

March 8, 2019

Ms. Charlene Sauls; Regional Hydrogeologist
Pennsylvania Department of Environmental Protection
Bureau of Land Recycling and Waste Management
909 Elmerton Avenue
Harrisburg, PA 17110-8200

REF: Creswell Landfill (BWM Permit #100008)
Groundwater Monitoring; 1st Quarter 2019

Dear Ms. Sauls:

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 were below MCL and SMCL except for nitrate, iron, and manganese on well 1.
- Down gradient wells had similar results with 17 showing manganese and TDS, 18 showing high nitrates, manganese and TDS (surface Mann’s Run) related to surface influences and Turkey Hill discharge. Wells 1 & 18 exceeded MCL for nitrate. Well 9 had elevated TDS and chlorides which shows surface influence of Mann’s Run. Wells 2 & 3 show manganese, 8 thru 12 show iron and manganese above the SMCL which is due to natural geologic parent material.
- Wells 2,3,4,8,9 and 12 with historic VOCs concentrations detected either stabilized or continue to decrease.

Page 2 of 2
Creswell Landfill (BWM Permit #100008)

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
Environmental Compliance Manager

Enclosures

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



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

Date Prepared/Revised
02/25/2019

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

Facility 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 Well Spring Stream Other
 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: 22.38 ft Measured from: Land Surface TOC

Casing Stickup: 1.23 ft Elevation of Water Level: 492.75 ft./MSL

Sampling Depth: 57 ft Volume of Water Column: 64.50 gal

Total Well Depth: 66.3 ft Sampling Method: Pumped Bailed Grab

Well Purged: Yes No Well Volumes Purged: 1.8

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

Spring Flow Rate: gpm

Sample Date (mm/dd/yy): 1/14/2019 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 No If yes, please explain in comments field.

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3010706001 Final Lab Analysis CompletionDate: 1/29/2019

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

Comments: _____

I.D. No 100008

Monitoring Point No. CWMP001W

Sample Date 1/14/2019

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	10	SM18-2321
CALCIUM, TOTAL	19.7	SW846 6010B
CALCIUM, DISSOLVED		SW 8466010B
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	32.6	EPA 300.0
FLUORIDE	0.2 ND	EPA 300.0
IRON, TOTAL (ug/l)	6300	SW846 6010B
IRON, DISSOLVED (ug/l)		SW846 6010B
MAGNESIUM, TOTAL	11.9	SW846 6010B
MAGNESIUM, DISSOLVED		SW846 6010B
MANGANESE, TOTAL (ug/l)	190	SW846 6010B
MANGANESE, DISSOLVED (ug/l)		SW846 6010B
NITRATE-NITROGEN	20	EPA 300.0
pH-FIELD (SU)	5.08	FIELD
pH-LAB (SU)	6.16	EPA 150.1
POTASSIUM, TOTAL	2.6	SW846 6010B
POTASSIUM, DISSOLVED		SW846 6010B
SODIUM, TOTAL	14.4	SW846 6010B
SODIUM, DISSOLVED		SW846 6010B
SPEC. COND., FIELD (umhos/cm)	297	FIELD
SPEC. COND., LAB (umhos/cm)	273	EPA 120.1
SULFATE	2.5	EPA 300.0
ALKALINITY	10	SM18-2320B
TDS (TOTAL DISSOLVED SOLIDS)	258	SM18-2540C
TOC (TOTAL ORGANIC CARBON)	1.5	SM18-5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	432	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 1/14/2019

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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SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facility 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^o MM' SS.S")

Monitoring Point Number: CWMP007W Well Spring Stream Other
 Upgradient/Upstream 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: 5.11 ft Measured from: Land Surface TOC

Casing Stickup: 1.50 ft Elevation of Water Level: 448.29 ft./MSL

Sampling Depth: 33 ft Volume of Water Column: 46.10 gal

Total Well Depth: 36.5 ft Sampling Method: Pumped Bailed Grab

Well Purged: Yes No Well Volumes Purged: 2.2

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

Spring Flow Rate: gpm

Sample Date (mm/dd/yy): 1/14/2019 Sample Collection Time: 12:55

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3010706002 Final Lab Analysis Completion Date: 1/29/2019

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

Comments: _____

I.D. No 100008

Monitoring Point No. CWMP007W

Sample Date 1/14/2019

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	0.151	EPA 350.3
BICARBONATE	12	SM18-2321
CALCIUM, TOTAL	18.5	SW846 6010B
CALCIUM, DISSOLVED		SW 8466010B
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	63.7	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	9	SW846 6010B
MAGNESIUM, DISSOLVED		SW846 6010B
MANGANESE, TOTAL (ug/l)	6.7	SW846 6010B
MANGANESE, DISSOLVED (ug/l)		SW846 6010B
NITRATE-NITROGEN	8.9	EPA 300.0
pH-FIELD (SU)	5.14	FIELD
pH-LAB (SU)	6.37	EPA 150.1
POTASSIUM, TOTAL	2.1	SW846 6010B
POTASSIUM, DISSOLVED		SW846 6010B
SODIUM, TOTAL	31.6	SW846 6010B
SODIUM, DISSOLVED		SW846 6010B
SPEC. COND., FIELD (umhos/cm)	393	FIELD
SPEC. COND., LAB (umhos/cm)	366	EPA 120.1
SULFATE	15.2	EPA 300.0
ALKALINITY	12	SM18-2320B
TDS (TOTAL DISSOLVED SOLIDS)	254	SM18-2540C
TOC (TOTAL ORGANIC CARBON)	1.2	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 1/14/2019

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
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SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facility 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 Well Spring Stream Other
 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: 34.18 ft Measured from: Land Surface TOC

Casing Stickup: -0.37 ft Elevation of Water Level: 479.25 ft./MSL

Sampling Depth: 130 ft Volume of Water Column: 155.41 gal

Total Well Depth: 140 ft Sampling Method: Pumped Bailed Grab

Well Purged: Yes No Well Volumes Purged: 1.8

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

Spring Flow Rate: gpm

Sample Date (mm/dd/yy): 1/14/2019 Sample Collection Time: 15:12

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3010706003 Final Lab Analysis CompletionDate: 1/29/2019

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

Comments: _____

I.D. No 100008

Monitoring Point No. CWMP005W

Sample Date 1/14/2019

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	0.11	EPA 350.3
BICARBONATE	15	SM18-2321
CALCIUM, TOTAL	13.4	SW846 6010B
CALCIUM, DISSOLVED		SW 8466010B
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	66.1	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	7.1	SW846 6010B
MAGNESIUM, DISSOLVED		SW846 6010B
MANGANESE, TOTAL (ug/l)	46	SW846 6010B
MANGANESE, DISSOLVED (ug/l)		SW846 6010B
NITRATE-NITROGEN	8.4	EPA 300.0
pH-FIELD (SU)	5.21	FIELD
pH-LAB (SU)	6.43	EPA 150.1
POTASSIUM, TOTAL	2.1	SW846 6010B
POTASSIUM, DISSOLVED		SW846 6010B
SODIUM, TOTAL	29.4	SW846 6010B
SODIUM, DISSOLVED		SW846 6010B
SPEC. COND., FIELD (umhos/cm)	327	FIELD
SPEC. COND., LAB (umhos/cm)	304	EPA 120.1
SULFATE	3.8	EPA 300.0
ALKALINITY	15	SM18-2320B
TDS (TOTAL DISSOLVED SOLIDS)	210	SM18-2540C
TOC (TOTAL ORGANIC CARBON)	1.2	SM18-5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.35	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 1/14/2019

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

Facility 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 Well Spring Stream Other
 Upgradient/Upstream 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 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: Pumped Bailed Grab

Well Purged: Yes No Well Volumes Purged: _____

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

Spring Flow Rate: _____ gpm

Sample Date (mm/dd/yy): 1/15/2019 Sample Collection Time: 10:18

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3010953001 Final Lab Analysis CompletionDate: 1/30/2019

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

Comments: _____

I.D. No 100008

Monitoring Point No. CWMP018S

Sample Date 1/15/2019

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	0.82	EPA 350.3
BICARBONATE	142	SM18-2321
CALCIUM, TOTAL	40.7	SW846 6010B
CALCIUM, DISSOLVED		SW 8466010B
COD (CHEMICAL OXYGEN DEMAND)	27	EPA 410.4
CHLORIDE	180	EPA 300.0
FLUORIDE	0.5 ND	EPA 300.0
IRON, TOTAL (ug/l)	250	SW846 6010B
IRON, DISSOLVED (ug/l)		SW846 6010B
MAGNESIUM, TOTAL	29.1	SW846 6010B
MAGNESIUM, DISSOLVED		SW846 6010B
MANGANESE, TOTAL (ug/l)	470	SW846 6010B
MANGANESE, DISSOLVED (ug/l)		SW846 6010B
NITRATE-NITROGEN	14	EPA 300.0
pH-FIELD (SU)	6.93	FIELD
pH-LAB (SU)	8.03	EPA 150.1
POTASSIUM, TOTAL	9.4	SW846 6010B
POTASSIUM, DISSOLVED		SW846 6010B
SODIUM, TOTAL	97.9	SW846 6010B
SODIUM, DISSOLVED		SW846 6010B
SPEC. COND., FIELD (umhos/cm)	1058	FIELD
SPEC. COND., LAB (umhos/cm)	1030	EPA 120.1
SULFATE	27.9	EPA 300.0
ALKALINITY	142	SM18-2320B
TDS (TOTAL DISSOLVED SOLIDS)	785	SM18-2540C
TOC (TOTAL ORGANIC CARBON)	7.8	SM18-5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	1.41	SM 2130B

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Monitoring Point No. CWMP018S

Sample Date 1/15/2019

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.



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Monitoring Point Number: CWMP017S Well Spring Stream Other
 Upgradient/Upstream 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 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: Pumped Bailed Grab

Well Purged: Yes No Well Volumes Purged: _____

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

Spring Flow Rate: _____ gpm

Sample Date (mm/dd/yy): 1/15/2019 Sample Collection Time: 10:37

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3010953002 Final Lab Analysis CompletionDate: 1/30/2019

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

Comments: _____

I.D. No 100008

Monitoring Point No. CWMP017S

Sample Date 1/15/2019

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	0.547	EPA 350.3
BICARBONATE	57	SM18-2321
CALCIUM, TOTAL	25.3	SW846 6010B
CALCIUM, DISSOLVED		SW 8466010B
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	79.9	EPA 300.0
FLUORIDE	0.2 ND	EPA 300.0
IRON, TOTAL (ug/l)	110	SW846 6010B
IRON, DISSOLVED (ug/l)		SW846 6010B
MAGNESIUM, TOTAL	12.9	SW846 6010B
MAGNESIUM, DISSOLVED		SW846 6010B
MANGANESE, TOTAL (ug/l)	80	SW846 6010B
MANGANESE, DISSOLVED (ug/l)		SW846 6010B
NITRATE-NITROGEN	9.2	EPA 300.0
pH-FIELD (SU)	6.31	FIELD
pH-LAB (SU)	7.36	EPA 150.1
POTASSIUM, TOTAL	4.3	SW846 6010B
POTASSIUM, DISSOLVED		SW846 6010B
SODIUM, TOTAL	48.3	SW846 6010B
SODIUM, DISSOLVED		SW846 6010B
SPEC. COND., FIELD (umhos/cm)	553	FIELD
SPEC. COND., LAB (umhos/cm)	538	EPA 120.1
SULFATE	39.5	EPA 300.0
ALKALINITY	57	SM18-2320B
TDS (TOTAL DISSOLVED SOLIDS)	560	SM18-2540C
TOC (TOTAL ORGANIC CARBON)	2.9	SM18-5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.63	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 1/15/2019

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

Date Prepared/Revised
02/25/2019

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

Facility 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 Well Spring Stream Other
 Upgradient/Upstream 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: 7.89 ft Measured from: Land Surface TOC

Casing Stickup: 2.53 ft Elevation of Water Level: 304.08 ft./MSL

Sampling Depth: 71 ft Volume of Water Column: _____ gal

Total Well Depth: 78.03 ft Sampling Method: Pumped Bailed Grab

Well Purged: Yes No Well Volumes Purged: 1.8

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

Spring Flow Rate: _____ gpm

Sample Date (mm/dd/yy): 1/15/2019 Sample Collection Time: 13:10

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3010953003 Final Lab Analysis CompletionDate: 1/30/2019

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

Comments: _____

I.D. No 100008

Monitoring Point No. CWMP016W

Sample Date 1/15/2019

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	9	SM18-2321
CALCIUM, TOTAL	4.8	SW846 6010B
CALCIUM, DISSOLVED		SW 8466010B
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	2 ND	EPA 300.0
FLUORIDE	0.2 ND	EPA 300.0
IRON, TOTAL (ug/l)	110	SW846 6010B
IRON, DISSOLVED (ug/l)		SW846 6010B
MAGNESIUM, TOTAL	1.1	SW846 6010B
MAGNESIUM, DISSOLVED		SW846 6010B
MANGANESE, TOTAL (ug/l)	13	SW846 6010B
MANGANESE, DISSOLVED (ug/l)		SW846 6010B
NITRATE-NITROGEN	0.72	EPA 300.0
pH-FIELD (SU)	5.13	FIELD
pH-LAB (SU)	6.39	EPA 150.1
POTASSIUM, TOTAL	0.56 ND	SW846 6010B
POTASSIUM, DISSOLVED		SW846 6010B
SODIUM, TOTAL	2.8	SW846 6010B
SODIUM, DISSOLVED		SW846 6010B
SPEC. COND., FIELD (umhos/cm)	61	FIELD
SPEC. COND., LAB (umhos/cm)	52	EPA 120.1
SULFATE	11.9	EPA 300.0
ALKALINITY	9	SM18-2320B
TDS (TOTAL DISSOLVED SOLIDS)	212	SM18-2540C
TOC (TOTAL ORGANIC CARBON)	0.87	SM18-5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.72	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. CWMP016W

Sample Date 1/15/2019

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



Date Prepared/Revised
02/25/2019

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

Facility 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 Well Spring Stream Other
 Upgradient/Upstream 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: 8.54 ft Measured from: Land Surface TOC

Casing Stickup: 2.10 ft Elevation of Water Level: 352.36 ft./MSL

Sampling Depth: 17 ft Volume of Water Column: 7.22 gal

Total Well Depth: 19.6 ft Sampling Method: Pumped Bailed Grab

Well Purged: Yes No Well Volumes Purged: 1.5

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

Spring Flow Rate: gpm

Sample Date (mm/dd/yy): 1/15/2019 Sample Collection Time: 14:10

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3010953004 Final Lab Analysis Completion Date: 1/30/2019

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

Comments: _____

I.D. No 100008

Monitoring Point No. CWMP010W

Sample Date 1/15/2019

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	0.111	EPA 350.3
BICARBONATE	80	SM18-2321
CALCIUM, TOTAL	15.3	SW846 6010B
CALCIUM, DISSOLVED		SW 8466010B
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	49.8	EPA 300.0
FLUORIDE	0.2 ND	EPA 300.0
IRON, TOTAL (ug/l)	160	SW846 6010B
IRON, DISSOLVED (ug/l)		SW846 6010B
MAGNESIUM, TOTAL	12.1	SW846 6010B
MAGNESIUM, DISSOLVED		SW846 6010B
MANGANESE, TOTAL (ug/l)	37	SW846 6010B
MANGANESE, DISSOLVED (ug/l)		SW846 6010B
NITRATE-NITROGEN	2.4	EPA 300.0
pH-FIELD (SU)	6.29	FIELD
pH-LAB (SU)	7.04	EPA 150.1
POTASSIUM, TOTAL	3	SW846 6010B
POTASSIUM, DISSOLVED		SW846 6010B
SODIUM, TOTAL	34.3	SW846 6010B
SODIUM, DISSOLVED		SW846 6010B
SPEC. COND., FIELD (umhos/cm)	567	FIELD
SPEC. COND., LAB (umhos/cm)	346	EPA 120.1
SULFATE	23.2	EPA 300.0
ALKALINITY	80	SM18-2320B
TDS (TOTAL DISSOLVED SOLIDS)	275	SM18-2540C
TOC (TOTAL ORGANIC CARBON)	2.5	SM18-5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.63	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 1/15/2019

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

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

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

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facility 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^o MM' SS.S")

Monitoring Point Number: CWMP009W Well Spring Stream Other
 Upgradient/Upstream 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: 8.95 ft Measured from: Land Surface TOC

Casing Stickup: 2.70 ft Elevation of Water Level: 395.25 ft./MSL

Sampling Depth: 16 ft Volume of Water Column: 7.02 gal

Total Well Depth: 19.7 ft Sampling Method: Pumped Bailed Grab

Well Purged: Yes No Well Volumes Purged: 11.6

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

Spring Flow Rate: gpm

Sample Date (mm/dd/yy): 1/15/2019 Sample Collection Time: 14:49

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3010953005 Final Lab Analysis Completion Date: 1/30/2019

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

Comments: _____

I.D. No 100008

Monitoring Point No. CWMP009W

Sample Date 1/15/2019

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	27	EPA 350.3
BICARBONATE	560	SM18-2321
CALCIUM, TOTAL	128	SW846 6010B
CALCIUM, DISSOLVED		SW 8466010B
COD (CHEMICAL OXYGEN DEMAND)	93	EPA 410.4
CHLORIDE	416	EPA 300.0
FLUORIDE	0.2 ND	EPA 300.0
IRON, TOTAL (ug/l)	30200	SW846 6010B
IRON, DISSOLVED (ug/l)		SW846 6010B
MAGNESIUM, TOTAL	61.8	SW846 6010B
MAGNESIUM, DISSOLVED		SW846 6010B
MANGANESE, TOTAL (ug/l)	10400	SW846 6010B
MANGANESE, DISSOLVED (ug/l)		SW846 6010B
NITRATE-NITROGEN	0.2 ND	EPA 300.0
pH-FIELD (SU)	6.69	FIELD
pH-LAB (SU)	6.51	EPA 150.1
POTASSIUM, TOTAL	29.7	SW846 6010B
POTASSIUM, DISSOLVED		SW846 6010B
SODIUM, TOTAL	145	SW846 6010B
SODIUM, DISSOLVED		SW846 6010B
SPEC. COND., FIELD (umhos/cm)	2321	FIELD
SPEC. COND., LAB (umhos/cm)	2320	EPA 120.1
SULFATE	6.9	EPA 300.0
ALKALINITY	560	SM18-2320B
TDS (TOTAL DISSOLVED SOLIDS)	1640	SM18-2540C
TOC (TOTAL ORGANIC CARBON)	32	SM18-5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	66.4	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.

T Please indicate detection limit if analyte is not detected.

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

Remaining quarterly samples only require total metals analysis.

I.D. No 100008

Monitoring Point No. CWMP009W

Sample Date 1/15/2019

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

ANALYTE	VALUE^T	ANALYSIS METHOD NUMBER
BENZENE	3.7	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

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FORM 19
MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facility 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 Well Spring Stream Other
 Upgradient/Upstream 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: 78.2 ft Measured from: Land Surface TOC

Casing Stickup: -1.19 ft Elevation of Water Level: 447.61 ft./MSL

Sampling Depth: 85 ft Volume of Water Column: 32.02 gal

Total Well Depth: 100 ft Sampling Method: Pumped Bailed Grab

Well Purged: Yes No Well Volumes Purged: _____

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

Spring Flow Rate: _____ gpm

Sample Date (mm/dd/yy): 1/16/2019 Sample Collection Time: 12:50

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3011231001 Final Lab Analysis CompletionDate: 1/31/2019

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

Comments: _____

I.D. No 100008

Monitoring Point No. CWMP002W

Sample Date 1/16/2019

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	77	SM18-2321
CALCIUM, TOTAL	55.9	SW846 6010B
CALCIUM, DISSOLVED		SW 8466010B
COD (CHEMICAL OXYGEN DEMAND)	23	EPA 410.4
CHLORIDE	113	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	18.2	SW846 6010B
MAGNESIUM, DISSOLVED		SW846 6010B
MANGANESE, TOTAL (ug/l)	1200	SW846 6010B
MANGANESE, DISSOLVED (ug/l)		SW846 6010B
NITRATE-NITROGEN	3.3	EPA 300.0
pH-FIELD (SU)	5.56	FIELD
pH-LAB (SU)	6.26	EPA 150.1
POTASSIUM, TOTAL	3.1	SW846 6010B
POTASSIUM, DISSOLVED		SW846 6010B
SODIUM, TOTAL	24.7	SW846 6010B
SODIUM, DISSOLVED		SW846 6010B
SPEC. COND., FIELD (umhos/cm)	637	FIELD
SPEC. COND., LAB (umhos/cm)	650	EPA 120.1
SULFATE	16.8	EPA 300.0
ALKALINITY	77	SM18-2320B
TDS (TOTAL DISSOLVED SOLIDS)	244	SM18-2540C
TOC (TOTAL ORGANIC CARBON)	5.8	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 1/16/2019

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	11.5	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
02/25/2019

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

Facility 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 Well Spring Stream Other
 Upgradient/Upstream 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: 64 ft Measured from: Land Surface TOC

Casing Stickup: -1.29 ft Elevation of Water Level: 460.21 ft./MSL

Sampling Depth: 100 ft Volume of Water Column: 16.16 gal

Total Well Depth: 75 ft Sampling Method: Pumped Bailed Grab

Well Purged: Yes No Well Volumes Purged: _____

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

Spring Flow Rate: _____ gpm

Sample Date (mm/dd/yy): 1/16/2019 Sample Collection Time: 15:54

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3011231002 Final Lab Analysis CompletionDate: 1/30/2019

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

Comments: _____

I.D. No 100008

Monitoring Point No. CWMP003W

Sample Date 1/16/2019

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	22	SM18-2321
CALCIUM, TOTAL	32.1	SW846 6010B
CALCIUM, DISSOLVED		SW 8466010B
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	82.7	EPA 300.0
FLUORIDE	0.2 ND	EPA 300.0
IRON, TOTAL (ug/l)	99	SW846 6010B
IRON, DISSOLVED (ug/l)		SW846 6010B
MAGNESIUM, TOTAL	11.5	SW846 6010B
MAGNESIUM, DISSOLVED		SW846 6010B
MANGANESE, TOTAL (ug/l)	120	SW846 6010B
MANGANESE, DISSOLVED (ug/l)		SW846 6010B
NITRATE-NITROGEN	7.8	EPA 300.0
pH-FIELD (SU)	5.38	FIELD
pH-LAB (SU)	6.21	EPA 150.1
POTASSIUM, TOTAL	2.1	SW846 6010B
POTASSIUM, DISSOLVED		SW846 6010B
SODIUM, TOTAL	26.9	SW846 6010B
SODIUM, DISSOLVED		SW846 6010B
SPEC. COND., FIELD (umhos/cm)	464	FIELD
SPEC. COND., LAB (umhos/cm)	463	EPA 120.1
SULFATE	5	EPA 300.0
ALKALINITY	22	SM18-2320B
TDS (TOTAL DISSOLVED SOLIDS)	174	SM18-2540C
TOC (TOTAL ORGANIC CARBON)	1.9	SM18-5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.5	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.

T Please indicate detection limit if analyte is not detected.

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

I.D. No 100008

Monitoring Point No. CWMP003W

Sample Date 1/16/2019

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	1.9	SW846 8260B
1,1-DICHLOROETHENE	1 ND	SW846 8260B
1,2-DICHLOROETHANE	1 ND	SW846 8260B
cis 1,2-DICHLOROETHENE	1 ND	SW846 8260B
trans 1,2-DICHLOROETHENE	1 ND	SW846 8260B
ETHYLBENZENE	1 ND	SW846 8260B
METHYLENE CHLORIDE	1 ND	SW846 8260B
TETRACHLOROETHENE	1 ND	SW846 8260B
TOLUENE	1 ND	SW846 8260B
1,1,1-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROETHENE	1 ND	SW846 8260B
VINYL CHLORIDE	1 ND	SW846 8260B
XYLENES (TOTAL)	3 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

Date Prepared/Revised
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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

Facility 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 Well Spring Stream Other
 Upgradient/Upstream 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: 102.56 ft Measured from: Land Surface TOC

Casing Stickup: -1.37 ft Elevation of Water Level: 426.97 ft./MSL

Sampling Depth: 130 ft Volume of Water Column: 54.99 gal

Total Well Depth: 140 ft Sampling Method: Pumped Bailed Grab

Well Purged: Yes No Well Volumes Purged: _____

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

Spring Flow Rate: _____ gpm

Sample Date (mm/dd/yy): 1/16/2019 Sample Collection Time: 15:40

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3011231003 Final Lab Analysis CompletionDate: 1/30/2019

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

Comments: _____

I.D. No 100008

Monitoring Point No. CWMP004W

Sample Date 1/16/2019

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	22	SM18-2321
CALCIUM, TOTAL	19.8	SW846 6010B
CALCIUM, DISSOLVED		SW 8466010B
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	45	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	7.5	SW846 6010B
MAGNESIUM, DISSOLVED		SW846 6010B
MANGANESE, TOTAL (ug/l)	9.1	SW846 6010B
MANGANESE, DISSOLVED (ug/l)		SW846 6010B
NITRATE-NITROGEN	5.5	EPA 300.0
pH-FIELD (SU)	5.56	FIELD
pH-LAB (SU)	6.3	EPA 150.1
POTASSIUM, TOTAL	1.7	SW846 6010B
POTASSIUM, DISSOLVED		SW846 6010B
SODIUM, TOTAL	19.9	SW846 6010B
SODIUM, DISSOLVED		SW846 6010B
SPEC. COND., FIELD (umhos/cm)	309	FIELD
SPEC. COND., LAB (umhos/cm)	281	EPA 120.1
SULFATE	5.1	EPA 300.0
ALKALINITY	22	SM18-2320B
TDS (TOTAL DISSOLVED SOLIDS)	132	SM18-2540C
TOC (TOTAL ORGANIC CARBON)	2.5	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. CWMP004W

Sample Date 1/16/2019

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
02/25/2019

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FORM 19
MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facility 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 Well Spring Stream Other
 Upgradient/Upstream 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: 50.43 ft Measured from: Land Surface TOC

Casing Stickup: 1.90 ft Elevation of Water Level: 332.27 ft./MSL

Sampling Depth: 0 ft Volume of Water Column: 75.59 gal

Total Well Depth: 101.9 ft Sampling Method: Pumped Bailed Grab

Well Purged: Yes No Well Volumes Purged: _____

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

Spring Flow Rate: _____ gpm

Sample Date (mm/dd/yy): 1/17/2019 Sample Collection Time: 10:35

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3011494001 Final Lab Analysis CompletionDate: 1/31/2019

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

Comments: _____

I.D. No 100008

Monitoring Point No. CWMP012W

Sample Date 1/17/2019

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	0.292	EPA 350.3
BICARBONATE	75	SM18-2321
CALCIUM, TOTAL	32	SW846 6010B
CALCIUM, DISSOLVED		SW 8466010B
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	33.3	EPA 300.0
FLUORIDE	0.2 ND	EPA 300.0
IRON, TOTAL (ug/l)	76400	SW846 6010B
IRON, DISSOLVED (ug/l)		SW846 6010B
MAGNESIUM, TOTAL	8.7	SW846 6010B
MAGNESIUM, DISSOLVED		SW846 6010B
MANGANESE, TOTAL (ug/l)	290	SW846 6010B
MANGANESE, DISSOLVED (ug/l)		SW846 6010B
NITRATE-NITROGEN	7.9	EPA 300.0
pH-FIELD (SU)	5.42	FIELD
pH-LAB (SU)	6.23	EPA 150.1
POTASSIUM, TOTAL	1.5	SW846 6010B
POTASSIUM, DISSOLVED		SW846 6010B
SODIUM, TOTAL	13	SW846 6010B
SODIUM, DISSOLVED		SW846 6010B
SPEC. COND., FIELD (umhos/cm)	391	FIELD
SPEC. COND., LAB (umhos/cm)	281	EPA 120.1
SULFATE	5.4	EPA 300.0
ALKALINITY	75	SM18-2320B
TDS (TOTAL DISSOLVED SOLIDS)	208	SM18-2540C
TOC (TOTAL ORGANIC CARBON)	2.4	SM18-5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	322	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 1/17/2019

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.



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

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Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facility 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^o MM' SS.S")

Monitoring Point Number: CWMP008W Well Spring Stream Other
 Upgradient/Upstream 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: 2.3 ft Measured from: Land Surface TOC

Casing Stickup: 2.80 ft Elevation of Water Level: 420 ft./MSL

Sampling Depth: 19 ft Volume of Water Column: 3.35 gal

Total Well Depth: 22.8 ft Sampling Method: Pumped Bailed Grab

Well Purged: Yes No Well Volumes Purged: 6.3

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

Spring Flow Rate: gpm

Sample Date (mm/dd/yy): 1/17/2019 Sample Collection Time: 13:56

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3011494002 Final Lab Analysis CompletionDate: 1/31/2019

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

Comments: _____

I.D. No 100008

Monitoring Point No. CWMP008W

Sample Date 1/17/2019

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	6.99	EPA 350.3
BICARBONATE	450	SM18-2321
CALCIUM, TOTAL	70.7	SW846 6010B
CALCIUM, DISSOLVED		SW 8466010B
COD (CHEMICAL OXYGEN DEMAND)	28	EPA 410.4
CHLORIDE	34.3	EPA 300.0
FLUORIDE	0.2 ND	EPA 300.0
IRON, TOTAL (ug/l)	31100	SW846 6010B
IRON, DISSOLVED (ug/l)		SW846 6010B
MAGNESIUM, TOTAL	31.6	SW846 6010B
MAGNESIUM, DISSOLVED		SW846 6010B
MANGANESE, TOTAL (ug/l)	17500	SW846 6010B
MANGANESE, DISSOLVED (ug/l)		SW846 6010B
NITRATE-NITROGEN	0.2 ND	EPA 300.0
pH-FIELD (SU)	6.08	FIELD
pH-LAB (SU)	6.49	EPA 150.1
POTASSIUM, TOTAL	9.1	SW846 6010B
POTASSIUM, DISSOLVED		SW846 6010B
SODIUM, TOTAL	37.3	SW846 6010B
SODIUM, DISSOLVED		SW846 6010B
SPEC. COND., FIELD (umhos/cm)	916	FIELD
SPEC. COND., LAB (umhos/cm)	883	EPA 120.1
SULFATE	5.8	EPA 300.0
ALKALINITY	450	SM18-2320B
TDS (TOTAL DISSOLVED SOLIDS)	448	SM18-2540C
TOC (TOTAL ORGANIC CARBON)	10.7	SM18-5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	6.37	SM 2130B

* Indicator Analyte - For comparison with detection zone analytes.

T Please indicate detection limit if analyte is not detected.

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Remaining quarterly samples only require total metals analysis.

I.D. No 100008

Monitoring Point No. CWMP008W

Sample Date 1/17/2019

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	2.8	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.

January 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:	3010706
Purchase Order:	PO1000127	Workorder ID:	1ST QTR 2019 CWMP-FORM 19Q

Dear Mr. Brown:

Enclosed are the analytical results for samples received by the laboratory on Monday, January 14, 2019.

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

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

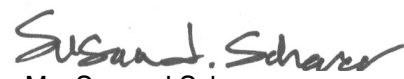
Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications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

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

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

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

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



Ms. Susan J Scherer
Project Coordinator

ALS Environmental Laboratory Locations Across North America

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

SAMPLE SUMMARY

Workorder: 3010706 1ST QTR 2019 CWMP-FORM 19Q

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
3010706001	CWMP001W	Ground Water	1/14/2019 10:01	1/14/2019 16:28	Mr. Brian G Shade
3010706002	CWMP007W	Ground Water	1/14/2019 12:55	1/14/2019 16:28	Mr. Brian G Shade
3010706003	CWMP005W	Ground Water	1/14/2019 15:12	1/14/2019 16:28	Mr. Brian G Shade
3010706004	Field Blank	Water	1/14/2019 15:30	1/14/2019 16:28	Mr. Brian G Shade
3010706005	Trip Blank	Water	1/14/2019 16:28	1/14/2019 16:28	Mr. Brian G Shade

ALS Environmental Laboratory Locations Across North America

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

SAMPLE SUMMARY

Workorder: 3010706 1ST QTR 2019 CWMP-FORM 19Q

Notes

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

Standard Acronyms/Flags

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

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ANALYTICAL RESULTS

Workorder: 3010706 1ST QTR 2019 CWMP-FORM 19Q

Lab ID: **3010706001** Date Collected: 1/14/2019 10:01 Matrix: Ground Water
Sample ID: **CWMP001W** Date Received: 1/14/2019 16:28

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			1/16/19 07:03	PDK	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			1/16/19 07:03	PDK	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			1/16/19 07:03	PDK	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			1/16/19 07:03	PDK	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/16/19 07:03	PDK	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/16/19 07:03	PDK	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/16/19 07:03	PDK	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			1/16/19 07:03	PDK	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			1/16/19 07:03	PDK	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			1/16/19 07:03	PDK	G
Toluene	ND		ug/L	1.0	SW846 8260B			1/16/19 07:03	PDK	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			1/16/19 07:03	PDK	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			1/16/19 07:03	PDK	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			1/16/19 07:03	PDK	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			1/16/19 07:03	PDK	G
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	102		%	62 - 133	SW846 8260B			1/16/19 07:03	PDK	G
4-Bromofluorobenzene (S)	97.7		%	79 - 114	SW846 8260B			1/16/19 07:03	PDK	G
Dibromofluoromethane (S)	96.8		%	78 - 116	SW846 8260B			1/16/19 07:03	PDK	G
Toluene-d8 (S)	95.3		%	76 - 127	SW846 8260B			1/16/19 07:03	PDK	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	10		mg/L	5	SM2320B-2011			1/16/19 18:20	MSA	B
Alkalinity, Total	10	2	mg/L	5	SM2320B-2011			1/16/19 18:20	MSA	B
Ammonia-N	ND		mg/L	0.100	D6919-09			1/24/19 23:59	AK	A
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			1/22/19 13:54	AK	A
Chloride	32.6		mg/L	2.0	EPA 300.0			1/15/19 09:15	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			1/15/19 09:15	CHW	B
Nitrate-N	20.0		mg/L	0.20	EPA 300.0			1/15/19 09:15	CHW	B
pH	6.16	1	pH_Units		S4500HB-11			1/16/19 18:20	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	1/24/19 10:00	RXB	1/25/19 13:36	RXB	F
Specific Conductance	273		umhos/cm	1	SW846 9050A			1/16/19 18:20	MSA	B
Sulfate	2.5		mg/L	2.0	EPA 300.0			1/15/19 09:15	CHW	B
Total Dissolved Solids	258		mg/L	5	S2540C-11			1/16/19 12:40	EXS	B
Total Organic Carbon (TOC)	1.5		mg/L	0.50	SW846 9060A			1/29/19 21:48	PAG	D
Turbidity	432		NTU	0.10	SM2130B-2011			1/15/19 03:20	MBW	B

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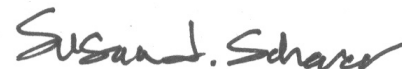
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ANALYTICAL RESULTS

Workorder: 3010706 1ST QTR 2019 CWMP-FORM 19Q

Lab ID: **3010706001** Date Collected: 1/14/2019 10:01 Matrix: Ground Water
 Sample ID: **CWMP001W** Date Received: 1/14/2019 16:28

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	19.7		mg/L	0.11	SW846 6010C	1/18/19 10:10	BMK	1/22/19 11:54	SRT	J1
Iron, Total	6.3		mg/L	0.067	SW846 6010C	1/18/19 10:10	BMK	1/22/19 11:54	SRT	J1
Magnesium, Total	11.9		mg/L	0.11	SW846 6010C	1/18/19 10:10	BMK	1/22/19 11:54	SRT	J1
Manganese, Total	0.19		mg/L	0.0056	SW846 6010C	1/18/19 10:10	BMK	1/22/19 11:54	SRT	J1
Potassium, Total	2.6		mg/L	0.56	SW846 6010C	1/18/19 10:10	BMK	1/22/19 11:54	SRT	J1
Sodium, Total	14.4		mg/L	0.56	SW846 6010C	1/18/19 10:10	BMK	1/22/19 11:54	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	22.38		Feet		Field			1/14/19 10:01	CLT	C
Elev Top MW Casing above MSL	515.13		Feet		Field			1/14/19 10:01	CLT	C
Flow Rate	1.92		gal/min		Field			1/14/19 10:01	CLT	C
Ground Water Elevation	492.75		ft/MSL		Field			1/14/19 10:01	CLT	C
pH, Field (SM4500B)	5.08		pH_Units		Field			1/14/19 10:01	CLT	C
Sample Depth	57.00		Feet		Field			1/14/19 10:01	CLT	C
Specific Conductance, Field	297		umhos/cm	1	Field			1/14/19 10:01	CLT	C
Temperature	11.27		Deg. C		Field			1/14/19 10:01	CLT	C
Total Well Depth	66.30		Feet		Field			1/14/19 10:01	CLT	C
Volume in Water Column	64.56		Gallons		Field			1/14/19 10:01	CLT	C
Water Level After Purge	51.36		Feet		Field			1/14/19 10:01	CLT	C
Well Volumes Purged	1.79		Vol		Field			1/14/19 10:01	CLT	C



Ms. Susan J Scherer
 Project Coordinator

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ANALYTICAL RESULTS

Workorder: 3010706 1ST QTR 2019 CWMP-FORM 19Q

Lab ID: **3010706002** Date Collected: 1/14/2019 12:55 Matrix: Ground Water
Sample ID: **CWMP007W** Date Received: 1/14/2019 16:28

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			1/16/19 08:57	PDK	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			1/16/19 08:57	PDK	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			1/16/19 08:57	PDK	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			1/16/19 08:57	PDK	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/16/19 08:57	PDK	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/16/19 08:57	PDK	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/16/19 08:57	PDK	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			1/16/19 08:57	PDK	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			1/16/19 08:57	PDK	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			1/16/19 08:57	PDK	G
Toluene	ND		ug/L	1.0	SW846 8260B			1/16/19 08:57	PDK	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			1/16/19 08:57	PDK	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			1/16/19 08:57	PDK	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			1/16/19 08:57	PDK	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			1/16/19 08:57	PDK	G
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	97.8		%	62 - 133	SW846 8260B			1/16/19 08:57	PDK	G
4-Bromofluorobenzene (S)	94.9		%	79 - 114	SW846 8260B			1/16/19 08:57	PDK	G
Dibromofluoromethane (S)	93.6		%	78 - 116	SW846 8260B			1/16/19 08:57	PDK	G
Toluene-d8 (S)	94.9		%	76 - 127	SW846 8260B			1/16/19 08:57	PDK	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	12		mg/L	5	SM2320B-2011			1/16/19 18:29	MSA	B
Alkalinity, Total	12	2	mg/L	5	SM2320B-2011			1/16/19 18:29	MSA	B
Ammonia-N	0.151		mg/L	0.100	D6919-09			1/25/19 00:14	AK	A
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			1/22/19 13:54	AK	A
Chloride	63.7		mg/L	2.0	EPA 300.0			1/15/19 09:41	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			1/15/19 09:41	CHW	B
Nitrate-N	8.9		mg/L	0.20	EPA 300.0			1/15/19 09:41	CHW	B
pH	6.37	1	pH_Units		S4500HB-11			1/16/19 18:29	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	1/24/19 10:00	RXB	1/25/19 13:36	RXB	F
Specific Conductance	366		umhos/cm	1	SW846 9050A			1/16/19 18:29	MSA	B
Sulfate	15.2		mg/L	2.0	EPA 300.0			1/15/19 09:41	CHW	B
Total Dissolved Solids	254		mg/L	5	S2540C-11			1/16/19 12:40	EXS	B
Total Organic Carbon (TOC)	1.2		mg/L	0.50	SW846 9060A			1/29/19 21:48	PAG	D
Turbidity	ND		NTU	0.10	SM2130B-2011			1/15/19 03:20	MBW	B

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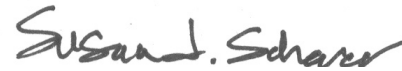
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ANALYTICAL RESULTS

Workorder: 3010706 1ST QTR 2019 CWMP-FORM 19Q

Lab ID: **3010706002** Date Collected: 1/14/2019 12:55 Matrix: Ground Water
 Sample ID: **CWMP007W** Date Received: 1/14/2019 16:28

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	18.5		mg/L	0.11	SW846 6010C	1/18/19 10:10	BMK	1/22/19 11:58	SRT	J1
Iron, Total	ND		mg/L	0.067	SW846 6010C	1/18/19 10:10	BMK	1/22/19 11:58	SRT	J1
Magnesium, Total	9.0		mg/L	0.11	SW846 6010C	1/18/19 10:10	BMK	1/22/19 11:58	SRT	J1
Manganese, Total	0.0067		mg/L	0.0056	SW846 6010C	1/18/19 10:10	BMK	1/22/19 11:58	SRT	J1
Potassium, Total	2.1		mg/L	0.56	SW846 6010C	1/18/19 10:10	BMK	1/22/19 11:58	SRT	J1
Sodium, Total	31.6		mg/L	0.56	SW846 6010C	1/18/19 10:10	BMK	1/22/19 11:58	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	5.11		Feet		Field			1/14/19 12:55	CLT	C
Elev Top MW Casing above MSL	453.40		Feet		Field			1/14/19 12:55	CLT	C
Flow Rate	1.66		gal/min		Field			1/14/19 12:55	CLT	C
Ground Water Elevation	448.29		ft/MSL		Field			1/14/19 12:55	CLT	C
pH, Field (SM4500B)	5.14		pH_Units		Field			1/14/19 12:55	CLT	C
Sample Depth	33.00		Feet		Field			1/14/19 12:55	CLT	C
Specific Conductance, Field	393		umhos/cm	1	Field			1/14/19 12:55	CLT	C
Temperature	11.32		Deg. C		Field			1/14/19 12:55	CLT	C
Total Well Depth	36.50		Feet		Field			1/14/19 12:55	CLT	C
Volume in Water Column	46.14		Gallons		Field			1/14/19 12:55	CLT	C
Water Level After Purge	6.52		Feet		Field			1/14/19 12:55	CLT	C
Well Volumes Purged	2.16		Vol		Field			1/14/19 12:55	CLT	C



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ANALYTICAL RESULTS

Workorder: 3010706 1ST QTR 2019 CWMP-FORM 19Q

Lab ID: **3010706003** Date Collected: 1/14/2019 15:12 Matrix: Ground Water
Sample ID: **CWMP005W** Date Received: 1/14/2019 16:28

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			1/16/19 09:20	PDK	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			1/16/19 09:20	PDK	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			1/16/19 09:20	PDK	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			1/16/19 09:20	PDK	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/16/19 09:20	PDK	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/16/19 09:20	PDK	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/16/19 09:20	PDK	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			1/16/19 09:20	PDK	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			1/16/19 09:20	PDK	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			1/16/19 09:20	PDK	G
Toluene	ND		ug/L	1.0	SW846 8260B			1/16/19 09:20	PDK	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			1/16/19 09:20	PDK	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			1/16/19 09:20	PDK	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			1/16/19 09:20	PDK	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			1/16/19 09:20	PDK	G
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	102		%	62 - 133	SW846 8260B			1/16/19 09:20	PDK	G
4-Bromofluorobenzene (S)	96.8		%	79 - 114	SW846 8260B			1/16/19 09:20	PDK	G
Dibromofluoromethane (S)	95.3		%	78 - 116	SW846 8260B			1/16/19 09:20	PDK	G
Toluene-d8 (S)	94.4		%	76 - 127	SW846 8260B			1/16/19 09:20	PDK	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	15		mg/L	5	SM2320B-2011			1/16/19 18:39	MSA	B
Alkalinity, Total	15	2	mg/L	5	SM2320B-2011			1/16/19 18:39	MSA	B
Ammonia-N	0.110		mg/L	0.100	D6919-09			1/25/19 00:28	AK	A
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			1/22/19 13:54	AK	A
Chloride	66.1		mg/L	2.0	EPA 300.0			1/15/19 09:54	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			1/15/19 09:54	CHW	B
Nitrate-N	8.4		mg/L	0.20	EPA 300.0			1/15/19 09:54	CHW	B
pH	6.43	1	pH_Units		S4500HB-11			1/16/19 18:39	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	1/24/19 10:00	RXB	1/25/19 13:36	RXB	F
Specific Conductance	304		umhos/cm	1	SW846 9050A			1/16/19 18:39	MSA	B
Sulfate	3.8		mg/L	2.0	EPA 300.0			1/15/19 09:54	CHW	B
Total Dissolved Solids	210		mg/L	5	S2540C-11			1/16/19 12:40	EXS	B
Total Organic Carbon (TOC)	1.2		mg/L	0.50	SW846 9060A			1/29/19 21:48	PAG	D
Turbidity	0.35		NTU	0.10	SM2130B-2011			1/15/19 03:20	MBW	B

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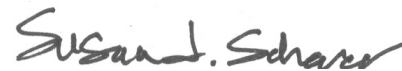
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ANALYTICAL RESULTS

Workorder: 3010706 1ST QTR 2019 CWMP-FORM 19Q

Lab ID: **3010706003** Date Collected: 1/14/2019 15:12 Matrix: Ground Water
 Sample ID: **CWMP005W** Date Received: 1/14/2019 16:28

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	13.4		mg/L	0.11	SW846 6010C	1/18/19 10:10	BMK	1/22/19 12:02	SRT	J1
Iron, Total	ND		mg/L	0.067	SW846 6010C	1/18/19 10:10	BMK	1/22/19 12:02	SRT	J1
Magnesium, Total	7.1		mg/L	0.11	SW846 6010C	1/18/19 10:10	BMK	1/22/19 12:02	SRT	J1
Manganese, Total	0.046		mg/L	0.0056	SW846 6010C	1/18/19 10:10	BMK	1/22/19 12:02	SRT	J1
Potassium, Total	2.1		mg/L	0.56	SW846 6010C	1/18/19 10:10	BMK	1/22/19 12:02	SRT	J1
Sodium, Total	29.4		mg/L	0.56	SW846 6010C	1/18/19 10:10	BMK	1/22/19 12:02	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	34.18		Feet		Field			1/14/19 15:12	CLT	C
Elev Top MW Casing above MSL	513.43		Feet		Field			1/14/19 15:12	CLT	C
Flow Rate	3.95		gal/min		Field			1/14/19 15:12	CLT	C
Ground Water Elevation	479.25		ft/MSL		Field			1/14/19 15:12	CLT	C
pH, Field (SM4500B)	5.21		pH_Units		Field			1/14/19 15:12	CLT	C
Sample Depth	130.00		Feet		Field			1/14/19 15:12	CLT	C
Specific Conductance, Field	327		umhos/cm	1	Field			1/14/19 15:12	CLT	C
Temperature	10.84		Deg. C		Field			1/14/19 15:12	CLT	C
Total Well Depth	138.92		Feet		Field			1/14/19 15:12	CLT	C
Volume in Water Column	153.97		Gallons		Field			1/14/19 15:12	CLT	C
Water Level After Purge	35.41		Feet		Field			1/14/19 15:12	CLT	C
Well Volumes Purged	1.79		Vol		Field			1/14/19 15:12	CLT	C



Ms. Susan J Scherer
 Project Coordinator

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ANALYTICAL RESULTS

Workorder: 3010706 1ST QTR 2019 CWMP-FORM 19Q

Lab ID: **3010706004**

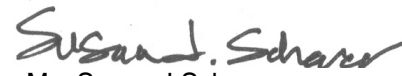
Date Collected: 1/14/2019 15:30

Matrix: Water

Sample ID: **Field Blank**

Date Received: 1/14/2019 16:28

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			1/16/19 06:17	PDK	A
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			1/16/19 06:17	PDK	A
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			1/16/19 06:17	PDK	A
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			1/16/19 06:17	PDK	A
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/16/19 06:17	PDK	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/16/19 06:17	PDK	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/16/19 06:17	PDK	A
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			1/16/19 06:17	PDK	A
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			1/16/19 06:17	PDK	A
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			1/16/19 06:17	PDK	A
Toluene	ND		ug/L	1.0	SW846 8260B			1/16/19 06:17	PDK	A
Total Xylenes	ND		ug/L	3.0	SW846 8260B			1/16/19 06:17	PDK	A
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			1/16/19 06:17	PDK	A
Trichloroethene	ND		ug/L	1.0	SW846 8260B			1/16/19 06:17	PDK	A
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			1/16/19 06:17	PDK	A
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	102		%	62 - 133	SW846 8260B			1/16/19 06:17	PDK	A
4-Bromofluorobenzene (S)	96.1		%	79 - 114	SW846 8260B			1/16/19 06:17	PDK	A
Dibromofluoromethane (S)	96.2		%	78 - 116	SW846 8260B			1/16/19 06:17	PDK	A
Toluene-d8 (S)	94.9		%	76 - 127	SW846 8260B			1/16/19 06:17	PDK	A



Ms. Susan J Scherer

Project Coordinator

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ANALYTICAL RESULTS

Workorder: 3010706 1ST QTR 2019 CWMP-FORM 19Q

Lab ID: **3010706005**

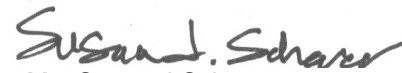
Date Collected: 1/14/2019 16:28

Matrix: Water

Sample ID: **Trip Blank**

Date Received: 1/14/2019 16:28

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			1/16/19 05:54	PDK	A
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			1/16/19 05:54	PDK	A
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			1/16/19 05:54	PDK	A
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			1/16/19 05:54	PDK	A
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/16/19 05:54	PDK	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/16/19 05:54	PDK	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/16/19 05:54	PDK	A
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			1/16/19 05:54	PDK	A
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			1/16/19 05:54	PDK	A
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			1/16/19 05:54	PDK	A
Toluene	ND		ug/L	1.0	SW846 8260B			1/16/19 05:54	PDK	A
Total Xylenes	ND		ug/L	3.0	SW846 8260B			1/16/19 05:54	PDK	A
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			1/16/19 05:54	PDK	A
Trichloroethene	ND		ug/L	1.0	SW846 8260B			1/16/19 05:54	PDK	A
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			1/16/19 05:54	PDK	A
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	100		%	62 - 133	SW846 8260B			1/16/19 05:54	PDK	A
4-Bromofluorobenzene (S)	95		%	79 - 114	SW846 8260B			1/16/19 05:54	PDK	A
Dibromofluoromethane (S)	94.4		%	78 - 116	SW846 8260B			1/16/19 05:54	PDK	A
Toluene-d8 (S)	93.4		%	76 - 127	SW846 8260B			1/16/19 05:54	PDK	A



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ANALYTICAL RESULTS

Workorder: 3010706 1ST QTR 2019 CWMP-FORM 19Q

PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
3010706001	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.				
3010706001	2	CWMP001W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
3010706002	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.				
3010706002	2	CWMP007W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
3010706003	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.				
3010706003	2	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: 3010706 1ST QTR 2019 CWMP-FORM 19Q

Lab ID	Sample ID	Analysis Method	Prep Method
3010706001	CWMP001W	D6919-09	
3010706001	CWMP001W	EPA 300.0	
3010706001	CWMP001W	EPA 410.4	
3010706001	CWMP001W	Field	
3010706001	CWMP001W	S2540C-11	
3010706001	CWMP001W	S4500HB-11	
3010706001	CWMP001W	SM2130B-2011	
3010706001	CWMP001W	SM2320B-2011	
3010706001	CWMP001W	SW846 6010C	SW846 3015
3010706001	CWMP001W	SW846 8260B	
3010706001	CWMP001W	SW846 9050A	
3010706001	CWMP001W	SW846 9060A	
3010706001	CWMP001W	SW846 9066	420.4/9066
3010706002	CWMP007W	D6919-09	
3010706002	CWMP007W	EPA 300.0	
3010706002	CWMP007W	EPA 410.4	
3010706002	CWMP007W	Field	
3010706002	CWMP007W	S2540C-11	
3010706002	CWMP007W	S4500HB-11	
3010706002	CWMP007W	SM2130B-2011	
3010706002	CWMP007W	SM2320B-2011	
3010706002	CWMP007W	SW846 6010C	SW846 3015
3010706002	CWMP007W	SW846 8260B	
3010706002	CWMP007W	SW846 9050A	
3010706002	CWMP007W	SW846 9060A	
3010706002	CWMP007W	SW846 9066	420.4/9066
3010706003	CWMP005W	D6919-09	
3010706003	CWMP005W	EPA 300.0	
3010706003	CWMP005W	EPA 410.4	
3010706003	CWMP005W	Field	
3010706003	CWMP005W	S2540C-11	
3010706003	CWMP005W	S4500HB-11	
3010706003	CWMP005W	SM2130B-2011	
3010706003	CWMP005W	SM2320B-2011	
3010706003	CWMP005W	SW846 6010C	SW846 3015
3010706003	CWMP005W	SW846 8260B	
3010706003	CWMP005W	SW846 9050A	
3010706003	CWMP005W	SW846 9060A	
3010706003	CWMP005W	SW846 9066	420.4/9066
3010706004	Field Blank	SW846 8260B	
3010706005	Trip Blank	SW846 8260B	

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

Generated by ALS
 C A
 1 of 1
 * 3 0 1 0 7 0 6 *

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

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

Sample Description/Location (as it will appear on the lab report)	Sample Date	Time
1. CWMF001W	1/14/19	10:01
2. CWMF007W	1/14/19	12:55
3. CWMF005W	1/14/19	15:12
4. Field Blank	1/14/19	15:30
5. Trip Blank	1/14/19	16:28
6		
7		
8		
9		
10		

Matrix	TOC	O-OH	8260 VOCs - Form 19Q	Field Measurements	Sample Depth for AUX Data	Total Metals: Ca, Fe, Mn, Mg, K, Na	PH, NO3, Cl, F, SPC, SO4, Turb, TDS	Alkalinity, HCO3
G	2	1	2	X	X	1	1	1
GW	2	1	2	X	X	1	1	1
G	2	1	2	X	X	1	1	1
GW	2	1	2	X	X	1	1	1
G								
GW								
G								
GW								

Enter Number of Containers Per Sample or Field Results Below.

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

Date	Time	Received By / Company Name
1-14-19	16:28	2 [Signature] ALS
3	4	
5	6	
7	8	
9	10	

Project Comments:

Relinquished By / Company Name: [Signature] ALS

ALS Field Services: Pickup Labor Rental_Equipment
 Composite_Sampling

Special Processing: USACE Navy State Samples Collected In

Sample Disposal: PA NY NJ NC

Reportable to PADEP? Yes No Lab Special

PWSID # _____
 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 SWMA Work Order #: 301070e Initials: gn Date: 1/14/19

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

Cooler #: _____

Temperature (°C): 1°C

Thermometer ID: 352

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

Rev. 1/10/2019

February 1, 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:	3011231
Purchase Order:	PO1000127	Workorder ID:	1ST QTR 2019 CWMP-FORM 19Q

Dear Mr. Brown:

Enclosed are the analytical results for samples received by the laboratory on Wednesday, January 16, 2019.

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

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

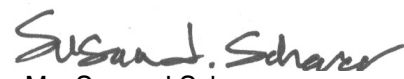
Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications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

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

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

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

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



Ms. Susan J Scherer
Project Coordinator

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SAMPLE SUMMARY

Workorder: 3011231 1ST QTR 2019 CWMP-FORM 19Q

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
3011231001	CWMP002W	Ground Water	1/16/2019 12:50	1/16/2019 17:11	Mr. Brian G Shade
3011231002	CWMP003W	Ground Water	1/16/2019 15:54	1/16/2019 17:11	Mr. Brian G Shade
3011231003	CWMP004W	Ground Water	1/16/2019 15:40	1/16/2019 17:11	Mr. Brian G Shade

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SAMPLE SUMMARY

Workorder: 3011231 1ST QTR 2019 CWMP-FORM 19Q

Notes

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

Standard Acronyms/Flags

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

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ANALYTICAL RESULTS

Workorder: 3011231 1ST QTR 2019 CWMP-FORM 19Q

Lab ID: **3011231001** Date Collected: 1/16/2019 12:50 Matrix: Ground Water
Sample ID: **CWMP002W** Date Received: 1/16/2019 17:11

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			1/18/19 16:16	TMP	E
Bromodichloromethane	ND		ug/L	1.0	SW846 8260B			1/18/19 16:16	TMP	E
Bromoform	ND		ug/L	1.0	SW846 8260B			1/18/19 16:16	TMP	E
Bromomethane	ND		ug/L	1.0	SW846 8260B			1/18/19 16:16	TMP	E
Carbon Tetrachloride	ND		ug/L	1.0	SW846 8260B			1/18/19 16:16	TMP	E
Chlorobenzene	ND		ug/L	1.0	SW846 8260B			1/18/19 16:16	TMP	E
Chlorodibromomethane	ND		ug/L	1.0	SW846 8260B			1/18/19 16:16	TMP	E
Chloroethane	31.1		ug/L	1.0	SW846 8260B			1/18/19 16:16	TMP	E
Chloroform	ND		ug/L	1.0	SW846 8260B			1/18/19 16:16	TMP	E
Chloromethane	ND		ug/L	1.0	SW846 8260B			1/18/19 16:16	TMP	E
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			1/18/19 16:16	TMP	E
1,2-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			1/18/19 16:16	TMP	E
1,3-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			1/18/19 16:16	TMP	E
1,4-Dichlorobenzene	1.0		ug/L	1.0	SW846 8260B			1/18/19 16:16	TMP	E
1,1-Dichloroethane	11.5		ug/L	1.0	SW846 8260B			1/18/19 16:16	TMP	E
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			1/18/19 16:16	TMP	E
1,1-Dichloroethene	ND	4	ug/L	1.0	SW846 8260B			1/18/19 16:16	TMP	E
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/18/19 16:16	TMP	E
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/18/19 16:16	TMP	E
1,2-Dichloropropane	ND		ug/L	1.0	SW846 8260B			1/18/19 16:16	TMP	E
1,3-Dichloropropene, Total	ND		ug/L	2.0	SW846 8260B			1/18/19 16:16	TMP	E
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			1/18/19 16:16	TMP	E
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			1/18/19 16:16	TMP	E
Styrene	ND		ug/L	1.0	SW846 8260B			1/18/19 16:16	TMP	E
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			1/18/19 16:16	TMP	E
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			1/18/19 16:16	TMP	E
Toluene	ND		ug/L	1.0	SW846 8260B			1/18/19 16:16	TMP	E
Total Xylenes	ND		ug/L	3.0	SW846 8260B			1/18/19 16:16	TMP	E
1,2,4-Trichlorobenzene	ND		ug/L	2.0	SW846 8260B			1/18/19 16:16	TMP	E
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			1/18/19 16:16	TMP	E
1,1,2-Trichloroethane	ND		ug/L	1.0	SW846 8260B			1/18/19 16:16	TMP	E
Trichloroethene	ND		ug/L	1.0	SW846 8260B			1/18/19 16:16	TMP	E
Trichlorofluoromethane	ND		ug/L	1.0	SW846 8260B			1/18/19 16:16	TMP	E
1,2,3-Trichloropropane	ND		ug/L	2.0	SW846 8260B			1/18/19 16:16	TMP	E
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			1/18/19 16:16	TMP	E
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>

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ANALYTICAL RESULTS

Workorder: 3011231 1ST QTR 2019 CWMP-FORM 19Q

Lab ID: **3011231001** Date Collected: 1/16/2019 12:50 Matrix: Ground Water
Sample ID: **CWMP002W** Date Received: 1/16/2019 17:11

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
1,2-Dichloroethane-d4 (S)	112		%	62 - 133	SW846 8260B			1/18/19 16:16	TMP	E
4-Bromofluorobenzene (S)	91.5		%	79 - 114	SW846 8260B			1/18/19 16:16	TMP	E
Dibromofluoromethane (S)	105		%	78 - 116	SW846 8260B			1/18/19 16:16	TMP	E
Toluene-d8 (S)	91.7		%	76 - 127	SW846 8260B			1/18/19 16:16	TMP	E
WET CHEMISTRY										
Alkalinity, Bicarbonate	77		mg/L	5	SM2320B-2011			1/19/19 11:07	MSA	C
Alkalinity, Total	77	1	mg/L	5	SM2320B-2011			1/19/19 11:07	MSA	C
Ammonia-N	ND		mg/L	0.100	D6919-09			1/29/19 06:19	JAM	A
Chemical Oxygen Demand (COD)	23		mg/L	15	EPA 410.4			1/23/19 17:01	AK	A
Chloride	113		mg/L	2.0	EPA 300.0			1/17/19 08:58	CHW	C
Fluoride	ND		mg/L	0.20	EPA 300.0			1/17/19 08:58	CHW	C
Nitrate-N	3.3		mg/L	0.20	EPA 300.0			1/17/19 08:58	CHW	C
pH	6.26	2	pH_Units		S4500HB-11			1/19/19 11:07	MSA	C
Phenolics	ND		mg/L	0.005	SW846 9066	1/29/19 07:00	RXB	1/30/19 16:15	RXB	I
Specific Conductance	650		umhos/cm	1	SM2510B-2011			1/19/19 11:07	MSA	C
Sulfate	16.8		mg/L	2.0	EPA 300.0			1/17/19 08:58	CHW	C
Total Dissolved Solids	244	3	mg/L	5	S2540C-11			1/18/19 12:30	EXS	C
Total Organic Carbon (TOC)	5.8		mg/L	2.5	SM5310B-2011			1/31/19 22:40	AK	G
Turbidity	0.23		NTU	0.10	SM2130B-2011			1/17/19 04:55	MBW	C
METALS										
Calcium, Total	55.9		mg/L	0.11	SW846 6010C	1/19/19 11:15	AHI	1/25/19 14:48	SRT	J1
Iron, Total	ND		mg/L	0.067	SW846 6010C	1/19/19 11:15	AHI	1/25/19 14:48	SRT	J1
Magnesium, Total	18.2		mg/L	0.11	SW846 6010C	1/19/19 11:15	AHI	1/25/19 14:48	SRT	J1
Manganese, Total	1.2		mg/L	0.0056	SW846 6010C	1/19/19 11:15	AHI	1/25/19 14:48	SRT	J1
Potassium, Total	3.1		mg/L	0.56	SW846 6010C	1/19/19 11:15	AHI	1/25/19 14:48	SRT	J1
Sodium, Total	24.7		mg/L	0.56	SW846 6010C	1/19/19 11:15	AHI	1/25/19 14:48	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	78.20		Feet		Field			1/16/19 13:28	CLT	B
Elev Top MW Casing above MSL	525.81		Feet		Field			1/16/19 13:28	CLT	B
Ground Water Elevation	447.61		ft/MSL		Field			1/16/19 13:28	CLT	B
pH, Field (SM4500B)	5.56		pH_Units		Field			1/16/19 13:28	CLT	B
Sample Depth	85.00		Feet		Field			1/16/19 13:28	CLT	B
Specific Conductance, Field	637		umhos/cm	1	Field			1/16/19 13:28	CLT	B
Temperature	10.99		Deg. C		Field			1/16/19 13:28	CLT	B
Total Well Depth	100.00		Feet		Field			1/16/19 13:28	CLT	B

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ANALYTICAL RESULTS

Workorder: 3011231 1ST QTR 2019 CWMP-FORM 19Q

Lab ID: **3011231001** Date Collected: 1/16/2019 12:50 Matrix: Ground Water
 Sample ID: **CWMP002W** Date Received: 1/16/2019 17:11

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
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Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 3011231 1ST QTR 2019 CWMP-FORM 19Q

Lab ID: **3011231002** Date Collected: 1/16/2019 15:54 Matrix: Ground Water
Sample ID: **CWMP003W** Date Received: 1/16/2019 17:11

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			1/18/19 16:39	TMP	E
Bromodichloromethane	ND		ug/L	1.0	SW846 8260B			1/18/19 16:39	TMP	E
Bromoform	ND		ug/L	1.0	SW846 8260B			1/18/19 16:39	TMP	E
Bromomethane	ND		ug/L	1.0	SW846 8260B			1/18/19 16:39	TMP	E
Carbon Tetrachloride	ND		ug/L	1.0	SW846 8260B			1/18/19 16:39	TMP	E
Chlorobenzene	ND		ug/L	1.0	SW846 8260B			1/18/19 16:39	TMP	E
Chlorodibromomethane	ND		ug/L	1.0	SW846 8260B			1/18/19 16:39	TMP	E
Chloroethane	ND		ug/L	1.0	SW846 8260B			1/18/19 16:39	TMP	E
Chloroform	ND		ug/L	1.0	SW846 8260B			1/18/19 16:39	TMP	E
Chloromethane	ND		ug/L	1.0	SW846 8260B			1/18/19 16:39	TMP	E
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			1/18/19 16:39	TMP	E
1,2-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			1/18/19 16:39	TMP	E
1,3-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			1/18/19 16:39	TMP	E
1,4-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			1/18/19 16:39	TMP	E
1,1-Dichloroethane	1.9		ug/L	1.0	SW846 8260B			1/18/19 16:39	TMP	E
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			1/18/19 16:39	TMP	E
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/18/19 16:39	TMP	E
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/18/19 16:39	TMP	E
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/18/19 16:39	TMP	E
1,2-Dichloropropane	ND		ug/L	1.0	SW846 8260B			1/18/19 16:39	TMP	E
1,3-Dichloropropene, Total	ND		ug/L	2.0	SW846 8260B			1/18/19 16:39	TMP	E
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			1/18/19 16:39	TMP	E
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			1/18/19 16:39	TMP	E
Styrene	ND		ug/L	1.0	SW846 8260B			1/18/19 16:39	TMP	E
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			1/18/19 16:39	TMP	E
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			1/18/19 16:39	TMP	E
Toluene	ND		ug/L	1.0	SW846 8260B			1/18/19 16:39	TMP	E
Total Xylenes	ND		ug/L	3.0	SW846 8260B			1/18/19 16:39	TMP	E
1,2,4-Trichlorobenzene	ND		ug/L	2.0	SW846 8260B			1/18/19 16:39	TMP	E
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			1/18/19 16:39	TMP	E
1,1,2-Trichloroethane	ND		ug/L	1.0	SW846 8260B			1/18/19 16:39	TMP	E
Trichloroethene	ND		ug/L	1.0	SW846 8260B			1/18/19 16:39	TMP	E
Trichlorofluoromethane	ND		ug/L	1.0	SW846 8260B			1/18/19 16:39	TMP	E
1,2,3-Trichloropropane	ND		ug/L	2.0	SW846 8260B			1/18/19 16:39	TMP	E
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			1/18/19 16:39	TMP	E
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>

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ANALYTICAL RESULTS

Workorder: 3011231 1ST QTR 2019 CWMP-FORM 19Q

Lab ID: **3011231002** Date Collected: 1/16/2019 15:54 Matrix: Ground Water
Sample ID: **CWMP003W** Date Received: 1/16/2019 17:11

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
1,2-Dichloroethane-d4 (S)	111		%	62 - 133	SW846 8260B			1/18/19 16:39	TMP	E
4-Bromofluorobenzene (S)	91.4		%	79 - 114	SW846 8260B			1/18/19 16:39	TMP	E
Dibromofluoromethane (S)	104		%	78 - 116	SW846 8260B			1/18/19 16:39	TMP	E
Toluene-d8 (S)	91.3		%	76 - 127	SW846 8260B			1/18/19 16:39	TMP	E
WET CHEMISTRY										
Alkalinity, Bicarbonate	22		mg/L	5	SM2320B-2011			1/19/19 11:51	MSA	C
Alkalinity, Total	22	1	mg/L	5	SM2320B-2011			1/19/19 11:51	MSA	C
Ammonia-N	ND		mg/L	0.100	D6919-09			1/29/19 06:32	JAM	A
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			1/23/19 17:01	AK	A
Chloride	82.7		mg/L	2.0	EPA 300.0			1/17/19 09:13	CHW	C
Fluoride	ND		mg/L	0.20	EPA 300.0			1/17/19 09:13	CHW	C
Nitrate-N	7.8		mg/L	0.20	EPA 300.0			1/17/19 09:13	CHW	C
pH	6.21	2	pH_Units		S4500HB-11			1/19/19 11:51	MSA	C
Phenolics	ND		mg/L	0.005	SW846 9066	1/29/19 07:00	RXB	1/30/19 16:15	RXB	I
Specific Conductance	463		umhos/cm	1	SM2510B-2011			1/19/19 11:51	MSA	C
Sulfate	5.0		mg/L	2.0	EPA 300.0			1/17/19 09:13	CHW	C
Total Dissolved Solids	174		mg/L	5	S2540C-11			1/18/19 12:30	EXS	C
Total Organic Carbon (TOC)	1.9		mg/L	0.50	SM5310B-2011			1/30/19 21:41	PAG	G
Turbidity	0.50		NTU	0.10	SM2130B-2011			1/17/19 04:55	MBW	C
METALS										
Calcium, Total	32.1		mg/L	0.11	SW846 6010C	1/19/19 11:15	AHI	1/25/19 14:51	SRT	J1
Iron, Total	0.099		mg/L	0.067	SW846 6010C	1/19/19 11:15	AHI	1/25/19 14:51	SRT	J1
Magnesium, Total	11.5		mg/L	0.11	SW846 6010C	1/19/19 11:15	AHI	1/25/19 14:51	SRT	J1
Manganese, Total	0.12		mg/L	0.0056	SW846 6010C	1/19/19 11:15	AHI	1/25/19 14:51	SRT	J1
Potassium, Total	2.1		mg/L	0.56	SW846 6010C	1/19/19 11:15	AHI	1/25/19 14:51	SRT	J1
Sodium, Total	26.9		mg/L	0.56	SW846 6010C	1/19/19 11:15	AHI	1/25/19 14:51	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	64.00		Feet		Field			1/16/19 15:54	CLT	B
Elev Top MW Casing above MSL	524.21		Feet		Field			1/16/19 15:54	CLT	B
Ground Water Elevation	460.21		ft/MSL		Field			1/16/19 15:54	CLT	B
pH, Field (SM4500B)	5.38		pH_Units		Field			1/16/19 15:54	CLT	B
Sample Depth	100.00		Feet		Field			1/16/19 15:54	CLT	B
Specific Conductance, Field	464		umhos/cm	1	Field			1/16/19 15:54	CLT	B
Temperature	11.38		Deg. C		Field			1/16/19 15:54	CLT	B
Total Well Depth	140.00		Feet		Field			1/16/19 15:54	CLT	B

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ANALYTICAL RESULTS

Workorder: 3011231 1ST QTR 2019 CWMP-FORM 19Q

Lab ID:	3011231002	Date Collected:	1/16/2019 15:54	Matrix:	Ground Water
Sample ID:	CWMP003W	Date Received:	1/16/2019 17:11		

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
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Ms. Susan J Scherer
Project Coordinator

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Mexico: Monterrey

ANALYTICAL RESULTS

Workorder: 3011231 1ST QTR 2019 CWMP-FORM 19Q

Lab ID: **3011231003** Date Collected: 1/16/2019 15:40 Matrix: Ground Water
Sample ID: **CWMP004W** Date Received: 1/16/2019 17:11

Parameters	Results	Flag	Units	RDL	Method	Prepared By	Analyzed By	Cntr
VOLATILE ORGANICS								
Benzene	ND	21,2 2	ug/L	1.0	SW846 8260B		1/18/19 17:02	TMP E
Bromodichloromethane	ND	26	ug/L	1.0	SW846 8260B		1/18/19 17:02	TMP E
Bromoform	ND		ug/L	1.0	SW846 8260B		1/18/19 17:02	TMP E
Bromomethane	ND		ug/L	1.0	SW846 8260B		1/18/19 17:02	TMP E
Carbon Tetrachloride	ND	20	ug/L	1.0	SW846 8260B		1/18/19 17:02	TMP E
Chlorobenzene	ND		ug/L	1.0	SW846 8260B		1/18/19 17:02	TMP E
Chlorodibromomethane	ND		ug/L	1.0	SW846 8260B		1/18/19 17:02	TMP E
Chloroethane	ND		ug/L	1.0	SW846 8260B		1/18/19 17:02	TMP E
Chloroform	ND	17,1 8	ug/L	1.0	SW846 8260B		1/18/19 17:02	TMP E
Chloromethane	ND	3,4	ug/L	1.0	SW846 8260B		1/18/19 17:02	TMP E
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B		1/18/19 17:02	TMP E
1,2-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B		1/18/19 17:02	TMP E
1,3-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B		1/18/19 17:02	TMP E
1,4-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B		1/18/19 17:02	TMP E
1,1-Dichloroethane	ND	13,1 4	ug/L	1.0	SW846 8260B		1/18/19 17:02	TMP E
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B		1/18/19 17:02	TMP E
1,1-Dichloroethene	ND	7,8	ug/L	1.0	SW846 8260B		1/18/19 17:02	TMP E
cis-1,2-Dichloroethene	ND	15,1 6	ug/L	1.0	SW846 8260B		1/18/19 17:02	TMP E
trans-1,2-Dichloroethene	ND	11,1 2	ug/L	1.0	SW846 8260B		1/18/19 17:02	TMP E
1,2-Dichloropropane	ND	23,2 4	ug/L	1.0	SW846 8260B		1/18/19 17:02	TMP E
1,3-Dichloropropene, Total	ND		ug/L	2.0	SW846 8260B		1/18/19 17:02	TMP E
Ethylbenzene	ND		ug/L	1.0	SW846 8260B		1/18/19 17:02	TMP E
Methylene Chloride	ND	10,9	ug/L	1.0	SW846 8260B		1/18/19 17:02	TMP E
Styrene	ND		ug/L	1.0	SW846 8260B		1/18/19 17:02	TMP E
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B		1/18/19 17:02	TMP E
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B		1/18/19 17:02	TMP E
Toluene	ND		ug/L	1.0	SW846 8260B		1/18/19 17:02	TMP E
Total Xylenes	ND		ug/L	3.0	SW846 8260B		1/18/19 17:02	TMP E
1,2,4-Trichlorobenzene	ND		ug/L	2.0	SW846 8260B		1/18/19 17:02	TMP E
1,1,1-Trichloroethane	ND	19	ug/L	1.0	SW846 8260B		1/18/19 17:02	TMP E
1,1,2-Trichloroethane	ND		ug/L	1.0	SW846 8260B		1/18/19 17:02	TMP E
Trichloroethene	ND	25	ug/L	1.0	SW846 8260B		1/18/19 17:02	TMP E
Trichlorofluoromethane	ND	6	ug/L	1.0	SW846 8260B		1/18/19 17:02	TMP E

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ANALYTICAL RESULTS

Workorder: 3011231 1ST QTR 2019 CWMP-FORM 19Q

Lab ID: **3011231003** Date Collected: 1/16/2019 15:40 Matrix: Ground Water
Sample ID: **CWMP004W** Date Received: 1/16/2019 17:11

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
1,2,3-Trichloropropane	ND		ug/L	2.0	SW846 8260B			1/18/19 17:02	TMP	E
Vinyl Chloride	ND	5	ug/L	1.0	SW846 8260B			1/18/19 17:02	TMP	E
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	111		%	62 - 133	SW846 8260B			1/18/19 17:02	TMP	E
4-Bromofluorobenzene (S)	91.3		%	79 - 114	SW846 8260B			1/18/19 17:02	TMP	E
Dibromofluoromethane (S)	105		%	78 - 116	SW846 8260B			1/18/19 17:02	TMP	E
Toluene-d8 (S)	91.4		%	76 - 127	SW846 8260B			1/18/19 17:02	TMP	E
WET CHEMISTRY										
Alkalinity, Bicarbonate	22		mg/L	5	SM2320B-2011			1/19/19 12:10	MSA	C
Alkalinity, Total	22	1	mg/L	5	SM2320B-2011			1/19/19 12:10	MSA	C
Ammonia-N	ND		mg/L	0.100	D6919-09			1/29/19 06:45	JAM	A
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			1/23/19 17:01	AK	A
Chloride	45.0		mg/L	2.0	EPA 300.0			1/17/19 09:28	CHW	C
Fluoride	ND		mg/L	0.20	EPA 300.0			1/17/19 09:28	CHW	C
Nitrate-N	5.5		mg/L	0.20	EPA 300.0			1/17/19 09:28	CHW	C
pH	6.30	2	pH_Units		S4500HB-11			1/19/19 12:10	MSA	C
Phenolics	ND		mg/L	0.005	SW846 9066	1/29/19 07:00	RXB	1/30/19 16:15	RXB	I
Specific Conductance	281		umhos/cm	1	SM2510B-2011			1/19/19 12:10	MSA	C
Sulfate	5.1		mg/L	2.0	EPA 300.0			1/17/19 09:28	CHW	C
Total Dissolved Solids	132		mg/L	5	S2540C-11			1/18/19 12:30	EXS	C
Total Organic Carbon (TOC)	2.5		mg/L	0.50	SM5310B-2011			1/30/19 21:41	PAG	G
Turbidity	ND		NTU	0.10	SM2130B-2011			1/17/19 04:55	MBW	C
METALS										
Calcium, Total	19.8		mg/L	0.11	SW846 6010C	1/19/19 11:15	AHI	1/25/19 14:55	SRT	J1
Iron, Total	ND		mg/L	0.067	SW846 6010C	1/19/19 11:15	AHI	1/25/19 14:55	SRT	J1
Magnesium, Total	7.5		mg/L	0.11	SW846 6010C	1/19/19 11:15	AHI	1/25/19 14:55	SRT	J1
Manganese, Total	0.0091		mg/L	0.0056	SW846 6010C	1/19/19 11:15	AHI	1/25/19 14:55	SRT	J1
Potassium, Total	1.7		mg/L	0.56	SW846 6010C	1/19/19 11:15	AHI	1/25/19 14:55	SRT	J1
Sodium, Total	19.9		mg/L	0.56	SW846 6010C	1/19/19 11:15	AHI	1/25/19 14:55	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	102.56		Feet		Field			1/16/19 15:40	CLT	B
Elev Top MW Casing above MSL	529.53		Feet		Field			1/16/19 15:40	CLT	B
Ground Water Elevation	426.97		ft/MSL		Field			1/16/19 15:40	CLT	B
pH, Field (SM4500B)	5.56		pH_Units		Field			1/16/19 15:40	CLT	B
Sample Depth	130.00		Feet		Field			1/16/19 15:40	CLT	B

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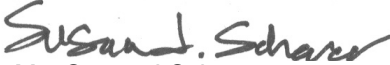
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ANALYTICAL RESULTS

Workorder: 3011231 1ST QTR 2019 CWMP-FORM 19Q

Lab ID: **3011231003** Date Collected: 1/16/2019 15:40 Matrix: Ground Water
 Sample ID: **CWMP004W** Date Received: 1/16/2019 17:11

Parameters	Results	Flag	Units	RDL	Method	Prepared By	Analyzed By	Cntr
Specific Conductance, Field	309		umhos/cm	1	Field		1/16/19 15:40	CLT B
Temperature	11.11		Deg. C		Field		1/16/19 15:40	CLT B
Total Well Depth	140.00		Feet		Field		1/16/19 15:40	CLT B



Ms. Susan J Scherer
 Project Coordinator

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ANALYTICAL RESULTS

Workorder: 3011231 1ST QTR 2019 CWMP-FORM 19Q

PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
3011231001	1	CWMP002W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
3011231001	2	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.				
3011231001	3	CWMP002W	S2540C-11	Total Dissolved Solids
The RPD associated with this sample was recovered at 12%. The RPD is outside method acceptance limits of 0-5%. The results used to calculate the RPD were 244 mg/L and 276 mg/L.				
3011231001	4	CWMP002W	SW846 8260B	1,1-Dichloroethene
The QC sample type LCS for method SW846 8260B was outside the control limits for the analyte 1,1-Dichloroethene. The % Recovery was reported as 130 and the control limits were 63 to 128.				
3011231002	1	CWMP003W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
3011231002	2	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.				
3011231003	1	CWMP004W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
3011231003	2	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.				
3011231003	3	CWMP004W	SW846 8260B	Chloromethane
The QC sample type MS for method SW846 8260B was outside the control limits for the analyte Chloromethane. The % Recovery was reported as 164 and the control limits were 38 to 156.				
3011231003	4	CWMP004W	SW846 8260B	Chloromethane
The QC sample type MSD for method SW846 8260B was outside the control limits for the analyte Chloromethane. The % Recovery was reported as 158 and the control limits were 38 to 156.				
3011231003	5	CWMP004W	SW846 8260B	Vinyl Chloride
The QC sample type MS for method SW846 8260B was outside the control limits for the analyte Vinyl Chloride. The % Recovery was reported as 143 and the control limits were 27 to 138.				
3011231003	6	CWMP004W	SW846 8260B	Trichlorofluoromethane
The QC sample type MS for method SW846 8260B was outside the control limits for the analyte Trichlorofluoromethane. The % Recovery was reported as 126 and the control limits were 38 to 123.				
3011231003	7	CWMP004W	SW846 8260B	1,1-Dichloroethene
The QC sample type MS for method SW846 8260B was outside the control limits for the analyte 1,1-Dichloroethene. The % Recovery was reported as 149 and the control limits were 63 to 128.				
3011231003	8	CWMP004W	SW846 8260B	1,1-Dichloroethene
The QC sample type MSD for method SW846 8260B was outside the control limits for the analyte 1,1-Dichloroethene. The % Recovery was reported as 136 and the control limits were 63 to 128.				
3011231003	9	CWMP004W	SW846 8260B	Methylene Chloride
The QC sample type MS for method SW846 8260B was outside the control limits for the analyte Methylene Chloride. The % Recovery was reported as 132 and the control limits were 76 to 121.				

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ANALYTICAL RESULTS

Workorder: 3011231 1ST QTR 2019 CWMP-FORM 19Q

3011231003	10	CWMP004W	SW846 8260B	Methylene Chloride
The QC sample type MSD for method SW846 8260B was outside the control limits for the analyte Methylene Chloride. The % Recovery was reported as 126 and the control limits were 76 to 121.				
3011231003	11	CWMP004W	SW846 8260B	trans-1,2-Dichloroethene
The QC sample type MS for method SW846 8260B was outside the control limits for the analyte trans-1,2-Dichloroethene. The % Recovery was reported as 142 and the control limits were 71 to 122.				
3011231003	12	CWMP004W	SW846 8260B	trans-1,2-Dichloroethene
The QC sample type MSD for method SW846 8260B was outside the control limits for the analyte trans-1,2-Dichloroethene. The % Recovery was reported as 132 and the control limits were 71 to 122.				
3011231003	13	CWMP004W	SW846 8260B	1,1-Dichloroethane
The QC sample type MS for method SW846 8260B was outside the control limits for the analyte 1,1-Dichloroethane. The % Recovery was reported as 135 and the control limits were 78 to 124.				
3011231003	14	CWMP004W	SW846 8260B	1,1-Dichloroethane
The QC sample type MSD for method SW846 8260B was outside the control limits for the analyte 1,1-Dichloroethane. The % Recovery was reported as 127 and the control limits were 78 to 124.				
3011231003	15	CWMP004W	SW846 8260B	cis-1,2-Dichloroethene
The QC sample type MS for method SW846 8260B was outside the control limits for the analyte cis-1,2-Dichloroethene. The % Recovery was reported as 135 and the control limits were 78 to 125.				
3011231003	16	CWMP004W	SW846 8260B	cis-1,2-Dichloroethene
The QC sample type MSD for method SW846 8260B was outside the control limits for the analyte cis-1,2-Dichloroethene. The % Recovery was reported as 128 and the control limits were 78 to 125.				
3011231003	17	CWMP004W	SW846 8260B	Chloroform
The QC sample type MS for method SW846 8260B was outside the control limits for the analyte Chloroform. The % Recovery was reported as 132 and the control limits were 78 to 122.				
3011231003	18	CWMP004W	SW846 8260B	Chloroform
The QC sample type MSD for method SW846 8260B was outside the control limits for the analyte Chloroform. The % Recovery was reported as 123 and the control limits were 78 to 122.				
3011231003	19	CWMP004W	SW846 8260B	1,1,1-Trichloroethane
The QC sample type MS for method SW846 8260B was outside the control limits for the analyte 1,1,1-Trichloroethane. The % Recovery was reported as 135 and the control limits were 66 to 130.				
3011231003	20	CWMP004W	SW846 8260B	Carbon Tetrachloride
The QC sample type MS for method SW846 8260B was outside the control limits for the analyte Carbon Tetrachloride. The % Recovery was reported as 136 and the control limits were 62 to 132.				
3011231003	21	CWMP004W	SW846 8260B	Benzene
The QC sample type MS for method SW846 8260B was outside the control limits for the analyte Benzene. The % Recovery was reported as 135 and the control limits were 80 to 124.				
3011231003	22	CWMP004W	SW846 8260B	Benzene
The QC sample type MSD for method SW846 8260B was outside the control limits for the analyte Benzene. The % Recovery was reported as 126 and the control limits were 80 to 124.				
3011231003	23	CWMP004W	SW846 8260B	1,2-Dichloropropane
The QC sample type MS for method SW846 8260B was outside the control limits for the analyte 1,2-Dichloropropane. The % Recovery was reported as 135 and the control limits were 81 to 127.				
3011231003	24	CWMP004W	SW846 8260B	1,2-Dichloropropane
The QC sample type MSD for method SW846 8260B was outside the control limits for the analyte 1,2-Dichloropropane. The % Recovery was reported as 130 and the control limits were 81 to 127.				

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ANALYTICAL RESULTS

Workorder: 3011231 1ST QTR 2019 CWMP-FORM 19Q

3011231003	25	CWMP004W	SW846 8260B	Trichloroethene
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The QC sample type MS for method SW846 8260B was outside the control limits for the analyte Trichloroethene. The % Recovery was reported as 131 and the control limits were 77 to 124.

3011231003	26	CWMP004W	SW846 8260B	Bromodichloromethane
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The QC sample type MS for method SW846 8260B was outside the control limits for the analyte Bromodichloromethane. The % Recovery was reported as 129 and the control limits were 79 to 126.

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ANALYSIS - PREP METHOD CROSS REFERENCE TABLE

Workorder: 3011231 1ST QTR 2019 CWMP-FORM 19Q

Lab ID	Sample ID	Analysis Method	Prep Method
3011231001	CWMP002W	D6919-09	
3011231001	CWMP002W	EPA 300.0	
3011231001	CWMP002W	EPA 410.4	
3011231001	CWMP002W	Field	
3011231001	CWMP002W	S2540C-11	
3011231001	CWMP002W	S4500HB-11	
3011231001	CWMP002W	SM2130B-2011	
3011231001	CWMP002W	SM2320B-2011	
3011231001	CWMP002W	SM2510B-2011	
3011231001	CWMP002W	SM5310B-2011	
3011231001	CWMP002W	SW846 6010C	SW846 3015
3011231001	CWMP002W	SW846 8260B	
3011231001	CWMP002W	SW846 9066	420.4/9066
3011231002	CWMP003W	D6919-09	
3011231002	CWMP003W	EPA 300.0	
3011231002	CWMP003W	EPA 410.4	
3011231002	CWMP003W	Field	
3011231002	CWMP003W	S2540C-11	
3011231002	CWMP003W	S4500HB-11	
3011231002	CWMP003W	SM2130B-2011	
3011231002	CWMP003W	SM2320B-2011	
3011231002	CWMP003W	SM2510B-2011	
3011231002	CWMP003W	SM5310B-2011	
3011231002	CWMP003W	SW846 6010C	SW846 3015
3011231002	CWMP003W	SW846 8260B	
3011231002	CWMP003W	SW846 9066	420.4/9066
3011231003	CWMP004W	D6919-09	
3011231003	CWMP004W	EPA 300.0	
3011231003	CWMP004W	EPA 410.4	
3011231003	CWMP004W	Field	
3011231003	CWMP004W	S2540C-11	
3011231003	CWMP004W	S4500HB-11	
3011231003	CWMP004W	SM2130B-2011	
3011231003	CWMP004W	SM2320B-2011	
3011231003	CWMP004W	SM2510B-2011	
3011231003	CWMP004W	SM5310B-2011	
3011231003	CWMP004W	SW846 6010C	SW846 3015
3011231003	CWMP004W	SW846 8260B	
3011231003	CWMP004W	SW846 9066	420.4/9066

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301 Fulling Mill Road
Middletown, PA 17057

P: (717) 944-5541

F: (717) 944-1430

Condition of Sample Receipt Form

Client: LCSUMA Work Order #: 3011231 Initials: SS Date: 1/17/18

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

Cooler #: _____

Temperature (°C): _____

Thermometer ID: _____

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

February 2, 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: 3011494
Purchase Order: PO1000127	Workorder ID: 1ST QTR 2019 CWMP-FORM 19Q

Dear Mr. Brown:

Enclosed are the analytical results for samples received by the laboratory on Thursday, January 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.

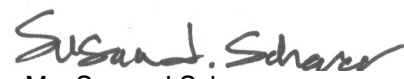
Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications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

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

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

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

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


Ms. Susan J Scherer
Project Coordinator

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SAMPLE SUMMARY

Workorder: 3011494 1ST QTR 2019 CWMP-FORM 19Q

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
3011494001	CWMP012W	Ground Water	1/17/2019 10:35	1/17/2019 15:53	Mr. Brian G Shade
3011494002	CWMP008W	Ground Water	1/17/2019 13:56	1/17/2019 15:53	Mr. Brian G Shade
3011494003	Field Blank	Water	1/17/2019 14:15	1/17/2019 15:53	Mr. Brian G Shade
3011494004	Trip Blank	Water	1/17/2019 15:53	1/17/2019 15:53	Mr. Brian G Shade

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SAMPLE SUMMARY

Workorder: 3011494 1ST QTR 2019 CWMP-FORM 19Q

Notes

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

Standard Acronyms/Flags

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

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ANALYTICAL RESULTS

Workorder: 3011494 1ST QTR 2019 CWMP-FORM 19Q

Lab ID: **3011494001** Date Collected: 1/17/2019 10:35 Matrix: Ground Water
Sample ID: **CWMP012W** Date Received: 1/17/2019 15:53

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			1/23/19 01:20	PDK	F
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			1/23/19 01:20	PDK	F
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			1/23/19 01:20	PDK	F
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			1/23/19 01:20	PDK	F
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/23/19 01:20	PDK	F
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/23/19 01:20	PDK	F
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/23/19 01:20	PDK	F
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			1/23/19 01:20	PDK	F
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			1/23/19 01:20	PDK	F
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			1/23/19 01:20	PDK	F
Toluene	ND		ug/L	1.0	SW846 8260B			1/23/19 01:20	PDK	F
Total Xylenes	ND		ug/L	3.0	SW846 8260B			1/23/19 01:20	PDK	F
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			1/23/19 01:20	PDK	F
Trichloroethene	ND		ug/L	1.0	SW846 8260B			1/23/19 01:20	PDK	F
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			1/23/19 01:20	PDK	F
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	103		%	62 - 133	SW846 8260B			1/23/19 01:20	PDK	F
4-Bromofluorobenzene (S)	98.7		%	79 - 114	SW846 8260B			1/23/19 01:20	PDK	F
Dibromofluoromethane (S)	97.1		%	78 - 116	SW846 8260B			1/23/19 01:20	PDK	F
Toluene-d8 (S)	96.2		%	76 - 127	SW846 8260B			1/23/19 01:20	PDK	F
WET CHEMISTRY										
Alkalinity, Bicarbonate	75		mg/L	5	SM2320B-2011			1/21/19 06:28	MSA	C
Alkalinity, Total	75	3	mg/L	5	SM2320B-2011			1/21/19 06:28	MSA	C
Ammonia-N	0.292		mg/L	0.100	D6919-09			1/30/19 06:57	JAM	G
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			1/24/19 14:29	AK	G
Chloride	33.3		mg/L	2.0	EPA 300.0			1/18/19 08:26	CHW	G
Fluoride	ND		mg/L	0.20	EPA 300.0			1/18/19 08:26	CHW	G
Nitrate-N	7.9		mg/L	0.20	EPA 300.0			1/18/19 08:26	CHW	G
pH	6.23	1	pH_Units		S4500HB-11			1/21/19 06:28	MSA	C
Phenolics	ND		mg/L	0.005	SW846 9066	1/29/19 07:00	RXB	1/29/19 15:55	RXB	G
Specific Conductance	281		umhos/cm	1	SW846 9050A			1/21/19 06:28	MSA	C
Sulfate	5.4		mg/L	2.0	EPA 300.0			1/18/19 08:26	CHW	G
Total Dissolved Solids	208		mg/L	5	S2540C-11			1/18/19 17:35	EXS	G
Total Organic Carbon (TOC)	2.4		mg/L	0.50	SW846 9060A			1/31/19 09:57	PAG	G
Turbidity	322		NTU	0.10	SM2130B-2011			1/18/19 05:25	MBW	C

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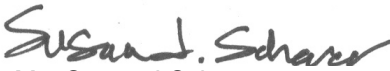
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ANALYTICAL RESULTS

Workorder: 3011494 1ST QTR 2019 CWMP-FORM 19Q

Lab ID: **3011494001** Date Collected: 1/17/2019 10:35 Matrix: Ground Water
 Sample ID: **CWMP012W** Date Received: 1/17/2019 15:53

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	32.0		mg/L	0.11	SW846 6010C	1/19/19 11:15	AHI	1/25/19 15:14	SRT	G1
Iron, Total	76.4		mg/L	0.067	SW846 6010C	1/19/19 11:15	AHI	1/25/19 15:14	SRT	G1
Magnesium, Total	8.7		mg/L	0.11	SW846 6010C	1/19/19 11:15	AHI	1/25/19 15:14	SRT	G1
Manganese, Total	0.29		mg/L	0.0056	SW846 6010C	1/19/19 11:15	AHI	1/25/19 15:14	SRT	G1
Potassium, Total	1.5		mg/L	0.56	SW846 6010C	1/19/19 11:15	AHI	1/25/19 15:14	SRT	G1
Sodium, Total	13.0		mg/L	0.56	SW846 6010C	1/19/19 11:15	AHI	1/25/19 15:14	SRT	G1
FIELD PARAMETERS										
Depth to Water Level	50.43		Feet		Field			1/15/19 09:35	CLT	B
pH, Field (SM4500B)	5.42		pH_Units		Field			1/15/19 09:35	CLT	B
Specific Conductance, Field	391		umhos/cm	1	Field			1/15/19 09:35	CLT	B
Temperature	12.37		Deg. C		Field			1/15/19 09:35	CLT	B


 Ms. Susan J Scherer
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ANALYTICAL RESULTS

Workorder: 3011494 1ST QTR 2019 CWMP-FORM 19Q

Lab ID: **3011494002** Date Collected: 1/17/2019 13:56 Matrix: Ground Water
Sample ID: **CWMP008W** Date Received: 1/17/2019 15:53

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	2.7		ug/L	1.0	SW846 8260B			1/23/19 01:42	PDK	F
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			1/23/19 01:42	PDK	F
1,1-Dichloroethane	2.8		ug/L	1.0	SW846 8260B			1/23/19 01:42	PDK	F
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			1/23/19 01:42	PDK	F
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/23/19 01:42	PDK	F
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/23/19 01:42	PDK	F
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/23/19 01:42	PDK	F
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			1/23/19 01:42	PDK	F
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			1/23/19 01:42	PDK	F
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			1/23/19 01:42	PDK	F
Toluene	ND		ug/L	1.0	SW846 8260B			1/23/19 01:42	PDK	F
Total Xylenes	ND		ug/L	3.0	SW846 8260B			1/23/19 01:42	PDK	F
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			1/23/19 01:42	PDK	F
Trichloroethene	ND		ug/L	1.0	SW846 8260B			1/23/19 01:42	PDK	F
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			1/23/19 01:42	PDK	F
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	102		%	62 - 133	SW846 8260B			1/23/19 01:42	PDK	F
4-Bromofluorobenzene (S)	98.7		%	79 - 114	SW846 8260B			1/23/19 01:42	PDK	F
Dibromofluoromethane (S)	97.4		%	78 - 116	SW846 8260B			1/23/19 01:42	PDK	F
Toluene-d8 (S)	93.3		%	76 - 127	SW846 8260B			1/23/19 01:42	PDK	F
WET CHEMISTRY										
Alkalinity, Bicarbonate	450		mg/L	5	SM2320B-2011			1/21/19 08:39	MSA	C
Alkalinity, Total	450	3	mg/L	5	SM2320B-2011			1/21/19 08:39	MSA	C
Ammonia-N	6.99		mg/L	0.100	D6919-09			1/30/19 07:10	JAM	G
Chemical Oxygen Demand (COD)	28		mg/L	15	EPA 410.4			1/23/19 17:01	AK	G
Chloride	34.3		mg/L	2.0	EPA 300.0			1/18/19 08:39	CHW	G
Fluoride	ND		mg/L	0.20	EPA 300.0			1/18/19 08:39	CHW	G
Nitrate-N	ND		mg/L	0.20	EPA 300.0			1/18/19 08:39	CHW	G
pH	6.49	1	pH_Units		S4500HB-11			1/21/19 08:39	MSA	C
Phenolics	ND		mg/L	0.005	SW846 9066	1/29/19 07:00	RXB	1/29/19 15:55	RXB	G
Specific Conductance	883		umhos/cm	1	SW846 9050A			1/21/19 08:39	MSA	C
Sulfate	5.8		mg/L	2.0	EPA 300.0			1/18/19 08:39	CHW	G
Total Dissolved Solids	448		mg/L	5	S2540C-11			1/18/19 17:35	EXS	G
Total Organic Carbon (TOC)	10.7		mg/L	2.5	SW846 9060A			1/31/19 09:57	PAG	G
Turbidity	6.37		NTU	0.10	SM2130B-2011			1/18/19 05:25	MBW	C

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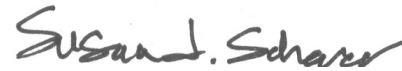
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ANALYTICAL RESULTS

Workorder: 3011494 1ST QTR 2019 CWMP-FORM 19Q

Lab ID: **3011494002** Date Collected: 1/17/2019 13:56 Matrix: Ground Water
 Sample ID: **CWMP008W** Date Received: 1/17/2019 15:53

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	70.7		mg/L	0.11	SW846 6010C	1/19/19 11:15	AHI	1/25/19 15:17	SRT	G1
Iron, Total	31.1		mg/L	0.067	SW846 6010C	1/19/19 11:15	AHI	1/25/19 15:17	SRT	G1
Magnesium, Total	31.6		mg/L	0.11	SW846 6010C	1/19/19 11:15	AHI	1/25/19 15:17	SRT	G1
Manganese, Total	17.5		mg/L	0.0056	SW846 6010C	1/19/19 11:15	AHI	1/25/19 15:17	SRT	G1
Potassium, Total	9.1		mg/L	0.56	SW846 6010C	1/19/19 11:15	AHI	1/25/19 15:17	SRT	G1
Sodium, Total	37.3		mg/L	0.56	SW846 6010C	1/19/19 11:15	AHI	1/25/19 15:17	SRT	G1
FIELD PARAMETERS										
Depth to Water Level	2.30		Feet		Field			1/17/19 13:56	CLT	B
Elev Top MW Casing above MSL	422.30		Feet		Field			1/17/19 13:56	CLT	B
Flow Rate	1.04		gal/min		Field			1/17/19 13:56	CLT	B
Ground Water Elevation	420.00		ft/MSL		Field			1/17/19 13:56	CLT	B
pH, Field (SM4500B)	6.08		pH_Units		Field			1/17/19 13:56	CLT	B
Sample Depth	19.00		Feet		Field			1/17/19 13:56	CLT	B
Specific Conductance, Field	916		umhos/cm	1	Field			1/17/19 13:56	CLT	B
Temperature	10.73		Deg. C		Field			1/17/19 13:56	CLT	B
Total Well Depth	22.80		Feet		Field			1/17/19 13:56	CLT	B
Volume in Water Column	3.28		Gallons		Field			1/17/19 13:56	CLT	B
Water Level After Purge	16.98		Feet		Field			1/17/19 13:56	CLT	B
Well Volumes Purged	6.32		Vol		Field			1/17/19 13:56	CLT	B



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ANALYTICAL RESULTS

Workorder: 3011494 1ST QTR 2019 CWMP-FORM 19Q

Lab ID: **3011494003** Date Collected: 1/17/2019 14:15 Matrix: Water
Sample ID: **Field Blank** Date Received: 1/17/2019 15:53

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			1/21/19 12:12	DD	D
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			1/21/19 12:12	DD	D
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			1/21/19 12:12	DD	D
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			1/21/19 12:12	DD	D
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/21/19 12:12	DD	D
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/21/19 12:12	DD	D
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/21/19 12:12	DD	D
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			1/21/19 12:12	DD	D
Methylene Chloride	5.9		ug/L	1.0	SW846 8260B			1/21/19 12:12	DD	D
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			1/21/19 12:12	DD	D
Toluene	ND		ug/L	1.0	SW846 8260B			1/21/19 12:12	DD	D
Total Xylenes	ND		ug/L	3.0	SW846 8260B			1/21/19 12:12	DD	D
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			1/21/19 12:12	DD	D
Trichloroethene	ND		ug/L	1.0	SW846 8260B			1/21/19 12:12	DD	D
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			1/21/19 12:12	DD	D
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	121		%	62 - 133	SW846 8260B			1/21/19 12:12	DD	D
4-Bromofluorobenzene (S)	92		%	79 - 114	SW846 8260B			1/21/19 12:12	DD	D
Dibromofluoromethane (S)	114		%	78 - 116	SW846 8260B			1/21/19 12:12	DD	D
Toluene-d8 (S)	93.6		%	76 - 127	SW846 8260B			1/21/19 12:12	DD	D
WET CHEMISTRY										
Alkalinity, Bicarbonate	ND		mg/L	5	SM2320B-2011			1/21/19 08:47	MSA	C
Alkalinity, Total	ND	2	mg/L	5	SM2320B-2011			1/21/19 08:47	MSA	C
Ammonia-N	0.172		mg/L	0.100	D6919-09			2/1/19 08:06	JAM	F
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			1/24/19 14:29	AK	F
Chloride	ND		mg/L	1.0	EPA 300.0			1/18/19 08:52	CHW	F
Fluoride	ND		mg/L	0.10	EPA 300.0			1/18/19 08:52	CHW	F
Nitrate-N	ND		mg/L	0.10	EPA 300.0			1/18/19 08:52	CHW	F
pH	6.33	1	pH_Units		S4500HB-11			1/21/19 08:47	MSA	C
Phenolics	ND		mg/L	0.005	SW846 9066	1/29/19 07:00	RXB	1/29/19 15:55	RXB	F
Specific Conductance	2		umhos/cm	1	SW846 9050A			1/23/19 08:50	MSA	C
Sulfate	ND		mg/L	1.0	EPA 300.0			1/18/19 08:52	CHW	F
Total Dissolved Solids	13		mg/L	5	S2540C-11			1/18/19 17:35	EXS	F
Total Organic Carbon (TOC)	ND		mg/L	0.50	SW846 9060A			1/31/19 09:57	PAG	F
Turbidity	ND		NTU	0.10	SM2130B-2011			1/18/19 05:25	MBW	C

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ANALYTICAL RESULTS

Workorder: 3011494 1ST QTR 2019 CWMP-FORM 19Q

Lab ID: **3011494003** Date Collected: 1/17/2019 14:15 Matrix: Water
 Sample ID: **Field Blank** Date Received: 1/17/2019 15:53

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	ND		mg/L	0.11	SW846 6010C	1/19/19 11:15	AHI	1/25/19 15:28	SRT	F1
Iron, Total	ND		mg/L	0.067	SW846 6010C	1/19/19 11:15	AHI	1/25/19 15:28	SRT	F1
Magnesium, Total	ND		mg/L	0.11	SW846 6010C	1/19/19 11:15	AHI	1/25/19 15:28	SRT	F1
Manganese, Total	ND		mg/L	0.0056	SW846 6010C	1/19/19 11:15	AHI	1/25/19 15:28	SRT	F1
Potassium, Total	ND		mg/L	0.56	SW846 6010C	1/19/19 11:15	AHI	1/25/19 15:28	SRT	F1
Sodium, Total	ND		mg/L	0.56	SW846 6010C	1/19/19 11:15	AHI	1/25/19 15:28	SRT	F1



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 Project Coordinator

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ANALYTICAL RESULTS

Workorder: 3011494 1ST QTR 2019 CWMP-FORM 19Q

Lab ID: **3011494004**

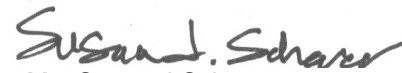
Date Collected: 1/17/2019 15:53

Matrix: Water

Sample ID: **Trip Blank**

Date Received: 1/17/2019 15:53

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			1/21/19 11:49	DD	A
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			1/21/19 11:49	DD	A
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			1/21/19 11:49	DD	A
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			1/21/19 11:49	DD	A
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/21/19 11:49	DD	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/21/19 11:49	DD	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/21/19 11:49	DD	A
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			1/21/19 11:49	DD	A
Methylene Chloride	5.6		ug/L	1.0	SW846 8260B			1/21/19 11:49	DD	A
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			1/21/19 11:49	DD	A
Toluene	ND		ug/L	1.0	SW846 8260B			1/21/19 11:49	DD	A
Total Xylenes	ND		ug/L	3.0	SW846 8260B			1/21/19 11:49	DD	A
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			1/21/19 11:49	DD	A
Trichloroethene	ND		ug/L	1.0	SW846 8260B			1/21/19 11:49	DD	A
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			1/21/19 11:49	DD	A
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	118		%	62 - 133	SW846 8260B			1/21/19 11:49	DD	A
4-Bromofluorobenzene (S)	91.6		%	79 - 114	SW846 8260B			1/21/19 11:49	DD	A
Dibromofluoromethane (S)	111		%	78 - 116	SW846 8260B			1/21/19 11:49	DD	A
Toluene-d8 (S)	92.6		%	76 - 127	SW846 8260B			1/21/19 11:49	DD	A



Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 3011494 1ST QTR 2019 CWMP-FORM 19Q

PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
3011494001	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.				
3011494001	3	CWMP012W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
3011494002	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.				
3011494002	3	CWMP008W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
3011494003	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.				
3011494003	2	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: 3011494 1ST QTR 2019 CWMP-FORM 19Q

Lab ID	Sample ID	Analysis Method	Prep Method
3011494001	CWMP012W	D6919-09	
3011494001	CWMP012W	EPA 300.0	
3011494001	CWMP012W	EPA 410.4	
3011494001	CWMP012W	Field	
3011494001	CWMP012W	S2540C-11	
3011494001	CWMP012W	S4500HB-11	
3011494001	CWMP012W	SM2130B-2011	
3011494001	CWMP012W	SM2320B-2011	
3011494001	CWMP012W	SW846 6010C	SW846 3015
3011494001	CWMP012W	SW846 8260B	
3011494001	CWMP012W	SW846 9050A	
3011494001	CWMP012W	SW846 9060A	
3011494001	CWMP012W	SW846 9066	420.4/9066
3011494002	CWMP008W	D6919-09	
3011494002	CWMP008W	EPA 300.0	
3011494002	CWMP008W	EPA 410.4	
3011494002	CWMP008W	Field	
3011494002	CWMP008W	S2540C-11	
3011494002	CWMP008W	S4500HB-11	
3011494002	CWMP008W	SM2130B-2011	
3011494002	CWMP008W	SM2320B-2011	
3011494002	CWMP008W	SW846 6010C	SW846 3015
3011494002	CWMP008W	SW846 8260B	
3011494002	CWMP008W	SW846 9050A	
3011494002	CWMP008W	SW846 9060A	
3011494002	CWMP008W	SW846 9066	420.4/9066
3011494003	Field Blank	D6919-09	
3011494003	Field Blank	EPA 300.0	
3011494003	Field Blank	EPA 410.4	
3011494003	Field Blank	S2540C-11	
3011494003	Field Blank	S4500HB-11	
3011494003	Field Blank	SM2130B-2011	
3011494003	Field Blank	SM2320B-2011	
3011494003	Field Blank	SW846 6010C	SW846 3015
3011494003	Field Blank	SW846 8260B	
3011494003	Field Blank	SW846 9050A	
3011494003	Field Blank	SW846 9060A	
3011494003	Field Blank	SW846 9066	420.4/9066
3011494004	Trip Blank	SW846 8260B	

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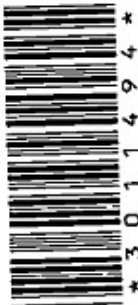
34 Dogwood Lane • Middletown, PA 17057 • Fax: 717.944.5541 • Fax: 717.944.1430
 In Dependence • Middletown, PA 17057 • Phone: 717.944.5541 • Fax: 717.944.1430

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

Generated by ALS

CO

1 of 1



* 3 0 1 1 4 9 4 *

Cooler Temp: 3 Therm ID: 352

No. of Coolers: Y N Initial

Custody Seals Present? (if present) Seals Intact? Received on Ice? COCLabels Complete/Accurate? Cont. in Good Cond.? Correct Containers? Correct Sample Volumes? Correct Preservation? Headspace/Volatiles? Courier/Tracking #:

Custody Seals Present? (if present)	Y	N	Initial
Seals Intact?			
Received on Ice?			
COCLabels Complete/Accurate?			
Cont. in Good Cond.?			
Correct Containers?			
Correct Sample Volumes?			
Correct Preservation?			
Headspace/Volatiles?			
Courier/Tracking #:			

Sample/COC Comments

Container Type: PL 500 ml

Container Size: 1 L

Pretentive: HCl H2SO4 HCl H2SO4 HNO3 None

Field Measurements: Alkalinity, HCO3

Sample Depth for AUX Data: PH, NO3, Cl, F, SPC, SO4, Turb,

Total Metals: Ca, Fe, Mn, Mg, K, Na

NH3-N, COD

8260 VOCs - Form 19Q

O-H

TOC

Matrix

Enter Number of Containers Per Sample or Field Results Below.

1	2	1	2	X	1	1	1	1
2	2	1	2	X	1	1	1	1
3	2	1	2		1	1	1	1
4	2		2					
5								
6								
7								
8								
9								
10								

ALS Field Services: Pickup Labor Composite_Sampling Rental_Equipment Other:

Standard CLP-like USACE Navy USACE State Samples Collected In

Reportable to PADEP? Yes No Lab Special

PWSID # EDDS: Format Type-

LOGGED BY (signature):

REVIEWED BY (signature):

Date Time Received By / Company Name

1 1/17/19 10:35 G GW 2 1/17/19 13:56 G GW 2 1/17/19 14:15 G GW 2 1/17/19 15:53 G GW

3 1/17/19 15:53 2 4 6 8 10

Relinquished By / Company Name

1 1/17/19 15:53 2 4 6 8 10

Project Comments:

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

Client Name: Lancaster County Solid Waste MA

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

Contact: Mark Reider

Phone#: (717) 735-0193

Project Name#: Creswell/GWMP Form 19Q Wells

Bill To: Lancaster County Solid Waste MA

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

Date Required: Rush-Subject to ALS approval and surcharges. Approved By:

Email? -Y mreider@LCSWMA.com

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

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

Sample Date Time

1/17/19 10:35 G GW 2 1/17/19 13:56 G GW 2 1/17/19 14:15 G GW 2 1/17/19 15:53 G GW

1/17/19 15:53 2 4 6 8 10

Relinquished By / Company Name

1/17/19 15:53 2 4 6 8 10

Project Comments:

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

* G=Grab; C=Composite

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



301 Fulling Mill Road
Middletown, PA 17057

P: (717) 944-5541

F: (717) 944-1430

Condition of Sample Receipt Form

Client: LCSWMA Work Order #: 3011494 Initials: SS Date: 1/18/18

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

Cooler #: 1

Temperature (°C): 3

Thermometer ID: 352

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



February 1, 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:	3010953
Purchase Order:	PO1000127	Workorder ID:	1ST QTR 2019 CWMP-FORM 19Q

Dear Mr. Brown:

Enclosed are the analytical results for samples received by the laboratory on Tuesday, January 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.

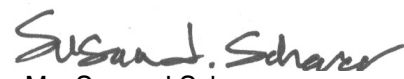
Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications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

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

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

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

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



Ms. Susan J Scherer
Project Coordinator

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SAMPLE SUMMARY

Workorder: 3010953 1ST QTR 2019 CWMP-FORM 19Q

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
3010953001	CWMP018S	Ground Water	1/15/2019 10:18	1/15/2019 16:57	Mr. Brian G Shade
3010953002	CWMP017S	Ground Water	1/15/2019 10:37	1/15/2019 16:57	Mr. Brian G Shade
3010953003	CWMP016W	Ground Water	1/15/2019 13:10	1/15/2019 16:57	Mr. Brian G Shade
3010953004	CWMP010W	Ground Water	1/15/2019 14:10	1/15/2019 16:57	Mr. Brian G Shade
3010953005	CWMP009W	Ground Water	1/15/2019 14:49	1/15/2019 16:57	Mr. Brian G Shade
3010953006	Field Blank	Water	1/15/2019 15:41	1/15/2019 16:57	Mr. Brian G Shade
3010953007	Trip Blank	Water	1/15/2019 16:57	1/15/2019 16:57	Mr. Brian G Shade

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SAMPLE SUMMARY

Workorder: 3010953 1ST QTR 2019 CWMP-FORM 19Q

Notes

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

Standard Acronyms/Flags

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

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ANALYTICAL RESULTS

Workorder: 3010953 1ST QTR 2019 CWMP-FORM 19Q

Lab ID: **3010953001** Date Collected: 1/15/2019 10:18 Matrix: Ground Water
Sample ID: **CWMP018S** Date Received: 1/15/2019 16:57

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			1/17/19 14:09	TMP	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			1/17/19 14:09	TMP	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			1/17/19 14:09	TMP	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			1/17/19 14:09	TMP	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/17/19 14:09	TMP	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/17/19 14:09	TMP	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/17/19 14:09	TMP	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			1/17/19 14:09	TMP	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			1/17/19 14:09	TMP	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			1/17/19 14:09	TMP	G
Toluene	ND		ug/L	1.0	SW846 8260B			1/17/19 14:09	TMP	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			1/17/19 14:09	TMP	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			1/17/19 14:09	TMP	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			1/17/19 14:09	TMP	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			1/17/19 14:09	TMP	G
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	104		%	62 - 133	SW846 8260B			1/17/19 14:09	TMP	G
4-Bromofluorobenzene (S)	97		%	79 - 114	SW846 8260B			1/17/19 14:09	TMP	G
Dibromofluoromethane (S)	100		%	78 - 116	SW846 8260B			1/17/19 14:09	TMP	G
Toluene-d8 (S)	95.5		%	76 - 127	SW846 8260B			1/17/19 14:09	TMP	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	142		mg/L	5	SM2320B-2011			1/17/19 11:07	MSA	B
Alkalinity, Total	142	2	mg/L	5	SM2320B-2011			1/17/19 11:07	MSA	B
Ammonia-N	0.820		mg/L	0.100	D6919-09			1/27/19 02:57	JAM	A
Chemical Oxygen Demand (COD)	27		mg/L	15	EPA 410.4			1/22/19 13:54	AK	A
Chloride	180		mg/L	5.0	EPA 300.0			1/16/19 07:34	CHW	B
Fluoride	ND		mg/L	0.50	EPA 300.0			1/16/19 07:34	CHW	B
Nitrate-N	14.0		mg/L	0.50	EPA 300.0			1/16/19 07:34	CHW	B
pH	8.03	1	pH_Units		S4500HB-11			1/17/19 11:07	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	1/29/19 07:00	RXB	1/30/19 16:15	RXB	F
Specific Conductance	1030		umhos/cm	1	SW846 9050A			1/17/19 11:07	MSA	B
Sulfate	27.9		mg/L	5.0	EPA 300.0			1/16/19 07:34	CHW	B
Total Dissolved Solids	785		mg/L	5	S2540C-11			1/16/19 15:05	EXS	B
Total Organic Carbon (TOC)	7.8		mg/L	0.50	SW846 9060A			1/29/19 21:48	PAG	D
Turbidity	1.41		NTU	0.10	SM2130B-2011			1/17/19 04:55	MBW	B

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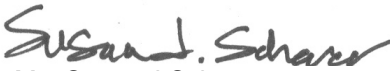
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ANALYTICAL RESULTS

Workorder: 3010953 1ST QTR 2019 CWMP-FORM 19Q

Lab ID: **3010953001** Date Collected: 1/15/2019 10:18 Matrix: Ground Water
 Sample ID: **CWMP018S** Date Received: 1/15/2019 16:57

Parameters	Results	Flag	Units	RDL	Method	Prepared By	Analyzed By	Cntr
METALS								
Calcium, Total	40.7		mg/L	0.11	SW846 6010C	1/18/19 10:10 BMK	1/22/19 12:31 SRT	J1
Iron, Total	0.25		mg/L	0.067	SW846 6010C	1/18/19 10:10 BMK	1/22/19 12:31 SRT	J1
Magnesium, Total	29.1		mg/L	0.11	SW846 6010C	1/18/19 10:10 BMK	1/22/19 12:31 SRT	J1
Manganese, Total	0.47		mg/L	0.0056	SW846 6010C	1/18/19 10:10 BMK	1/22/19 12:31 SRT	J1
Potassium, Total	9.4		mg/L	0.56	SW846 6010C	1/18/19 10:10 BMK	1/22/19 12:31 SRT	J1
Sodium, Total	97.9		mg/L	0.56	SW846 6010C	1/18/19 10:10 BMK	1/22/19 12:31 SRT	J1
FIELD PARAMETERS								
Dissolved Oxygen	16.51		mg/L	0.01	Field		1/15/19 10:18 BGS	C
pH, Field (SM4500B)	6.93		pH_Units		Field		1/15/19 10:18 BGS	C
Specific Conductance, Field	1058		umhos/cm	1	Field		1/15/19 10:18 BGS	C
Temperature	0.23		Deg. C		Field		1/15/19 10:18 BGS	C


 Ms. Susan J Scherer
 Project Coordinator

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ANALYTICAL RESULTS

Workorder: 3010953 1ST QTR 2019 CWMP-FORM 19Q

Lab ID: **3010953002** Date Collected: 1/15/2019 10:37 Matrix: Ground Water
Sample ID: **CWMP017S** Date Received: 1/15/2019 16:57

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			1/17/19 14:32	TMP	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			1/17/19 14:32	TMP	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			1/17/19 14:32	TMP	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			1/17/19 14:32	TMP	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/17/19 14:32	TMP	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/17/19 14:32	TMP	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/17/19 14:32	TMP	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			1/17/19 14:32	TMP	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			1/17/19 14:32	TMP	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			1/17/19 14:32	TMP	G
Toluene	ND		ug/L	1.0	SW846 8260B			1/17/19 14:32	TMP	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			1/17/19 14:32	TMP	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			1/17/19 14:32	TMP	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			1/17/19 14:32	TMP	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			1/17/19 14:32	TMP	G
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	103		%	62 - 133	SW846 8260B			1/17/19 14:32	TMP	G
4-Bromofluorobenzene (S)	98.2		%	79 - 114	SW846 8260B			1/17/19 14:32	TMP	G
Dibromofluoromethane (S)	98.8		%	78 - 116	SW846 8260B			1/17/19 14:32	TMP	G
Toluene-d8 (S)	96		%	76 - 127	SW846 8260B			1/17/19 14:32	TMP	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	57		mg/L	5	SM2320B-2011			1/17/19 11:17	MSA	B
Alkalinity, Total	57	2	mg/L	5	SM2320B-2011			1/17/19 11:17	MSA	B
Ammonia-N	0.547		mg/L	0.100	D6919-09			1/27/19 03:12	JAM	A
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			1/22/19 13:54	AK	A
Chloride	79.9		mg/L	2.0	EPA 300.0			1/16/19 07:47	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			1/16/19 07:47	CHW	B
Nitrate-N	9.2		mg/L	0.20	EPA 300.0			1/16/19 07:47	CHW	B
pH	7.36	1	pH_Units		S4500HB-11			1/17/19 11:17	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	1/29/19 07:00	RXB	1/30/19 16:15	RXB	F
Specific Conductance	538		umhos/cm	1	SW846 9050A			1/17/19 11:17	MSA	B
Sulfate	39.5		mg/L	2.0	EPA 300.0			1/16/19 07:47	CHW	B
Total Dissolved Solids	560		mg/L	5	S2540C-11			1/16/19 15:05	EXS	B
Total Organic Carbon (TOC)	2.9		mg/L	0.50	SW846 9060A			1/29/19 21:48	PAG	D
Turbidity	0.63		NTU	0.10	SM2130B-2011			1/17/19 04:55	MBW	B

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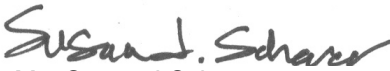
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ANALYTICAL RESULTS

Workorder: 3010953 1ST QTR 2019 CWMP-FORM 19Q

Lab ID: **3010953002** Date Collected: 1/15/2019 10:37 Matrix: Ground Water
 Sample ID: **CWMP017S** Date Received: 1/15/2019 16:57

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	25.3		mg/L	0.11	SW846 6010C	1/18/19 10:10	BMK	1/22/19 12:35	SRT	J1
Iron, Total	0.11		mg/L	0.067	SW846 6010C	1/18/19 10:10	BMK	1/22/19 12:35	SRT	J1
Magnesium, Total	12.9		mg/L	0.11	SW846 6010C	1/18/19 10:10	BMK	1/22/19 12:35	SRT	J1
Manganese, Total	0.080		mg/L	0.0056	SW846 6010C	1/18/19 10:10	BMK	1/22/19 12:35	SRT	J1
Potassium, Total	4.3		mg/L	0.56	SW846 6010C	1/18/19 10:10	BMK	1/22/19 12:35	SRT	J1
Sodium, Total	48.3		mg/L	0.56	SW846 6010C	1/18/19 10:10	BMK	1/22/19 12:35	SRT	J1
FIELD PARAMETERS										
Dissolved Oxygen	16.33		mg/L	0.01	Field			1/15/19 10:37	BGS	C
pH, Field (SM4500B)	6.31		pH_Units		Field			1/15/19 10:37	BGS	C
Specific Conductance, Field	553		umhos/cm	1	Field			1/15/19 10:37	BGS	C
Temperature	0.29		Deg. C		Field			1/15/19 10:37	BGS	C


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ANALYTICAL RESULTS

Workorder: 3010953 1ST QTR 2019 CWMP-FORM 19Q

Lab ID: **3010953003** Date Collected: 1/15/2019 13:10 Matrix: Ground Water
Sample ID: **CWMP016W** Date Received: 1/15/2019 16:57

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			1/17/19 14:54	TMP	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			1/17/19 14:54	TMP	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			1/17/19 14:54	TMP	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			1/17/19 14:54	TMP	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/17/19 14:54	TMP	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/17/19 14:54	TMP	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/17/19 14:54	TMP	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			1/17/19 14:54	TMP	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			1/17/19 14:54	TMP	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			1/17/19 14:54	TMP	G
Toluene	ND		ug/L	1.0	SW846 8260B			1/17/19 14:54	TMP	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			1/17/19 14:54	TMP	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			1/17/19 14:54	TMP	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			1/17/19 14:54	TMP	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			1/17/19 14:54	TMP	G
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	104		%	62 - 133	SW846 8260B			1/17/19 14:54	TMP	G
4-Bromofluorobenzene (S)	97.6		%	79 - 114	SW846 8260B			1/17/19 14:54	TMP	G
Dibromofluoromethane (S)	99.6		%	78 - 116	SW846 8260B			1/17/19 14:54	TMP	G
Toluene-d8 (S)	95.8		%	76 - 127	SW846 8260B			1/17/19 14:54	TMP	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	9		mg/L	5	SM2320B-2011			1/17/19 11:27	MSA	B
Alkalinity, Total	9	2	mg/L	5	SM2320B-2011			1/17/19 11:27	MSA	B
Ammonia-N	ND		mg/L	0.100	D6919-09			1/27/19 03:27	JAM	A
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			1/22/19 13:54	AK	A
Chloride	ND		mg/L	2.0	EPA 300.0			1/16/19 09:56	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			1/16/19 09:56	CHW	B
Nitrate-N	0.72		mg/L	0.20	EPA 300.0			1/16/19 09:56	CHW	B
pH	6.39	1	pH_Units		S4500HB-11			1/17/19 11:27	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	1/29/19 07:00	RXB	1/30/19 16:15	RXB	F
Specific Conductance	52		umhos/cm	1	SW846 9050A			1/17/19 11:27	MSA	B
Sulfate	11.9		mg/L	2.0	EPA 300.0			1/16/19 09:56	CHW	B
Total Dissolved Solids	212		mg/L	5	S2540C-11			1/22/19 13:15	EXS	B
Total Organic Carbon (TOC)	0.87		mg/L	0.50	SW846 9060A			1/29/19 21:48	PAG	D
Turbidity	0.72		NTU	0.10	SM2130B-2011			1/17/19 04:55	MBW	B

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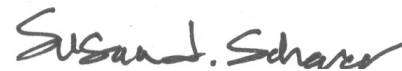
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ANALYTICAL RESULTS

Workorder: 3010953 1ST QTR 2019 CWMP-FORM 19Q

Lab ID: **3010953003** Date Collected: 1/15/2019 13:10 Matrix: Ground Water
Sample ID: **CWMP016W** Date Received: 1/15/2019 16:57

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	4.8		mg/L	0.11	SW846 6010C	1/18/19 10:10	BMK	1/22/19 12:39	SRT	J1
Iron, Total	0.11		mg/L	0.067	SW846 6010C	1/18/19 10:10	BMK	1/22/19 12:39	SRT	J1
Magnesium, Total	1.1		mg/L	0.11	SW846 6010C	1/18/19 10:10	BMK	1/22/19 12:39	SRT	J1
Manganese, Total	0.013		mg/L	0.0056	SW846 6010C	1/18/19 10:10	BMK	1/22/19 12:39	SRT	J1
Potassium, Total	ND		mg/L	0.56	SW846 6010C	1/18/19 10:10	BMK	1/22/19 12:39	SRT	J1
Sodium, Total	2.8		mg/L	0.56	SW846 6010C	1/18/19 10:10	BMK	1/22/19 12:39	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	7.89		Feet		Field			1/15/19 13:10	CLT	C
Elev Top MW Casing above MSL	311.97		Feet		Field			1/15/19 13:10	CLT	C
Flow Rate	2.47		gal/min		Field			1/15/19 13:10	CLT	C
Ground Water Elevation	304.08		ft/MSL		Field			1/15/19 13:10	CLT	C
pH, Field (SM4500B)	5.13		pH_Units		Field			1/15/19 13:10	CLT	C
Sample Depth	71.00		Feet		Field			1/15/19 13:10	CLT	C
Specific Conductance, Field	61		umhos/cm	1	Field			1/15/19 13:10	CLT	C
Temperature	9.94		Deg. C		Field			1/15/19 13:10	CLT	C
Total Well Depth	73.52		Feet		Field			1/15/19 13:10	CLT	C
Volume in Water Column	96.48		Gallons		Field			1/15/19 13:10	CLT	C
Water Level After Purge	18.55		Feet		Field			1/15/19 13:10	CLT	C
Well Volumes Purged	1.79		Vol		Field			1/15/19 13:10	CLT	C



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ANALYTICAL RESULTS

Workorder: 3010953 1ST QTR 2019 CWMP-FORM 19Q

Lab ID: **3010953004** Date Collected: 1/15/2019 14:10 Matrix: Ground Water
Sample ID: **CWMP010W** Date Received: 1/15/2019 16:57

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			1/17/19 15:17	TMP	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			1/17/19 15:17	TMP	G
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			1/17/19 15:17	TMP	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			1/17/19 15:17	TMP	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/17/19 15:17	TMP	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/17/19 15:17	TMP	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/17/19 15:17	TMP	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			1/17/19 15:17	TMP	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			1/17/19 15:17	TMP	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			1/17/19 15:17	TMP	G
Toluene	ND		ug/L	1.0	SW846 8260B			1/17/19 15:17	TMP	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			1/17/19 15:17	TMP	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			1/17/19 15:17	TMP	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			1/17/19 15:17	TMP	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			1/17/19 15:17	TMP	G
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	105		%	62 - 133	SW846 8260B			1/17/19 15:17	TMP	G
4-Bromofluorobenzene (S)	98.2		%	79 - 114	SW846 8260B			1/17/19 15:17	TMP	G
Dibromofluoromethane (S)	98.4		%	78 - 116	SW846 8260B			1/17/19 15:17	TMP	G
Toluene-d8 (S)	96.1		%	76 - 127	SW846 8260B			1/17/19 15:17	TMP	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	80		mg/L	5	SM2320B-2011			1/17/19 11:36	MSA	B
Alkalinity, Total	80	2	mg/L	5	SM2320B-2011			1/17/19 11:36	MSA	B
Ammonia-N	0.111		mg/L	0.100	D6919-09			1/27/19 03:43	JAM	A
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			1/22/19 13:54	AK	A
Chloride	49.8		mg/L	2.0	EPA 300.0			1/17/19 05:40	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			1/17/19 05:40	CHW	B
Nitrate-N	2.4		mg/L	0.20	EPA 300.0			1/17/19 05:40	CHW	B
pH	7.04	1	pH_Units		S4500HB-11			1/17/19 11:36	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	1/29/19 07:00	RXB	1/30/19 16:15	RXB	F
Specific Conductance	346		umhos/cm	1	SW846 9050A			1/17/19 11:36	MSA	B
Sulfate	23.2		mg/L	2.0	EPA 300.0			1/17/19 05:40	CHW	B
Total Dissolved Solids	275		mg/L	5	S2540C-11			1/22/19 13:15	EXS	B
Total Organic Carbon (TOC)	2.5		mg/L	0.50	SW846 9060A			1/30/19 02:21	PAG	D
Turbidity	0.63		NTU	0.10	SM2130B-2011			1/17/19 04:55	MBW	B

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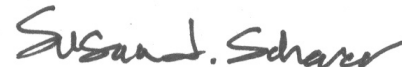
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ANALYTICAL RESULTS

Workorder: 3010953 1ST QTR 2019 CWMP-FORM 19Q

Lab ID: **3010953004** Date Collected: 1/15/2019 14:10 Matrix: Ground Water
 Sample ID: **CWMP010W** Date Received: 1/15/2019 16:57

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	15.3		mg/L	0.11	SW846 6010C	1/18/19 10:20	BMK	1/23/19 11:24	SRT	J1
Iron, Total	0.16		mg/L	0.067	SW846 6010C	1/18/19 10:20	BMK	1/23/19 11:24	SRT	J1
Magnesium, Total	12.1		mg/L	0.11	SW846 6010C	1/18/19 10:20	BMK	1/23/19 11:24	SRT	J1
Manganese, Total	0.037		mg/L	0.0056	SW846 6010C	1/18/19 10:20	BMK	1/23/19 11:24	SRT	J1
Potassium, Total	3.0		mg/L	0.56	SW846 6010C	1/18/19 10:20	BMK	1/23/19 11:24	SRT	J1
Sodium, Total	34.3		mg/L	0.56	SW846 6010C	1/18/19 10:20	BMK	1/23/19 11:24	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	8.54		Feet		Field			1/15/19 14:10	CLT	C
Elev Top MW Casing above MSL	360.90		Feet		Field			1/15/19 14:10	CLT	C
Flow Rate	1.07		gal/min		Field			1/15/19 14:10	CLT	C
Ground Water Elevation	352.36		ft/MSL		Field			1/15/19 14:10	CLT	C
pH, Field (SM4500B)	6.29		pH_Units		Field			1/15/19 14:10	CLT	C
Sample Depth	17.00		Feet		Field			1/15/19 14:10	CLT	C
Specific Conductance, Field	567		umhos/cm	1	Field			1/15/19 14:10	CLT	C
Temperature	8.29		Deg. C		Field			1/15/19 14:10	CLT	C
Total Well Depth	19.60		Feet		Field			1/15/19 14:10	CLT	C
Volume in Water Column	7.19		Gallons		Field			1/15/19 14:10	CLT	C
Water Level After Purge	15.37		Feet		Field			1/15/19 14:10	CLT	C
Well Volumes Purged	1.48		Vol		Field			1/15/19 14:10	CLT	C



Ms. Susan J Scherer
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ANALYTICAL RESULTS

Workorder: 3010953 1ST QTR 2019 CWMP-FORM 19Q

Lab ID: **3010953005** Date Collected: 1/15/2019 14:49 Matrix: Ground Water
Sample ID: **CWMP009W** Date Received: 1/15/2019 16:57

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	3.7		ug/L	1.0	SW846 8260B			1/17/19 15:39	TMP	G
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			1/17/19 15:39	TMP	G
1,1-Dichloroethane	1.3		ug/L	1.0	SW846 8260B			1/17/19 15:39	TMP	G
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			1/17/19 15:39	TMP	G
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/17/19 15:39	TMP	G
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/17/19 15:39	TMP	G
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/17/19 15:39	TMP	G
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			1/17/19 15:39	TMP	G
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			1/17/19 15:39	TMP	G
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			1/17/19 15:39	TMP	G
Toluene	ND		ug/L	1.0	SW846 8260B			1/17/19 15:39	TMP	G
Total Xylenes	ND		ug/L	3.0	SW846 8260B			1/17/19 15:39	TMP	G
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			1/17/19 15:39	TMP	G
Trichloroethene	ND		ug/L	1.0	SW846 8260B			1/17/19 15:39	TMP	G
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			1/17/19 15:39	TMP	G
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	102		%	62 - 133	SW846 8260B			1/17/19 15:39	TMP	G
4-Bromofluorobenzene (S)	99.1		%	79 - 114	SW846 8260B			1/17/19 15:39	TMP	G
Dibromofluoromethane (S)	97.9		%	78 - 116	SW846 8260B			1/17/19 15:39	TMP	G
Toluene-d8 (S)	96.5		%	76 - 127	SW846 8260B			1/17/19 15:39	TMP	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	560		mg/L	5	SM2320B-2011			1/17/19 11:49	MSA	B
Alkalinity, Total	560	2	mg/L	5	SM2320B-2011			1/17/19 11:49	MSA	B
Ammonia-N	27.0		mg/L	0.100	D6919-09			1/27/19 03:58	JAM	A
Chemical Oxygen Demand (COD)	93		mg/L	15	EPA 410.4			1/22/19 13:54	AK	A
Chloride	416		mg/L	10.0	EPA 300.0			1/16/19 08:26	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			1/16/19 08:13	CHW	B
Nitrate-N	ND		mg/L	0.20	EPA 300.0			1/16/19 08:13	CHW	B
pH	6.51	1	pH_Units		S4500HB-11			1/17/19 11:49	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	1/29/19 07:00	RXB	1/30/19 16:15	RXB	F
Specific Conductance	2320		umhos/cm	1	SW846 9050A			1/17/19 11:49	MSA	B
Sulfate	6.9		mg/L	2.0	EPA 300.0			1/16/19 08:13	CHW	B
Total Dissolved Solids	1640		mg/L	5	S2540C-11			1/16/19 15:05	EXS	B
Total Organic Carbon (TOC)	32.0		mg/L	5.0	SW846 9060A			1/30/19 02:21	PAG	D
Turbidity	66.4		NTU	0.10	SM2130B-2011			1/17/19 04:55	MBW	B

ALS Environmental Laboratory Locations Across North America

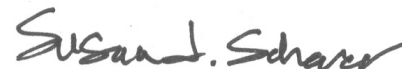
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ANALYTICAL RESULTS

Workorder: 3010953 1ST QTR 2019 CWMP-FORM 19Q

Lab ID: **3010953005** Date Collected: 1/15/2019 14:49 Matrix: Ground Water
 Sample ID: **CWMP009W** Date Received: 1/15/2019 16:57

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
METALS										
Calcium, Total	128		mg/L	0.11	SW846 6010C	1/18/19 10:20	BMK	1/23/19 11:28	SRT	J1
Iron, Total	30.2		mg/L	0.067	SW846 6010C	1/18/19 10:20	BMK	1/23/19 11:28	SRT	J1
Magnesium, Total	61.8		mg/L	0.11	SW846 6010C	1/18/19 10:20	BMK	1/23/19 11:28	SRT	J1
Manganese, Total	10.4		mg/L	0.0056	SW846 6010C	1/18/19 10:20	BMK	1/23/19 11:28	SRT	J1
Potassium, Total	29.7		mg/L	0.56	SW846 6010C	1/18/19 10:20	BMK	1/23/19 11:28	SRT	J1
Sodium, Total	145		mg/L	0.56	SW846 6010C	1/18/19 10:20	BMK	1/23/19 11:28	SRT	J1
FIELD PARAMETERS										
Depth to Water Level	8.95		Feet		Field			1/15/19 14:49	CLT	C
Elev Top MW Casing above MSL	404.20		Feet		Field			1/15/19 14:49	CLT	C
Flow Rate	4.05		gal/min		Field			1/15/19 14:49	CLT	C
Ground Water Elevation	395.25		ft/MSL		Field			1/15/19 14:49	CLT	C
pH, Field (SM4500B)	6.69		pH_Units		Field			1/15/19 14:49	CLT	C
Sample Depth	16.00		Feet		Field			1/15/19 14:49	CLT	C
Specific Conductance, Field	2321		umhos/cm	1	Field			1/15/19 14:49	CLT	C
Temperature	8.90		Deg. C		Field			1/15/19 14:49	CLT	C
Total Well Depth	19.70		Feet		Field			1/15/19 14:49	CLT	C
Volume in Water Column	6.99		Gallons		Field			1/15/19 14:49	CLT	C
Water Level After Purge	11.60		Feet		Field			1/15/19 14:49	CLT	C
Well Volumes Purged	11.59		Vol		Field			1/15/19 14:49	CLT	C



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ANALYTICAL RESULTS

Workorder: 3010953 1ST QTR 2019 CWMP-FORM 19Q

Lab ID: **3010953006**

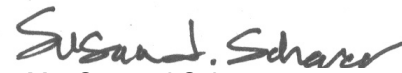
Date Collected: 1/15/2019 15:41

Matrix: Water

Sample ID: **Field Blank**

Date Received: 1/15/2019 16:57

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			1/17/19 13:47	TMP	A
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			1/17/19 13:47	TMP	A
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			1/17/19 13:47	TMP	A
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			1/17/19 13:47	TMP	A
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/17/19 13:47	TMP	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/17/19 13:47	TMP	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/17/19 13:47	TMP	A
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			1/17/19 13:47	TMP	A
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			1/17/19 13:47	TMP	A
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			1/17/19 13:47	TMP	A
Toluene	ND		ug/L	1.0	SW846 8260B			1/17/19 13:47	TMP	A
Total Xylenes	ND		ug/L	3.0	SW846 8260B			1/17/19 13:47	TMP	A
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			1/17/19 13:47	TMP	A
Trichloroethene	ND		ug/L	1.0	SW846 8260B			1/17/19 13:47	TMP	A
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			1/17/19 13:47	TMP	A
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	103		%	62 - 133	SW846 8260B			1/17/19 13:47	TMP	A
4-Bromofluorobenzene (S)	96.8		%	79 - 114	SW846 8260B			1/17/19 13:47	TMP	A
Dibromofluoromethane (S)	97.1		%	78 - 116	SW846 8260B			1/17/19 13:47	TMP	A
Toluene-d8 (S)	95.2		%	76 - 127	SW846 8260B			1/17/19 13:47	TMP	A



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ANALYTICAL RESULTS

Workorder: 3010953 1ST QTR 2019 CWMP-FORM 19Q

Lab ID: **3010953007**


Date Collected: 1/15/2019 16:57

Matrix: Water

Sample ID: **Trip Blank**

Date Received: 1/15/2019 16:57

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			1/17/19 13:24	TMP	A
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			1/17/19 13:24	TMP	A
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			1/17/19 13:24	TMP	A
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			1/17/19 13:24	TMP	A
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/17/19 13:24	TMP	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/17/19 13:24	TMP	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			1/17/19 13:24	TMP	A
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			1/17/19 13:24	TMP	A
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			1/17/19 13:24	TMP	A
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			1/17/19 13:24	TMP	A
Toluene	ND		ug/L	1.0	SW846 8260B			1/17/19 13:24	TMP	A
Total Xylenes	ND		ug/L	3.0	SW846 8260B			1/17/19 13:24	TMP	A
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			1/17/19 13:24	TMP	A
Trichloroethene	ND		ug/L	1.0	SW846 8260B			1/17/19 13:24	TMP	A
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			1/17/19 13:24	TMP	A
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Flag</i>	<i>Units</i>	<i>Limits</i>	<i>Method</i>	<i>Prepared</i>	<i>By</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	104		%	62 - 133	SW846 8260B			1/17/19 13:24	TMP	A
4-Bromofluorobenzene (S)	98.2		%	79 - 114	SW846 8260B			1/17/19 13:24	TMP	A
Dibromofluoromethane (S)	99.2		%	78 - 116	SW846 8260B			1/17/19 13:24	TMP	A
Toluene-d8 (S)	96.4		%	76 - 127	SW846 8260B			1/17/19 13:24	TMP	A



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ANALYTICAL RESULTS

Workorder: 3010953 1ST QTR 2019 CWMP-FORM 19Q

PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
3010953001	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.				
3010953001	2	CWMP018S	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
3010953002	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.				
3010953002	2	CWMP017S	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
3010953003	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.				
3010953003	2	CWMP016W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
3010953004	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.				
3010953004	2	CWMP010W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				
3010953005	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.				
3010953005	2	CWMP009W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO ₃ /L.				

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ANALYSIS - PREP METHOD CROSS REFERENCE TABLE

Workorder: 3010953 1ST QTR 2019 CWMP-FORM 19Q

Lab ID	Sample ID	Analysis Method	Prep Method
3010953001	CWMP018S	D6919-09	
3010953001	CWMP018S	EPA 300.0	
3010953001	CWMP018S	EPA 410.4	
3010953001	CWMP018S	Field	
3010953001	CWMP018S	S2540C-11	
3010953001	CWMP018S	S4500HB-11	
3010953001	CWMP018S	SM2130B-2011	
3010953001	CWMP018S	SM2320B-2011	
3010953001	CWMP018S	SW846 6010C	SW846 3015
3010953001	CWMP018S	SW846 8260B	
3010953001	CWMP018S	SW846 9050A	
3010953001	CWMP018S	SW846 9060A	
3010953001	CWMP018S	SW846 9066	420.4/9066
3010953002	CWMP017S	D6919-09	
3010953002	CWMP017S	EPA 300.0	
3010953002	CWMP017S	EPA 410.4	
3010953002	CWMP017S	Field	
3010953002	CWMP017S	S2540C-11	
3010953002	CWMP017S	S4500HB-11	
3010953002	CWMP017S	SM2130B-2011	
3010953002	CWMP017S	SM2320B-2011	
3010953002	CWMP017S	SW846 6010C	SW846 3015
3010953002	CWMP017S	SW846 8260B	
3010953002	CWMP017S	SW846 9050A	
3010953002	CWMP017S	SW846 9060A	
3010953002	CWMP017S	SW846 9066	420.4/9066
3010953003	CWMP016W	D6919-09	
3010953003	CWMP016W	EPA 300.0	
3010953003	CWMP016W	EPA 410.4	
3010953003	CWMP016W	Field	
3010953003	CWMP016W	S2540C-11	
3010953003	CWMP016W	S4500HB-11	
3010953003	CWMP016W	SM2130B-2011	
3010953003	CWMP016W	SM2320B-2011	
3010953003	CWMP016W	SW846 6010C	SW846 3015
3010953003	CWMP016W	SW846 8260B	
3010953003	CWMP016W	SW846 9050A	
3010953003	CWMP016W	SW846 9060A	
3010953003	CWMP016W	SW846 9066	420.4/9066
3010953004	CWMP010W	D6919-09	
3010953004	CWMP010W	EPA 300.0	
3010953004	CWMP010W	EPA 410.4	
3010953004	CWMP010W	Field	
3010953004	CWMP010W	S2540C-11	
3010953004	CWMP010W	S4500HB-11	
3010953004	CWMP010W	SM2130B-2011	

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ANALYSIS - PREP METHOD CROSS REFERENCE TABLE

Workorder: 3010953 1ST QTR 2019 CWMP-FORM 19Q

Lab ID	Sample ID	Analysis Method	Prep Method
3010953004	CWMP010W	SM2320B-2011	
3010953004	CWMP010W	SW846 6010C	SW846 3015
3010953004	CWMP010W	SW846 8260B	
3010953004	CWMP010W	SW846 9050A	
3010953004	CWMP010W	SW846 9060A	
3010953004	CWMP010W	SW846 9066	420.4/9066
3010953005	CWMP009W	D6919-09	
3010953005	CWMP009W	EPA 300.0	
3010953005	CWMP009W	EPA 410.4	
3010953005	CWMP009W	Field	
3010953005	CWMP009W	S2540C-11	
3010953005	CWMP009W	S4500HB-11	
3010953005	CWMP009W	SM2130B-2011	
3010953005	CWMP009W	SM2320B-2011	
3010953005	CWMP009W	SW846 6010C	SW846 3015
3010953005	CWMP009W	SW846 8260B	
3010953005	CWMP009W	SW846 9050A	
3010953005	CWMP009W	SW846 9060A	
3010953005	CWMP009W	SW846 9066	420.4/9066
3010953006	Field Blank	SW846 8260B	
3010953007	Trip Blank	SW846 8260B	

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**CHAIN OF CUSTODY/
REQUEST FOR ANALYSIS**

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

Client Name: Lancaster County Solid Waste MA
 Address: 1299 Harrisburg Pike, P.O. Box 4424
 Lancaster, PA 17604
 Contact: Mark Reider
 Phone#: (717) 735-0193
 Project Name#: Creswell/GWMP Form 19Q Wells
 Bill To: Lancaster County Solid Waste MA

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

COC #: _____
 ALS Quot# _____

Receipt Information: _____
 * 3 0 1 0 9 5 3 *

Container Type: AG AN CG PL PL PL PL PL
 Container Size: 40 ml 150 ml 40 ml 125 ml 500 ml
 Preservative: HCl H2SO4 HCl HNO3 None
 Cooler Temp: 1°C Therm ID: 352
 No. of Coolers: _____ Y N Initial

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

ANALYSES/METHOD REQUESTED

Sample Description/Location (as it will appear on the lab report)	Sample Date	Time	Matrix	TOC	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,	Alkalinity, HCO3
1. CWMP018S	1/15/19	10:18	G GW	2	1	2	X	X	1	1	1	1
2. CWMP017S	1/15/19	10:37	G GW	2	1	2	X	X	1	1	1	1
3. CWMP016W	1/15/19	13:10	G GW	2	1	2	X	X	1	1	1	1
4. CWMP010W	1/15/19	14:10	G GW	2	1	2	X	X	1	1	1	1
5. CWMP009W	1/15/19	14:49	G GW	2	1	2	X	X	1	1	1	1
6. Field Blank	1/15/19	15:41	G GW			2						
7. Trip Blank	1/15/19	16:57	G GW			2						
8												
9												
10												

Enter Number of Containers Per Sample or Field Results Below.

ALS Field Services: Pickup Labor
 Composite_Sampling Rental_Equipment
 Other: _____

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

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

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

Relinquished By / Company Name: _____ Date: 1/15/19 16:57
 Received By / Company Name: _____ Date: 1/15/19 16:57

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

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



301 Fulling Mill Road
Middletown, PA 17057

P: (717) 944-5541

F: (717) 944-1430

Condition of Sample Receipt Form

Client: LCSWMA Work Order #: 3010953 Initials: uv Date: 1-16-19

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

Cooler #: 1

Temperature (°C): 1

Thermometer ID: 352

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

*NO dates / times on CWMPOLW * w/1-16-19*

Lancaster County Solid Waste Management Authority
Creswell Landfill

Exceedence Report

<i>Parameter Name</i>	<i>Units</i>	<i>Concentration</i>	<i>Criteria Conc</i>	<i>Qualifiers</i>	<i>Criteria</i>
<i>Location ID</i>	<i>Sample Number</i>	<i>Sample Date</i>	<i>Sample Type</i>	<i>Sample Depth</i>	
CWMP001W	3010706001	01/14/2019	GW		
NITRATE-NITROGEN	mg/l	20.00	10.00		EPA-MCL
<i>Location ID</i>	<i>Sample Number</i>	<i>Sample Date</i>	<i>Sample Type</i>	<i>Sample Depth</i>	
CWMP018S	3010953001	01/15/2019	GW		
NITRATE-NITROGEN	mg/l	14.00	10.00		EPA-MCL

Lancaster County Solid Waste Management Authority
Creswell Landfill

Exceedence Report

<i>Parameter Name</i>	<i>Units</i>	<i>Concentration</i>	<i>Criteria Conc</i>	<i>Qualifiers</i>	<i>Criteria</i>
<i>Location ID</i>	<i>Sample Number</i>	<i>Sample Date</i>	<i>Sample Type</i>	<i>Sample Depth</i>	
CWMP001W	3010706001	01/14/2019	GW		
IRON, TOTAL	mg/l	6.30	0.30		EPA-SMCL
MANGANESE, TOTAL	mg/l	0.19	0.05		EPA-SMCL
<i>Location ID</i>	<i>Sample Number</i>	<i>Sample Date</i>	<i>Sample Type</i>	<i>Sample Depth</i>	
CWMP002W	3011231001	01/16/2019	GW		
MANGANESE, TOTAL	mg/l	1.20	0.05		EPA-SMCL
<i>Location ID</i>	<i>Sample Number</i>	<i>Sample Date</i>	<i>Sample Type</i>	<i>Sample Depth</i>	
CWMP003W	3011231002	01/16/2019	GW		
MANGANESE, TOTAL	mg/l	0.12	0.05		EPA-SMCL
<i>Location ID</i>	<i>Sample Number</i>	<i>Sample Date</i>	<i>Sample Type</i>	<i>Sample Depth</i>	
CWMP008W	3011494002	01/17/2019	GW		
IRON, TOTAL	mg/l	31.10	0.30		EPA-SMCL
MANGANESE, TOTAL	mg/l	17.50	0.05		EPA-SMCL
<i>Location ID</i>	<i>Sample Number</i>	<i>Sample Date</i>	<i>Sample Type</i>	<i>Sample Depth</i>	
CWMP009W	3010953005	01/15/2019	GW		
CHLORIDE	mg/l	416.00	250.00		EPA-SMCL
IRON, TOTAL	mg/l	30.20	0.30		EPA-SMCL
MANGANESE, TOTAL	mg/l	10.40	0.05		EPA-SMCL
TDS (TOTAL DISSOLVED SOLIDS)	mg/l	1,640.00	500.00		EPA-SMCL
<i>Location ID</i>	<i>Sample Number</i>	<i>Sample Date</i>	<i>Sample Type</i>	<i>Sample Depth</i>	
CWMP012W	3011494001	01/17/2019	GW		
IRON, TOTAL	mg/l	76.40	0.30		EPA-SMCL
MANGANESE, TOTAL	mg/l	0.29	0.05		EPA-SMCL
<i>Location ID</i>	<i>Sample Number</i>	<i>Sample Date</i>	<i>Sample Type</i>	<i>Sample Depth</i>	
CWMP017S	3010953002	01/15/2019	GW		
MANGANESE, TOTAL	mg/l	0.08	0.05		EPA-SMCL
TDS (TOTAL DISSOLVED SOLIDS)	mg/l	560.00	500.00		EPA-SMCL

<i>Parameter Name</i>	<i>Units</i>	<i>Concentration</i>	<i>Criteria Conc</i>	<i>Qualifiers</i>	<i>Criteria</i>
<i>Location ID</i>	<i>Sample Number</i>	<i>Sample Date</i>	<i>Sample Type</i>	<i>Sample Depth</i>	
CWMP018S	3010953001	01/15/2019	GW		
MANGANESE, TOTAL		mg/l	0.47	0.05	EPA-SMCL
TDS (TOTAL DISSOLVED SOLIDS)		mg/l	785.00	500.00	EPA-SMCL