LCSWMA

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

September 17, 2019

Mr. Timothy Long PG; Licensed Professional Geologist
Pennsylvania Department of Environmental Protection
Bureau of Waste Management
909 Elmerton Avenue
Harrisburg, PA 17110-8200

REF: Creswell Landfill (BWM Permit #100008)
Groundwater Monitoring; 3rd Quarter 2019

Dear Mr. Long:

Enclosed, as a PDF file, are the Form 19 reports for the sampling period completed at the above referenced facility. The laboratory results were reviewed to evaluate the quality of the data and historic trends.

- This sampling event was for the "Quarterly" Form 19 parameters, all the thirteen (13) GWMP locations were sampled.
- Enclosed, on CD, is a csv file that should be in the format compatible with your LandLinks software. Additionally, the CD includes a PDF file of all the Forms 19, PDF files of the laboratory reports, MCL and SMCL exceedance reports as you have requested.
- Up gradient well samples where below MCL and SMCL except for nitrate, iron, and manganese on well 1.
- Down gradient wells had similar results with 17 showing chloride, iron, manganese and TDS, 18 showing chloride and TDS (surface Mann's Run) related to surface influences and Turkey Hill discharge. Wells 1,7,10,17& 18 exceeded MCL for nitrate. Well 9 had elevated iron, manganese, TDS and chlorides which shows surface influence of Mann's Run. Well 2 shows manganese above the SMCL, well 8 shows iron manganese and TDS above the SMCL, well 10 shows iron, chloride and TDS above the SMCL, well 12 sows iron and manganese above the SMCL and 16 shows iron above the SMCL, which is due to natural geologic parent material.

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In summary, we observed no unusual trends, and the values reported are generally consistent with historic or seasonal results.

Please do not hesitate in contacting me if you have any questions or concerns at 570-590-1599 or nrogers@lcswma.org.

Respectfully Submitted,

Nick R. Rogers
FFLF Facility Manager

Enclosures

cc: Michelle Marsh, Daniel Brown; Jeff Musser; Jordan Gallagher
Randy Weiss (PA DEP)

2540-FM-BWM0041 Rev. 6/2005

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

Date Prepared/Revised
08/16/2019
DEP USE ONLY
Date Received

FORM 19

MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

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

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facitlity ID (as issued by DEP): 100008

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: CWMP007W — X Well ___ Spring ___ Stream ___ Other

___ Upgradient/Upstream X Downgradient/Downstream

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

Sampling Point: Latitude: 39 ° 57 ' 24.53 " — Longitude: 76 ° 26 ' 33.28 "

Depth to Water Level: 6.95 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: 1.50 ft — Elevation of Water Level: 446.45 ft./MSL

Sampling Depth: 33 ft — Volume of Water Column: 43.40 gal

Total Well Depth: 36.5 ft — Sampling Method: X Pumped ___ Bailed ___ Grab

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

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

Spring Flow Rate: ___ gpm

Sample Date (mm/dd/yy): 7/15/2019 — Sample Collection Time: 10:29

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3045441001 — Final Lab Analysis CompletionDate: 7/25/2019

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

Comments:

I.D. No	100008
Monitoring Point No.	CWMP007W
Sample Date	7/15/2019

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	EPA 350.3
BICARBONATE	14	SM18-2321
CALCIUM, TOTAL	18.5	SW846 6010B
CALCIUM, DISSOLVED		SW 8466010B
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	70.3	EPA 300.0
FLUORIDE	0.2 ND	EPA 300.0
IRON, TOTAL (ug/l)	190	SW846 6010B
IRON, DISSOLVED (ug/l)		SW846 6010B
MAGNESIUM, TOTAL	8.7	SW846 6010B
MAGNESIUM, DISSOLVED		SW846 6010B
MANGANESE, TOTAL (ug/l)	6.7	SW846 6010B
MANGANESE, DISSOLVED (ug/l)		SW846 6010B
NITRATE-NITROGEN	10.5	EPA 300.0
pH-FIELD (SU)	5.47	FIELD
pH-LAB (SU)	5.91	EPA 150.1
POTASSIUM, TOTAL	2.2	SW846 6010B
POTASSIUM, DISSOLVED		SW846 6010B
SODIUM, TOTAL	31.6	SW846 6010B
SODIUM, DISSOLVED		SW846 6010B
SPEC. COND., FIELD (umhos/cm)	381	FIELD
SPEC. COND., LAB (umhos/cm)	361	EPA 120.1
SULFATE	22.4	EPA 300.0
ALKALINITY	14	SM18-2320B
TDS (TOTAL DISSOLVED SOLIDS)	223	SM18-2540C
TOC (TOTAL ORGANIC CARBON)	0.52	SM18-5310B
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	100008
Monitoring Point No.	CWMP007W
Sample Date	7/15/2019

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE (EDB) (ETHYLENE D	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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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: Creswell Landfill

Facitlity ID (as issued by DEP): 100008

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: CWMP001W — X Well ___ Spring ___ Stream ___ Other

X Upgradient/Upstream ___ Downgradient/Downstream

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

Sampling Point: Latitude: 39 ° 57 ' 27.43 " — Longitude: 76 ° 26 ' 14.4 "

Depth to Water Level: 24.65 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: 1.23 ft — Elevation of Water Level: 490.48 ft./MSL

Sampling Depth: 57 ft — Volume of Water Column: 61.17 gal

Total Well Depth: 66.3 ft — Sampling Method: X Pumped ___ Bailed ___ Grab

Well Purged: X Yes ___ No — Well Volumes Purged: 2.0

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

Spring Flow Rate: ___ gpm

Sample Date (mm/dd/yy): 7/15/2019 — Sample Collection Time: 11:41

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3045441002 — Final Lab Analysis CompletionDate: 7/25/2019

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

Comments:

I.D. No	100008
Monitoring Point No.	CWMP001W
Sample Date	7/15/2019

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.114	EPA 350.3
BICARBONATE	8	SM18-2321
CALCIUM, TOTAL	14.7	SW846 6010B
CALCIUM, DISSOLVED		SW 8466010B
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	31.5	EPA 300.0
FLUORIDE	0.2 ND	EPA 300.0
IRON, TOTAL (ug/l)	760	SW846 6010B
IRON, DISSOLVED (ug/l)		SW846 6010B
MAGNESIUM, TOTAL	9.6	SW846 6010B
MAGNESIUM, DISSOLVED		SW846 6010B
MANGANESE, TOTAL (ug/l)	57	SW846 6010B
MANGANESE, DISSOLVED (ug/l)		SW846 6010B
NITRATE-NITROGEN	19.7	EPA 300.0
pH-FIELD (SU)	5.3	FIELD
pH-LAB (SU)	5.48	EPA 150.1
POTASSIUM, TOTAL	2.3	SW846 6010B
POTASSIUM, DISSOLVED		SW846 6010B
SODIUM, TOTAL	12.8	SW846 6010B
SODIUM, DISSOLVED		SW846 6010B
SPEC. COND., FIELD (umhos/cm)	277	FIELD
SPEC. COND., LAB (umhos/cm)	236	EPA 120.1
SULFATE	2.7	EPA 300.0
ALKALINITY	8	SM18-2320B
TDS (TOTAL DISSOLVED SOLIDS)	214	SM18-2540C
TOC (TOTAL ORGANIC CARBON)	0.59	SM18-5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	28.7	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	100008
Monitoring Point No.	CWMP001W
Sample Date	7/15/2019

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

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

T Please indicate detection limit if analyte is not detected.

2540-FM-BWM0041 Rev. 6/2005

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

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SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facitlity ID (as issued by DEP): 100008

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: CWMP005W — X Well ___ Spring ___ Stream ___ Other

X Upgradient/Upstream ___ Downgradient/Downstream

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

Sampling Point: Latitude: 39 ° 57 ' 11.17 " — Longitude: 76 ° 26 ' 7.08 "

Depth to Water Level: 36.76 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: -0.37 ft — Elevation of Water Level: 476.67 ft./MSL

Sampling Depth: 130 ft — Volume of Water Column: 151.62 gal

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

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

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

Spring Flow Rate: ___ gpm

Sample Date (mm/dd/yy): 7/15/2019 — Sample Collection Time: 14:11

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3045441003 — Final Lab Analysis CompletionDate: 7/25/2019

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

Comments:

I.D. No	100008
Monitoring Point No.	CWMP005W
Sample Date	7/15/2019

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	EPA 350.3
BICARBONATE	12	SM18-2321
CALCIUM, TOTAL	12.5	SW846 6010B
CALCIUM, DISSOLVED		SW 8466010B
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	50.9	EPA 300.0
FLUORIDE	0.2 ND	EPA 300.0
IRON, TOTAL (ug/l)	180	SW846 6010B
IRON, DISSOLVED (ug/l)		SW846 6010B
MAGNESIUM, TOTAL	6.2	SW846 6010B
MAGNESIUM, DISSOLVED		SW846 6010B
MANGANESE, TOTAL (ug/l)	50	SW846 6010B
MANGANESE, DISSOLVED (ug/l)		SW846 6010B
NITRATE-NITROGEN	8.6	EPA 300.0
pH-FIELD (SU)	4.63	FIELD
pH-LAB (SU)	5.99	EPA 150.1
POTASSIUM, TOTAL	2	SW846 6010B
POTASSIUM, DISSOLVED		SW846 6010B
SODIUM, TOTAL	24.3	SW846 6010B
SODIUM, DISSOLVED		SW846 6010B
SPEC. COND., FIELD (umhos/cm)	286	FIELD
SPEC. COND., LAB (umhos/cm)	245	EPA 120.1
SULFATE	5.8	EPA 300.0
ALKALINITY	12	SM18-2320B
TDS (TOTAL DISSOLVED SOLIDS)	205	SM18-2540C
TOC (TOTAL ORGANIC CARBON)	0.5 ND	SM18-5310B
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	100008
Monitoring Point No.	CWMP005W
Sample Date	7/15/2019

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

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

T Please indicate detection limit if analyte is not detected.

2540-FM-BWM0041 Rev. 6/2005

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DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

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SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facitlity ID (as issued by DEP): 100008

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: CWMP016W — X Well ___ Spring ___ Stream ___ Other

___ Upgradient/Upstream X Downgradient/Downstream

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

Sampling Point: Latitude: 39 ° 56 ' 55.57 " — Longitude: 76 ° 26 ' 50.59 "

Depth to Water Level: 11.63 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: 2.53 ft — Elevation of Water Level: 300.34 ft./MSL

Sampling Depth: 71 ft — Volume of Water Column: ___ gal

Total Well Depth: 78.03 ft — Sampling Method: X Pumped ___ Bailed ___ Grab

Well Purged: X Yes ___ No — Well Volumes Purged: 2.1

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

Spring Flow Rate: ___ gpm

Sample Date (mm/dd/yy): 7/17/2019 — 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 X No If yes, please explain in comments field.

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3046018001 — Final Lab Analysis CompletionDate: 7/25/2019

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

Comments:

I.D. No	100008
Monitoring Point No.	CWMP016W
Sample Date	7/17/2019

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.146	EPA 350.3
BICARBONATE	6	SM18-2321
CALCIUM, TOTAL	4.5	SW846 6010B
CALCIUM, DISSOLVED		SW 8466010B
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	2.9	EPA 300.0
FLUORIDE	0.2 ND	EPA 300.0
IRON, TOTAL (ug/l)	820	SW846 6010B
IRON, DISSOLVED (ug/l)		SW846 6010B
MAGNESIUM, TOTAL	1.1	SW846 6010B
MAGNESIUM, DISSOLVED		SW846 6010B
MANGANESE, TOTAL (ug/l)	19	SW846 6010B
MANGANESE, DISSOLVED (ug/l)		SW846 6010B
NITRATE-NITROGEN	0.74	EPA 300.0
pH-FIELD (SU)	5.68	FIELD
pH-LAB (SU)	6.9	EPA 150.1
POTASSIUM, TOTAL	0.56 ND	SW846 6010B
POTASSIUM, DISSOLVED		SW846 6010B
SODIUM, TOTAL	2.7	SW846 6010B
SODIUM, DISSOLVED		SW846 6010B
SPEC. COND., FIELD (umhos/cm)	59	FIELD
SPEC. COND., LAB (umhos/cm)	51	EPA 120.1
SULFATE	12.5	EPA 300.0
ALKALINITY	6	SM18-2320B
TDS (TOTAL DISSOLVED SOLIDS)	37	SM18-2540C
TOC (TOTAL ORGANIC CARBON)	0.5	SM18-5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	5.54	SM 2130B

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I.D. No	100008
Monitoring Point No.	CWMP016W
Sample Date	7/17/2019

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE (EDB) (ETHYLENE D	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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Facitlity ID (as issued by DEP): 100008

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: CWMP010W — X Well ___ Spring ___ Stream ___ Other

___ Upgradient/Upstream X Downgradient/Downstream

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

Sampling Point: Latitude: 39 ° 57 ' 2.38 " — Longitude: 76 ° 26 ' 57.92 "

Depth to Water Level: 9.91 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: 2.10 ft — Elevation of Water Level: 350.99 ft./MSL

Sampling Depth: 17 ft — Volume of Water Column: 6.32 gal

Total Well Depth: 19.6 ft — Sampling Method: X Pumped ___ Bailed ___ Grab

Well Purged: X Yes ___ No — Well Volumes Purged: 1.7

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

Spring Flow Rate: ___ gpm

Sample Date (mm/dd/yy): 7/17/2019 — Sample Collection Time: 11:21

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3046018002 — Final Lab Analysis CompletionDate: 7/25/2019

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

Comments:

I.D. No	100008
Monitoring Point No.	CWMP010W
Sample Date	7/17/2019

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.183	EPA 350.3
BICARBONATE	182	SM18-2321
CALCIUM, TOTAL	57.2	SW846 6010B
CALCIUM, DISSOLVED		SW 8466010B
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	369	EPA 300.0
FLUORIDE	0.2 ND	EPA 300.0
IRON, TOTAL (ug/l)	360	SW846 6010B
IRON, DISSOLVED (ug/l)		SW846 6010B
MAGNESIUM, TOTAL	42.8	SW846 6010B
MAGNESIUM, DISSOLVED		SW846 6010B
MANGANESE, TOTAL (ug/l)	34	SW846 6010B
MANGANESE, DISSOLVED (ug/l)		SW846 6010B
NITRATE-NITROGEN	11.7	EPA 300.0
pH-FIELD (SU)	6.21	FIELD
pH-LAB (SU)	7.67	EPA 150.1
POTASSIUM, TOTAL	10.9	SW846 6010B
POTASSIUM, DISSOLVED		SW846 6010B
SODIUM, TOTAL	184	SW846 6010B
SODIUM, DISSOLVED		SW846 6010B
SPEC. COND., FIELD (umhos/cm)	1971	FIELD
SPEC. COND., LAB (umhos/cm)	1720	EPA 120.1
SULFATE	35.6	EPA 300.0
ALKALINITY	182	SM18-2320B
TDS (TOTAL DISSOLVED SOLIDS)	926	SM18-2540C
TOC (TOTAL ORGANIC CARBON)	4.5	SM18-5310B
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	100008
Monitoring Point No.	CWMP010W
Sample Date	7/17/2019

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

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

T Please indicate detection limit if analyte is not detected.

2540-FM-BWM0041 Rev. 6/2005

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

Date Prepared/Revised
08/16/2019
DEP USE ONLY
Date Received

FORM 19

MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

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

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facitlity ID (as issued by DEP): 100008

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: CWMP009W — X Well ___ Spring ___ Stream ___ Other

___ Upgradient/Upstream X Downgradient/Downstream

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

Sampling Point: Latitude: 39 ° 57 ' 10.82 " — Longitude: 76 ° 26 ' 55.8 "

Depth to Water Level: 9.18 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: 2.70 ft — Elevation of Water Level: 395.02 ft./MSL

Sampling Depth: 16 ft — Volume of Water Column: 6.87 gal

Total Well Depth: 19.7 ft — Sampling Method: X Pumped ___ Bailed ___ Grab

Well Purged: X Yes ___ No — Well Volumes Purged: 11.1

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

Spring Flow Rate: ___ gpm

Sample Date (mm/dd/yy): 7/17/2019 — Sample Collection Time: 11:52

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3046018003 — Final Lab Analysis CompletionDate: 7/25/2019

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

Comments:

I.D. No	100008
Monitoring Point No.	CWMP009W
Sample Date	7/17/2019

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	24.2	EPA 350.3
BICARBONATE	485	SM18-2321
CALCIUM, TOTAL	130	SW846 6010B
CALCIUM, DISSOLVED		SW 8466010B
COD (CHEMICAL OXYGEN DEMAND)	91	EPA 410.4
CHLORIDE	395	EPA 300.0
FLUORIDE	0.2 ND	EPA 300.0
IRON, TOTAL (ug/l)	28900	SW846 6010B
IRON, DISSOLVED (ug/l)		SW846 6010B
MAGNESIUM, TOTAL	59.8	SW846 6010B
MAGNESIUM, DISSOLVED		SW846 6010B
MANGANESE, TOTAL (ug/l)	10300	SW846 6010B
MANGANESE, DISSOLVED (ug/l)		SW846 6010B
NITRATE-NITROGEN	0.2 ND	EPA 300.0
pH-FIELD (SU)	6.12	FIELD
pH-LAB (SU)	7.44	EPA 150.1
POTASSIUM, TOTAL	32	SW846 6010B
POTASSIUM, DISSOLVED		SW846 6010B
SODIUM, TOTAL	140	SW846 6010B
SODIUM, DISSOLVED		SW846 6010B
SPEC. COND., FIELD (umhos/cm)	2276	FIELD
SPEC. COND., LAB (umhos/cm)	2200	EPA 120.1
SULFATE	6.6	EPA 300.0
ALKALINITY	485	SM18-2320B
TDS (TOTAL DISSOLVED SOLIDS)	1220	SM18-2540C
TOC (TOTAL ORGANIC CARBON)	32.3	SM18-5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	49	SM 2130B

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

I.D. No	100008
Monitoring Point No.	CWMP009W
Sample Date	7/17/2019

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
BENZENE	4.3	SW846 8260B
1,2-DIBROMOETHANE (EDB) (ETHYLENE D	1 ND	SW846 8260B
1,1-DICHLOROETHANE	1.3	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
08/16/2019
DEP USE ONLY
Date Received

FORM 19

MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

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

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facitlity ID (as issued by DEP): 100008

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: CWMP008W — X Well ___ Spring ___ Stream ___ Other

___ Upgradient/Upstream X Downgradient/Downstream

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

Sampling Point: Latitude: 39 ° 57 ' 16.97 " — Longitude: 76 ° 26 ' 47.58 "

Depth to Water Level: 3.25 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: 2.80 ft — Elevation of Water Level: 419.05 ft./MSL

Sampling Depth: 19 ft — Volume of Water Column: 3.19 gal

Total Well Depth: 22.8 ft — Sampling Method: X Pumped ___ Bailed ___ Grab

Well Purged: X Yes ___ No — Well Volumes Purged: 6.9

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

Spring Flow Rate: ___ gpm

Sample Date (mm/dd/yy): 7/17/2019 — Sample Collection Time: 13:20

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3046018004 — Final Lab Analysis CompletionDate: 7/25/2019

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

Comments:

I.D. No	100008
Monitoring Point No.	CWMP008W
Sample Date	7/17/2019

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	EPA 350.3
BICARBONATE	423	SM18-2321
CALCIUM, TOTAL	74	SW846 6010B
CALCIUM, DISSOLVED		SW 8466010B
COD (CHEMICAL OXYGEN DEMAND)	36	EPA 410.4
CHLORIDE	58.6	EPA 300.0
FLUORIDE	0.2 ND	EPA 300.0
IRON, TOTAL (ug/l)	31700	SW846 6010B
IRON, DISSOLVED (ug/l)		SW846 6010B
MAGNESIUM, TOTAL	34.3	SW846 6010B
MAGNESIUM, DISSOLVED		SW846 6010B
MANGANESE, TOTAL (ug/l)	16100	SW846 6010B
MANGANESE, DISSOLVED (ug/l)		SW846 6010B
NITRATE-NITROGEN	0.2 ND	EPA 300.0
pH-FIELD (SU)	5.87	FIELD
pH-LAB (SU)	7.39	EPA 150.1
POTASSIUM, TOTAL	10.9	SW846 6010B
POTASSIUM, DISSOLVED		SW846 6010B
SODIUM, TOTAL	50.2	SW846 6010B
SODIUM, DISSOLVED		SW846 6010B
SPEC. COND., FIELD (umhos/cm)	1093	FIELD
SPEC. COND., LAB (umhos/cm)	1010	EPA 120.1
SULFATE	5.6	EPA 300.0
ALKALINITY	423	SM18-2320B
TDS (TOTAL DISSOLVED SOLIDS)	625	SM18-2540C
TOC (TOTAL ORGANIC CARBON)	14.2	SM18-5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	22.3	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	100008
Monitoring Point No.	CWMP008W
Sample Date	7/17/2019

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
BENZENE	2.7	SW846 8260B
1,2-DIBROMOETHANE (EDB) (ETHYLENE D	1 ND	SW846 8260B
1,1-DICHLOROETHANE	4.2	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
08/16/2019
DEP USE ONLY
Date Received

FORM 19

MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facitlity ID (as issued by DEP): 100008

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: CWMP018S — X Well ___ Spring ___ Stream ___ Other

___ Upgradient/Upstream X Downgradient/Downstream

Location (County): Lancaster County — Municipality: Manor

Sampling Point: Latitude: 39 ° 56 ' 55.11 " — Longitude: 76 ° 26 ' 51.66 "

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

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

Sampling Depth: 0 ft — Volume of Water Column: #Error gal

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

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

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

Spring Flow Rate: ___ gpm

Sample Date (mm/dd/yy): 7/18/2019 — Sample Collection Time: 9:47

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3046374001 — Final Lab Analysis CompletionDate: 7/27/2019

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

Comments:

I.D. No	100008
Monitoring Point No.	CWMP018S
Sample Date	7/18/2019

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	EPA 350.3
BICARBONATE	299	SM18-2321
CALCIUM, TOTAL	36.1	SW846 6010B
CALCIUM, DISSOLVED		SW 8466010B
COD (CHEMICAL OXYGEN DEMAND)	19	EPA 410.4
CHLORIDE	422	EPA 300.0
FLUORIDE	0.5 ND	EPA 300.0
IRON, TOTAL (ug/l)	110	SW846 6010B
IRON, DISSOLVED (ug/l)		SW846 6010B
MAGNESIUM, TOTAL	35.3	SW846 6010B
MAGNESIUM, DISSOLVED		SW846 6010B
MANGANESE, TOTAL (ug/l)	5.6 ND	SW846 6010B
MANGANESE, DISSOLVED (ug/l)		SW846 6010B
NITRATE-NITROGEN	18.1	EPA 300.0
pH-FIELD (SU)	8.03	FIELD
pH-LAB (SU)	8.19	EPA 150.1
POTASSIUM, TOTAL	8.9	SW846 6010B
POTASSIUM, DISSOLVED		SW846 6010B
SODIUM, TOTAL	135	SW846 6010B
SODIUM, DISSOLVED		SW846 6010B
SPEC. COND., FIELD (umhos/cm)	2124	FIELD
SPEC. COND., LAB (umhos/cm)	2080	EPA 120.1
SULFATE	36.2	EPA 300.0
ALKALINITY	299	SM18-2320B
TDS (TOTAL DISSOLVED SOLIDS)	1250	SM18-2540C
TOC (TOTAL ORGANIC CARBON)	7.7	SM18-5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.76	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	100008
Monitoring Point No.	CWMP018S
Sample Date	7/18/2019

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE (EDB) (ETHYLENE D	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
08/16/2019
DEP USE ONLY
Date Received

FORM 19

MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facitlity ID (as issued by DEP): 100008

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: CWMP017S — X Well ___ Spring ___ Stream ___ Other

___ Upgradient/Upstream X Downgradient/Downstream

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

Sampling Point: Latitude: 39 ° 57 ' 20.41 " — Longitude: 76 ° 26 ' 45.1 "

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

Casing Stickup: _____ ft — Elevation of Water Level: #Error ft./MSL

Sampling Depth: 0 ft — Volume of Water Column: #Error gal

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

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

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

Spring Flow Rate: _____ gpm

Sample Date (mm/dd/yy): 7/18/2019 — 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 X No If yes, please explain in comments field.

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3046374002 — Final Lab Analysis CompletionDate: 7/27/2019

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

Comments:

I.D. No	100008
Monitoring Point No.	CWMP017S
Sample Date	7/18/2019

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.154	EPA 350.3
BICARBONATE	411	SM18-2321
CALCIUM, TOTAL	78.5	SW846 6010B
CALCIUM, DISSOLVED		SW 8466010B
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	625	EPA 300.0
FLUORIDE	0.5 ND	EPA 300.0
IRON, TOTAL (ug/l)	320	SW846 6010B
IRON, DISSOLVED (ug/l)		SW846 6010B
MAGNESIUM, TOTAL	92.6	SW846 6010B
MAGNESIUM, DISSOLVED		SW846 6010B
MANGANESE, TOTAL (ug/l)	140	SW846 6010B
MANGANESE, DISSOLVED (ug/l)		SW846 6010B
NITRATE-NITROGEN	26	EPA 300.0
pH-FIELD (SU)	7.7	FIELD
pH-LAB (SU)	7.99	EPA 150.1
POTASSIUM, TOTAL	15.7	SW846 6010B
POTASSIUM, DISSOLVED		SW846 6010B
SODIUM, TOTAL	364	SW846 6010B
SODIUM, DISSOLVED		SW846 6010B
SPEC. COND., FIELD (umhos/cm)	2883	FIELD
SPEC. COND., LAB (umhos/cm)	2860	EPA 120.1
SULFATE	55.5	EPA 300.0
ALKALINITY	411	SM18-2320B
TDS (TOTAL DISSOLVED SOLIDS)	1280	SM18-2540C
TOC (TOTAL ORGANIC CARBON)	5.4	SM18-5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	1.96	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	100008
Monitoring Point No.	CWMP017S
Sample Date	7/18/2019

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

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

T Please indicate detection limit if analyte is not detected.

2540-FM-BWM0041 Rev. 6/2005

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

Date Prepared/Revised
08/16/2019
DEP USE ONLY
Date Received

FORM 19

MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

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

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facitlity ID (as issued by DEP): 100008

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: CWMP012W — X Well ___ Spring ___ Stream ___ Other

___ Upgradient/Upstream X Downgradient/Downstream

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

Sampling Point: Latitude: 39 ° 57 ' 1.48 " — Longitude: 76 ° 26 ' 36.02 "

Depth to Water Level: 59.72 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: 1.90 ft — Elevation of Water Level: 322.98 ft./MSL

Sampling Depth: 0 ft — Volume of Water Column: 61.95 gal

Total Well Depth: 101.9 ft — Sampling Method: X Pumped ___ Bailed ___ Grab

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

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

Spring Flow Rate: ___ gpm

Sample Date (mm/dd/yy): 7/19/2019 — Sample Collection Time: 8:59

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 X No If yes, please explain in comments field.

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3046658001 — Final Lab Analysis CompletionDate: 7/28/2019

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

Comments:

I.D. No	100008
Monitoring Point No.	CWMP012W
Sample Date	7/19/2019

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.16	EPA 350.3
BICARBONATE	73	SM18-2321
CALCIUM, TOTAL	33	SW846 6010B
CALCIUM, DISSOLVED		SW 8466010B
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	35.7	EPA 300.0
FLUORIDE	0.2 ND	EPA 300.0
IRON, TOTAL (ug/l)	43000	SW846 6010B
IRON, DISSOLVED (ug/l)		SW846 6010B
MAGNESIUM, TOTAL	9.4	SW846 6010B
MAGNESIUM, DISSOLVED		SW846 6010B
MANGANESE, TOTAL (ug/l)	170	SW846 6010B
MANGANESE, DISSOLVED (ug/l)		SW846 6010B
NITRATE-NITROGEN	9.7	EPA 300.0
pH-FIELD (SU)	5.81	FIELD
pH-LAB (SU)	6.68	EPA 150.1
POTASSIUM, TOTAL	1.4	SW846 6010B
POTASSIUM, DISSOLVED		SW846 6010B
SODIUM, TOTAL	13.6	SW846 6010B
SODIUM, DISSOLVED		SW846 6010B
SPEC. COND., FIELD (umhos/cm)	391	FIELD
SPEC. COND., LAB (umhos/cm)	300	EPA 120.1
SULFATE	4.9	EPA 300.0
ALKALINITY	73	SM18-2320B
TDS (TOTAL DISSOLVED SOLIDS)	239	SM18-2540C
TOC (TOTAL ORGANIC CARBON)	1.7	SM18-5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	363	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	100008
Monitoring Point No.	CWMP012W
Sample Date	7/19/2019

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

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

T Please indicate detection limit if analyte is not detected.

2540-FM-BWM0041 Rev. 6/2005

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

Date Prepared/Revised
08/16/2019
DEP USE ONLY
Date Received

FORM 19

MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

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

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facitlity ID (as issued by DEP): 100008

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: CWMP002W — X Well ___ Spring ___ Stream ___ Other

___ Upgradient/Upstream X Downgradient/Downstream

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

Sampling Point: Latitude: 39 ° 57 ' 19.97 " — Longitude: 76 ° 26 ' 12.3 "

Depth to Water Level: 68.32 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: -1.19 ft — Elevation of Water Level: 457.49 ft./MSL

Sampling Depth: 85 ft — Volume of Water Column: 46.53 gal

Total Well Depth: 100 ft — Sampling Method: X Pumped ___ Bailed ___ Grab

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

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

Spring Flow Rate: ___ gpm

Sample Date (mm/dd/yy): 7/19/2019 — Sample Collection Time: 9:27

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3046658002 — Final Lab Analysis CompletionDate: 7/28/2019

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

Comments:

I.D. No	100008
Monitoring Point No.	CWMP002W
Sample Date	7/19/2019

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.127	EPA 350.3
BICARBONATE	74	SM18-2321
CALCIUM, TOTAL	46.4	SW846 6010B
CALCIUM, DISSOLVED		SW 8466010B
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	109	EPA 300.0
FLUORIDE	0.2 ND	EPA 300.0
IRON, TOTAL (ug/l)	67 ND	SW846 6010B
IRON, DISSOLVED (ug/l)		SW846 6010B
MAGNESIUM, TOTAL	16	SW846 6010B
MAGNESIUM, DISSOLVED		SW846 6010B
MANGANESE, TOTAL (ug/l)	930	SW846 6010B
MANGANESE, DISSOLVED (ug/l)		SW846 6010B
NITRATE-NITROGEN	4.7	EPA 300.0
pH-FIELD (SU)	5.34	FIELD
pH-LAB (SU)	6.24	EPA 150.1
POTASSIUM, TOTAL	2.7	SW846 6010B
POTASSIUM, DISSOLVED		SW846 6010B
SODIUM, TOTAL	24.2	SW846 6010B
SODIUM, DISSOLVED		SW846 6010B
SPEC. COND., FIELD (umhos/cm)	561	FIELD
SPEC. COND., LAB (umhos/cm)	538	EPA 120.1
SULFATE	22.1	EPA 300.0
ALKALINITY	74	SM18-2320B
TDS (TOTAL DISSOLVED SOLIDS)	371	SM18-2540C
TOC (TOTAL ORGANIC CARBON)	4.1	SM18-5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.23	SM 2130B

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

I.D. No	100008
Monitoring Point No.	CWMP002W
Sample Date	7/19/2019

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE (EDB) (ETHYLENE D	1 ND	SW846 8260B
1,1-DICHLOROETHANE	10.6	SW846 8260B
1,1-DICHLOROETHENE	1 ND	SW846 8260B
1,2-DICHLOROETHANE	1 ND	SW846 8260B
cis 1,2-DICHLOROETHENE	1 ND	SW846 8260B
trans 1,2-DICHLOROETHENE	1 ND	SW846 8260B
ETHYLBENZENE	1 ND	SW846 8260B
METHYLENE CHLORIDE	1 ND	SW846 8260B
TETRACHLOROETHENE	1 ND	SW846 8260B
TOLUENE	1 ND	SW846 8260B
1,1,1-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROETHENE	1 ND	SW846 8260B
VINYL CHLORIDE	1 ND	SW846 8260B
XYLENES (TOTAL)	3 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

2540-FM-BWM0041 Rev. 6/2005

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

Date Prepared/Revised
08/16/2019
DEP USE ONLY
Date Received

FORM 19

MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facitlity ID (as issued by DEP): 100008

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: CWMP004W — X Well ___ Spring ___ Stream ___ Other

___ Upgradient/Upstream X Downgradient/Downstream

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

Sampling Point: Latitude: 39 ° 57 ' 17.9 " — Longitude: 76 ° 26 ' 7.05 "

Depth to Water Level: 79.34 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: -1.37 ft — Elevation of Water Level: 450.19 ft./MSL

Sampling Depth: 130 ft — Volume of Water Column: 89.09 gal

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

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

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

Spring Flow Rate: ___ gpm

Sample Date (mm/dd/yy): 7/19/2019 — Sample Collection Time: 9:44

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 X No If yes, please explain in comments field.

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3046658003 — Final Lab Analysis CompletionDate: 7/28/2019

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

Comments: ___

I.D. No	100008
Monitoring Point No.	CWMP004W
Sample Date	7/19/2019

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.149	EPA 350.3
BICARBONATE	15	SM18-2321
CALCIUM, TOTAL	20.3	SW846 6010B
CALCIUM, DISSOLVED		SW 8466010B
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	64.4	EPA 300.0
FLUORIDE	0.2 ND	EPA 300.0
IRON, TOTAL (ug/l)	83	SW846 6010B
IRON, DISSOLVED (ug/l)		SW846 6010B
MAGNESIUM, TOTAL	8.5	SW846 6010B
MAGNESIUM, DISSOLVED		SW846 6010B
MANGANESE, TOTAL (ug/l)	23	SW846 6010B
MANGANESE, DISSOLVED (ug/l)		SW846 6010B
NITRATE-NITROGEN	8	EPA 300.0
pH-FIELD (SU)	5.12	FIELD
pH-LAB (SU)	6.54	EPA 150.1
POTASSIUM, TOTAL	1.6	SW846 6010B
POTASSIUM, DISSOLVED		SW846 6010B
SODIUM, TOTAL	22.7	SW846 6010B
SODIUM, DISSOLVED		SW846 6010B
SPEC. COND., FIELD (umhos/cm)	331	FIELD
SPEC. COND., LAB (umhos/cm)	297	EPA 120.1
SULFATE	7.8	EPA 300.0
ALKALINITY	15	SM18-2320B
TDS (TOTAL DISSOLVED SOLIDS)	251	SM18-2540C
TOC (TOTAL ORGANIC CARBON)	0.57	SM18-5310B
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	100008
Monitoring Point No.	CWMP004W
Sample Date	7/19/2019

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

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

T Please indicate detection limit if analyte is not detected.

2540-FM-BWM0041 Rev. 6/2005

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

Date Prepared/Revised
08/16/2019
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Date Received

FORM 19

MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facitlity ID (as issued by DEP): 100008

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: CWMP003W — X Well ___ Spring ___ Stream ___ Other

___ Upgradient/Upstream X Downgradient/Downstream

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

Sampling Point: Latitude: 39 ° 57 ' 20.17 " — Longitude: 76 ° 26 ' 8.37 "

Depth to Water Level: 75.22 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: -1.29 ft — Elevation of Water Level: 448.99 ft./MSL

Sampling Depth: 100 ft — Volume of Water Column: -0.32 gal

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

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

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

Spring Flow Rate: ___ gpm

Sample Date (mm/dd/yy): 7/31/2019 — Sample Collection Time: 17:31

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3048878001 — Final Lab Analysis CompletionDate: 8/8/2019

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

Comments:

I.D. No	100008
Monitoring Point No.	CWMP003W
Sample Date	7/31/2019

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	EPA 350.3
BICARBONATE	14	SM18-2321
CALCIUM, TOTAL	23.7	SW846 6010B
CALCIUM, DISSOLVED		SW 8466010B
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	75.8	EPA 300.0
FLUORIDE	0.2 ND	EPA 300.0
IRON, TOTAL (ug/l)	100	SW846 6010B
IRON, DISSOLVED (ug/l)		SW846 6010B
MAGNESIUM, TOTAL	9	SW846 6010B
MAGNESIUM, DISSOLVED		SW846 6010B
MANGANESE, TOTAL (ug/l)	7	SW846 6010B
MANGANESE, DISSOLVED (ug/l)		SW846 6010B
NITRATE-NITROGEN	8.3	EPA 300.0
pH-FIELD (SU)	4.55	FIELD
pH-LAB (SU)	6.3	EPA 150.1
POTASSIUM, TOTAL	1.9	SW846 6010B
POTASSIUM, DISSOLVED		SW846 6010B
SODIUM, TOTAL	22.8	SW846 6010B
SODIUM, DISSOLVED		SW846 6010B
SPEC. COND., FIELD (umhos/cm)	316	FIELD
SPEC. COND., LAB (umhos/cm)	338	EPA 120.1
SULFATE	5.5	EPA 300.0
ALKALINITY	14	SM18-2320B
TDS (TOTAL DISSOLVED SOLIDS)	239	SM18-2540C
TOC (TOTAL ORGANIC CARBON)	0.5 ND	SM18-5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.16	SM 2130B

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

I.D. No	100008
Monitoring Point No.	CWMP003W
Sample Date	7/31/2019

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE (EDB) (ETHYLENE D	1 ND	SW846 8260B
1,1-DICHLOROETHANE	1.2	SW846 8260B
1,1-DICHLOROETHENE	1 ND	SW846 8260B
1,2-DICHLOROETHANE	1 ND	SW846 8260B
cis 1,2-DICHLOROETHENE	1 ND	SW846 8260B
trans 1,2-DICHLOROETHENE	1 ND	SW846 8260B
ETHYLBENZENE	1 ND	SW846 8260B
METHYLENE CHLORIDE	1 ND	SW846 8260B
TETRACHLOROETHENE	1 ND	SW846 8260B
TOLUENE	1 ND	SW846 8260B
1,1,1-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROETHENE	1 ND	SW846 8260B
VINYL CHLORIDE	1 ND	SW846 8260B
XYLENES (TOTAL)	3 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

ALS Environmental

301 Fulling Mill Road - Middletown, PA 17057 - Phone: 717-944-5541 - Fax: 717-944-1430 - www.alsglobal.com

NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: PJLA 74618
State Certifications: FL E871113 , WA C999 , MD 128 , VA 460157 , WV DW 9961-C , WV 343

July 25, 2019

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

Certificate of Analysis

Project Name:	**CRESWELL**	Workorder:	**3045441**
Purchase Order:	**PO1000127**	Workorder ID:	**Creswell/GWMP Form 19Q**

Dear Mr. Brown:

Enclosed are the analytical results for samples received by the laboratory on Monday, July 15, 2019.

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

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

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

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

SAMPLE SUMMARY

Workorder: 3045441 Creswell/GWMP Form 19Q

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
3045441001	CWMP007W	Ground Water	7/15/2019 10:29	7/15/2019 15:19	Mr. Brian G Shade
3045441002	CWMP001W	Ground Water	7/15/2019 11:41	7/15/2019 15:19	Mr. Brian G Shade
3045441003	CWMP005W	Ground Water	7/15/2019 14:11	7/15/2019 15:19	Mr. Brian G Shade

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SAMPLE SUMMARY

Workorder: 3045441 Creswell/GWMP Form 19Q

Notes

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

Standard Acronyms/Flags

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

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ANALYTICAL RESULTS

Workorder: 3045441 Creswell/GWMP Form 19Q

Lab ID: **3045441001** Date Collected: 7/15/2019 10:29 Matrix: Ground Water
Sample ID: **CWMP007W** Date Received: 7/15/2019 15:19

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			7/17/19 06:17	PDK	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			7/17/19 06:17	PDK	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			7/17/19 06:17	PDK	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			7/17/19 06:17	PDK	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			7/17/19 06:17	PDK	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			7/17/19 06:17	PDK	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			7/17/19 06:17	PDK	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			7/17/19 06:17	PDK	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			7/17/19 06:17	PDK	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			7/17/19 06:17	PDK	G
Toluene	ND		ug/L	1.0	SW846 8260B			7/17/19 06:17	PDK	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			7/17/19 06:17	PDK	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			7/17/19 06:17	PDK	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			7/17/19 06:17	PDK	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			7/17/19 06:17	PDK	G
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	112		%	62 - 133	SW846 8260B			7/17/19 06:17	PDK	G
4-Bromofluorobenzene (S)	110		%	79 - 114	SW846 8260B			7/17/19 06:17	PDK	G
Dibromofluoromethane (S)	104		%	78 - 116	SW846 8260B			7/17/19 06:17	PDK	G
Toluene-d8 (S)	106		%	76 - 127	SW846 8260B			7/17/19 06:17	PDK	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	14		mg/L	5	SM2320B-2011			7/20/19 03:06	MBW	B
Alkalinity, Total	14	3	mg/L	5	SM2320B-2011			7/20/19 03:06	MBW	B
Ammonia-N	ND		mg/L	0.100	D6919-09			7/23/19 15:29	AK	A
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			7/20/19 14:08	AK	A
Chloride	70.3		mg/L	2.0	EPA 300.0			7/16/19 07:18	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			7/16/19 07:18	CHW	B
Nitrate-N	10.5		mg/L	0.20	EPA 300.0			7/16/19 07:18	CHW	B
pH	5.91	1	pH_Units		S4500HB-11			7/20/19 03:06	MBW	B
Phenolics	ND		mg/L	0.005	SW846 9066	7/16/19 10:29	C_D	7/17/19 06:18	C_D	F
Specific Conductance	361		umhos/cm	1	SW846 9050A			7/20/19 03:06	MBW	B
Sulfate	22.4		mg/L	2.0	EPA 300.0			7/16/19 07:18	CHW	B
Total Dissolved Solids	223	2	mg/L	5	S2540C-11			7/16/19 14:20	LXW	B
Total Organic Carbon (TOC)	0.52		mg/L	0.50	SW846 9060A			7/17/19 07:32	PAG	D
Turbidity	ND		NTU	0.10	SM2130B-2011			7/16/19 06:01	R2B	B

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ANALYTICAL RESULTS

Workorder: 3045441 Creswell/GWMP Form 19Q

Lab ID: **3045441001** Date Collected: 7/15/2019 10:29 Matrix: Ground Water

Sample ID: **CWMP007W** Date Received: 7/15/2019 15:19

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Calcium, Total	18.5		mg/L	0.11	SW846 6010C	7/18/19 16:35	SXC	7/25/19 17:44	SRT	J1
Iron, Total	0.19		mg/L	0.067	SW846 6010C	7/18/19 16:35	SXC	7/25/19 17:44	SRT	J1
Magnesium, Total	8.7		mg/L	0.11	SW846 6010C	7/18/19 16:35	SXC	7/25/19 17:44	SRT	J1
Manganese, Total	0.0067		mg/L	0.0056	SW846 6010C	7/18/19 16:35	SXC	7/25/19 17:44	SRT	J1
Potassium, Total	2.2		mg/L	0.56	SW846 6010C	7/18/19 16:35	SXC	7/25/19 17:44	SRT	J1
Sodium, Total	31.6		mg/L	0.56	SW846 6010C	7/18/19 16:35	SXC	7/25/19 17:44	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	6.95		Feet		Field			7/15/19 10:29	BGS	C
Elev Top MW Casing above MSL	453.40		Feet		Field			7/15/19 10:29	BGS	C
Flow Rate	1.95		gal/min		Field			7/15/19 10:29	BGS	C
Ground Water Elevation	446.45		ft/MSL		Field			7/15/19 10:29	BGS	C
pH, Field (SM4500B)	5.47		pH_Units		Field			7/15/19 10:29	BGS	C
Sample Depth	33.00		Feet		Field			7/15/19 10:29	BGS	C
Specific Conductance, Field	381		umhos/cm	1	Field			7/15/19 10:29	BGS	C
Temperature	10.12		Deg. C		Field			7/15/19 10:29	BGS	C
Total Well Depth	36.50		Feet		Field			7/15/19 10:29	BGS	C
Volume in Water Column	43.44		Gallons		Field			7/15/19 10:29	BGS	C
Water Level After Purge	7.43		Feet		Field			7/15/19 10:29	BGS	C
Well Volumes Purged	2.70		Vol		Field			7/15/19 10:29	BGS	C

Susan J. Scherer

Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 3045441 Creswell/GWMP Form 19Q

Lab ID: **3045441002** Date Collected: 7/15/2019 11:41 Matrix: Ground Water
Sample ID: **CWMP001W** Date Received: 7/15/2019 15:19

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			7/17/19 06:40	PDK	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			7/17/19 06:40	PDK	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			7/17/19 06:40	PDK	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			7/17/19 06:40	PDK	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			7/17/19 06:40	PDK	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			7/17/19 06:40	PDK	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			7/17/19 06:40	PDK	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			7/17/19 06:40	PDK	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			7/17/19 06:40	PDK	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			7/17/19 06:40	PDK	G
Toluene	ND		ug/L	1.0	SW846 8260B			7/17/19 06:40	PDK	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			7/17/19 06:40	PDK	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			7/17/19 06:40	PDK	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			7/17/19 06:40	PDK	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			7/17/19 06:40	PDK	G
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	112		%	62 - 133	SW846 8260B			7/17/19 06:40	PDK	G
4-Bromofluorobenzene (S)	110		%	79 - 114	SW846 8260B			7/17/19 06:40	PDK	G
Dibromofluoromethane (S)	104		%	78 - 116	SW846 8260B			7/17/19 06:40	PDK	G
Toluene-d8 (S)	106		%	76 - 127	SW846 8260B			7/17/19 06:40	PDK	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	8		mg/L	5	SM2320B-2011			7/20/19 03:13	MBW	B
Alkalinity, Total	8	3	mg/L	5	SM2320B-2011			7/20/19 03:13	MBW	B
Ammonia-N	0.114		mg/L	0.100	D6919-09			7/21/19 22:49	AK	A
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			7/20/19 14:08	AK	A
Chloride	31.5		mg/L	2.0	EPA 300.0			7/16/19 07:30	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			7/16/19 07:30	CHW	B
Nitrate-N	19.7	4	mg/L	0.50	EPA 300.0			7/18/19 05:47	CHW	B
pH	5.48	1	pH_Units		S4500HB-11			7/20/19 03:13	MBW	B
Phenolics	ND		mg/L	0.005	SW846 9066	7/16/19 10:30	C_D	7/17/19 06:18	C_D	F
Specific Conductance	236		umhos/cm	1	SW846 9050A			7/20/19 03:13	MBW	B
Sulfate	2.7		mg/L	2.0	EPA 300.0			7/16/19 07:30	CHW	B
Total Dissolved Solids	214	2	mg/L	5	S2540C-11			7/16/19 14:20	LXW	B
Total Organic Carbon (TOC)	0.59		mg/L	0.50	SW846 9060A			7/17/19 07:32	PAG	D
Turbidity	28.7		NTU	0.10	SM2130B-2011			7/16/19 06:01	R2B	B

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ANALYTICAL RESULTS

Workorder: 3045441 Creswell/GWMP Form 19Q

Lab ID: **3045441002** Date Collected: 7/15/2019 11:41 Matrix: Ground Water

Sample ID: **CWMP001W** Date Received: 7/15/2019 15:19

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Calcium, Total	14.7		mg/L	0.11	SW846 6010C	7/18/19 16:35	SXC	7/25/19 17:40	SRT	J1
Iron, Total	0.76		mg/L	0.067	SW846 6010C	7/18/19 16:35	SXC	7/25/19 17:40	SRT	J1
Magnesium, Total	9.6		mg/L	0.11	SW846 6010C	7/18/19 16:35	SXC	7/25/19 17:40	SRT	J1
Manganese, Total	0.057		mg/L	0.0056	SW846 6010C	7/18/19 16:35	SXC	7/25/19 17:40	SRT	J1
Potassium, Total	2.3		mg/L	0.56	SW846 6010C	7/18/19 16:35	SXC	7/25/19 17:40	SRT	J1
Sodium, Total	12.8		mg/L	0.56	SW846 6010C	7/18/19 16:35	SXC	7/25/19 17:40	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	24.65		Feet		Field			7/15/19 11:41	BGS	C
Elev Top MW Casing above MSL	515.13		Feet		Field			7/15/19 11:41	BGS	C
Flow Rate	2.01		gal/min		Field			7/15/19 11:41	BGS	C
Ground Water Elevation	490.48		ft/MSL		Field			7/15/19 11:41	BGS	C
pH, Field (SM4500B)	5.30		pH_Units		Field			7/15/19 11:41	BGS	C
Sample Depth	57.00		Feet		Field			7/15/19 11:41	BGS	C
Specific Conductance, Field	277		umhos/cm	1	Field			7/15/19 11:41	BGS	C
Temperature	11.26		Deg. C		Field			7/15/19 11:41	BGS	C
Total Well Depth	66.30		Feet		Field			7/15/19 11:41	BGS	C
Volume in Water Column	61.23		Gallons		Field			7/15/19 11:41	BGS	C
Water Level After Purge	48.00		Feet		Field			7/15/19 11:41	BGS	C
Well Volumes Purged	1.97		Vol		Field			7/15/19 11:41	BGS	C

Susan J. Scherer

Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 3045441 Creswell/GWMP Form 19Q

Lab ID: **3045441003** Date Collected: 7/15/2019 14:11 Matrix: Ground Water
Sample ID: **CWMP005W** Date Received: 7/15/2019 15:19

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			7/17/19 07:02	PDK	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			7/17/19 07:02	PDK	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			7/17/19 07:02	PDK	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			7/17/19 07:02	PDK	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			7/17/19 07:02	PDK	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			7/17/19 07:02	PDK	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			7/17/19 07:02	PDK	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			7/17/19 07:02	PDK	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			7/17/19 07:02	PDK	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			7/17/19 07:02	PDK	G
Toluene	ND		ug/L	1.0	SW846 8260B			7/17/19 07:02	PDK	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			7/17/19 07:02	PDK	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			7/17/19 07:02	PDK	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			7/17/19 07:02	PDK	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			7/17/19 07:02	PDK	G
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	113		%	62 - 133	SW846 8260B			7/17/19 07:02	PDK	G
4-Bromofluorobenzene (S)	113		%	79 - 114	SW846 8260B			7/17/19 07:02	PDK	G
Dibromofluoromethane (S)	104		%	78 - 116	SW846 8260B			7/17/19 07:02	PDK	G
Toluene-d8 (S)	107		%	76 - 127	SW846 8260B			7/17/19 07:02	PDK	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	12		mg/L	5	SM2320B-2011			7/20/19 03:22	MBW	B
Alkalinity, Total	12	3	mg/L	5	SM2320B-2011			7/20/19 03:22	MBW	B
Ammonia-N	ND		mg/L	0.100	D6919-09			7/23/19 13:46	AK	A
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			7/20/19 14:08	AK	A
Chloride	50.9		mg/L	2.0	EPA 300.0			7/16/19 07:43	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			7/16/19 07:43	CHW	B
Nitrate-N	8.6		mg/L	0.20	EPA 300.0			7/16/19 07:43	CHW	B
pH	5.99	1	pH_Units		S4500HB-11			7/20/19 03:22	MBW	B
Phenolics	ND		mg/L	0.005	SW846 9066	7/16/19 10:30	C_D	7/17/19 06:18	C_D	F
Specific Conductance	245		umhos/cm	1	SW846 9050A			7/20/19 03:22	MBW	B
Sulfate	5.8		mg/L	2.0	EPA 300.0			7/16/19 07:43	CHW	B
Total Dissolved Solids	205	2	mg/L	5	S2540C-11			7/16/19 14:20	LXW	B
Total Organic Carbon (TOC)	ND		mg/L	0.50	SW846 9060A			7/17/19 07:32	PAG	D
Turbidity	0.12		NTU	0.10	SM2130B-2011			7/16/19 06:01	R2B	B

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

ANALYTICAL RESULTS

Workorder: 3045441 Creswell/GWMP Form 19Q

Lab ID: **3045441003** Date Collected: 7/15/2019 14:11 Matrix: Ground Water

Sample ID: **CWMP005W** Date Received: 7/15/2019 15:19

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Calcium, Total	12.5		mg/L	0.11	SW846 6010C	7/18/19 16:35	SXC	7/25/19 17:48	SRT	J1
Iron, Total	0.18		mg/L	0.067	SW846 6010C	7/18/19 16:35	SXC	7/25/19 17:48	SRT	J1
Magnesium, Total	6.2		mg/L	0.11	SW846 6010C	7/18/19 16:35	SXC	7/25/19 17:48	SRT	J1
Manganese, Total	0.050		mg/L	0.0056	SW846 6010C	7/18/19 16:35	SXC	7/25/19 17:48	SRT	J1
Potassium, Total	2.0		mg/L	0.56	SW846 6010C	7/18/19 16:35	SXC	7/25/19 17:48	SRT	J1
Sodium, Total	24.3		mg/L	0.56	SW846 6010C	7/18/19 16:35	SXC	7/25/19 17:48	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	36.76		Feet		Field			7/15/19 14:11	BGS	C
Elev Top MW Casing above MSL	513.43		Feet		Field			7/15/19 14:11	BGS	C
Flow Rate	2.61		gal/min		Field			7/15/19 14:11	BGS	C
Ground Water Elevation	476.67		ft/MSL		Field			7/15/19 14:11	BGS	C
pH, Field (SM4500B)	4.63		pH_Units		Field			7/15/19 14:11	BGS	C
Sample Depth	130.00		Feet		Field			7/15/19 14:11	BGS	C
Specific Conductance, Field	286		umhos/cm	1	Field			7/15/19 14:11	BGS	C
Temperature	10.50		Deg. C		Field			7/15/19 14:11	BGS	C
Total Well Depth	138.92		Feet		Field			7/15/19 14:11	BGS	C
Volume in Water Column	150.18		Gallons		Field			7/15/19 14:11	BGS	C
Water Level After Purge	38.78		Feet		Field			7/15/19 14:11	BGS	C
Well Volumes Purged	1.22		Vol		Field			7/15/19 14:11	BGS	C

Susan J. Scherer

Ms. Susan J Scherer
Project Coordinator

ANALYTICAL RESULTS

Workorder: 3045441 Creswell/GWMP Form 19Q

PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
3045441001	1	CWMP007W	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.				
3045441001	2	CWMP007W	S2540C-11	Total Dissolved Solids
The Method Blank for method S2540C-11 reported a value greater than the reporting level for the analyte Total Dissolved Solids.				
3045441001	3	CWMP007W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
3045441002	1	CWMP001W	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.				
3045441002	2	CWMP001W	S2540C-11	Total Dissolved Solids
The Method Blank for method S2540C-11 reported a value greater than the reporting level for the analyte Total Dissolved Solids.				
3045441002	3	CWMP001W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
3045441002	4	CWMP001W	EPA 300.0	Nitrate-N
The sample was originally run within hold time, but required further analysis that exceeded hold time.				
3045441003	1	CWMP005W	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.				
3045441003	2	CWMP005W	S2540C-11	Total Dissolved Solids
The Method Blank for method S2540C-11 reported a value greater than the reporting level for the analyte Total Dissolved Solids.				
3045441003	3	CWMP005W	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: 3045441 Creswell/GWMP Form 19Q

Lab ID	Sample ID	Analysis Method	Prep Method
3045441001	CWMP007W	D6919-09	
3045441001	CWMP007W	EPA 300.0	
3045441001	CWMP007W	EPA 410.4	
3045441001	CWMP007W	Field	
3045441001	CWMP007W	S2540C-11	
3045441001	CWMP007W	S4500HB-11	
3045441001	CWMP007W	SM2130B-2011	
3045441001	CWMP007W	SM2320B-2011	
3045441001	CWMP007W	SW846 6010C	SW846 3015
3045441001	CWMP007W	SW846 8260B	
3045441001	CWMP007W	SW846 9050A	
3045441001	CWMP007W	SW846 9060A	
3045441001	CWMP007W	SW846 9066	420.4/9066
3045441002	CWMP001W	D6919-09	
3045441002	CWMP001W	EPA 300.0	
3045441002	CWMP001W	EPA 410.4	
3045441002	CWMP001W	Field	
3045441002	CWMP001W	S2540C-11	
3045441002	CWMP001W	S4500HB-11	
3045441002	CWMP001W	SM2130B-2011	
3045441002	CWMP001W	SM2320B-2011	
3045441002	CWMP001W	SW846 6010C	SW846 3015
3045441002	CWMP001W	SW846 8260B	
3045441002	CWMP001W	SW846 9050A	
3045441002	CWMP001W	SW846 9060A	
3045441002	CWMP001W	SW846 9066	420.4/9066
3045441003	CWMP005W	D6919-09	
3045441003	CWMP005W	EPA 300.0	
3045441003	CWMP005W	EPA 410.4	
3045441003	CWMP005W	Field	
3045441003	CWMP005W	S2540C-11	
3045441003	CWMP005W	S4500HB-11	
3045441003	CWMP005W	SM2130B-2011	
3045441003	CWMP005W	SM2320B-2011	
3045441003	CWMP005W	SW846 6010C	SW846 3015
3045441003	CWMP005W	SW846 8260B	
3045441003	CWMP005W	SW846 9050A	
3045441003	CWMP005W	SW846 9060A	
3045441003	CWMP005W	SW846 9066	420.4/9066

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CHAIN OF CUSTODY/ REQUEST FOR ANALYSIS

Generated by ALS

* 3 0 4 5 4 4 1 *

1 of 1

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

Client Name: Lancaster County Solid Waste MA

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

Contact: Mark Reider

Phone#: (717) 735-0193

Project Name/#: Creswell/GWMP Form 19Q Wells

Bill To: Lancaster County Solid Waste MA

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

Date Required: _____ Approved By: _____

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

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

Sample Description/Location (as it will appear on the lab report)	Sample Date	Time	*G or C	**Matrix	TOC	O-OH	8260 VOCs - Form 19Q	Field Measurements	Sample Depth for AUX Data	NH3-N, COD	Total Metals: Ca, Fe, Mn, Mg, K, Na	pH, NO3, Cl, F, SpC, SO4, Turb, TDS	Alkalinity, HCO3	
Container Type					AG	AN	CG	---	---	PL	PL	PL	P	
Container Size					40 ml	125 ml	40 ml	---	---	250 ml	125 ml	1 L	500 ml	
Preservative					HCl	H2SO4	HCl	---	---	H2SO4	HNO3	None	None	
					ANALYSES/METHOD REQUESTED									
					Enter Number of Containers Per Sample or Field Results Below.									
1. CWMP007W	07/15/19	1029	G	GW	2	1	2	x	x	1	1	1	1	
2. CWMP001W	07/15/19	1141	G	GW	2	1	2	x	x	1	1	1	1	
3. CWMP005W	07/15/19	1411	G	GW	2	1	2	x	x	1	1	1	1	
4														
5														
6														
7														
8														
9														
10														

Receipt Information (completed by Receiving Lab)

Cooler Temp: 1 Therm ID: 318

No. of Coolers: _____

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

Courier/Tracking #:

Sample/COC Comments

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

Project Comments:

LOGGED BY(signature): DATE TIME

REVIEWED BY(signature): DATE TIME

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
1 [signature] ALS	7/15/19	1679	2 [signature] ALS	7/15/19	1519
3			4		
5			6		
7			8		
9			10		

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

Special Processing: USACE ☐ Navy ☐ ☐

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

Reportable to PADEP? Yes ☐

PWSID # _____

Sample Disposal: Lab [X] Special ☐

EDDS: Format Type-

* G=Grab; C=Composite

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

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

Rev 8/04

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

Condition of Sample Receipt Form

Client: Lancaster County SWMA Work Order #: 384541 Initials: CD Date: 7/15/19

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

Cooler #: _____

Temperature (°C): 1

Thermometer ID: 315

Radiological (µCi): _____

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

Ph is exceed, but will be analyzed with a qualifier

-CD 7/15/19

Rev. 4/29/2019

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July 31, 2019

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

Certificate of Analysis

Project Name:	**CRESWELL**	Workorder:	**3046658**
Purchase Order:	**PO1000127**	Workorder ID:	**3RD QTR 2019 GWMP-FORM 19Q**

Dear Mr. Brown:

Enclosed are the analytical results for samples received by the laboratory on Friday, July 19, 2019.

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

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

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

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

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

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

Ms. Susan J Scherer
Project Coordinator

ALS Environmental

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SAMPLE SUMMARY

Workorder: 3046658 3RD QTR 2019 GWMP-FORM 19Q

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
3046658001	CWMP012W	Ground Water	7/19/2019 08:59	7/19/2019 11:41	Mr. Brian G Shade
3046658002	CWMP002W	Ground Water	7/19/2019 09:27	7/19/2019 11:41	Mr. Brian G Shade
3046658003	CWMP004W	Ground Water	7/19/2019 09:44	7/19/2019 11:41	Mr. Brian G Shade
3046658004	Field Blank	Water	7/19/2019 10:15	7/19/2019 11:41	Mr. Brian G Shade
3046658005	Trip Blank	Water	7/19/2019 11:41	7/19/2019 11:41	Mr. Brian G Shade

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SAMPLE SUMMARY

Workorder: 3046658 3RD QTR 2019 GWMP-FORM 19Q

Notes

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

Standard Acronyms/Flags

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

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ANALYTICAL RESULTS

Workorder: 3046658 3RD QTR 2019 GWMP-FORM 19Q

Lab ID: **3046658001** Date Collected: 7/19/2019 08:59 Matrix: Ground Water
Sample ID: **CWMP012W** Date Received: 7/19/2019 11:41

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			7/22/19 18:30	TMP	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			7/22/19 18:30	TMP	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			7/22/19 18:30	TMP	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			7/22/19 18:30	TMP	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			7/22/19 18:30	TMP	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			7/22/19 18:30	TMP	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			7/22/19 18:30	TMP	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			7/22/19 18:30	TMP	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			7/22/19 18:30	TMP	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			7/22/19 18:30	TMP	G
Toluene	ND		ug/L	1.0	SW846 8260B			7/22/19 18:30	TMP	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			7/22/19 18:30	TMP	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			7/22/19 18:30	TMP	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			7/22/19 18:30	TMP	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			7/22/19 18:30	TMP	G
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	112		%	62 - 133	SW846 8260B			7/22/19 18:30	TMP	G
4-Bromofluorobenzene (S)	110		%	79 - 114	SW846 8260B			7/22/19 18:30	TMP	G
Dibromofluoromethane (S)	106		%	78 - 116	SW846 8260B			7/22/19 18:30	TMP	G
Toluene-d8 (S)	106		%	76 - 127	SW846 8260B			7/22/19 18:30	TMP	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	73		mg/L	5	SM2320B-2011			7/25/19 12:46	MBW	B
Alkalinity, Total	73	3	mg/L	5	SM2320B-2011			7/25/19 12:46	MBW	B
Ammonia-N	0.160		mg/L	0.100	D6919-09			7/28/19 01:32	AK	A
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			7/23/19 16:42	AK	A
Chloride	35.7		mg/L	2.0	EPA 300.0			7/20/19 12:39	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			7/20/19 12:39	CHW	B
Nitrate-N	9.7		mg/L	0.20	EPA 300.0			7/20/19 12:39	CHW	B
pH	6.68	1	pH_Units		S4500HB-11			7/25/19 12:46	MBW	B
Phenolics	ND		mg/L	0.005	SW846 9066	7/24/19 12:19	C_D	7/25/19 06:03	C_D	F
Specific Conductance	300		umhos/cm	1	SW846 9050A			7/25/19 12:46	MBW	B
Sulfate	4.9		mg/L	2.0	EPA 300.0			7/20/19 12:39	CHW	B
Total Dissolved Solids	239	2	mg/L	5	S2540C-11			7/24/19 11:03	D1C	B
Total Organic Carbon (TOC)	1.7		mg/L	0.50	SW846 9060A			7/22/19 23:02	PAG	D
Turbidity	363		NTU	0.10	SM2130B-2011			7/20/19 08:30	R2B	B

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ANALYTICAL RESULTS

Workorder: 3046658 3RD QTR 2019 GWMP-FORM 19Q

Lab ID: **3046658001** Date Collected: 7/19/2019 08:59 Matrix: Ground Water
Sample ID: **CWMP012W** Date Received: 7/19/2019 11:41

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Calcium, Total	33.0		mg/L	0.11	SW846 6010C	7/24/19 13:45	SXC	7/26/19 17:25	SRT	J1
Iron, Total	43.0		mg/L	0.067	SW846 6010C	7/24/19 13:45	SXC	7/26/19 17:25	SRT	J1
Magnesium, Total	9.4		mg/L	0.11	SW846 6010C	7/24/19 13:45	SXC	7/26/19 17:25	SRT	J1
Manganese, Total	0.17		mg/L	0.0056	SW846 6010C	7/24/19 13:45	SXC	7/26/19 17:25	SRT	J1
Potassium, Total	1.4		mg/L	0.56	SW846 6010C	7/24/19 13:45	SXC	7/26/19 17:25	SRT	J1
Sodium, Total	13.6		mg/L	0.56	SW846 6010C	7/24/19 13:45	SXC	7/26/19 17:25	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	59.72		Feet		Field			7/19/19 08:59	BGS	C
pH, Field (SM4500B)	5.81		pH_Units		Field			7/19/19 08:59	BGS	C
Specific Conductance, Field	391		umhos/cm	1	Field			7/19/19 08:59	BGS	C
Temperature	15.17		Deg. C		Field			7/19/19 08:59	BGS	C
Water Level After Purge	59.72		Feet		Field			7/19/19 08:59	BGS	C

Susan J. Scherer

Ms. Susan J Scherer
Project Coordinator

ALS Environmental

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

ANALYTICAL RESULTS

Workorder: 3046658 3RD QTR 2019 GWMP-FORM 19Q

Lab ID: **3046658002** Date Collected: 7/19/2019 09:27 Matrix: Ground Water
Sample ID: **CWMP002W** Date Received: 7/19/2019 11:41

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			7/22/19 18:53	TMP	G
Bromodichloromethane	ND		ug/L	1.0	SW846 8260B			7/22/19 18:53	TMP	G
Bromoform	ND		ug/L	1.0	SW846 8260B			7/22/19 18:53	TMP	G
Bromomethane	ND		ug/L	1.0	SW846 8260B			7/22/19 18:53	TMP	G
Carbon Tetrachloride	ND		ug/L	1.0	SW846 8260B			7/22/19 18:53	TMP	G
Chlorobenzene	ND		ug/L	1.0	SW846 8260B			7/22/19 18:53	TMP	G
Chlorodibromomethane	ND		ug/L	1.0	SW846 8260B			7/22/19 18:53	TMP	G
Chloroethane	22.0		ug/L	1.0	SW846 8260B			7/22/19 18:53	TMP	G
Chloroform	ND		ug/L	1.0	SW846 8260B			7/22/19 18:53	TMP	G
Chloromethane	ND		ug/L	1.0	SW846 8260B			7/22/19 18:53	TMP	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			7/22/19 18:53	TMP	G
1,2-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			7/22/19 18:53	TMP	G
1,3-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			7/22/19 18:53	TMP	G
1,4-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			7/22/19 18:53	TMP	G
1,1-Dichloroethane	10.6		ug/L	1.0	SW846 8260B			7/22/19 18:53	TMP	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			7/22/19 18:53	TMP	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			7/22/19 18:53	TMP	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			7/22/19 18:53	TMP	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			7/22/19 18:53	TMP	G
1,2-Dichloropropane	ND		ug/L	1.0	SW846 8260B			7/22/19 18:53	TMP	G
1,3-Dichloropropene, Total	ND		ug/L	2.0	SW846 8260B			7/22/19 18:53	TMP	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			7/22/19 18:53	TMP	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			7/22/19 18:53	TMP	G
Styrene	ND		ug/L	1.0	SW846 8260B			7/22/19 18:53	TMP	G
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			7/22/19 18:53	TMP	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			7/22/19 18:53	TMP	G
Toluene	ND		ug/L	1.0	SW846 8260B			7/22/19 18:53	TMP	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			7/22/19 18:53	TMP	G
1,2,4-Trichlorobenzene	ND		ug/L	2.0	SW846 8260B			7/22/19 18:53	TMP	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			7/22/19 18:53	TMP	G
1,1,2-Trichloroethane	ND		ug/L	1.0	SW846 8260B			7/22/19 18:53	TMP	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			7/22/19 18:53	TMP	G
Trichlorofluoromethane	ND		ug/L	1.0	SW846 8260B			7/22/19 18:53	TMP	G
1,2,3-Trichloropropane	ND		ug/L	2.0	SW846 8260B			7/22/19 18:53	TMP	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			7/22/19 18:53	TMP	G

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*

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ANALYTICAL RESULTS

Workorder: 3046658 3RD QTR 2019 GWMP-FORM 19Q

Lab ID: **3046658002** Date Collected: 7/19/2019 09:27 Matrix: Ground Water

Sample ID: **CWMP002W** Date Received: 7/19/2019 11:41

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
1,2-Dichloroethane-d4 (S)	114		%	62 - 133	SW846 8260B			7/22/19 18:53	TMP	G
4-Bromofluorobenzene (S)	110		%	79 - 114	SW846 8260B			7/22/19 18:53	TMP	G
Dibromofluoromethane (S)	106		%	78 - 116	SW846 8260B			7/22/19 18:53	TMP	G
Toluene-d8 (S)	105		%	76 - 127	SW846 8260B			7/22/19 18:53	TMP	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	74		mg/L	5	SM2320B-2011			7/25/19 13:27	MBW	B
Alkalinity, Total	74	3	mg/L	5	SM2320B-2011			7/25/19 13:27	MBW	B
Ammonia-N	0.127		mg/L	0.100	D6919-09			7/28/19 01:47	AK	A
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			7/23/19 16:42	AK	A
Chloride	109		mg/L	2.0	EPA 300.0			7/20/19 12:57	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			7/20/19 12:57	CHW	B
Nitrate-N	4.7		mg/L	0.20	EPA 300.0			7/20/19 12:57	CHW	B
pH	6.24	1	pH_Units		S4500HB-11			7/25/19 13:27	MBW	B
Phenolics	ND		mg/L	0.005	SW846 9066	7/24/19 12:19	C_D	7/25/19 06:03	C_D	F
Specific Conductance	538		umhos/cm	1	SW846 9050A			7/25/19 13:27	MBW	B
Sulfate	22.1		mg/L	2.0	EPA 300.0			7/20/19 12:57	CHW	B
Total Dissolved Solids	371	2	mg/L	5	S2540C-11			7/24/19 11:03	D1C	B
Total Organic Carbon (TOC)	4.1		mg/L	0.50	SW846 9060A			7/22/19 23:02	PAG	D
Turbidity	0.23		NTU	0.10	SM2130B-2011			7/20/19 08:30	R2B	B
METALS										
Calcium, Total	46.4		mg/L	0.11	SW846 6010C	7/24/19 13:45	SXC	7/26/19 17:21	SRT	J1
Iron, Total	ND		mg/L	0.067	SW846 6010C	7/24/19 13:45	SXC	7/26/19 17:21	SRT	J1
Magnesium, Total	16.0		mg/L	0.11	SW846 6010C	7/24/19 13:45	SXC	7/26/19 17:21	SRT	J1
Manganese, Total	0.93		mg/L	0.0056	SW846 6010C	7/24/19 13:45	SXC	7/26/19 17:21	SRT	J1
Potassium, Total	2.7		mg/L	0.56	SW846 6010C	7/24/19 13:45	SXC	7/26/19 17:21	SRT	J1
Sodium, Total	24.2		mg/L	0.56	SW846 6010C	7/24/19 13:45	SXC	7/26/19 17:21	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	68.32		Feet		Field			7/19/19 09:27	BGS	C
Elev Top MW Casing above MSL	525.81		Feet		Field			7/19/19 09:27	BGS	C
Ground Water Elevation	457.49		ft/MSL		Field			7/19/19 09:27	BGS	C
pH, Field (SM4500B)	5.34		pH_Units		Field			7/19/19 09:27	BGS	C
Sample Depth	85.00		Feet		Field			7/19/19 09:27	BGS	C
Specific Conductance, Field	561		umhos/cm	1	Field			7/19/19 09:27	BGS	C
Temperature	13.24		Deg. C		Field			7/19/19 09:27	BGS	C
Total Well Depth	100.00		Feet		Field			7/19/19 09:27	BGS	C

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ANALYTICAL RESULTS

Workorder: 3046658 3RD QTR 2019 GWMP-FORM 19Q

Lab ID:	**3046658002**	Date Collected:	7/19/2019 09:27	Matrix:	Ground Water
Sample ID:	**CWMP002W**	Date Received:	7/19/2019 11:41		

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*

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ANALYTICAL RESULTS

Workorder: 3046658 3RD QTR 2019 GWMP-FORM 19Q

Lab ID: **3046658003** Date Collected: 7/19/2019 09:44 Matrix: Ground Water

Sample ID: **CWMP004W** Date Received: 7/19/2019 11:41

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			7/22/19 19:15	TMP	G
Bromodichloromethane	ND		ug/L	1.0	SW846 8260B			7/22/19 19:15	TMP	G
Bromoform	ND		ug/L	1.0	SW846 8260B			7/22/19 19:15	TMP	G
Bromomethane	ND		ug/L	1.0	SW846 8260B			7/22/19 19:15	TMP	G
Carbon Tetrachloride	ND		ug/L	1.0	SW846 8260B			7/22/19 19:15	TMP	G
Chlorobenzene	ND		ug/L	1.0	SW846 8260B			7/22/19 19:15	TMP	G
Chlorodibromomethane	ND		ug/L	1.0	SW846 8260B			7/22/19 19:15	TMP	G
Chloroethane	ND		ug/L	1.0	SW846 8260B			7/22/19 19:15	TMP	G
Chloroform	ND		ug/L	1.0	SW846 8260B			7/22/19 19:15	TMP	G
Chloromethane	ND		ug/L	1.0	SW846 8260B			7/22/19 19:15	TMP	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			7/22/19 19:15	TMP	G
1,2-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			7/22/19 19:15	TMP	G
1,3-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			7/22/19 19:15	TMP	G
1,4-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			7/22/19 19:15	TMP	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			7/22/19 19:15	TMP	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			7/22/19 19:15	TMP	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			7/22/19 19:15	TMP	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			7/22/19 19:15	TMP	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			7/22/19 19:15	TMP	G
1,2-Dichloropropane	ND		ug/L	1.0	SW846 8260B			7/22/19 19:15	TMP	G
1,3-Dichloropropene, Total	ND		ug/L	2.0	SW846 8260B			7/22/19 19:15	TMP	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			7/22/19 19:15	TMP	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			7/22/19 19:15	TMP	G
Styrene	ND		ug/L	1.0	SW846 8260B			7/22/19 19:15	TMP	G
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			7/22/19 19:15	TMP	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			7/22/19 19:15	TMP	G
Toluene	ND		ug/L	1.0	SW846 8260B			7/22/19 19:15	TMP	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			7/22/19 19:15	TMP	G
1,2,4-Trichlorobenzene	ND		ug/L	2.0	SW846 8260B			7/22/19 19:15	TMP	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			7/22/19 19:15	TMP	G
1,1,2-Trichloroethane	ND		ug/L	1.0	SW846 8260B			7/22/19 19:15	TMP	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			7/22/19 19:15	TMP	G
Trichlorofluoromethane	ND		ug/L	1.0	SW846 8260B			7/22/19 19:15	TMP	G
1,2,3-Trichloropropane	ND		ug/L	2.0	SW846 8260B			7/22/19 19:15	TMP	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			7/22/19 19:15	TMP	G

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*

ANALYTICAL RESULTS

Workorder: 3046658 3RD QTR 2019 GWMP-FORM 19Q

Lab ID: **3046658003** Date Collected: 7/19/2019 09:44 Matrix: Ground Water

Sample ID: **CWMP004W** Date Received: 7/19/2019 11:41

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
1,2-Dichloroethane-d4 (S)	114		%	62 - 133	SW846 8260B			7/22/19 19:15	TMP	G
4-Bromofluorobenzene (S)	110		%	79 - 114	SW846 8260B			7/22/19 19:15	TMP	G
Dibromofluoromethane (S)	107		%	78 - 116	SW846 8260B			7/22/19 19:15	TMP	G
Toluene-d8 (S)	107		%	76 - 127	SW846 8260B			7/22/19 19:15	TMP	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	15		mg/L	5	SM2320B-2011			7/25/19 13:37	MBW	B
Alkalinity, Total	15	3	mg/L	5	SM2320B-2011			7/25/19 13:37	MBW	B
Ammonia-N	0.149		mg/L	0.100	D6919-09			7/28/19 02:02	AK	A
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			7/23/19 16:42	AK	A
Chloride	64.4		mg/L	2.0	EPA 300.0			7/20/19 15:36	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			7/20/19 15:36	CHW	B
Nitrate-N	8.0		mg/L	0.20	EPA 300.0			7/20/19 15:36	CHW	B
pH	6.54	1	pH_Units		S4500HB-11			7/25/19 13:37	MBW	B
Phenolics	ND		mg/L	0.005	SW846 9066	7/24/19 12:19	C_D	7/25/19 06:03	C_D	F
Specific Conductance	297		umhos/cm	1	SW846 9050A			7/25/19 13:37	MBW	B
Sulfate	7.8		mg/L	2.0	EPA 300.0			7/20/19 15:36	CHW	B
Total Dissolved Solids	251	2	mg/L	5	S2540C-11			7/24/19 11:03	D1C	B
Total Organic Carbon (TOC)	0.57		mg/L	0.50	SW846 9060A			7/22/19 23:02	PAG	D
Turbidity	0.12		NTU	0.10	SM2130B-2011			7/20/19 08:30	R2B	B
METALS										
Calcium, Total	20.3		mg/L	0.11	SW846 6010C	7/24/19 13:45	SXC	7/26/19 17:10	SRT	J1
Iron, Total	0.083		mg/L	0.067	SW846 6010C	7/24/19 13:45	SXC	7/26/19 17:10	SRT	J1
Magnesium, Total	8.5		mg/L	0.11	SW846 6010C	7/24/19 13:45	SXC	7/26/19 17:10	SRT	J1
Manganese, Total	0.023		mg/L	0.0056	SW846 6010C	7/24/19 13:45	SXC	7/26/19 17:10	SRT	J1
Potassium, Total	1.6		mg/L	0.56	SW846 6010C	7/24/19 13:45	SXC	7/26/19 17:10	SRT	J1
Sodium, Total	22.7		mg/L	0.56	SW846 6010C	7/24/19 13:45	SXC	7/26/19 17:10	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	79.34		Feet		Field			7/19/19 09:44	BGS	C
Elev Top MW Casing above MSL	529.53		Feet		Field			7/19/19 09:44	BGS	C
Ground Water Elevation	450.19		ft/MSL		Field			7/19/19 09:44	BGS	C
pH, Field (SM4500B)	5.12		pH_Units		Field			7/19/19 09:44	BGS	C
Sample Depth	130.00		Feet		Field			7/19/19 09:44	BGS	C
Specific Conductance, Field	331		umhos/cm	1	Field			7/19/19 09:44	BGS	C
Temperature	11.48		Deg. C		Field			7/19/19 09:44	BGS	C
Total Well Depth	140.00		Feet		Field			7/19/19 09:44	BGS	C

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ANALYTICAL RESULTS

Workorder: 3046658 3RD QTR 2019 GWMP-FORM 19Q

Lab ID:	**3046658003**	Date Collected:	7/19/2019 09:44	Matrix:	Ground Water
Sample ID:	**CWMP004W**	Date Received:	7/19/2019 11:41		

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*

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ANALYTICAL RESULTS

Workorder: 3046658 3RD QTR 2019 GWMP-FORM 19Q

Lab ID: **3046658004** Date Collected: 7/19/2019 10:15 Matrix: Water

Sample ID: **Field Blank** Date Received: 7/19/2019 11:41

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			7/22/19 17:21	TMP	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			7/22/19 17:21	TMP	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			7/22/19 17:21	TMP	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			7/22/19 17:21	TMP	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			7/22/19 17:21	TMP	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			7/22/19 17:21	TMP	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			7/22/19 17:21	TMP	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			7/22/19 17:21	TMP	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			7/22/19 17:21	TMP	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			7/22/19 17:21	TMP	G
Toluene	ND		ug/L	1.0	SW846 8260B			7/22/19 17:21	TMP	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			7/22/19 17:21	TMP	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			7/22/19 17:21	TMP	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			7/22/19 17:21	TMP	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			7/22/19 17:21	TMP	G
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	113		%	62 - 133	SW846 8260B			7/22/19 17:21	TMP	G
4-Bromofluorobenzene (S)	111		%	79 - 114	SW846 8260B			7/22/19 17:21	TMP	G
Dibromofluoromethane (S)	107		%	78 - 116	SW846 8260B			7/22/19 17:21	TMP	G
Toluene-d8 (S)	106		%	76 - 127	SW846 8260B			7/22/19 17:21	TMP	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	ND		mg/L	5	SM2320B-2011			7/25/19 13:46	MBW	B
Alkalinity, Total	ND	3	mg/L	5	SM2320B-2011			7/25/19 13:46	MBW	B
Ammonia-N	ND		mg/L	0.100	D6919-09			7/31/19 04:02	NJA	A
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			7/23/19 16:42	AK	A
Chloride	ND		mg/L	1.0	EPA 300.0			7/20/19 15:54	CHW	B
Fluoride	ND		mg/L	0.10	EPA 300.0			7/20/19 15:54	CHW	B
Nitrate-N	ND		mg/L	0.10	EPA 300.0			7/20/19 15:54	CHW	B
pH	6.35	1	pH_Units		S4500HB-11			7/25/19 13:46	MBW	B
Phenolics	ND		mg/L	0.005	SW846 9066	7/24/19 12:19	C_D	7/25/19 06:03	C_D	F
Specific Conductance	ND		umhos/cm	1	SW846 9050A			7/25/19 13:46	MBW	B
Sulfate	ND		mg/L	1.0	EPA 300.0			7/20/19 15:54	CHW	B
Total Dissolved Solids	ND	2	mg/L	5	S2540C-11			7/24/19 11:03	D1C	B
Total Organic Carbon (TOC)	ND		mg/L	0.50	SW846 9060A			7/22/19 23:02	PAG	D
Turbidity	ND		NTU	0.10	SM2130B-2011			7/20/19 08:30	R2B	B

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ANALYTICAL RESULTS

Workorder: 3046658 3RD QTR 2019 GWMP-FORM 19Q

Lab ID: **3046658004** Date Collected: 7/19/2019 10:15 Matrix: Water

Sample ID: **Field Blank** Date Received: 7/19/2019 11:41

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Calcium, Total	ND		mg/L	0.11	SW846 6010C	7/24/19 13:45	SXC	7/26/19 17:29	SRT	J1
Iron, Total	ND		mg/L	0.067	SW846 6010C	7/24/19 13:45	SXC	7/26/19 17:29	SRT	J1
Magnesium, Total	ND		mg/L	0.11	SW846 6010C	7/24/19 13:45	SXC	7/26/19 17:29	SRT	J1
Manganese, Total	ND		mg/L	0.0056	SW846 6010C	7/24/19 13:45	SXC	7/26/19 17:29	SRT	J1
Potassium, Total	ND		mg/L	0.56	SW846 6010C	7/24/19 13:45	SXC	7/26/19 17:29	SRT	J1
Sodium, Total	ND		mg/L	0.56	SW846 6010C	7/24/19 13:45	SXC	7/26/19 17:29	SRT	J1

Susan J. Scherer

Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 3046658 3RD QTR 2019 GWMP-FORM 19Q

Lab ID: **3046658005** Date Collected: 7/19/2019 11:41 Matrix: Water

Sample ID: **Trip Blank** Date Received: 7/19/2019 11:41

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			7/22/19 16:59	TMP	A
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			7/22/19 16:59	TMP	A
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			7/22/19 16:59	TMP	A
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			7/22/19 16:59	TMP	A
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			7/22/19 16:59	TMP	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			7/22/19 16:59	TMP	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			7/22/19 16:59	TMP	A
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			7/22/19 16:59	TMP	A
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			7/22/19 16:59	TMP	A
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			7/22/19 16:59	TMP	A
Toluene	ND		ug/L	1.0	SW846 8260B			7/22/19 16:59	TMP	A
Total Xylenes	ND		ug/L	3.0	SW846 8260B			7/22/19 16:59	TMP	A
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			7/22/19 16:59	TMP	A
Trichloroethene	ND		ug/L	1.0	SW846 8260B			7/22/19 16:59	TMP	A
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			7/22/19 16:59	TMP	A
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	113		%	62 - 133	SW846 8260B			7/22/19 16:59	TMP	A
4-Bromofluorobenzene (S)	111		%	79 - 114	SW846 8260B			7/22/19 16:59	TMP	A
Dibromofluoromethane (S)	108		%	78 - 116	SW846 8260B			7/22/19 16:59	TMP	A
Toluene-d8 (S)	105		%	76 - 127	SW846 8260B			7/22/19 16:59	TMP	A

Susan J. Scherer

Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 3046658 3RD QTR 2019 GWMP-FORM 19Q

PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
3046658001	1	CWMP012W	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.				
3046658001	2	CWMP012W	S2540C-11	Total Dissolved Solids
The Method Blank for method S2540C-11 reported a value greater than the reporting level for the analyte Total Dissolved Solids.				
3046658001	3	CWMP012W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
3046658002	1	CWMP002W	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.				
3046658002	2	CWMP002W	S2540C-11	Total Dissolved Solids
The Method Blank for method S2540C-11 reported a value greater than the reporting level for the analyte Total Dissolved Solids.				
3046658002	3	CWMP002W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
3046658003	1	CWMP004W	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.				
3046658003	2	CWMP004W	S2540C-11	Total Dissolved Solids
The Method Blank for method S2540C-11 reported a value greater than the reporting level for the analyte Total Dissolved Solids.				
3046658003	3	CWMP004W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
3046658004	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.				
3046658004	2	Field Blank	S2540C-11	Total Dissolved Solids
The Method Blank for method S2540C-11 reported a value greater than the reporting level for the analyte Total Dissolved Solids.				
3046658004	3	Field Blank	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				

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ANALYSIS - PREP METHOD CROSS REFERENCE TABLE

Workorder: 3046658 3RD QTR 2019 GWMP-FORM 19Q

Lab ID	Sample ID	Analysis Method	Prep Method
3046658001	CWMP012W	D6919-09	
3046658001	CWMP012W	EPA 300.0	
3046658001	CWMP012W	EPA 410.4	
3046658001	CWMP012W	Field	
3046658001	CWMP012W	S2540C-11	
3046658001	CWMP012W	S4500HB-11	
3046658001	CWMP012W	SM2130B-2011	
3046658001	CWMP012W	SM2320B-2011	
3046658001	CWMP012W	SW846 6010C	SW846 3015
3046658001	CWMP012W	SW846 8260B	
3046658001	CWMP012W	SW846 9050A	
3046658001	CWMP012W	SW846 9060A	
3046658001	CWMP012W	SW846 9066	420.4/9066
3046658002	CWMP002W	D6919-09	
3046658002	CWMP002W	EPA 300.0	
3046658002	CWMP002W	EPA 410.4	
3046658002	CWMP002W	Field	
3046658002	CWMP002W	S2540C-11	
3046658002	CWMP002W	S4500HB-11	
3046658002	CWMP002W	SM2130B-2011	
3046658002	CWMP002W	SM2320B-2011	
3046658002	CWMP002W	SW846 6010C	SW846 3015
3046658002	CWMP002W	SW846 8260B	
3046658002	CWMP002W	SW846 9050A	
3046658002	CWMP002W	SW846 9060A	
3046658002	CWMP002W	SW846 9066	420.4/9066
3046658003	CWMP004W	D6919-09	
3046658003	CWMP004W	EPA 300.0	
3046658003	CWMP004W	EPA 410.4	
3046658003	CWMP004W	Field	
3046658003	CWMP004W	S2540C-11	
3046658003	CWMP004W	S4500HB-11	
3046658003	CWMP004W	SM2130B-2011	
3046658003	CWMP004W	SM2320B-2011	
3046658003	CWMP004W	SW846 6010C	SW846 3015
3046658003	CWMP004W	SW846 8260B	
3046658003	CWMP004W	SW846 9050A	
3046658003	CWMP004W	SW846 9060A	
3046658003	CWMP004W	SW846 9066	420.4/9066
3046658004	Field Blank	D6919-09	
3046658004	Field Blank	EPA 300.0	
3046658004	Field Blank	EPA 410.4	
3046658004	Field Blank	S2540C-11	
3046658004	Field Blank	S4500HB-11	
3046658004	Field Blank	SM2130B-2011	
3046658004	Field Blank	SM2320B-2011	

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ANALYSIS - PREP METHOD CROSS REFERENCE TABLE

Workorder: 3046658 3RD QTR 2019 GWMP-FORM 19Q

Lab ID	Sample ID	Analysis Method	Prep Method
3046658004	Field Blank	SW846 6010C	SW846 3015
3046658004	Field Blank	SW846 8260B	
3046658004	Field Blank	SW846 9050A	
3046658004	Field Blank	SW846 9060A	
3046658004	Field Blank	SW846 9066	420.4/9066
3046658005	Trip Blank	SW846 8260B	

CHAIN OF CUSTODY/ REQUEST FOR ANALYSIS

Generated by ALS

-3046658-

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

(Completed by Receiving Lab)

Client Name: Lancaster County Solid Waste MA

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

Contact: Mark Reider

Phone#: (717) 735-0193

Project Name/#: Creswell/GWMP Form 19Q Wells

Bill To: Lancaster County Solid Waste MA

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

Date Required: _____ Approved By: _____

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

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

Cooler Temp: 2.2 Therm ID: 525

No. of Coolers: _____

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

Courier/Tracking #:

Container Type	AG	AN	CG	---	---	PL	PL	PL	PL	
Container Size	40 ml	125 ml	40 ml	---	---	250 ml	125 ml	1 L	500 ml	
Preservative	HCl	H2SO4	HCl	—	—	H2SO4	HNO3	None	None	

ANALYSES/METHOD REQUESTED

Sample Description/Location (as it will appear on the lab report)	Sample Date	Time	*G or C	**Matrix	TOC	O-OH	8260 VOCs - Form 19Q	Field Measurements	Sample Depth for AUX Data	NH3-N, COD	Total Metals: Ca, Fe, Mn, Mg, K, Na	pH, NO3, Cl, F, SpC, SO4, Turb, TDS	Alkalinity, HCO3	
					Enter Number of Containers Per Sample or Field Results Below.									
1. CWMP012W	07/19/19	0859	G	GW	2	1	2	X	X	1	1	1	1	
2. CWMP002W	07/19/19	0927	G	GW	2	1	2	X	X	1	1	1	1	
3. CWMP004W	07/19/19	0944	G	GW	2	1	2	X	X	1	1	1	1	
4. Field Blank	07/19/19	1015	G	GW	2	1	2			1	1	1	1	
5. Trip Blank	07/19/19	1141	G	GW			2							
6														
7														
8														
9														
10														

Sample/COC Comments

ALS Field Services: [ ] Pickup [ ] Labor [ ] Composite_Sampling [ ] Rental_Equipment [ ] Other: _____

Project Comments:

LOGGED BY(signature): DATE TIME

REVIEWED BY(signature): DATE TIME

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
1 [signature] ALS	7/19/19	1141	2 [signature] ALS	7/19/19	1141
3			4		
5			6		
7			8		
9			10		

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

Special Processing: USACE [ ] Navy [ ]

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

Reportable to PADEP? Yes [ ] PWSID # _____

Sample Disposal: Lab [X] Special [ ]

EDDS: Format Type- _____

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

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

Rev 8/04

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

Condition of Sample Receipt Form

Client: Lancaster County | Work Order #: 30466658 | Initials: JAS | Date: 7/19/19

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

Cooler #:	—							
Temperature (°C):	2°C							
Thermometer ID:	525							
Radiological (µCi):	—							

COMMENTS (Required for all NO responses above and any sample non-conformance):
Recid out of hold for pH testing. Collected by ALS. Not reportable. JAS/ALS 7/19/19

Rev. 4/29/2019

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August 12, 2019

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

Certificate of Analysis

Project Name:	**CRESWELL**	Workorder:	**3048878**
Purchase Order:	**PO1000127**	Workorder ID:	**3RD QTR 2019 GWMP-FORM 19Q**

Dear Mr. Brown:

Enclosed are the analytical results for samples received by the laboratory on Wednesday, July 31, 2019.

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

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

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

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

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

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

Ms. Susan J Scherer
Project Coordinator

ALS Environmental

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SAMPLE SUMMARY

Workorder: 3048878 3RD QTR 2019 GWMP-FORM 19Q

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
3048878001	CWMP003W	Ground Water	7/31/2019 17:31	7/31/2019 18:31	Mr. Brian G Shade

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SAMPLE SUMMARY

Workorder: 3048878 3RD QTR 2019 GWMP-FORM 19Q

Notes

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

Standard Acronyms/Flags

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

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NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: PJLA 74618
State Certifications: FL E871113 , WA C999 , MD 128 , VA 460157 , WV DW 9961-C , WV 343

ANALYTICAL RESULTS

Workorder: 3048878 3RD QTR 2019 GWMP-FORM 19Q

Lab ID: **3048878001** Date Collected: 7/31/2019 17:31 Matrix: Ground Water
Sample ID: **CWMP003W** Date Received: 7/31/2019 18:31

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			8/3/19 04:04	PDK	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			8/3/19 04:04	PDK	G
1,1-Dichloroethane	1.2		ug/L	1.0	SW846 8260B			8/3/19 04:04	PDK	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			8/3/19 04:04	PDK	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/3/19 04:04	PDK	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/3/19 04:04	PDK	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			8/3/19 04:04	PDK	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			8/3/19 04:04	PDK	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			8/3/19 04:04	PDK	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			8/3/19 04:04	PDK	G
Toluene	ND		ug/L	1.0	SW846 8260B			8/3/19 04:04	PDK	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			8/3/19 04:04	PDK	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			8/3/19 04:04	PDK	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			8/3/19 04:04	PDK	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			8/3/19 04:04	PDK	G
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	124		%	62 - 133	SW846 8260B			8/3/19 04:04	PDK	G
4-Bromofluorobenzene (S)	103		%	79 - 114	SW846 8260B			8/3/19 04:04	PDK	G
Dibromofluoromethane (S)	107		%	78 - 116	SW846 8260B			8/3/19 04:04	PDK	G
Toluene-d8 (S)	104		%	76 - 127	SW846 8260B			8/3/19 04:04	PDK	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	14		mg/L	5	SM2320B-2011			8/2/19 16:42	MBW	B
Alkalinity, Total	14	2	mg/L	5	SM2320B-2011			8/2/19 16:42	MBW	B
Ammonia-N	ND		mg/L	0.100	D6919-09			8/8/19 15:56	NJA	A
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			8/7/19 13:43	AK	A
Chloride	75.8		mg/L	2.0	EPA 300.0			8/1/19 10:47	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			8/1/19 10:47	CHW	B
Nitrate-N	8.3		mg/L	0.20	EPA 300.0			8/1/19 10:47	CHW	B
pH	6.30	1	pH_Units		S4500HB-11			8/2/19 16:42	MBW	B
Phenolics	ND		mg/L	0.005	SW846 9066	8/6/19 15:50	C_D	8/7/19 05:58	C_D	F
Specific Conductance	338		umhos/cm	1	SW846 9050A			8/2/19 16:42	MBW	B
Sulfate	5.5		mg/L	2.0	EPA 300.0			8/1/19 10:47	CHW	B
Total Dissolved Solids	239		mg/L	5	S2540C-11			8/6/19 10:40	LXW	B
Total Organic Carbon (TOC)	ND		mg/L	0.50	SW846 9060A			8/5/19 21:12	PAG	D
Turbidity	0.16		NTU	0.10	SM2130B-2011			8/1/19 06:10	R2B	B

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ANALYTICAL RESULTS

Workorder: 3048878 3RD QTR 2019 GWMP-FORM 19Q

Lab ID: **3048878001** Date Collected: 7/31/2019 17:31 Matrix: Ground Water

Sample ID: **CWMP003W** Date Received: 7/31/2019 18:31

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Calcium, Total	23.7		mg/L	0.11	SW846 6010C	8/2/19 15:50	SXC	8/5/19 14:46	SRT	J
Iron, Total	0.10		mg/L	0.067	SW846 6010C	8/2/19 15:50	SXC	8/5/19 14:46	SRT	J
Magnesium, Total	9.0		mg/L	0.11	SW846 6010C	8/2/19 15:50	SXC	8/5/19 14:46	SRT	J
Manganese, Total	0.0070		mg/L	0.0056	SW846 6010C	8/2/19 15:50	SXC	8/5/19 14:46	SRT	J
Potassium, Total	1.9		mg/L	0.56	SW846 6010C	8/2/19 15:50	SXC	8/5/19 14:46	SRT	J
Sodium, Total	22.8		mg/L	0.56	SW846 6010C	8/2/19 15:50	SXC	8/5/19 14:46	SRT	J
FIELD PARAMETERS										
Depth to Water Level	75.22		Feet		Field			7/31/19 17:31	BGS	C
Elev Top MW Casing above MSL	524.21		Feet		Field			7/31/19 17:31	BGS	C
Ground Water Elevation	448.99		ft/MSL		Field			7/31/19 17:31	BGS	C
pH, Field (SM4500B)	4.55		pH_Units		Field			7/31/19 17:31	BGS	C
Sample Depth	100.00		Feet		Field			7/31/19 17:31	BGS	C
Specific Conductance, Field	316		umhos/cm	1	Field			7/31/19 17:31	BGS	C
Temperature	14.11		Deg. C		Field			7/31/19 17:31	BGS	C
Total Well Depth	140.00		Feet		Field			7/31/19 17:31	BGS	C

Susan J. Scherer

Ms. Susan J Scherer
Project Coordinator

ANALYTICAL RESULTS

Workorder: 3048878 3RD QTR 2019 GWMP-FORM 19Q

PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
3048878001	1	CWMP003W	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.				
3048878001	2	CWMP003W	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: 3048878 3RD QTR 2019 GWMP-FORM 19Q

Lab ID	Sample ID	Analysis Method	Prep Method
3048878001	CWMP003W	D6919-09	
3048878001	CWMP003W	EPA 300.0	
3048878001	CWMP003W	EPA 410.4	
3048878001	CWMP003W	Field	
3048878001	CWMP003W	S2540C-11	
3048878001	CWMP003W	S4500HB-11	
3048878001	CWMP003W	SM2130B-2011	
3048878001	CWMP003W	SM2320B-2011	
3048878001	CWMP003W	SW846 6010C	SW846 3015
3048878001	CWMP003W	SW846 8260B	
3048878001	CWMP003W	SW846 9050A	
3048878001	CWMP003W	SW846 9060A	
3048878001	CWMP003W	SW846 9066	420.4/9066

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CHAIN OF CUSTODY/ REQUEST FOR ANALYSIS

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1 of 1

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

Client Name: Lancaster County Solid Waste MA

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

Contact: Mark Reider

Phone#: (717) 735-0193

Project Name/#: Creswell/GWMP Form 19Q Wells

Bill To: Lancaster County Solid Waste MA

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

Date Required: _____ Approved By: _____

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

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

Container Type	AG	AN	CG	---	---	PL	PL	PL	PL
Container Size	40 ml	125 ml	40 ml	---	---	250 ml	125 ml	1 L	500 ml
Preservative	HCl	H2SO4	HCl	---	---	H2SO4	HNO3	None	None

ANALYSES/METHOD REQUESTED

Sample Description/Location (as it will appear on the lab report)	Sample Date	Time	*G or C	**Matrix	TOC	O-OH	8260 VOCs - Form 19Q	Field Measurements	Sample Depth for AUX Data	NH3-N, COD	Total Metals: Ca, Fe, Mn, Mg, K, Na	pH, NO3, Cl, F, SpC, SO4, Turb, TDS	Alkalinity, HCO3	
					Enter Number of Containers Per Sample or Field Results Below.									
1. CWMP003W	07/31/19	1731	G	GW	2	1	2	X	X	1	1	1	1	
2														
3														
4														
5														
6														
7														
8														
9														
10														

Cooler Temp: 16°C Therm ID: 318

No. of Coolers: 1

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

Courier/Tracking #:

Sample/COC Comments

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

Project Comments:

LOGGED BY(signature): DATE TIME

REVIEWED BY(signature): DATE TIME

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
1 [signature] ALS	7/31/19	1831	2 [signature]	7/31/19	1831
3			4		
5			6		
7			8		
9			10		

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

Special Processing: USACE [ ] Navy [ ]

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

Reportable to PADEP? Yes [ ] PWSID # _____

Sample Disposal: Lab [X] Special [ ]

EDDS: Format Type- _____

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

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

Rev 8/04

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

Condition of Sample Receipt Form

Client: Lancaster County SWD | Work Order #: 364878 | Initials: CLS | Date: 8/1119

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

Cooler #: _____

Temperature (°C): 16

Thermometer ID: 318

Radiological (µCi): _____

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

Rev. 4/29/2019

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July 29, 2019

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

Certificate of Analysis

Project Name:	**CRESWELL**	Workorder:	**3046018**
Purchase Order:	**PO1000127**	Workorder ID:	**3RD QTR 2019 GWMP-FORM 19Q**

Dear Mr. Brown:

Enclosed are the analytical results for samples received by the laboratory on Wednesday, July 17, 2019.

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

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

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

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

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

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

Ms. Susan J Scherer
Project Coordinator

ALS Environmental

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SAMPLE SUMMARY

Workorder: 3046018 3RD QTR 2019 GWMP-FORM 19Q

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
3046018001	CWMP016W	Ground Water	7/17/2019 10:57	7/17/2019 14:37	Mr. Brian G Shade
3046018002	CWMP010W	Ground Water	7/17/2019 11:21	7/17/2019 14:37	Mr. Brian G Shade
3046018003	CWMP009W	Ground Water	7/17/2019 11:52	7/17/2019 14:37	Mr. Brian G Shade
3046018004	CWMP008W	Ground Water	7/17/2019 13:20	7/17/2019 14:37	Mr. Brian G Shade

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SAMPLE SUMMARY

Workorder: 3046018 3RD QTR 2019 GWMP-FORM 19Q

Notes

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

Standard Acronyms/Flags

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

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ANALYTICAL RESULTS

Workorder: 3046018 3RD QTR 2019 GWMP-FORM 19Q

Lab ID: **3046018001** Date Collected: 7/17/2019 10:57 Matrix: Ground Water
Sample ID: **CWMP016W** Date Received: 7/17/2019 14:37

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			7/18/19 20:21	DD	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			7/18/19 20:21	DD	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			7/18/19 20:21	DD	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			7/18/19 20:21	DD	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			7/18/19 20:21	DD	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			7/18/19 20:21	DD	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			7/18/19 20:21	DD	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			7/18/19 20:21	DD	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			7/18/19 20:21	DD	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			7/18/19 20:21	DD	G
Toluene	ND		ug/L	1.0	SW846 8260B			7/18/19 20:21	DD	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			7/18/19 20:21	DD	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			7/18/19 20:21	DD	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			7/18/19 20:21	DD	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			7/18/19 20:21	DD	G
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	111		%	62 - 133	SW846 8260B			7/18/19 20:21	DD	G
4-Bromofluorobenzene (S)	106		%	79 - 114	SW846 8260B			7/18/19 20:21	DD	G
Dibromofluoromethane (S)	106		%	78 - 116	SW846 8260B			7/18/19 20:21	DD	G
Toluene-d8 (S)	116		%	76 - 127	SW846 8260B			7/18/19 20:21	DD	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	6		mg/L	5	SM2320B-2011			7/24/19 05:06	MBW	B
Alkalinity, Total	6	2	mg/L	5	SM2320B-2011			7/24/19 05:06	MBW	B
Ammonia-N	0.146		mg/L	0.100	D6919-09			7/25/19 21:10	AK	A
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			7/20/19 14:08	AK	A
Chloride	2.9		mg/L	2.0	EPA 300.0			7/18/19 08:55	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			7/18/19 08:55	CHW	B
Nitrate-N	0.74		mg/L	0.20	EPA 300.0			7/18/19 08:55	CHW	B
pH	6.90	1	pH_Units		S4500HB-11			7/24/19 05:06	MBW	B
Phenolics	ND		mg/L	0.005	SW846 9066	7/24/19 12:19	C_D	7/25/19 06:03	C_D	F
Specific Conductance	51		umhos/cm	1	SW846 9050A			7/24/19 05:06	MBW	B
Sulfate	12.5		mg/L	2.0	EPA 300.0			7/18/19 08:55	CHW	B
Total Dissolved Solids	37		mg/L	5	S2540C-11			7/18/19 15:14	D1C	B
Total Organic Carbon (TOC)	0.50		mg/L	0.50	SW846 9060A			7/18/19 17:56	PAG	D
Turbidity	5.54		NTU	0.10	SM2130B-2011			7/18/19 05:10	MBW	B

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ANALYTICAL RESULTS

Workorder: 3046018 3RD QTR 2019 GWMP-FORM 19Q

Lab ID: **3046018001** Date Collected: 7/17/2019 10:57 Matrix: Ground Water

Sample ID: **CWMP016W** Date Received: 7/17/2019 14:37

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Calcium, Total	4.5		mg/L	0.11	SW846 6010C	7/22/19 15:15	SXC	7/25/19 20:07	SRT	J1
Iron, Total	0.82		mg/L	0.067	SW846 6010C	7/22/19 15:15	SXC	7/25/19 20:07	SRT	J1
Magnesium, Total	1.1		mg/L	0.11	SW846 6010C	7/22/19 15:15	SXC	7/25/19 20:07	SRT	J1
Manganese, Total	0.019		mg/L	0.0056	SW846 6010C	7/22/19 15:15	SXC	7/25/19 20:07	SRT	J1
Potassium, Total	ND		mg/L	0.56	SW846 6010C	7/22/19 15:15	SXC	7/25/19 20:07	SRT	J1
Sodium, Total	2.7		mg/L	0.56	SW846 6010C	7/22/19 15:15	SXC	7/25/19 20:07	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	11.63		Feet		Field			7/17/19 10:57	BGS	C
Elev Top MW Casing above MSL	311.97		Feet		Field			7/17/19 10:57	BGS	C
Flow Rate	2.75		gal/min		Field			7/17/19 10:57	BGS	C
Ground Water Elevation	300.34		ft/MSL		Field			7/17/19 10:57	BGS	C
pH, Field (SM4500B)	5.68		pH_Units		Field			7/17/19 10:57	BGS	C
Sample Depth	71.00		Feet		Field			7/17/19 10:57	BGS	C
Specific Conductance, Field	59		umhos/cm	1	Field			7/17/19 10:57	BGS	C
Temperature	9.72		Deg. C		Field			7/17/19 10:57	BGS	C
Total Well Depth	73.52		Feet		Field			7/17/19 10:57	BGS	C
Volume in Water Column	90.98		Gallons		Field			7/17/19 10:57	BGS	C
Water Level After Purge	22.41		Feet		Field			7/17/19 10:57	BGS	C
Well Volumes Purged	2.11		Vol		Field			7/17/19 10:57	BGS	C

Susan J. Scherer

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ANALYTICAL RESULTS

Workorder: 3046018 3RD QTR 2019 GWMP-FORM 19Q

Lab ID: **3046018002** Date Collected: 7/17/2019 11:21 Matrix: Ground Water
Sample ID: **CWMP010W** Date Received: 7/17/2019 14:37

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			7/18/19 20:44	DD	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			7/18/19 20:44	DD	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			7/18/19 20:44	DD	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			7/18/19 20:44	DD	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			7/18/19 20:44	DD	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			7/18/19 20:44	DD	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			7/18/19 20:44	DD	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			7/18/19 20:44	DD	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			7/18/19 20:44	DD	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			7/18/19 20:44	DD	G
Toluene	ND		ug/L	1.0	SW846 8260B			7/18/19 20:44	DD	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			7/18/19 20:44	DD	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			7/18/19 20:44	DD	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			7/18/19 20:44	DD	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			7/18/19 20:44	DD	G
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	113		%	62 - 133	SW846 8260B			7/18/19 20:44	DD	G
4-Bromofluorobenzene (S)	107		%	79 - 114	SW846 8260B			7/18/19 20:44	DD	G
Dibromofluoromethane (S)	107		%	78 - 116	SW846 8260B			7/18/19 20:44	DD	G
Toluene-d8 (S)	117		%	76 - 127	SW846 8260B			7/18/19 20:44	DD	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	182		mg/L	5	SM2320B-2011			7/24/19 05:16	MBW	B
Alkalinity, Total	182	2	mg/L	5	SM2320B-2011			7/24/19 05:16	MBW	B
Ammonia-N	0.183		mg/L	0.100	D6919-09			7/25/19 21:25	AK	A
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			7/20/19 14:08	AK	A
Chloride	369		mg/L	10.0	EPA 300.0			7/20/19 10:35	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			7/18/19 09:08	CHW	B
Nitrate-N	11.7		mg/L	0.20	EPA 300.0			7/18/19 09:08	CHW	B
pH	7.67	1	pH_Units		S4500HB-11			7/24/19 05:16	MBW	B
Phenolics	ND		mg/L	0.005	SW846 9066	7/24/19 12:19	C_D	7/25/19 06:03	C_D	F
Specific Conductance	1720		umhos/cm	1	SW846 9050A			7/24/19 05:16	MBW	B
Sulfate	35.6		mg/L	2.0	EPA 300.0			7/18/19 09:08	CHW	B
Total Dissolved Solids	926		mg/L	5	S2540C-11			7/18/19 15:14	D1C	B
Total Organic Carbon (TOC)	4.5		mg/L	0.50	SW846 9060A			7/18/19 17:56	PAG	D
Turbidity	0.26		NTU	0.10	SM2130B-2011			7/18/19 05:10	MBW	B

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ANALYTICAL RESULTS

Workorder: 3046018 3RD QTR 2019 GWMP-FORM 19Q

Lab ID: **3046018002** Date Collected: 7/17/2019 11:21 Matrix: Ground Water

Sample ID: **CWMP010W** Date Received: 7/17/2019 14:37

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Calcium, Total	57.2		mg/L	0.11	SW846 6010C	7/22/19 15:15	SXC	7/25/19 20:00	SRT	J1
Iron, Total	0.36		mg/L	0.067	SW846 6010C	7/22/19 15:15	SXC	7/25/19 20:00	SRT	J1
Magnesium, Total	42.8		mg/L	0.11	SW846 6010C	7/22/19 15:15	SXC	7/25/19 20:00	SRT	J1
Manganese, Total	0.034		mg/L	0.0056	SW846 6010C	7/22/19 15:15	SXC	7/25/19 20:00	SRT	J1
Potassium, Total	10.9		mg/L	0.56	SW846 6010C	7/22/19 15:15	SXC	7/25/19 20:00	SRT	J1
Sodium, Total	184		mg/L	0.56	SW846 6010C	7/22/19 15:15	SXC	7/25/19 20:00	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	9.91		Feet		Field			7/17/19 11:21	BGS	C
Elev Top MW Casing above MSL	360.90		Feet		Field			7/17/19 11:21	BGS	C
Flow Rate	1.06		gal/min		Field			7/17/19 11:21	BGS	C
Ground Water Elevation	350.99		ft/MSL		Field			7/17/19 11:21	BGS	C
pH, Field (SM4500B)	6.21		pH_Units		Field			7/17/19 11:21	BGS	C
Sample Depth	17.00		Feet		Field			7/17/19 11:21	BGS	C
Specific Conductance, Field	1971		umhos/cm	1	Field			7/17/19 11:21	BGS	C
Temperature	12.92		Deg. C		Field			7/17/19 11:21	BGS	C
Total Well Depth	19.60		Feet		Field			7/17/19 11:21	BGS	C
Volume in Water Column	6.30		Gallons		Field			7/17/19 11:21	BGS	C
Water Level After Purge	16.32		Feet		Field			7/17/19 11:21	BGS	C
Well Volumes Purged	1.68		Vol		Field			7/17/19 11:21	BGS	C

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ANALYTICAL RESULTS

Workorder: 3046018 3RD QTR 2019 GWMP-FORM 19Q

Lab ID: **3046018003** Date Collected: 7/17/2019 11:52 Matrix: Ground Water
Sample ID: **CWMP009W** Date Received: 7/17/2019 14:37

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	4.3		ug/L	1.0	SW846 8260B			7/18/19 21:29	DD	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			7/18/19 21:29	DD	G
1,1-Dichloroethane	1.3		ug/L	1.0	SW846 8260B			7/18/19 21:29	DD	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			7/18/19 21:29	DD	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			7/18/19 21:29	DD	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			7/18/19 21:29	DD	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			7/18/19 21:29	DD	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			7/18/19 21:29	DD	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			7/18/19 21:29	DD	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			7/18/19 21:29	DD	G
Toluene	ND		ug/L	1.0	SW846 8260B			7/18/19 21:29	DD	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			7/18/19 21:29	DD	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			7/18/19 21:29	DD	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			7/18/19 21:29	DD	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			7/18/19 21:29	DD	G
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	115		%	62 - 133	SW846 8260B			7/18/19 21:29	DD	G
4-Bromofluorobenzene (S)	107		%	79 - 114	SW846 8260B			7/18/19 21:29	DD	G
Dibromofluoromethane (S)	110		%	78 - 116	SW846 8260B			7/18/19 21:29	DD	G
Toluene-d8 (S)	117		%	76 - 127	SW846 8260B			7/18/19 21:29	DD	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	485		mg/L	5	SM2320B-2011			7/24/19 05:28	MBW	B
Alkalinity, Total	485	2	mg/L	5	SM2320B-2011			7/24/19 05:28	MBW	B
Ammonia-N	24.2		mg/L	0.100	D6919-09			7/25/19 21:40	AK	A
Chemical Oxygen Demand (COD)	91		mg/L	15	EPA 410.4			7/20/19 14:08	AK	A
Chloride	395		mg/L	10.0	EPA 300.0			7/20/19 10:53	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			7/18/19 09:20	CHW	B
Nitrate-N	ND		mg/L	0.20	EPA 300.0			7/18/19 09:20	CHW	B
pH	7.44	1	pH_Units		S4500HB-11			7/24/19 05:28	MBW	B
Phenolics	ND		mg/L	0.005	SW846 9066	7/24/19 12:19	C_D	7/25/19 06:03	C_D	F
Specific Conductance	2200		umhos/cm	1	SW846 9050A			7/24/19 05:28	MBW	B
Sulfate	6.6		mg/L	2.0	EPA 300.0			7/18/19 09:20	CHW	B
Total Dissolved Solids	1220		mg/L	5	S2540C-11			7/18/19 15:14	D1C	B
Total Organic Carbon (TOC)	32.3		mg/L	2.5	SW846 9060A			7/18/19 17:56	PAG	D
Turbidity	49.0		NTU	0.10	SM2130B-2011			7/18/19 05:10	MBW	B

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ANALYTICAL RESULTS

Workorder: 3046018 3RD QTR 2019 GWMP-FORM 19Q

Lab ID: **3046018003** Date Collected: 7/17/2019 11:52 Matrix: Ground Water

Sample ID: **CWMP009W** Date Received: 7/17/2019 14:37

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Calcium, Total	130		mg/L	0.11	SW846 6010C	7/22/19 15:15	SXC	7/25/19 19:49	SRT	J1
Iron, Total	28.9		mg/L	0.067	SW846 6010C	7/22/19 15:15	SXC	7/25/19 19:49	SRT	J1
Magnesium, Total	59.8		mg/L	0.11	SW846 6010C	7/22/19 15:15	SXC	7/25/19 19:49	SRT	J1
Manganese, Total	10.3		mg/L	0.0056	SW846 6010C	7/22/19 15:15	SXC	7/25/19 19:49	SRT	J1
Potassium, Total	32.0		mg/L	0.56	SW846 6010C	7/22/19 15:15	SXC	7/25/19 19:49	SRT	J1
Sodium, Total	140		mg/L	0.56	SW846 6010C	7/22/19 15:15	SXC	7/25/19 19:49	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	9.18		Feet		Field			7/17/19 11:52	BGS	C
Elev Top MW Casing above MSL	404.20		Feet		Field			7/17/19 11:52	BGS	C
Flow Rate	3.81		gal/min		Field			7/17/19 11:52	BGS	C
Ground Water Elevation	395.02		ft/MSL		Field			7/17/19 11:52	BGS	C
pH, Field (SM4500B)	6.12		pH_Units		Field			7/17/19 11:52	BGS	C
Sample Depth	16.00		Feet		Field			7/17/19 11:52	BGS	C
Specific Conductance, Field	2276		umhos/cm	1	Field			7/17/19 11:52	BGS	C
Temperature	12.35		Deg. C		Field			7/17/19 11:52	BGS	C
Total Well Depth	19.70		Feet		Field			7/17/19 11:52	BGS	C
Volume in Water Column	6.84		Gallons		Field			7/17/19 11:52	BGS	C
Water Level After Purge	9.32		Feet		Field			7/17/19 11:52	BGS	C
Well Volumes Purged	11.15		Vol		Field			7/17/19 11:52	BGS	C

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ANALYTICAL RESULTS

Workorder: 3046018 3RD QTR 2019 GWMP-FORM 19Q

Lab ID: **3046018004** Date Collected: 7/17/2019 13:20 Matrix: Ground Water
Sample ID: **CWMP008W** Date Received: 7/17/2019 14:37

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	2.7		ug/L	1.0	SW846 8260B			7/18/19 21:07	DD	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			7/18/19 21:07	DD	G
1,1-Dichloroethane	4.2		ug/L	1.0	SW846 8260B			7/18/19 21:07	DD	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			7/18/19 21:07	DD	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			7/18/19 21:07	DD	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			7/18/19 21:07	DD	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			7/18/19 21:07	DD	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			7/18/19 21:07	DD	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			7/18/19 21:07	DD	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			7/18/19 21:07	DD	G
Toluene	ND		ug/L	1.0	SW846 8260B			7/18/19 21:07	DD	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			7/18/19 21:07	DD	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			7/18/19 21:07	DD	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			7/18/19 21:07	DD	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			7/18/19 21:07	DD	G
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	116		%	62 - 133	SW846 8260B			7/18/19 21:07	DD	G
4-Bromofluorobenzene (S)	107		%	79 - 114	SW846 8260B			7/18/19 21:07	DD	G
Dibromofluoromethane (S)	110		%	78 - 116	SW846 8260B			7/18/19 21:07	DD	G
Toluene-d8 (S)	118		%	76 - 127	SW846 8260B			7/18/19 21:07	DD	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	423		mg/L	5	SM2320B-2011			7/24/19 05:38	MBW	B
Alkalinity, Total	423	3	mg/L	5	SM2320B-2011			7/24/19 05:38	MBW	B
Ammonia-N	ND		mg/L	0.100	D6919-09			7/25/19 21:54	AK	A
Chemical Oxygen Demand (COD)	36		mg/L	15	EPA 410.4			7/20/19 14:08	AK	A
Chloride	58.6		mg/L	2.0	EPA 300.0			7/18/19 09:33	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			7/18/19 09:33	CHW	B
Nitrate-N	ND		mg/L	0.20	EPA 300.0			7/18/19 09:33	CHW	B
pH	7.39	1	pH_Units		S4500HB-11			7/24/19 05:38	MBW	B
Phenolics	ND		mg/L	0.005	SW846 9066	7/24/19 12:19	C_D	7/25/19 06:03	C_D	F
Specific Conductance	1010		umhos/cm	1	SW846 9050A			7/24/19 05:38	MBW	B
Sulfate	5.6		mg/L	2.0	EPA 300.0			7/18/19 09:33	CHW	B
Total Dissolved Solids	625	2	mg/L	5	S2540C-11			7/19/19 11:02	D1C	B
Total Organic Carbon (TOC)	14.2		mg/L	1.0	SW846 9060A			7/18/19 17:56	PAG	D
Turbidity	22.3		NTU	0.10	SM2130B-2011			7/18/19 05:10	MBW	B

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ANALYTICAL RESULTS

Workorder: 3046018 3RD QTR 2019 GWMP-FORM 19Q

Lab ID: **3046018004** Date Collected: 7/17/2019 13:20 Matrix: Ground Water

Sample ID: **CWMP008W** Date Received: 7/17/2019 14:37

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Calcium, Total	74.0		mg/L	0.11	SW846 6010C	7/22/19 15:15	SXC	7/25/19 20:04	SRT	J1
Iron, Total	31.7		mg/L	0.067	SW846 6010C	7/22/19 15:15	SXC	7/25/19 20:04	SRT	J1
Magnesium, Total	34.3		mg/L	0.11	SW846 6010C	7/22/19 15:15	SXC	7/25/19 20:04	SRT	J1
Manganese, Total	16.1		mg/L	0.0056	SW846 6010C	7/22/19 15:15	SXC	7/25/19 20:04	SRT	J1
Potassium, Total	10.9		mg/L	0.56	SW846 6010C	7/22/19 15:15	SXC	7/25/19 20:04	SRT	J1
Sodium, Total	50.2		mg/L	0.56	SW846 6010C	7/22/19 15:15	SXC	7/25/19 20:04	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	3.25		Feet		Field			7/17/19 13:20	BGS	C
Elev Top MW Casing above MSL	422.30		Feet		Field			7/17/19 13:20	BGS	C
Flow Rate	1.07		gal/min		Field			7/17/19 13:20	BGS	C
Ground Water Elevation	419.05		ft/MSL		Field			7/17/19 13:20	BGS	C
pH, Field (SM4500B)	5.87		pH_Units		Field			7/17/19 13:20	BGS	C
Sample Depth	19.00		Feet		Field			7/17/19 13:20	BGS	C
Specific Conductance, Field	1093		umhos/cm	1	Field			7/17/19 13:20	BGS	C
Temperature	12.52		Deg. C		Field			7/17/19 13:20	BGS	C
Total Well Depth	22.80		Feet		Field			7/17/19 13:20	BGS	C
Volume in Water Column	3.13		Gallons		Field			7/17/19 13:20	BGS	C
Water Level After Purge	8.58		Feet		Field			7/17/19 13:20	BGS	C
Well Volumes Purged	6.87		Vol		Field			7/17/19 13:20	BGS	C

Susan J. Scherer

Ms. Susan J Scherer
Project Coordinator

ANALYTICAL RESULTS

Workorder: 3046018 3RD QTR 2019 GWMP-FORM 19Q

PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
3046018001	1	CWMP016W	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.				
3046018001	2	CWMP016W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
3046018002	1	CWMP010W	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.				
3046018002	2	CWMP010W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
3046018003	1	CWMP009W	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.				
3046018003	2	CWMP009W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
3046018004	1	CWMP008W	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.				
3046018004	2	CWMP008W	S2540C-11	Total Dissolved Solids
The Method Blank for method S2540C-11 reported a value greater than the reporting level for the analyte Total Dissolved Solids.				
3046018004	3	CWMP008W	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: 3046018 3RD QTR 2019 GWMP-FORM 19Q

Lab ID	Sample ID	Analysis Method	Prep Method
3046018001	CWMP016W	D6919-09	
3046018001	CWMP016W	EPA 300.0	
3046018001	CWMP016W	EPA 410.4	
3046018001	CWMP016W	Field	
3046018001	CWMP016W	S2540C-11	
3046018001	CWMP016W	S4500HB-11	
3046018001	CWMP016W	SM2130B-2011	
3046018001	CWMP016W	SM2320B-2011	
3046018001	CWMP016W	SW846 6010C	SW846 3015
3046018001	CWMP016W	SW846 8260B	
3046018001	CWMP016W	SW846 9050A	
3046018001	CWMP016W	SW846 9060A	
3046018001	CWMP016W	SW846 9066	420.4/9066
3046018002	CWMP010W	D6919-09	
3046018002	CWMP010W	EPA 300.0	
3046018002	CWMP010W	EPA 410.4	
3046018002	CWMP010W	Field	
3046018002	CWMP010W	S2540C-11	
3046018002	CWMP010W	S4500HB-11	
3046018002	CWMP010W	SM2130B-2011	
3046018002	CWMP010W	SM2320B-2011	
3046018002	CWMP010W	SW846 6010C	SW846 3015
3046018002	CWMP010W	SW846 8260B	
3046018002	CWMP010W	SW846 9050A	
3046018002	CWMP010W	SW846 9060A	
3046018002	CWMP010W	SW846 9066	420.4/9066
3046018003	CWMP009W	D6919-09	
3046018003	CWMP009W	EPA 300.0	
3046018003	CWMP009W	EPA 410.4	
3046018003	CWMP009W	Field	
3046018003	CWMP009W	S2540C-11	
3046018003	CWMP009W	S4500HB-11	
3046018003	CWMP009W	SM2130B-2011	
3046018003	CWMP009W	SM2320B-2011	
3046018003	CWMP009W	SW846 6010C	SW846 3015
3046018003	CWMP009W	SW846 8260B	
3046018003	CWMP009W	SW846 9050A	
3046018003	CWMP009W	SW846 9060A	
3046018003	CWMP009W	SW846 9066	420.4/9066
3046018004	CWMP008W	D6919-09	
3046018004	CWMP008W	EPA 300.0	
3046018004	CWMP008W	EPA 410.4	
3046018004	CWMP008W	Field	
3046018004	CWMP008W	S2540C-11	
3046018004	CWMP008W	S4500HB-11	
3046018004	CWMP008W	SM2130B-2011	

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ANALYSIS - PREP METHOD CROSS REFERENCE TABLE

Workorder: 3046018 3RD QTR 2019 GWMP-FORM 19Q

Lab ID	Sample ID	Analysis Method	Prep Method
3046018004	CWMP008W	SM2320B-2011	
3046018004	CWMP008W	SW846 6010C	SW846 3015
3046018004	CWMP008W	SW846 8260B	
3046018004	CWMP008W	SW846 9050A	
3046018004	CWMP008W	SW846 9060A	
3046018004	CWMP008W	SW846 9066	420.4/9066

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CHAIN OF CUSTODY/ REQUEST FOR ANALYSIS

Generated by ALS

30460018

8 | 1 of 1

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

Client Name: Lancaster County Solid Waste MA

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

Contact: Mark Reider

Phone#: (717) 735-0193

Project Name/#: Creswell/GWMP Form 19Q Wells

Bill To: Lancaster County Solid Waste MA

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

Date Required: _____ Approved By: _____

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

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

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

ANALYSES/METHOD REQUESTED

Sample Description/Location (as it will appear on the lab report)	Sample Date	Time	*G or C	**Matrix	TOC	O-OH	8260 VOCs - Form 19Q	Field Measurements	Sample Depth for AUX Data	NH3-N, COD	Total Metals: Ca, Fe, Mn, Mg, K, Na	pH, NO3, Cl, F, SpC, SO4, Turb, TDS	Alkalinity, HCO3	
					Enter Number of Containers Per Sample or Field Results Below.									
1. CWMP016W	07/17/19	1057	G	GW	2	1	2	x	x	1	1	1	1	
2. CWMP010W	07/17/19	1121	G	GW	2	1	2	x	x	1	1	1	1	
3. CWMP009W	07/17/19	1152	G	GW	2	1	2	x	x	1	1	1	1	
4. CWMP008W	07/17/19	1320	G	GW	2	1	2	x	x	1	1	1	1	
5														
6														
7														
8														
9														
10														

Receipt Information (completed by Receiving Lab)

Cooler Temp: 4 Therm ID: 315

No. of Coolers: _____

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

Courier/Tracking #:

Sample/COC Comments

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

Project Comments:

LOGGED BY(signature): DATE TIME

REVIEWED BY(signature): DATE TIME

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
1 RG Shrader ALS	07/17/19	1437	2	7/17/19	1437
3			4		
5			6		
7			8		
9			10		

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

Special Processing: USACE ☐ Navy ☐ ☐

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

Reportable to PADEP? Yes ☐ PWSID # _____

Sample Disposal: Lab [X] Special ☐

EDDS: Format Type-

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

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

Rev 8/04

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

Condition of Sample Receipt Form

Client: Lancaster County SWMA Work Order #: 3046018 Initials: CD Date: 7/17/19

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

Cooler #:								
Temperature (°C):	4.2							
Thermometer ID:	318							
Radiological (µCi):								

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

Rev. 4/29/2019

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July 30, 2019

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

Certificate of Analysis

Project Name:	**CRESWELL**	Workorder:	**3046374**
Purchase Order:	**PO1000127**	Workorder ID:	**3RD QTR 2019 GWMP-FORM 19Q**

Dear Mr. Brown:

Enclosed are the analytical results for samples received by the laboratory on Thursday, July 18, 2019.

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

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

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

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

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

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

Ms. Susan J Scherer
Project Coordinator

ALS Environmental

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SAMPLE SUMMARY

Workorder: 3046374 3RD QTR 2019 GWMP-FORM 19Q

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
3046374001	CWMP018S	Ground Water	7/18/2019 09:47	7/18/2019 13:17	Mr. Brian G Shade
3046374002	CWMP017S	Ground Water	7/18/2019 10:01	7/18/2019 13:17	Mr. Brian G Shade

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SAMPLE SUMMARY

Workorder: 3046374 3RD QTR 2019 GWMP-FORM 19Q

Notes

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

Standard Acronyms/Flags

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

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ANALYTICAL RESULTS

Workorder: 3046374 3RD QTR 2019 GWMP-FORM 19Q

Lab ID: **3046374001** Date Collected: 7/18/2019 09:47 Matrix: Ground Water
Sample ID: **CWMP018S** Date Received: 7/18/2019 13:17

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			7/19/19 01:35	PDK	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			7/19/19 01:35	PDK	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			7/19/19 01:35	PDK	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			7/19/19 01:35	PDK	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			7/19/19 01:35	PDK	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			7/19/19 01:35	PDK	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			7/19/19 01:35	PDK	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			7/19/19 01:35	PDK	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			7/19/19 01:35	PDK	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			7/19/19 01:35	PDK	G
Toluene	ND		ug/L	1.0	SW846 8260B			7/19/19 01:35	PDK	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			7/19/19 01:35	PDK	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			7/19/19 01:35	PDK	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			7/19/19 01:35	PDK	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			7/19/19 01:35	PDK	G
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	115		%	62 - 133	SW846 8260B			7/19/19 01:35	PDK	G
4-Bromofluorobenzene (S)	113		%	79 - 114	SW846 8260B			7/19/19 01:35	PDK	G
Dibromofluoromethane (S)	106		%	78 - 116	SW846 8260B			7/19/19 01:35	PDK	G
Toluene-d8 (S)	108		%	76 - 127	SW846 8260B			7/19/19 01:35	PDK	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	299		mg/L	5	SM2320B-2011			7/24/19 14:32	MBW	B
Alkalinity, Total	299	3	mg/L	5	SM2320B-2011			7/24/19 14:32	MBW	B
Ammonia-N	ND		mg/L	0.100	D6919-09			7/27/19 19:23	AK	A
Chemical Oxygen Demand (COD)	19		mg/L	15	EPA 410.4			7/26/19 16:02	AK	A
Chloride	422		mg/L	10.0	EPA 300.0			7/20/19 19:09	CHW	B
Fluoride	ND		mg/L	0.50	EPA 300.0			7/19/19 13:05	CHW	B
Nitrate-N	18.1		mg/L	0.50	EPA 300.0			7/19/19 13:05	CHW	B
pH	8.19	1	pH_Units		S4500HB-11			7/24/19 14:32	MBW	B
Phenolics	ND		mg/L	0.005	SW846 9066	7/24/19 12:19	C_D	7/25/19 06:03	C_D	F
Specific Conductance	2080		umhos/cm	1	SW846 9050A			7/24/19 14:32	MBW	B
Sulfate	36.2		mg/L	5.0	EPA 300.0			7/19/19 13:05	CHW	B
Total Dissolved Solids	1250	2	mg/L	5	S2540C-11			7/19/19 15:23	D1C	B
Total Organic Carbon (TOC)	7.7		mg/L	1.0	SW846 9060A			7/22/19 18:40	PAG	D
Turbidity	0.76		NTU	0.10	SM2130B-2011			7/19/19 07:35	R2B	B

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ANALYTICAL RESULTS

Workorder: 3046374 3RD QTR 2019 GWMP-FORM 19Q

Lab ID: **3046374001** Date Collected: 7/18/2019 09:47 Matrix: Ground Water
Sample ID: **CWMP018S** Date Received: 7/18/2019 13:17

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Calcium, Total	36.1		mg/L	0.11	SW846 6010C	7/24/19 13:45	SXC	7/26/19 18:02	SRT	J1
Iron, Total	0.11		mg/L	0.067	SW846 6010C	7/24/19 13:45	SXC	7/26/19 18:02	SRT	J1
Magnesium, Total	35.3		mg/L	0.11	SW846 6010C	7/24/19 13:45	SXC	7/26/19 18:02	SRT	J1
Manganese, Total	ND		mg/L	0.0056	SW846 6010C	7/24/19 13:45	SXC	7/26/19 18:02	SRT	J1
Potassium, Total	8.9		mg/L	0.56	SW846 6010C	7/24/19 13:45	SXC	7/26/19 18:02	SRT	J1
Sodium, Total	135		mg/L	0.56	SW846 6010C	7/24/19 13:45	SXC	7/26/19 18:02	SRT	J1
FIELD PARAMETERS										
Dissolved Oxygen	10.28		mg/L	0.01	Field			7/18/19 09:47	BGS	C
pH, Field (SM4500B)	8.03		pH_Units		Field			7/18/19 09:47	BGS	C
Specific Conductance, Field	2124		umhos/cm	1	Field			7/18/19 09:47	BGS	C
Temperature	21.21		Deg. C		Field			7/18/19 09:47	BGS	C

Susan J. Scherer
Ms. Susan J Scherer
Project Coordinator

ALS Environmental

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ANALYTICAL RESULTS

Workorder: 3046374 3RD QTR 2019 GWMP-FORM 19Q

Lab ID: **3046374002** Date Collected: 7/18/2019 10:01 Matrix: Ground Water
Sample ID: **CWMP017S** Date Received: 7/18/2019 13:17

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			7/19/19 01:58	PDK	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			7/19/19 01:58	PDK	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			7/19/19 01:58	PDK	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			7/19/19 01:58	PDK	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			7/19/19 01:58	PDK	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			7/19/19 01:58	PDK	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			7/19/19 01:58	PDK	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			7/19/19 01:58	PDK	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			7/19/19 01:58	PDK	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			7/19/19 01:58	PDK	G
Toluene	ND		ug/L	1.0	SW846 8260B			7/19/19 01:58	PDK	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			7/19/19 01:58	PDK	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			7/19/19 01:58	PDK	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			7/19/19 01:58	PDK	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			7/19/19 01:58	PDK	G
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	113		%	62 - 133	SW846 8260B			7/19/19 01:58	PDK	G
4-Bromofluorobenzene (S)	111		%	79 - 114	SW846 8260B			7/19/19 01:58	PDK	G
Dibromofluoromethane (S)	104		%	78 - 116	SW846 8260B			7/19/19 01:58	PDK	G
Toluene-d8 (S)	106		%	76 - 127	SW846 8260B			7/19/19 01:58	PDK	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	411		mg/L	5	SM2320B-2011			7/24/19 14:44	MBW	B
Alkalinity, Total	411	3	mg/L	5	SM2320B-2011			7/24/19 14:44	MBW	B
Ammonia-N	0.154		mg/L	0.100	D6919-09			7/27/19 17:10	AK	A
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			7/26/19 16:02	AK	A
Chloride	625		mg/L	10.0	EPA 300.0			7/20/19 19:26	CHW	B
Fluoride	ND		mg/L	0.50	EPA 300.0			7/19/19 13:19	CHW	B
Nitrate-N	26.0		mg/L	0.50	EPA 300.0			7/19/19 13:19	CHW	B
pH	7.99	1	pH_Units		S4500HB-11			7/24/19 14:44	MBW	B
Phenolics	ND		mg/L	0.005	SW846 9066	7/24/19 12:19	C_D	7/25/19 06:03	C_D	F
Specific Conductance	2860		umhos/cm	1	SW846 9050A			7/24/19 14:44	MBW	B
Sulfate	55.5		mg/L	5.0	EPA 300.0			7/19/19 13:19	CHW	B
Total Dissolved Solids	1280	2	mg/L	5	S2540C-11			7/19/19 15:23	D1C	B
Total Organic Carbon (TOC)	5.4		mg/L	0.50	SW846 9060A			7/22/19 18:40	PAG	D
Turbidity	1.96		NTU	0.10	SM2130B-2011			7/19/19 07:35	R2B	B

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ANALYTICAL RESULTS

Workorder: 3046374 3RD QTR 2019 GWMP-FORM 19Q

Lab ID: **3046374002** Date Collected: 7/18/2019 10:01 Matrix: Ground Water
Sample ID: **CWMP017S** Date Received: 7/18/2019 13:17

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Calcium, Total	78.5		mg/L	0.11	SW846 6010C	7/24/19 13:45	SXC	7/26/19 17:36	SRT	J1
Iron, Total	0.32		mg/L	0.067	SW846 6010C	7/24/19 13:45	SXC	7/26/19 17:36	SRT	J1
Magnesium, Total	92.6		mg/L	0.11	SW846 6010C	7/24/19 13:45	SXC	7/26/19 17:36	SRT	J1
Manganese, Total	0.14		mg/L	0.0056	SW846 6010C	7/24/19 13:45	SXC	7/26/19 17:36	SRT	J1
Potassium, Total	15.7		mg/L	0.56	SW846 6010C	7/24/19 13:45	SXC	7/26/19 17:36	SRT	J1
Sodium, Total	364		mg/L	0.56	SW846 6010C	7/24/19 13:45	SXC	7/26/19 17:36	SRT	J1
FIELD PARAMETERS										
Dissolved Oxygen	8.37		mg/L	0.01	Field			7/18/19 10:01	BGS	C
pH, Field (SM4500B)	7.70		pH_Units		Field			7/18/19 10:01	BGS	C
Specific Conductance, Field	2883		umhos/cm	1	Field			7/18/19 10:01	BGS	C
Temperature	23.00		Deg. C		Field			7/18/19 10:01	BGS	C

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ANALYTICAL RESULTS

Workorder: 3046374 3RD QTR 2019 GWMP-FORM 19Q

PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
3046374001	1	CWMP018S	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.				
3046374001	2	CWMP018S	S2540C-11	Total Dissolved Solids
The Method Blank for method S2540C-11 reported a value greater than the reporting level for the analyte Total Dissolved Solids.				
3046374001	3	CWMP018S	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
3046374002	1	CWMP017S	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.				
3046374002	2	CWMP017S	S2540C-11	Total Dissolved Solids
The Method Blank for method S2540C-11 reported a value greater than the reporting level for the analyte Total Dissolved Solids.				
3046374002	3	CWMP017S	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: 3046374 3RD QTR 2019 GWMP-FORM 19Q

Lab ID	Sample ID	Analysis Method	Prep Method
3046374001	CWMP018S	D6919-09	
3046374001	CWMP018S	EPA 300.0	
3046374001	CWMP018S	EPA 410.4	
3046374001	CWMP018S	Field	
3046374001	CWMP018S	S2540C-11	
3046374001	CWMP018S	S4500HB-11	
3046374001	CWMP018S	SM2130B-2011	
3046374001	CWMP018S	SM2320B-2011	
3046374001	CWMP018S	SW846 6010C	SW846 3015
3046374001	CWMP018S	SW846 8260B	
3046374001	CWMP018S	SW846 9050A	
3046374001	CWMP018S	SW846 9060A	
3046374001	CWMP018S	SW846 9066	420.4/9066
3046374002	CWMP017S	D6919-09	
3046374002	CWMP017S	EPA 300.0	
3046374002	CWMP017S	EPA 410.4	
3046374002	CWMP017S	Field	
3046374002	CWMP017S	S2540C-11	
3046374002	CWMP017S	S4500HB-11	
3046374002	CWMP017S	SM2130B-2011	
3046374002	CWMP017S	SM2320B-2011	
3046374002	CWMP017S	SW846 6010C	SW846 3015
3046374002	CWMP017S	SW846 8260B	
3046374002	CWMP017S	SW846 9050A	
3046374002	CWMP017S	SW846 9060A	
3046374002	CWMP017S	SW846 9066	420.4/9066

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CHAIN OF CUSTODY/ REQUEST FOR ANALYSIS

Generated by ALS

1 of 1

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

Client Name: Lancaster County Solid Waste MA

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

Lancaster, PA 17604

Contact: Mark Reider

Phone#: (717) 735-0193

Project Name/#: Creswell/GWMP Form 19Q Wells

Bill To: Lancaster County Solid Waste MA

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

Date Required: _____ Approved By: _____

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

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

Container Type	AG	AN	CG	---	PL	PL	PL	PL		
Container Size	40 ml	125 ml	40 ml	---	500 ml	250 ml	125 ml	1 L		
Preservative	HCl	~~H2SO4~~	HCl	---	None	~~H2SO4~~	~~HNO3~~	None		

ANALYSES/METHOD REQUESTED

Sample Description/Location (as it will appear on the lab report)	Sample Date	Time	*G or C	**Matrix	TOC	O-OH	8260 VOCs - Form 19Q	Field Measurements	Alkalinity, HCO3	NH3-N, COD	Total Metals: Ca, Fe, Mn, Mg, K, Na	pH, NO3, Cl, F, SpC, SO4, Turb, TDS		
					Enter Number of Containers Per Sample or Field Results Below.									
1. CWMP018S	07/18/19	0947	G	GW	2	1	2	X	1	1	1	1		
2. CWMP017S	07/18/19	1001	G	GW	2	1	2	X	1	1	1	1		
3														
4														
5														
6														
7														
8														
9														
10														

Project Comments:

LOGGED BY(signature): DATE TIME

REVIEWED BY(signature): DATE TIME

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
1 [signature] By ALS	7/18/19	1317	2 [signature]	7/18/19	1317
3			4		
5			6		
7			8		
9			10		

Cooler Temp: 4 Therm ID: 3W

No. of Coolers: _____

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

Courier/Tracking #:

Sample/COC Comments

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

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

Special Processing: USACE [ ] Navy [ ]

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

Reportable to PADEP? Yes [ ] PWSID # _____

Sample Disposal: Lab [X] Special [ ]

EDDS: Format Type-

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

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

Rev 8/04

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

Condition of Sample Receipt Form

Client: LCSWMA | Work Order #: 3046374 | Initials: CD | Date: 7/18/19

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

Cooler #: ____

Temperature (°C): 4

Thermometer ID: 318

Radiological (µCi): ____

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

pH TS expired, but will be analyzed with a qualifier
CD 7/18/19

Rev. 4/29/2019

Exceedence Report

Parameter Name	Units	Concentration	Criteria Conc	Qualifiers	Criteria
Location ID	**Sample Number**	**Sample Date**	**Sample Type**	**Sample Depth**	
CWMP001W	*3045441002*	*07/15/2019*	*GW*		
NITRATE-NITROGEN	mg/l	19.70	10.00		EPA-MCL
Location ID	**Sample Number**	**Sample Date**	**Sample Type**	**Sample Depth**	
CWMP007W	*3045441001*	*07/15/2019*	*GW*		
NITRATE-NITROGEN	mg/l	10.50	10.00		EPA-MCL
Location ID	**Sample Number**	**Sample Date**	**Sample Type**	**Sample Depth**	
CWMP010W	*3046018002*	*07/17/2019*	*GW*		
NITRATE-NITROGEN	mg/l	11.70	10.00		EPA-MCL
Location ID	**Sample Number**	**Sample Date**	**Sample Type**	**Sample Depth**	
CWMP017S	*3046374002*	*07/18/2019*	*GW*		
NITRATE-NITROGEN	mg/l	26.00	10.00		EPA-MCL
Location ID	**Sample Number**	**Sample Date**	**Sample Type**	**Sample Depth**	
CWMP018S	*3046374001*	*07/18/2019*	*GW*		
NITRATE-NITROGEN	mg/l	18.10	10.00		EPA-MCL

Lancaster County Solid Waste Management Authority

Creswell Landfill

Exceedence Report

Parameter Name	Units	Concentration	Criteria Conc	Qualifiers	Criteria
Location ID	**Sample Number**	**Sample Date**	**Sample Type**	**Sample Depth**	
CWMP001W	*3045441002*	*07/15/2019*	*GW*		
IRON, TOTAL	mg/l	0.76	0.30		EPA-SMCL
MANGANESE, TOTAL	mg/l	0.06	0.05		EPA-SMCL
Location ID	**Sample Number**	**Sample Date**	**Sample Type**	**Sample Depth**	
CWMP002W	*3046658002*	*07/19/2019*	*GW*		
MANGANESE, TOTAL	mg/l	0.93	0.05		EPA-SMCL
Location ID	**Sample Number**	**Sample Date**	**Sample Type**	**Sample Depth**	
CWMP008W	*3046018004*	*07/17/2019*	*GW*		
IRON, TOTAL	mg/l	31.70	0.30		EPA-SMCL
MANGANESE, TOTAL	mg/l	16.10	0.05		EPA-SMCL
TDS (TOTAL DISSOLVED SOLIDS)	mg/l	625.00	500.00		EPA-SMCL
Location ID	**Sample Number**	**Sample Date**	**Sample Type**	**Sample Depth**	
CWMP009W	*3046018003*	*07/17/2019*	*GW*		
CHLORIDE	mg/l	395.00	250.00		EPA-SMCL
IRON, TOTAL	mg/l	28.90	0.30		EPA-SMCL
MANGANESE, TOTAL	mg/l	10.30	0.05		EPA-SMCL
TDS (TOTAL DISSOLVED SOLIDS)	mg/l	1,220.00	500.00		EPA-SMCL
Location ID	**Sample Number**	**Sample Date**	**Sample Type**	**Sample Depth**	
CWMP010W	*3046018002*	*07/17/2019*	*GW*		
CHLORIDE	mg/l	369.00	250.00		EPA-SMCL
IRON, TOTAL	mg/l	0.36	0.30		EPA-SMCL
TDS (TOTAL DISSOLVED SOLIDS)	mg/l	926.00	500.00		EPA-SMCL
Location ID	**Sample Number**	**Sample Date**	**Sample Type**	**Sample Depth**	
CWMP012W	*3046658001*	*07/19/2019*	*GW*		
IRON, TOTAL	mg/l	43.00	0.30		EPA-SMCL
MANGANESE, TOTAL	mg/l	0.17	0.05		EPA-SMCL
Location ID	**Sample Number**	**Sample Date**	**Sample Type**	**Sample Depth**	
CWMP016W	*3046018001*	*07/17/2019*	*GW*		
IRON, TOTAL	mg/l	0.82	0.30		EPA-SMCL

Parameter Name	Units	Concentration	Criteria Conc	Qualifiers	Criteria
Location ID	**Sample Number**	**Sample Date**	**Sample Type**	**Sample Depth**	
CWMP017S	*3046374002*	*07/18/2019*	*GW*		
CHLORIDE	mg/l	625.00	250.00		EPA-SMCL
IRON, TOTAL	mg/l	0.32	0.30		EPA-SMCL
MANGANESE, TOTAL	mg/l	0.14	0.05		EPA-SMCL
TDS (TOTAL DISSOLVED SOLIDS)	mg/l	1,280.00	500.00		EPA-SMCL
Location ID	**Sample Number**	**Sample Date**	**Sample Type**	**Sample Depth**	
CWMP018S	*3046374001*	*07/18/2019*	*GW*		
CHLORIDE	mg/l	422.00	250.00		EPA-SMCL
TDS (TOTAL DISSOLVED SOLIDS)	mg/l	1,250.00	500.00		EPA-SMCL