	pH_Units		S4500HB-11			11/22/18 07:12	MBW	B
Phenolics	ND		mg/L	0.005	SW846 9066	11/28/18 15:56	C_D	11/29/18 06:28	C_D	F
Specific Conductance	1470		umhos/cm	1	SW846 9050A			11/22/18 07:12	MBW	B
Sulfate	6.1		mg/L	2.0	EPA 300.0			11/21/18 15:19	CHW	B
Total Dissolved Solids	1590		mg/L	5	S2540C-11			11/27/18 12:35	EXS	B
Total Organic Carbon (TOC)	1.2		mg/L	0.50	SW846 9060A			12/5/18 06:49	PAG	D
Turbidity	0.33		NTU	0.10	SM2130B-2011			11/22/18 07:05	MBW	B

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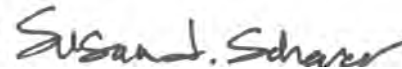
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ANALYTICAL RESULTS

Workorder: 3001515 4TH QTR 2018 GWMP-FORM 19Q

Lab ID: **3001515002** Date Collected: 11/20/2018 15:55 Matrix: Ground Water
Sample ID: **FFMP04AW** Date Received: 11/20/2018 17:44

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	150		mg/L	0.11	SW846 6010C	11/28/18 14:30	BMK	11/29/18 19:48	SRT	J1
Iron, Total	ND		mg/L	0.067	SW846 6010C	11/28/18 14:30	BMK	11/29/18 19:48	SRT	J1
Magnesium, Total	25.2		mg/L	0.11	SW846 6010C	11/28/18 14:30	BMK	11/29/18 19:48	SRT	J1
Manganese, Total	0.17		mg/L	0.0056	SW846 6010C	11/28/18 14:30	BMK	11/29/18 19:48	SRT	J1
Potassium, Total	2.1		mg/L	0.56	SW846 6010C	11/28/18 14:30	BMK	11/29/18 19:48	SRT	J1
Sodium, Total	83.1		mg/L	0.56	SW846 6010C	11/28/18 14:30	BMK	11/29/18 19:48	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	29.88		Feet		Field			11/20/18 15:55	BGS	C
Elev Top MW Casing above MSL	560.72		Feet		Field			11/20/18 15:55	BGS	C
Flow Rate	1.98		gal/min		Field			11/20/18 15:55	BGS	C
Ground Water Elevation	530.84		ft/MSL		Field			11/20/18 15:55	BGS	C
pH, Field (SM4500B)	6.60		pH_Units		Field			11/20/18 15:55	BGS	C
Sample Depth	146.00		Feet		Field			11/20/18 15:55	BGS	C
Specific Conductance, Field	1436		umhos/cm	1	Field			11/20/18 15:55	BGS	C
Temperature	10.76		Deg. C		Field			11/20/18 15:55	BGS	C
Total Well Depth	148.50		Feet		Field			11/20/18 15:55	BGS	C
Volume in Water Column	174.37		Gallons		Field			11/20/18 15:55	BGS	C
Water Level After Purge	78.69		Feet		Field			11/20/18 15:55	BGS	C
Well Volumes Purged	1.00		Vol		Field			11/20/18 15:55	BGS	C



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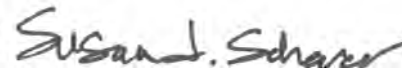
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ANALYTICAL RESULTS

Workorder: 3001515 4TH QTR 2018 GWMP-FORM 19Q

Lab ID: **3001515003** Date Collected: 11/20/2018 16:20 Matrix: Water
Sample ID: **FIELD BLANK** Date Received: 11/20/2018 17:44

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			11/29/18 04:05	PDK	A
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			11/29/18 04:05	PDK	A
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			11/29/18 04:05	PDK	A
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			11/29/18 04:05	PDK	A
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			11/29/18 04:05	PDK	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			11/29/18 04:05	PDK	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			11/29/18 04:05	PDK	A
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			11/29/18 04:05	PDK	A
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			11/29/18 04:05	PDK	A
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			11/29/18 04:05	PDK	A
Toluene	ND		ug/L	1.0	SW846 8260B			11/29/18 04:05	PDK	A
Total Xylenes	ND		ug/L	3.0	SW846 8260B			11/29/18 04:05	PDK	A
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			11/29/18 04:05	PDK	A
Trichloroethene	ND		ug/L	1.0	SW846 8260B			11/29/18 04:05	PDK	A
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			11/29/18 04:05	PDK	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)	100		%	62 - 133	SW846 8260B			11/29/18 04:05	PDK	A
4-Bromofluorobenzene (S)	102		%	79 - 114	SW846 8260B			11/29/18 04:05	PDK	A
Dibromofluoromethane (S)	94.2		%	78 - 116	SW846 8260B			11/29/18 04:05	PDK	A
Toluene-d8 (S)	93.4		%	76 - 127	SW846 8260B			11/29/18 04:05	PDK	A



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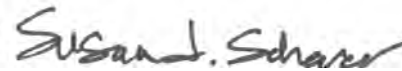
ANALYTICAL RESULTS

Workorder: 3001515 4TH QTR 2018 GWMP-FORM 19Q

Lab ID: **3001515004**
Sample ID: **TRIP BLANK**

Date Collected: 11/20/2018 17:44 Matrix: Water
Date Received: 11/20/2018 17:44

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			11/29/18 04:28	PDK	A
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			11/29/18 04:28	PDK	A
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			11/29/18 04:28	PDK	A
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			11/29/18 04:28	PDK	A
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			11/29/18 04:28	PDK	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			11/29/18 04:28	PDK	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			11/29/18 04:28	PDK	A
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			11/29/18 04:28	PDK	A
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			11/29/18 04:28	PDK	A
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			11/29/18 04:28	PDK	A
Toluene	ND		ug/L	1.0	SW846 8260B			11/29/18 04:28	PDK	A
Total Xylenes	ND		ug/L	3.0	SW846 8260B			11/29/18 04:28	PDK	A
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			11/29/18 04:28	PDK	A
Trichloroethene	ND		ug/L	1.0	SW846 8260B			11/29/18 04:28	PDK	A
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			11/29/18 04:28	PDK	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)	99.1		%	62 - 133	SW846 8260B			11/29/18 04:28	PDK	A
4-Bromofluorobenzene (S)	103		%	79 - 114	SW846 8260B			11/29/18 04:28	PDK	A
Dibromofluoromethane (S)	96		%	78 - 116	SW846 8260B			11/29/18 04:28	PDK	A
Toluene-d8 (S)	94.5		%	76 - 127	SW846 8260B			11/29/18 04:28	PDK	A



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ANALYTICAL RESULTS

Workorder: 3001515 4TH QTR 2018 GWMP-FORM 19Q

PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
3001515001	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.				
3001515001	2	FFMP30RW	S2540C-11	Total Dissolved Solids
The RPD associated with this sample was recovered at 6.5%. The RPD is outside method acceptance limits of 0-5%. The results used to calculate the RPD were 350 mg/L and 328 mg/L.				
3001515001	3	FFMP30RW	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
3001515002	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.				
3001515002	2	FFMP04AW	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				

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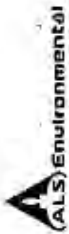
ANALYSIS - PREP METHOD CROSS REFERENCE TABLE

Workorder: 3001515 4TH QTR 2018 GWMP-FORM 19Q

Lab ID	Sample ID	Analysis Method	Prep Method
3001515001	FFMP30RW	D6919-09	
3001515001	FFMP30RW	EPA 300.0	
3001515001	FFMP30RW	EPA 410.4	
3001515001	FFMP30RW	Field	
3001515001	FFMP30RW	S2540C-11	
3001515001	FFMP30RW	S4500HB-11	
3001515001	FFMP30RW	SM2130B-2011	
3001515001	FFMP30RW	SM2320B-2011	
3001515001	FFMP30RW	SW846 6010C	SW846 3015
3001515001	FFMP30RW	SW846 8260B	
3001515001	FFMP30RW	SW846 9050A	
3001515001	FFMP30RW	SW846 9060A	
3001515001	FFMP30RW	SW846 9066	420.4/9066
3001515002	FFMP04AW	D6919-09	
3001515002	FFMP04AW	EPA 300.0	
3001515002	FFMP04AW	EPA 410.4	
3001515002	FFMP04AW	Field	
3001515002	FFMP04AW	S2540C-11	
3001515002	FFMP04AW	S4500HB-11	
3001515002	FFMP04AW	SM2130B-2011	
3001515002	FFMP04AW	SM2320B-2011	
3001515002	FFMP04AW	SW846 6010C	SW846 3015
3001515002	FFMP04AW	SW846 8260B	
3001515002	FFMP04AW	SW846 9050A	
3001515002	FFMP04AW	SW846 9060A	
3001515002	FFMP04AW	SW846 9066	420.4/9066
3001515003	FIELD BLANK	SW846 8260B	
3001515004	TRIP BLANK	SW846 8260B	

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



34 Dogwood Lane • Middlestown, PA 17057 • Tel: 717.944.5511 • Fax: 717.944.1430
 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

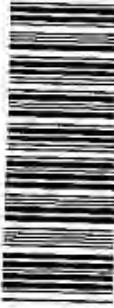
Project Name#: Frey Farm Quarterly (GWMP)
 Bill To: Lancaster County Solid Waste MA

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

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

1 of 1



Cooler Temp: 2°C Therm ID: 403
 No. of Coolers: Y N Initial
 Custody Seals Present?
 (if present) Seals Intact?
 Received on Ice?
 COC Labels Complete/Accurate?
 Cont. in Good Cond.?
 Correct Containers?
 Correct Sample Volumes?
 Correct Preservation?
 Headspace/Volatiles?
 Courier/Tracking #:

ANALYSIS METHOD REQUESTED

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

Matrix	TOC	O-OH	VOC - Form 190	Field Measurements	Sample Depth for AUX Data	NH3-N, COD	Metals: Fe, Mn, Na, Ca, K, Mg	pH, Cl, SPC, F, SO4, TDS, NO3	Alkalinity Bicarbonate
G or C	2	1	2	X	X	1	1	1	1
GW	↓	↓	↓	↓	↓	↓	↓	↓	↓
1555									
1620									
1744									

ALS Field Services: Pickup Labor
 Composite_Sampling Rental_Equipment
 Other:

Standard CLP-like USACE
 State Samples Collected In: USACE Navy NY NJ PA NC

Reportable to PADEP? Yes No
 PWSID # _____
 EDDS: Format Type: _____

Sample Description/Location (as it will appear on the lab report)	Sample Date	Time
1. FFMP30RW	11-20-18	1555
2. FFMP04AW	↓	1620
3. Field Blank	↓	1744
4. Trip Blank	↓	
5.		
6.		
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. [Signature] ALS	11-20-18	1744	[Signature]	11-20-18	1744
3.					
5.					
7.					
9.					

* G=Grab; C=Composite **Matrix - Air=Air; DW=Drinking Water; GW=Groundwater; Oil=Oil; OL=Other Liquid; SL=Sludge; SO=Soil; WP=Wipe; WW=Wastewater
 ALS ENVIRONMENTAL SHIPPING ADDRESS: 34 DOGWOOD LANE, MIDDLETOWN, PA 17057

Lancaster County Solid Waste Management Authority
Frey Farm Landfill

Exceedence Report

<i>Parameter Name</i>	<i>Units</i>	<i>Concentration</i>	<i>Criteria Conc</i>	<i>Qualifiers</i>	<i>Criteria</i>
<i>Location ID</i>	<i>Sample Number</i>	<i>Sample Date</i>	<i>Sample Type</i>	<i>Sample Depth</i>	
FFMP002W	3001068004	11/16/2018	GW		
NITRATE-NITROGEN	mg/l	26.00	10.00	EPA-MCL	
<i>Location ID</i>	<i>Sample Number</i>	<i>Sample Date</i>	<i>Sample Type</i>	<i>Sample Depth</i>	
FFMP016W	3002137009	11/21/2018	GW		
NITRATE-NITROGEN	mg/l	12.30	10.00	EPA-MCL	
<i>Location ID</i>	<i>Sample Number</i>	<i>Sample Date</i>	<i>Sample Type</i>	<i>Sample Depth</i>	
FFMP028W	3002137007	11/21/2018	GW		
NITRATE-NITROGEN	mg/l	19.80	10.00	EPA-MCL	
<i>Location ID</i>	<i>Sample Number</i>	<i>Sample Date</i>	<i>Sample Type</i>	<i>Sample Depth</i>	
FFMP033W	3002137006	11/21/2018	GW		
NITRATE-NITROGEN	mg/l	10.50	10.00	EPA-MCL	
<i>Location ID</i>	<i>Sample Number</i>	<i>Sample Date</i>	<i>Sample Type</i>	<i>Sample Depth</i>	
FFMP03AW	3001349003	11/19/2018	GW		
NITRATE-NITROGEN	mg/l	20.00	10.00	EPA-MCL	

Lancaster County Solid Waste Management Authority

Frey Farm Landfill

Exceedence Report

<i>Parameter Name</i>	<i>Units</i>	<i>Concentration</i>	<i>Criteria Conc</i>	<i>Qualifiers</i>	<i>Criteria</i>
<i>Location ID</i>	<i>Sample Number</i>	<i>Sample Date</i>	<i>Sample Type</i>	<i>Sample Depth</i>	
FFMP002W	3001068004	11/16/2018	GW		
MANGANESE, TOTAL	mg/l	0.27	0.05		EPA-SMCL
<i>Location ID</i>	<i>Sample Number</i>	<i>Sample Date</i>	<i>Sample Type</i>	<i>Sample Depth</i>	
FFMP005W	3002137001	11/21/2018	GW		
CHLORIDE	mg/l	251.00	250.00		EPA-SMCL
MANGANESE, TOTAL	mg/l	0.09	0.05		EPA-SMCL
TDS (TOT. DISSOLVED SOLIDS)	mg/l	655.00	500.00		EPA-SMCL
<i>Location ID</i>	<i>Sample Number</i>	<i>Sample Date</i>	<i>Sample Type</i>	<i>Sample Depth</i>	
FFMP017W	3001349001	11/19/2018	GW		
CHLORIDE	mg/l	333.00	250.00		EPA-SMCL
MANGANESE, TOTAL	mg/l	0.54	0.05		EPA-SMCL
TDS (TOT. DISSOLVED SOLIDS)	mg/l	696.00	500.00		EPA-SMCL
<i>Location ID</i>	<i>Sample Number</i>	<i>Sample Date</i>	<i>Sample Type</i>	<i>Sample Depth</i>	
FFMP018W	3002137002	11/21/2018	GW		
MANGANESE, TOTAL	mg/l	0.45	0.05		EPA-SMCL
<i>Location ID</i>	<i>Sample Number</i>	<i>Sample Date</i>	<i>Sample Type</i>	<i>Sample Depth</i>	
FFMP02DW	3002137004	11/21/2018	GW		
CHLORIDE	mg/l	362.00	250.00		EPA-SMCL
IRON, TOTAL	mg/l	0.85	0.30		EPA-SMCL
MANGANESE, TOTAL	mg/l	0.52	0.05		EPA-SMCL
TDS (TOT. DISSOLVED SOLIDS)	mg/l	834.00	500.00		EPA-SMCL
<i>Location ID</i>	<i>Sample Number</i>	<i>Sample Date</i>	<i>Sample Type</i>	<i>Sample Depth</i>	
FFMP02SW	3002137005	11/21/2018	GW		
IRON, TOTAL	mg/l	0.52	0.30		EPA-SMCL
<i>Location ID</i>	<i>Sample Number</i>	<i>Sample Date</i>	<i>Sample Type</i>	<i>Sample Depth</i>	
FFMP031W	3001068003	11/16/2018	GW		
IRON, TOTAL	mg/l	2.30	0.30		EPA-SMCL
MANGANESE, TOTAL	mg/l	0.28	0.05		EPA-SMCL

<i>Parameter Name</i>	<i>Units</i>	<i>Concentration</i>	<i>Criteria Conc</i>	<i>Qualifiers</i>	<i>Criteria</i>
<i>Location ID</i>	<i>Sample Number</i>	<i>Sample Date</i>	<i>Sample Type</i>	<i>Sample Depth</i>	
FFMP032W	3001068005	11/16/2018	GW		
IRON, TOTAL	mg/l	14.30	0.30	EPA-SMCL	
MANGANESE, TOTAL	mg/l	0.68	0.05	EPA-SMCL	
<i>Location ID</i>	<i>Sample Number</i>	<i>Sample Date</i>	<i>Sample Type</i>	<i>Sample Depth</i>	
FFMP033W	3002137006	11/21/2018	GW		
IRON, TOTAL	mg/l	4.50	0.30	EPA-SMCL	
MANGANESE, TOTAL	mg/l	0.69	0.05	EPA-SMCL	
<i>Location ID</i>	<i>Sample Number</i>	<i>Sample Date</i>	<i>Sample Type</i>	<i>Sample Depth</i>	
FFMP03AW	3001349003	11/19/2018	GW		
MANGANESE, TOTAL	mg/l	0.27	0.05	EPA-SMCL	
<i>Location ID</i>	<i>Sample Number</i>	<i>Sample Date</i>	<i>Sample Type</i>	<i>Sample Depth</i>	
FFMP04AW	3001515002	11/20/2018	GW		
MANGANESE, TOTAL	mg/l	0.17	0.05	EPA-SMCL	
TDS (TOT. DISSOLVED SOLIDS)	mg/l	1,590.00	500.00	EPA-SMCL	
<i>Location ID</i>	<i>Sample Number</i>	<i>Sample Date</i>	<i>Sample Type</i>	<i>Sample Depth</i>	
FFMP26RW	3001068002	11/16/2018	GW		
MANGANESE, TOTAL	mg/l	0.89	0.05	EPA-SMCL	
TDS (TOT. DISSOLVED SOLIDS)	mg/l	676.00	500.00	EPA-SMCL	
<i>Location ID</i>	<i>Sample Number</i>	<i>Sample Date</i>	<i>Sample Type</i>	<i>Sample Depth</i>	
FFMP30RW	3001515001	11/20/2018	GW		
MANGANESE, TOTAL	mg/l	0.43	0.05	EPA-SMCL	