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

May 16, 2017

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; 2nd Quarter 2017

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 "Annual" Form 19 parameters, all the thirteen (13) GWMP locations were sampled.
- Enclosed, on CD, is a csv file that should be in the format compatible with your LandLinks software. Additionally, the CD includes a PDF file of all the Forms 19, PDF files of the laboratory reports, MCL and SMCL exceedance reports as you have requested.
- Up gradient well samples where bellow MCL and SMCL except for nitrate, iron, and manganese on well 1.
- Down gradient wells had similar results with 17 &18 (surface Mann's Run) showing high concentration of chlorides, TDS and nitrate-nitrogen. Wells 9 and 10 had elevated TDS and chlorides which shows surface influence of Mann's Run. Wells 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 continue to decrease.

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

Please do not hesitate in contacting me if you have any questions or concerns at mreider@lcswma.org.

Respectfully Submitted,

Mark D. Reider
Director of Environmental Compliance

Enclosures

cc: Bob Zorbaugh; Daniel Brown; Bob Eshbach
Randy Weiss (PA DEP)

2540-FM-BWM0041 Rev. 6/2005

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

Date Prepared/Revised
05/12/2017
DEP USE ONLY
Date Received

FORM 19
MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

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

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facitlity ID (as issued by DEP): 100008

SECTION B. FACILITY INFORMATION

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

Monitoring Point Number: CWMP007W — X Well ___ Spring ___ Stream ___ Other

___ Upgradient/Upstream X Downgradient/Downstream

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

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

Depth to Water Level: 6.2 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: 1.50 ft — Elevation of Water Level: 447.2 ft./MSL

Sampling Depth: 33 ft — Volume of Water Column: 44.50 gal

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

Well Purged: X Yes ___ No — Well Volumes Purged: 2.9

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

Spring Flow Rate: ___ gpm

Sample Date (mm/dd/yy): 4/18/2017 — Sample Collection Time: 10:27

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS Environmental

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 2223292001 — Final Lab Analysis CompletionDate: 4/27/2017

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

Comments:

I.D. No 100008
Monitoring Point No. CWMP007W
Sample Date 4/18/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	ASTM D6919-09
BICARBONATE	11	SM20 2321
CALCIUM, TOTAL	19.8	SW846 6010C
CALCIUM, DISSOLVED	18.6	SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	7 ND	EPA 410.4
CHLORIDE	68.5	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	56 ND	SW846 6010C
IRON, DISSOLVED (ug/l)	56 ND	SW846 6010C
MAGNESIUM, TOTAL	10.1	SW846 6010C
MAGNESIUM, DISSOLVED	9.5	SW846 6010C
MANGANESE, TOTAL (ug/l)	6.8	SW846 6010C
MANGANESE, DISSOLVED (ug/l)	6.6	SW846 6010C
NITRATE-NITROGEN	10.4	EPA 300
pH-FIELD (SU)	4.89	FIELD
pH-LAB (SU)	6.09	SM4500B
POTASSIUM, TOTAL	2.2	SW846 6010C
POTASSIUM, DISSOLVED	2.1	6SW846 010C
SODIUM, TOTAL	33.9	SW846 6010C
SODIUM, DISSOLVED	32.2	SW 846 6010C
SPEC. COND., FIELD (umhos/cm)	422	FIELD
SPEC. COND., LAB (umhos/cm)	344	EPA 120.1
SULFATE	15.4	EPA 300
ALKALINITY	11	SM20 2320B
TDS (TOTAL DISSOLVED SOLIDS)	237	SM20 2540C
TOC (TOTAL ORGANIC CARBON)	0.51	SM20 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	4/18/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE (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.

I.D. No	100008
Monitoring Point No.	CWMP007W
Sample Date	4/18/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

1-A. Metals (Enter all data in ug/l) If initial background analyses of four consecutive analyses show essentially identical (within 5%) dissolved and total analyses, dissolved analyses may not be required, subject to written DEP approval.

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
ARSENIC, TOTAL	3.3 ND	SW846 6010C
ARSENIC, DISSOLVED	3 ND	SW846 6010C
BARIUM, TOTAL	53	SW846 6010C
BARIUM, DISSOLVED	52	SW846 6010C
CADMIUM, TOTAL	1.1 ND	SW846 6010C
CADMIUM, DISSOLVED	1.1 ND	SW846 6010C
CHROMIUM, TOTAL	2.2 ND	SW846 6010C
CHROMIUM, DISSOLVED	2.2 ND	SW846 6010C
COPPER, TOTAL	5.6 ND	SW846 6010C
COPPER, DISSOLVED	5.6 ND	SW846 6010C
LEAD-FLAMELESS, TOTAL	2.2 ND	SW846 6010C
LEAD, DISSOLVED	2.2 ND	SW846 6010C
MERCURY, TOTAL	0.5 ND	SW846 7470A
MERCURY, DISSOLVED	0.5 ND	SW846 7470A
SELENIUM, TOTAL	5.6 ND	SW846 6010C
SELENIUM, DISSOLVED	5.6 ND	SW846 6010C
SILVER, TOTAL	2.2 ND	SW846 6010C
SILVER, DISSOLVED	2.2 ND	SW846 6010C
ZINC, TOTAL	6.4	SW846 6010C
ZINC, DISSOLVED	6.2	SW846 6010C

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP007W
Sample Date	4/18/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
BROMOFORM	1 ND	SW846 8260B
BROMOMETHANE	1 ND	SW846 8260B
CARBON TETRACHLORIDE	1 ND	SW846 8260B
CHLOROBENZENE	1 ND	SW846 8260B
CHLOROETHANE	1 ND	SW846 8260B
DIBROMOCHLOROMETHANE (CHLORODIBROMOMET	1 ND	SW846 8260B
CHLOROMETHANE	1 ND	SW846 8260B
3-CHLORO-1-PROPENE	1 ND	SW846 8260B
1,2-DICHLOROBENZENE	1 ND	SW846 8260B
1,3-DICHLOROBENZENE	1 ND	SW846 8260B
1,4-DICHLOROBENZENE	1 ND	SW846 8260B
DICHLORODIFLUOROMETHANE	1 ND	SW846 8260B
1,2-DICHLOROPROPANE	1 ND	SW846 8260B
cis 1,3-DICHLOROPROPENE	1 ND	SW846 8260B
trans 1,3-DICHLOROPROPENE	1 ND	SW846 8260B
2-BUTANONE (MEK)	10 ND	SW846 8260B
4-METHYL-2-PENTANONE (MIBK)	5 ND	SW846 8260B
1,1,1,2-TETRACHLOROETHANE	1 ND	SW846 8260B
1,1,2,2-TETRACHLOROETHANE	1 ND	SW846 8260B
1,1,2-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROFLUOROMETHANE	1 ND	SW846 8260B
1,2,3-TRICHLOROPROPANE	2 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP007W
Sample Date	4/18/2017

FORM 19

ANNUAL WATER QUALITY ANALYSES

SUBTITLE D - Detection Zone Add-On LIst - When the MCL of any VOC is exceeded in the detection zone Form 50 monitoring, the following analytes must be monitored annually in the groundwater monitoring wells.

ORGANICS AND METALS (Enter all data in ug/l)

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
ACETONE	10 ND	SW846 8260B
ACRYLONITRILE	5 ND	SW846 8260B
BROMOCHLOROMETHANE) CHLOROBROMOMETHAN	1 ND	SW846 8260B
BROMODICHLOROMETHANE	1 ND	SW846 8260B
CARBON DISULFIDE	1 ND	SW846 8260B
CHLOROFORM	1 ND	SW846 8260B
1,2-DIBROMO-3-CHLOROPROPANE (DBCP) (DIBROMO	7 ND	SW846 8260B
trans 1,4-DICHLORO-2-BUTENE	3 ND	SW846 8260B
2-HEXANONE	5 ND	SW846 8260B
DIBROMOMETHANE	1 ND	SW846 8260B
IODOMETHANE	1 ND	SW846 8260B
STYRENE	1 ND	SW846 8260B
VINYL ACETATE	5 ND	SW846 8260B
ANTIMONY	2.2 ND	EPA 200.8
BERYLLIUM	1.1 ND	EPA 200.8
COBALT	5.6 ND	SW846 6010C
NICKEL	6.4	SW846 6010C
THALLIUM	1.1 ND	EPA 200.8
VANADIUM	2.2 ND	SW846 6010C

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP007W
Sample Date	4/18/2017

FORM 19

ANNUAL WATER QUALITY ANALYSES

Qualitatively Identified Organic Compounds

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

Constituent	CAS Number

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

Date Prepared/Revised
05/12/2017
DEP USE ONLY
Date Received

FORM 19
MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facitlity ID (as issued by DEP): 100008

SECTION B. FACILITY INFORMATION

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

Monitoring Point Number: CWMP001W — X Well ___ Spring ___ Stream ___ Other

X Upgradient/Upstream ___ Downgradient/Downstream

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

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

Depth to Water Level: 30.69 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: 1.23 ft — Elevation of Water Level: 484.44 ft./MSL

Sampling Depth: 57 ft — Volume of Water Column: 52.30 gal

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

Well Purged: X Yes ___ No — Well Volumes Purged: 2.3

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

Spring Flow Rate: ___ gpm

Sample Date (mm/dd/yy): 4/18/2017 — Sample Collection Time: 11:42

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS Environmental

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 2223292002 — Final Lab Analysis CompletionDate: 4/27/2017

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

Comments:

I.D. No 100008
Monitoring Point No. CWMP001W
Sample Date 4/18/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	ASTM D6919-09
BICARBONATE	6	SM20 2321
CALCIUM, TOTAL	17.2	SW846 6010C
CALCIUM, DISSOLVED	15.4	SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	7 ND	EPA 410.4
CHLORIDE	29.6	EPA 300
FLUORIDE	0.1 ND	EPA 300
IRON, TOTAL (ug/l)	600	SW846 6010C
IRON, DISSOLVED (ug/l)	56 ND	SW846 6010C
MAGNESIUM, TOTAL	12.1	SW846 6010C
MAGNESIUM, DISSOLVED	11	SW846 6010C
MANGANESE, TOTAL (ug/l)	60	SW846 6010C
MANGANESE, DISSOLVED (ug/l)	53	SW846 6010C
NITRATE-NITROGEN	20	EPA 300
pH-FIELD (SU)	4.95	FIELD
pH-LAB (SU)	5.98	SM4500B
POTASSIUM, TOTAL	2.4	SW846 6010C
POTASSIUM, DISSOLVED	2.2	6SW846 010C
SODIUM, TOTAL	15.6	SW846 6010C
SODIUM, DISSOLVED	14.8	SW 846 6010C
SPEC. COND., FIELD (umhos/cm)	328	FIELD
SPEC. COND., LAB (umhos/cm)	264	EPA 120.1
SULFATE	1.9	EPA 300
ALKALINITY	6	SM20 2320B
TDS (TOTAL DISSOLVED SOLIDS)	189	SM20 2540C
TOC (TOTAL ORGANIC CARBON)	0.5 ND	SM20 5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	22.5	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.	CWMP001W
Sample Date	4/18/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE (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.

I.D. No	100008
Monitoring Point No.	CWMP001W
Sample Date	4/18/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

1-A. Metals (Enter all data in ug/l) If initial background analyses of four consecutive analyses show essentially identical (within 5%) dissolved and total analyses, dissolved analyses may not be required, subject to written DEP approval.

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
ARSENIC, TOTAL	3.3 ND	SW846 6010C
ARSENIC, DISSOLVED	3 ND	SW846 6010C
BARIUM, TOTAL	92	SW846 6010C
BARIUM, DISSOLVED	86	SW846 6010C
CADMIUM, TOTAL	1.1 ND	SW846 6010C
CADMIUM, DISSOLVED	1.1 ND	SW846 6010C
CHROMIUM, TOTAL	2.2 ND	SW846 6010C
CHROMIUM, DISSOLVED	2.2 ND	SW846 6010C
COPPER, TOTAL	5.6 ND	SW846 6010C
COPPER, DISSOLVED	5.6 ND	SW846 6010C
LEAD-FLAMELESS, TOTAL	2.3	SW846 6010C
LEAD, DISSOLVED	2.2 ND	SW846 6010C
MERCURY, TOTAL	0.5 ND	SW846 7470A
MERCURY, DISSOLVED	0.5 ND	SW846 7470A
SELENIUM, TOTAL	5.6 ND	SW846 6010C
SELENIUM, DISSOLVED	5.6 ND	SW846 6010C
SILVER, TOTAL	2.2 ND	SW846 6010C
SILVER, DISSOLVED	2.2 ND	SW846 6010C
ZINC, TOTAL	20	SW846 6010C
ZINC, DISSOLVED	17	SW846 6010C

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP001W
Sample Date	4/18/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
BROMOFORM	1 ND	SW846 8260B
BROMOMETHANE	1 ND	SW846 8260B
CARBON TETRACHLORIDE	1 ND	SW846 8260B
CHLOROBENZENE	1 ND	SW846 8260B
CHLOROETHANE	1 ND	SW846 8260B
DIBROMOCHLOROMETHANE (CHLORODIBROMOMET	1 ND	SW846 8260B
CHLOROMETHANE	1 ND	SW846 8260B
3-CHLORO-1-PROPENE	1 ND	SW846 8260B
1,2-DICHLOROBENZENE	1 ND	SW846 8260B
1,3-DICHLOROBENZENE	1 ND	SW846 8260B
1,4-DICHLOROBENZENE	1 ND	SW846 8260B
DICHLORODIFLUOROMETHANE	1 ND	SW846 8260B
1,2-DICHLOROPROPANE	1 ND	SW846 8260B
cis 1,3-DICHLOROPROPENE	1 ND	SW846 8260B
trans 1,3-DICHLOROPROPENE	1 ND	SW846 8260B
2-BUTANONE (MEK)	10 ND	SW846 8260B
4-METHYL-2-PENTANONE (MIBK)	5 ND	SW846 8260B
1,1,1,2-TETRACHLOROETHANE	1 ND	SW846 8260B
1,1,2,2-TETRACHLOROETHANE	1 ND	SW846 8260B
1,1,2-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROFLUOROMETHANE	1 ND	SW846 8260B
1,2,3-TRICHLOROPROPANE	2 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP001W
Sample Date	4/18/2017

FORM 19

ANNUAL WATER QUALITY ANALYSES

SUBTITLE D - Detection Zone Add-On LIst - When the MCL of any VOC is exceeded in the detection zone Form 50 monitoring, the following analytes must be monitored annually in the groundwater monitoring wells.

ORGANICS AND METALS (Enter all data in ug/l)

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
ACETONE	10 ND	SW846 8260B
ACRYLONITRILE	5 ND	SW846 8260B
BROMOCHLOROMETHANE) CHLOROBROMOMETHAN	1 ND	SW846 8260B
BROMODICHLOROMETHANE	1 ND	SW846 8260B
CARBON DISULFIDE	1 ND	SW846 8260B
CHLOROFORM	1 ND	SW846 8260B
1,2-DIBROMO-3-CHLOROPROPANE (DBCP) (DIBROMO	7 ND	SW846 8260B
trans 1,4-DICHLORO-2-BUTENE	3 ND	SW846 8260B
2-HEXANONE	5 ND	SW846 8260B
DIBROMOMETHANE	1 ND	SW846 8260B
IODOMETHANE	1 ND	SW846 8260B
STYRENE	1 ND	SW846 8260B
VINYL ACETATE	5 ND	SW846 8260B
ANTIMONY	2.2 ND	EPA 200.8
BERYLLIUM	1.1 ND	EPA 200.8
COBALT	5.6 ND	SW846 6010C
NICKEL	8	SW846 6010C
THALLIUM	1.1 ND	EPA 200.8
VANADIUM	2.2 ND	SW846 6010C

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP001W
Sample Date	4/18/2017

FORM 19

ANNUAL WATER QUALITY ANALYSES

Qualitatively Identified Organic Compounds

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

Constituent	CAS Number

2540-FM-BWM0041 Rev. 6/2005

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

Date Prepared/Revised
05/12/2017
DEP USE ONLY
Date Received

FORM 19
MUNICIPAL WASTE LANDFILL
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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

Facitlity ID (as issued by DEP): 100008

SECTION B. FACILITY INFORMATION

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

Monitoring Point Number: CWMP008W — X Well ___ Spring ___ Stream ___ Other

___ Upgradient/Upstream X Downgradient/Downstream

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

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

Depth to Water Level: 3.51 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: 2.80 ft — Elevation of Water Level: 418.79 ft./MSL

Sampling Depth: 19 ft — Volume of Water Column: 3.15 gal

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

Well Purged: X Yes ___ No — Well Volumes Purged: 6.1

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

Spring Flow Rate: ___ gpm

Sample Date (mm/dd/yy): 4/18/2017 — Sample Collection Time: 14:17

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS Environmental

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 2223292003 — Final Lab Analysis CompletionDate: 4/27/2017

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

Comments:

I.D. No 100008
Monitoring Point No. CWMP008W
Sample Date 4/18/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	5.6	ASTM D6919-09
BICARBONATE	380	SM20 2321
CALCIUM, TOTAL	65.8	SW846 6010C
CALCIUM, DISSOLVED	59.8	SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	23	EPA 410.4
CHLORIDE	32.4	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	23900	SW846 6010C
IRON, DISSOLVED (ug/l)	24700	SW846 6010C
MAGNESIUM, TOTAL	30.4	SW846 6010C
MAGNESIUM, DISSOLVED	27.8	SW846 6010C
MANGANESE, TOTAL (ug/l)	16900	SW846 6010C
MANGANESE, DISSOLVED (ug/l)	16000	SW846 6010C
NITRATE-NITROGEN	0.2 ND	EPA 300
pH-FIELD (SU)	6	FIELD
pH-LAB (SU)	6.65	SM4500B
POTASSIUM, TOTAL	7.5	SW846 6010C
POTASSIUM, DISSOLVED	7.2	6SW846 010C
SODIUM, TOTAL	35.6	SW846 6010C
SODIUM, DISSOLVED	32.9	SW 846 6010C
SPEC. COND., FIELD (umhos/cm)	882	FIELD
SPEC. COND., LAB (umhos/cm)	772	EPA 120.1
SULFATE	8	EPA 300
ALKALINITY	380	SM20 2320B
TDS (TOTAL DISSOLVED SOLIDS)	427	SM20 2540C
TOC (TOTAL ORGANIC CARBON)	8.1	SM20 5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	3.31	SM 2130B

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

I.D. No	100008
Monitoring Point No.	CWMP008W
Sample Date	4/18/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
BENZENE	1.5	SW846 8260B
1,2-DIBROMOETHANE (EDB) (ETHYLENE D	1 ND	SW846 8260B
1,1-DICHLOROETHANE	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.

I.D. No	100008
Monitoring Point No.	CWMP008W
Sample Date	4/18/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

1-A. Metals (Enter all data in ug/l) If initial background analyses of four consecutive analyses show essentially identical (within 5%) dissolved and total analyses, dissolved analyses may not be required, subject to written DEP approval.

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
ARSENIC, TOTAL	3.3 ND	SW846 6010C
ARSENIC, DISSOLVED	3 ND	SW846 6010C
BARIUM, TOTAL	120	SW846 6010C
BARIUM, DISSOLVED	120	SW846 6010C
CADMIUM, TOTAL	1.1 ND	SW846 6010C
CADMIUM, DISSOLVED	1.1 ND	SW846 6010C
CHROMIUM, TOTAL	2.2 ND	SW846 6010C
CHROMIUM, DISSOLVED	2.2 ND	SW846 6010C
COPPER, TOTAL	5.6 ND	SW846 6010C
COPPER, DISSOLVED	5.6 ND	SW846 6010C
LEAD-FLAMELESS, TOTAL	2.2 ND	SW846 6010C
LEAD, DISSOLVED	2.2 ND	SW846 6010C
MERCURY, TOTAL	0.5 ND	SW846 7470A
MERCURY, DISSOLVED	0.5 ND	SW846 7470A
SELENIUM, TOTAL	5.6 ND	SW846 6010C
SELENIUM, DISSOLVED	5.6 ND	SW846 6010C
SILVER, TOTAL	2.2 ND	SW846 6010C
SILVER, DISSOLVED	2.2 ND	SW846 6010C
ZINC, TOTAL	5.6 ND	SW846 6010C
ZINC, DISSOLVED	5.6 ND	SW846 6010C

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP008W
Sample Date	4/18/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
BROMOFORM	1 ND	SW846 8260B
BROMOMETHANE	1 ND	SW846 8260B
CARBON TETRACHLORIDE	1 ND	SW846 8260B
CHLOROBENZENE	8.4	SW846 8260B
CHLOROETHANE	8.2	SW846 8260B
DIBROMOCHLOROMETHANE (CHLORODIBROMOMET	1 ND	SW846 8260B
CHLOROMETHANE	1 ND	SW846 8260B
3-CHLORO-1-PROPENE	1 ND	SW846 8260B
1,2-DICHLOROBENZENE	1.6	SW846 8260B
1,3-DICHLOROBENZENE	1 ND	SW846 8260B
1,4-DICHLOROBENZENE	11.3	SW846 8260B
DICHLORODIFLUOROMETHANE	1 ND	SW846 8260B
1,2-DICHLOROPROPANE	1 ND	SW846 8260B
cis 1,3-DICHLOROPROPENE	1 ND	SW846 8260B
trans 1,3-DICHLOROPROPENE	1 ND	SW846 8260B
2-BUTANONE (MEK)	10 ND	SW846 8260B
4-METHYL-2-PENTANONE (MIBK)	5 ND	SW846 8260B
1,1,1,2-TETRACHLOROETHANE	1 ND	SW846 8260B
1,1,2,2-TETRACHLOROETHANE	1 ND	SW846 8260B
1,1,2-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROFLUOROMETHANE	1 ND	SW846 8260B
1,2,3-TRICHLOROPROPANE	2 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP008W
Sample Date	4/18/2017

FORM 19

ANNUAL WATER QUALITY ANALYSES

SUBTITLE D - Detection Zone Add-On LIst - When the MCL of any VOC is exceeded in the detection zone Form 50 monitoring, the following analytes must be monitored annually in the groundwater monitoring wells.

ORGANICS AND METALS (Enter all data in ug/l)

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
ACETONE	10 ND	SW846 8260B
ACRYLONITRILE	5 ND	SW846 8260B
BROMOCHLOROMETHANE) CHLOROBROMOMETHAN	1 ND	SW846 8260B
BROMODICHLOROMETHANE	1 ND	SW846 8260B
CARBON DISULFIDE	1 ND	SW846 8260B
CHLOROFORM	1 ND	SW846 8260B
1,2-DIBROMO-3-CHLOROPROPANE (DBCP) (DIBROMO	7 ND	SW846 8260B
trans 1,4-DICHLORO-2-BUTENE	3 ND	SW846 8260B
2-HEXANONE	5 ND	SW846 8260B
DIBROMOMETHANE	1 ND	SW846 8260B
IODOMETHANE	1 ND	SW846 8260B
STYRENE	1 ND	SW846 8260B
VINYL ACETATE	5 ND	SW846 8260B
ANTIMONY	2.2 ND	EPA 200.8
BERYLLIUM	1.1 ND	EPA 200.8
COBALT	31	SW846 6010C
NICKEL	20	SW846 6010C
THALLIUM	1.1 ND	EPA 200.8
VANADIUM	2.2 ND	SW846 6010C

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP008W
Sample Date	4/18/2017

FORM 19

ANNUAL WATER QUALITY ANALYSES

Qualitatively Identified Organic Compounds

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

Constituent	CAS Number

2540-FM-BWM0041 Rev. 6/2005

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

Date Prepared/Revised
05/12/2017
DEP USE ONLY
Date Received

FORM 19
MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

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

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facitlity ID (as issued by DEP): 100008

SECTION B. FACILITY INFORMATION

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

Monitoring Point Number: CWMP009W — X Well ___ Spring ___ Stream ___ Other

___ Upgradient/Upstream X Downgradient/Downstream

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

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

Depth to Water Level: 9.32 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: 2.70 ft — Elevation of Water Level: 394.88 ft./MSL

Sampling Depth: 16 ft — Volume of Water Column: 6.78 gal

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

Well Purged: X Yes ___ No — Well Volumes Purged: 4.0

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

Spring Flow Rate: ___ gpm

Sample Date (mm/dd/yy): 4/18/2017 — Sample Collection Time: 14:50

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS Environmental

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 2223292004 — Final Lab Analysis CompletionDate: 4/28/2017

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

Comments:

I.D. No	100008
Monitoring Point No.	CWMP009W
Sample Date	4/18/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	35.8	ASTM D6919-09
BICARBONATE	533	SM20 2321
CALCIUM, TOTAL	179	SW846 6010C
CALCIUM, DISSOLVED	160	SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	98	EPA 410.4
CHLORIDE	541	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	38700	SW846 6010C
IRON, DISSOLVED (ug/l)	34500	SW846 6010C
MAGNESIUM, TOTAL	83.6	SW846 6010C
MAGNESIUM, DISSOLVED	75.3	SW846 6010C
MANGANESE, TOTAL (ug/l)	14800	SW846 6010C
MANGANESE, DISSOLVED (ug/l)	13700	SW846 6010C
NITRATE-NITROGEN	0.2 ND	EPA 300
pH-FIELD (SU)	5.85	FIELD
pH-LAB (SU)	6.71	SM4500B
POTASSIUM, TOTAL	34.8	SW846 6010C
POTASSIUM, DISSOLVED	32.9	6SW846 010C
SODIUM, TOTAL	155	SW846 6010C
SODIUM, DISSOLVED	163	SW 846 6010C
SPEC. COND., FIELD (umhos/cm)	2903	FIELD
SPEC. COND., LAB (umhos/cm)	2590	EPA 120.1
SULFATE	5.3	EPA 300
ALKALINITY	533	SM20 2320B
TDS (TOTAL DISSOLVED SOLIDS)	1430	SM20 2540C
TOC (TOTAL ORGANIC CARBON)	30.7	SM20 5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	22.1	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	4/18/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
BENZENE	1.2	SW846 8260B
1,2-DIBROMOETHANE (EDB) (ETHYLENE D	1 ND	SW846 8260B
1,1-DICHLOROETHANE	1.8	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.

I.D. No	100008
Monitoring Point No.	CWMP009W
Sample Date	4/18/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

1-A. Metals (Enter all data in ug/l) If initial background analyses of four consecutive analyses show essentially identical (within 5%) dissolved and total analyses, dissolved analyses may not be required, subject to written DEP approval.

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
ARSENIC, TOTAL	3.4	SW846 6010C
ARSENIC, DISSOLVED	3	SW846 6010C
BARIUM, TOTAL	850	SW846 6010C
BARIUM, DISSOLVED	760	SW846 6010C
CADMIUM, TOTAL	1.1 ND	SW846 6010C
CADMIUM, DISSOLVED	1.1 ND	SW846 6010C
CHROMIUM, TOTAL	2.2 ND	SW846 6010C
CHROMIUM, DISSOLVED	2.2 ND	SW846 6010C
COPPER, TOTAL	5.6 ND	SW846 6010C
COPPER, DISSOLVED	5.6 ND	SW846 6010C
LEAD-FLAMELESS, TOTAL	2.2 ND	SW846 6010C
LEAD, DISSOLVED	2.2 ND	SW846 6010C
MERCURY, TOTAL	0.5 ND	SW846 7470A
MERCURY, DISSOLVED	0.5 ND	SW846 7470A
SELENIUM, TOTAL	5.6 ND	SW846 6010C
SELENIUM, DISSOLVED	5.6 ND	SW846 6010C
SILVER, TOTAL	2.2 ND	SW846 6010C
SILVER, DISSOLVED	2.2 ND	SW846 6010C
ZINC, TOTAL	5.6 ND	SW846 6010C
ZINC, DISSOLVED	5.6 ND	SW846 6010C

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP009W
Sample Date	4/18/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
BROMOFORM	1 ND	SW846 8260B
BROMOMETHANE	1 ND	SW846 8260B
CARBON TETRACHLORIDE	1 ND	SW846 8260B
CHLOROBENZENE	13.7	SW846 8260B
CHLOROETHANE	12.7	SW846 8260B
DIBROMOCHLOROMETHANE (CHLORODIBROMOMET	1 ND	SW846 8260B
CHLOROMETHANE	1 ND	SW846 8260B
3-CHLORO-1-PROPENE	1 ND	SW846 8260B
1,2-DICHLOROBENZENE	1.5	SW846 8260B
1,3-DICHLOROBENZENE	1 ND	SW846 8260B
1,4-DICHLOROBENZENE	7.2	SW846 8260B
DICHLORODIFLUOROMETHANE	1 ND	SW846 8260B
1,2-DICHLOROPROPANE	1 ND	SW846 8260B
cis 1,3-DICHLOROPROPENE	1 ND	SW846 8260B
trans 1,3-DICHLOROPROPENE	1 ND	SW846 8260B
2-BUTANONE (MEK)	10 ND	SW846 8260B
4-METHYL-2-PENTANONE (MIBK)	5 ND	SW846 8260B
1,1,1,2-TETRACHLOROETHANE	1 ND	SW846 8260B
1,1,2,2-TETRACHLOROETHANE	1 ND	SW846 8260B
1,1,2-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROFLUOROMETHANE	1 ND	SW846 8260B
1,2,3-TRICHLOROPROPANE	2 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP009W
Sample Date	4/18/2017

FORM 19

ANNUAL WATER QUALITY ANALYSES

SUBTITLE D - Detection Zone Add-On LIst - When the MCL of any VOC is exceeded in the detection zone Form 50 monitoring, the following analytes must be monitored annually in the groundwater monitoring wells.

ORGANICS AND METALS (Enter all data in ug/l)

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
ACETONE	10 ND	SW846 8260B
ACRYLONITRILE	5 ND	SW846 8260B
BROMOCHLOROMETHANE) CHLOROBROMOMETHAN	1 ND	SW846 8260B
BROMODICHLOROMETHANE	1 ND	SW846 8260B
CARBON DISULFIDE	1 ND	SW846 8260B
CHLOROFORM	1 ND	SW846 8260B
1,2-DIBROMO-3-CHLOROPROPANE (DBCP) (DIBROMO	7 ND	SW846 8260B
trans 1,4-DICHLORO-2-BUTENE	3 ND	SW846 8260B
2-HEXANONE	5 ND	SW846 8260B
DIBROMOMETHANE	1 ND	SW846 8260B
IODOMETHANE	1 ND	SW846 8260B
STYRENE	1 ND	SW846 8260B
VINYL ACETATE	5 ND	SW846 8260B
ANTIMONY	2.2 ND	EPA 200.8
BERYLLIUM	1.1 ND	EPA 200.8
COBALT	58	SW846 6010C
NICKEL	67	SW846 6010C
THALLIUM	1.1 ND	EPA 200.8
VANADIUM	2.2 ND	SW846 6010C

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP009W
Sample Date	4/18/2017

FORM 19

ANNUAL WATER QUALITY ANALYSES

Qualitatively Identified Organic Compounds

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

Constituent	CAS Number

2540-FM-BWM0041 Rev. 6/2005

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

Date Prepared/Revised
05/12/2017
DEP USE ONLY
Date Received

FORM 19
MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

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

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facitlity ID (as issued by DEP): 100008

SECTION B. FACILITY INFORMATION

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

Monitoring Point Number: CWMP018S — X Well ___ Spring ___ Stream ___ Other

___ Upgradient/Upstream X Downgradient/Downstream

Location (County): Lancaster County — Municipality: Manor

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

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

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

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

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

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

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

Spring Flow Rate: ___ gpm

Sample Date (mm/dd/yy): 4/19/2017 — Sample Collection Time: 11:04

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS Environmental

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 2223701001 — Final Lab Analysis CompletionDate: 4/27/2017

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

Comments:

I.D. No	100008
Monitoring Point No.	CWMP018S
Sample Date	4/19/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	ASTM D6919-09
BICARBONATE	212	SM20 2321
CALCIUM, TOTAL	63.4	SW846 6010C
CALCIUM, DISSOLVED	56.3	SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	23	EPA 410.4
CHLORIDE	519	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	68	SW846 6010C
IRON, DISSOLVED (ug/l)	56 ND	SW846 6010C
MAGNESIUM, TOTAL	67.7	SW846 6010C
MAGNESIUM, DISSOLVED	55.6	SW846 6010C
MANGANESE, TOTAL (ug/l)	9.9	SW846 6010C
MANGANESE, DISSOLVED (ug/l)	5.6 ND	SW846 6010C
NITRATE-NITROGEN	19.2	EPA 300
pH-FIELD (SU)	8.17	FIELD
pH-LAB (SU)	8.62	SM4500B
POTASSIUM, TOTAL	15.6	SW846 6010C
POTASSIUM, DISSOLVED	15.3	6SW846 010C
SODIUM, TOTAL	314	SW846 6010C
SODIUM, DISSOLVED	291	SW 846 6010C
SPEC. COND., FIELD (umhos/cm)	2331	FIELD
SPEC. COND., LAB (umhos/cm)	2170	EPA 120.1
SULFATE	36.2	EPA 300
ALKALINITY	240	SM20 2320B
TDS (TOTAL DISSOLVED SOLIDS)	1200	SM20 2540C
TOC (TOTAL ORGANIC CARBON)	7.1	SM20 5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.78	SM 2130B

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

I.D. No	100008
Monitoring Point No.	CWMP018S
Sample Date	4/19/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE (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.

I.D. No	100008
Monitoring Point No.	CWMP018S
Sample Date	4/19/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

1-A. Metals (Enter all data in ug/l) If initial background analyses of four consecutive analyses show essentially identical (within 5%) dissolved and total analyses, dissolved analyses may not be required, subject to written DEP approval.

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
ARSENIC, TOTAL	3.3 ND	SW846 6010C
ARSENIC, DISSOLVED	3 ND	SW846 6010C
BARIUM, TOTAL	30	SW846 6010C
BARIUM, DISSOLVED	29	SW846 6010C
CADMIUM, TOTAL	1.1 ND	SW846 6010C
CADMIUM, DISSOLVED	1.1 ND	SW846 6010C
CHROMIUM, TOTAL	2.2 ND	SW846 6010C
CHROMIUM, DISSOLVED	2.2 ND	SW846 6010C
COPPER, TOTAL	9.700001	SW846 6010C
COPPER, DISSOLVED	5.6 ND	SW846 6010C
LEAD-FLAMELESS, TOTAL	2.2 ND	SW846 6010C
LEAD, DISSOLVED	2.2 ND	SW846 6010C
MERCURY, TOTAL	0.5 ND	SW846 7470A
MERCURY, DISSOLVED	0.5 ND	SW846 7470A
SELENIUM, TOTAL	5.6 ND	SW846 6010C
SELENIUM, DISSOLVED	5.6 ND	SW846 6010C
SILVER, TOTAL	2.2 ND	SW846 6010C
SILVER, DISSOLVED	2.2 ND	SW846 6010C
ZINC, TOTAL	8.9	SW846 6010C
ZINC, DISSOLVED	7.1	SW846 6010C

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP018S
Sample Date	4/19/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
BROMOFORM	1 ND	SW846 8260B
BROMOMETHANE	1 ND	SW846 8260B
CARBON TETRACHLORIDE	1 ND	SW846 8260B
CHLOROBENZENE	1 ND	SW846 8260B
CHLOROETHANE	1 ND	SW846 8260B
DIBROMOCHLOROMETHANE (CHLORODIBROMOMET	1 ND	SW846 8260B
CHLOROMETHANE	1 ND	SW846 8260B
3-CHLORO-1-PROPENE	1 ND	SW846 8260B
1,2-DICHLOROBENZENE	1 ND	SW846 8260B
1,3-DICHLOROBENZENE	1 ND	SW846 8260B
1,4-DICHLOROBENZENE	1 ND	SW846 8260B
DICHLORODIFLUOROMETHANE	1 ND	SW846 8260B
1,2-DICHLOROPROPANE	1 ND	SW846 8260B
cis 1,3-DICHLOROPROPENE	1 ND	SW846 8260B
trans 1,3-DICHLOROPROPENE	1 ND	SW846 8260B
2-BUTANONE (MEK)	10 ND	SW846 8260B
4-METHYL-2-PENTANONE (MIBK)	5 ND	SW846 8260B
1,1,1,2-TETRACHLOROETHANE	1 ND	SW846 8260B
1,1,2,2-TETRACHLOROETHANE	1 ND	SW846 8260B
1,1,2-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROFLUOROMETHANE	1 ND	SW846 8260B
1,2,3-TRICHLOROPROPANE	2 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP018S
Sample Date	4/19/2017

FORM 19

ANNUAL WATER QUALITY ANALYSES

SUBTITLE D - Detection Zone Add-On LIst - When the MCL of any VOC is exceeded in the detection zone Form 50 monitoring, the following analytes must be monitored annually in the groundwater monitoring wells.

ORGANICS AND METALS (Enter all data in ug/l)

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
ACETONE	10 ND	SW846 8260B
ACRYLONITRILE	5 ND	SW846 8260B
BROMOCHLOROMETHANE) CHLOROBROMOMETHAN	1 ND	SW846 8260B
BROMODICHLOROMETHANE	1 ND	SW846 8260B
CARBON DISULFIDE	1 ND	SW846 8260B
CHLOROFORM	1 ND	SW846 8260B
1,2-DIBROMO-3-CHLOROPROPANE (DBCP) (DIBROMO	7 ND	SW846 8260B
trans 1,4-DICHLORO-2-BUTENE	3 ND	SW846 8260B
2-HEXANONE	5 ND	SW846 8260B
DIBROMOMETHANE	1 ND	SW846 8260B
IODOMETHANE	1 ND	SW846 8260B
STYRENE	1 ND	SW846 8260B
VINYL ACETATE	5 ND	SW846 8260B
ANTIMONY	2.2 ND	EPA 200.8
BERYLLIUM	1.1 ND	EPA 200.8
COBALT	5.6 ND	SW846 6010C
NICKEL	13	SW846 6010C
THALLIUM	1.1 ND	EPA 200.8
VANADIUM	2.2 ND	SW846 6010C

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP018S
Sample Date	4/19/2017

FORM 19

ANNUAL WATER QUALITY ANALYSES

Qualitatively Identified Organic Compounds

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

Constituent	CAS Number

2540-FM-BWM0041 Rev. 6/2005

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

Date Prepared/Revised
05/12/2017
DEP USE ONLY
Date Received

FORM 19
MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

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

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facitlity ID (as issued by DEP): 100008

SECTION B. FACILITY INFORMATION

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

Monitoring Point Number: CWMP017S — X Well ___ Spring ___ Stream ___ Other

___ Upgradient/Upstream X Downgradient/Downstream

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

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

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

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

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

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

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

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

Spring Flow Rate: ___ gpm

Sample Date (mm/dd/yy): 4/19/2017 — Sample Collection Time: 11:30

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS Environmental

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 2223701002 — Final Lab Analysis CompletionDate: 4/27/2017

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

Comments:

I.D. No 100008
Monitoring Point No. CWMP017S
Sample Date 4/19/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	ASTM D6919-09
BICARBONATE	339	SM20 2321
CALCIUM, TOTAL	78.3	SW846 6010C
CALCIUM, DISSOLVED	71.8	SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	14	EPA 410.4
CHLORIDE	846	EPA 300
FLUORIDE	0.2	EPA 300
IRON, TOTAL (ug/l)	110	SW846 6010C
IRON, DISSOLVED (ug/l)	60	SW846 6010C
MAGNESIUM, TOTAL	100	SW846 6010C
MAGNESIUM, DISSOLVED	86.4	SW846 6010C
MANGANESE, TOTAL (ug/l)	91	SW846 6010C
MANGANESE, DISSOLVED (ug/l)	80	SW846 6010C
NITRATE-NITROGEN	29.8	EPA 300
pH-FIELD (SU)	7.79	FIELD
pH-LAB (SU)	8.07	SM4500B
POTASSIUM, TOTAL	20.9	SW846 6010C
POTASSIUM, DISSOLVED	19.6	6SW846 010C
SODIUM, TOTAL	537	SW846 6010C
SODIUM, DISSOLVED	534	SW 846 6010C
SPEC. COND., FIELD (umhos/cm)	3753	FIELD
SPEC. COND., LAB (umhos/cm)	3420	EPA 120.1
SULFATE	47.5	EPA 300
ALKALINITY	339	SM20 2320B
TDS (TOTAL DISSOLVED SOLIDS)	1950	SM20 2540C
TOC (TOTAL ORGANIC CARBON)	4.7	SM20 5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	1.32	SM 2130B

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

I.D. No	100008
Monitoring Point No.	CWMP017S
Sample Date	4/19/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE (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.

I.D. No	100008
Monitoring Point No.	CWMP017S
Sample Date	4/19/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

1-A. Metals (Enter all data in ug/l) If initial background analyses of four consecutive analyses show essentially identical (within 5%) dissolved and total analyses, dissolved analyses may not be required, subject to written DEP approval.

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
ARSENIC, TOTAL	3.3 ND	SW846 6010C
ARSENIC, DISSOLVED	3 ND	SW846 6010C
BARIUM, TOTAL	27	SW846 6010C
BARIUM, DISSOLVED	26	SW846 6010C
CADMIUM, TOTAL	1.1 ND	SW846 6010C
CADMIUM, DISSOLVED	1.1 ND	SW846 6010C
CHROMIUM, TOTAL	2.2 ND	SW846 6010C
CHROMIUM, DISSOLVED	2.2 ND	SW846 6010C
COPPER, TOTAL	14	SW846 6010C
COPPER, DISSOLVED	9.8	SW846 6010C
LEAD-FLAMELESS, TOTAL	2.2 ND	SW846 6010C
LEAD, DISSOLVED	2.2 ND	SW846 6010C
MERCURY, TOTAL	0.5 ND	SW846 7470A
MERCURY, DISSOLVED	0.5 ND	SW846 7470A
SELENIUM, TOTAL	5.6 ND	SW846 6010C
SELENIUM, DISSOLVED	5.6 ND	SW846 6010C
SILVER, TOTAL	2.2 ND	SW846 6010C
SILVER, DISSOLVED	2.2 ND	SW846 6010C
ZINC, TOTAL	58	SW846 6010C
ZINC, DISSOLVED	50	SW846 6010C

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP017S
Sample Date	4/19/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
BROMOFORM	1 ND	SW846 8260B
BROMOMETHANE	1 ND	SW846 8260B
CARBON TETRACHLORIDE	1 ND	SW846 8260B
CHLOROBENZENE	1 ND	SW846 8260B
CHLOROETHANE	1 ND	SW846 8260B
DIBROMOCHLOROMETHANE (CHLORODIBROMOMET	1 ND	SW846 8260B
CHLOROMETHANE	1 ND	SW846 8260B
3-CHLORO-1-PROPENE	1 ND	SW846 8260B
1,2-DICHLOROBENZENE	1 ND	SW846 8260B
1,3-DICHLOROBENZENE	1 ND	SW846 8260B
1,4-DICHLOROBENZENE	1 ND	SW846 8260B
DICHLORODIFLUOROMETHANE	1 ND	SW846 8260B
1,2-DICHLOROPROPANE	1 ND	SW846 8260B
cis 1,3-DICHLOROPROPENE	1 ND	SW846 8260B
trans 1,3-DICHLOROPROPENE	1 ND	SW846 8260B
2-BUTANONE (MEK)	10 ND	SW846 8260B
4-METHYL-2-PENTANONE (MIBK)	5 ND	SW846 8260B
1,1,1,2-TETRACHLOROETHANE	1 ND	SW846 8260B
1,1,2,2-TETRACHLOROETHANE	1 ND	SW846 8260B
1,1,2-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROFLUOROMETHANE	1 ND	SW846 8260B
1,2,3-TRICHLOROPROPANE	2 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP017S
Sample Date	4/19/2017

FORM 19

ANNUAL WATER QUALITY ANALYSES

SUBTITLE D - Detection Zone Add-On LIst - When the MCL of any VOC is exceeded in the detection zone Form 50 monitoring, the following analytes must be monitored annually in the groundwater monitoring wells.

ORGANICS AND METALS (Enter all data in ug/l)

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
ACETONE	10 ND	SW846 8260B
ACRYLONITRILE	5 ND	SW846 8260B
BROMOCHLOROMETHANE) CHLOROBROMOMETHAN	1 ND	SW846 8260B
BROMODICHLOROMETHANE	1 ND	SW846 8260B
CARBON DISULFIDE	1 ND	SW846 8260B
CHLOROFORM	1 ND	SW846 8260B
1,2-DIBROMO-3-CHLOROPROPANE (DBCP) (DIBROMO	7 ND	SW846 8260B
trans 1,4-DICHLORO-2-BUTENE	3 ND	SW846 8260B
2-HEXANONE	5 ND	SW846 8260B
DIBROMOMETHANE	1 ND	SW846 8260B
IODOMETHANE	1 ND	SW846 8260B
STYRENE	1 ND	SW846 8260B
VINYL ACETATE	5 ND	SW846 8260B
ANTIMONY	2.2 ND	EPA 200.8
BERYLLIUM	1.1 ND	EPA 200.8
COBALT	5.6 ND	SW846 6010C
NICKEL	9.8	SW846 6010C
THALLIUM	1.1 ND	EPA 200.8
VANADIUM	2.2 ND	SW846 6010C

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP017S
Sample Date	4/19/2017

FORM 19

ANNUAL WATER QUALITY ANALYSES

Qualitatively Identified Organic Compounds

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

Constituent	CAS Number

2540-FM-BWM0041 Rev. 6/2005

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

Date Prepared/Revised
05/12/2017
DEP USE ONLY
Date Received

FORM 19
MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

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

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facitlity ID (as issued by DEP): 100008

SECTION B. FACILITY INFORMATION

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

Monitoring Point Number: CWMP016W — X Well ___ Spring ___ Stream ___ Other

___ Upgradient/Upstream X Downgradient/Downstream

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

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

Depth to Water Level: 9.71 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: 2.53 ft — Elevation of Water Level: 302.26 ft./MSL

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

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

Well Purged: X Yes ___ No — Well Volumes Purged: 1.9

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

Spring Flow Rate: ___ gpm

Sample Date (mm/dd/yy): 4/19/2017 — Sample Collection Time: 13:38

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS Environmental

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 2223701003 — Final Lab Analysis CompletionDate: 4/27/2017

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

Comments:

I.D. No 100008
Monitoring Point No. CWMP016W
Sample Date 4/19/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	ASTM D6919-09
BICARBONATE	8	SM20 2321
CALCIUM, TOTAL	5.3	SW846 6010C
CALCIUM, DISSOLVED	4.8	SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	7 ND	EPA 410.4
CHLORIDE	2.5	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	170	SW846 6010C
IRON, DISSOLVED (ug/l)	56 ND	SW846 6010C
MAGNESIUM, TOTAL	1.3	SW846 6010C
MAGNESIUM, DISSOLVED	1.2	SW846 6010C
MANGANESE, TOTAL (ug/l)	7	SW846 6010C
MANGANESE, DISSOLVED (ug/l)	5.8	SW846 6010C
NITRATE-NITROGEN	0.54	EPA 300
pH-FIELD (SU)	5.02	FIELD
pH-LAB (SU)	6.47	SM4500B
POTASSIUM, TOTAL	0.43	SW846 6010C
POTASSIUM, DISSOLVED	0.43	6SW846 010C
SODIUM, TOTAL	3.4	SW846 6010C
SODIUM, DISSOLVED	3.1	SW 846 6010C
SPEC. COND., FIELD (umhos/cm)	65	FIELD
SPEC. COND., LAB (umhos/cm)	52	EPA 120.1
SULFATE	12.2	EPA 300
ALKALINITY	8	SM20 2320B
TDS (TOTAL DISSOLVED SOLIDS)	62	SM20 2540C
TOC (TOTAL ORGANIC CARBON)	0.86	SM20 5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.68	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	4/19/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE (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.

I.D. No	100008
Monitoring Point No.	CWMP016W
Sample Date	4/19/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

1-A. Metals (Enter all data in ug/l) If initial background analyses of four consecutive analyses show essentially identical (within 5%) dissolved and total analyses, dissolved analyses may not be required, subject to written DEP approval.

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
ARSENIC, TOTAL	3.3 ND	SW846 6010C
ARSENIC, DISSOLVED	3 ND	SW846 6010C
BARIUM, TOTAL	10	SW846 6010C
BARIUM, DISSOLVED	8.6	SW846 6010C
CADMIUM, TOTAL	1.1 ND	SW846 6010C
CADMIUM, DISSOLVED	1.1 ND	SW846 6010C
CHROMIUM, TOTAL	2.2 ND	SW846 6010C
CHROMIUM, DISSOLVED	2.2 ND	SW846 6010C
COPPER, TOTAL	5.6 ND	SW846 6010C
COPPER, DISSOLVED	5.6 ND	SW846 6010C
LEAD-FLAMELESS, TOTAL	2.2 ND	SW846 6010C
LEAD, DISSOLVED	2.2 ND	SW846 6010C
MERCURY, TOTAL	0.5 ND	SW846 7470A
MERCURY, DISSOLVED	0.5 ND	SW846 7470A
SELENIUM, TOTAL	5.6 ND	SW846 6010C
SELENIUM, DISSOLVED	5.6 ND	SW846 6010C
SILVER, TOTAL	2.2 ND	SW846 6010C
SILVER, DISSOLVED	2.2 ND	SW846 6010C
ZINC, TOTAL	5.6 ND	SW846 6010C
ZINC, DISSOLVED	5.6 ND	SW846 6010C

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP016W
Sample Date	4/19/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
BROMOFORM	1 ND	SW846 8260B
BROMOMETHANE	1 ND	SW846 8260B
CARBON TETRACHLORIDE	1 ND	SW846 8260B
CHLOROBENZENE	1 ND	SW846 8260B
CHLOROETHANE	1 ND	SW846 8260B
DIBROMOCHLOROMETHANE (CHLORODIBROMOMET	1 ND	SW846 8260B
CHLOROMETHANE	1 ND	SW846 8260B
3-CHLORO-1-PROPENE	1 ND	SW846 8260B
1,2-DICHLOROBENZENE	1 ND	SW846 8260B
1,3-DICHLOROBENZENE	1 ND	SW846 8260B
1,4-DICHLOROBENZENE	1 ND	SW846 8260B
DICHLORODIFLUOROMETHANE	1 ND	SW846 8260B
1,2-DICHLOROPROPANE	1 ND	SW846 8260B
cis 1,3-DICHLOROPROPENE	1 ND	SW846 8260B
trans 1,3-DICHLOROPROPENE	1 ND	SW846 8260B
2-BUTANONE (MEK)	10 ND	SW846 8260B
4-METHYL-2-PENTANONE (MIBK)	5 ND	SW846 8260B
1,1,1,2-TETRACHLOROETHANE	1 ND	SW846 8260B
1,1,2,2-TETRACHLOROETHANE	1 ND	SW846 8260B
1,1,2-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROFLUOROMETHANE	1 ND	SW846 8260B
1,2,3-TRICHLOROPROPANE	2 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP016W
Sample Date	4/19/2017

FORM 19

ANNUAL WATER QUALITY ANALYSES

SUBTITLE D - Detection Zone Add-On LIst - When the MCL of any VOC is exceeded in the detection zone Form 50 monitoring, the following analytes must be monitored annually in the groundwater monitoring wells.

ORGANICS AND METALS (Enter all data in ug/l)

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
ACETONE	10 ND	SW846 8260B
ACRYLONITRILE	5 ND	SW846 8260B
BROMOCHLOROMETHANE) CHLOROBROMOMETHAN	1 ND	SW846 8260B
BROMODICHLOROMETHANE	1 ND	SW846 8260B
CARBON DISULFIDE	1 ND	SW846 8260B
CHLOROFORM	1 ND	SW846 8260B
1,2-DIBROMO-3-CHLOROPROPANE (DBCP) (DIBROMO	7 ND	SW846 8260B
trans 1,4-DICHLORO-2-BUTENE	3 ND	SW846 8260B
2-HEXANONE	5 ND	SW846 8260B
DIBROMOMETHANE	1 ND	SW846 8260B
IODOMETHANE	1 ND	SW846 8260B
STYRENE	1 ND	SW846 8260B
VINYL ACETATE	5 ND	SW846 8260B
ANTIMONY	2.2 ND	EPA 200.8
BERYLLIUM	1.1 ND	EPA 200.8
COBALT	5.6 ND	SW846 6010C
NICKEL	5.6 ND	SW846 6010C
THALLIUM	1.1 ND	EPA 200.8
VANADIUM	2.2 ND	SW846 6010C

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP016W
Sample Date	4/19/2017

FORM 19

ANNUAL WATER QUALITY ANALYSES

Qualitatively Identified Organic Compounds

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

Constituent	CAS Number

2540-FM-BWM0041 Rev. 6/2005

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

Date Prepared/Revised
05/12/2017
DEP USE ONLY
Date Received

FORM 19
MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

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

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facitlity ID (as issued by DEP): 100008

SECTION B. FACILITY INFORMATION

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

Monitoring Point Number: CWMP010W — X Well ___ Spring ___ Stream ___ Other

___ Upgradient/Upstream X Downgradient/Downstream

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

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

Depth to Water Level: 8.88 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: 2.10 ft — Elevation of Water Level: 352.02 ft./MSL

Sampling Depth: 17 ft — Volume of Water Column: 7.00 gal

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

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

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

Spring Flow Rate: ___ gpm

Sample Date (mm/dd/yy): 4/19/2017 — Sample Collection Time: 14:40

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS Environmental

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 2223701004 — Final Lab Analysis CompletionDate: 4/27/2017

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

Comments:

I.D. No 100008
Monitoring Point No. CWMP010W
Sample Date 4/19/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	ASTM D6919-09
BICARBONATE	147	SM20 2321
CALCIUM, TOTAL	30.6	SW846 6010C
CALCIUM, DISSOLVED	26.5	SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	9	EPA 410.4
CHLORIDE	181	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	110	SW846 6010C
IRON, DISSOLVED (ug/l)	56 ND	SW846 6010C
MAGNESIUM, TOTAL	25	SW846 6010C
MAGNESIUM, DISSOLVED	23.5	SW846 6010C
MANGANESE, TOTAL (ug/l)	84	SW846 6010C
MANGANESE, DISSOLVED (ug/l)	7.5	SW846 6010C
NITRATE-NITROGEN	4.1	EPA 300
pH-FIELD (SU)	5.95	FIELD
pH-LAB (SU)	7.23	SM4500B
POTASSIUM, TOTAL	6	SW846 6010C
POTASSIUM, DISSOLVED	5.7	6SW846 010C
SODIUM, TOTAL	128	SW846 6010C
SODIUM, DISSOLVED	122	SW 846 6010C
SPEC. COND., FIELD (umhos/cm)	1149	FIELD
SPEC. COND., LAB (umhos/cm)	931	EPA 120.1
SULFATE	31.3	EPA 300
ALKALINITY	147	SM20 2320B
TDS (TOTAL DISSOLVED SOLIDS)	525	SM20 2540C
TOC (TOTAL ORGANIC CARBON)	3.8	SM20 5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	1.21	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	4/19/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE (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.

I.D. No	100008
Monitoring Point No.	CWMP010W
Sample Date	4/19/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

1-A. Metals (Enter all data in ug/l) If initial background analyses of four consecutive analyses show essentially identical (within 5%) dissolved and total analyses, dissolved analyses may not be required, subject to written DEP approval.

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
ARSENIC, TOTAL	3.3 ND	SW846 6010C
ARSENIC, DISSOLVED	3 ND	SW846 6010C
BARIUM, TOTAL	35	SW846 6010C
BARIUM, DISSOLVED	31	SW846 6010C
CADMIUM, TOTAL	1.1 ND	SW846 6010C
CADMIUM, DISSOLVED	1.1 ND	SW846 6010C
CHROMIUM, TOTAL	3.6	SW846 6010C
CHROMIUM, DISSOLVED	2.9	SW846 6010C
COPPER, TOTAL	8	SW846 6010C
COPPER, DISSOLVED	5.6 ND	SW846 6010C
LEAD-FLAMELESS, TOTAL	2.2 ND	SW846 6010C
LEAD, DISSOLVED	2.2 ND	SW846 6010C
MERCURY, TOTAL	0.5 ND	SW846 7470A
MERCURY, DISSOLVED	0.5 ND	SW846 7470A
SELENIUM, TOTAL	5.6 ND	SW846 6010C
SELENIUM, DISSOLVED	5.6 ND	SW846 6010C
SILVER, TOTAL	2.2 ND	SW846 6010C
SILVER, DISSOLVED	2.2 ND	SW846 6010C
ZINC, TOTAL	5.6 ND	SW846 6010C
ZINC, DISSOLVED	5.6 ND	SW846 6010C

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP010W
Sample Date	4/19/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
BROMOFORM	1 ND	SW846 8260B
BROMOMETHANE	1 ND	SW846 8260B
CARBON TETRACHLORIDE	1 ND	SW846 8260B
CHLOROBENZENE	1 ND	SW846 8260B
CHLOROETHANE	1 ND	SW846 8260B
DIBROMOCHLOROMETHANE (CHLORODIBROMOMET	1 ND	SW846 8260B
CHLOROMETHANE	1 ND	SW846 8260B
3-CHLORO-1-PROPENE	1 ND	SW846 8260B
1,2-DICHLOROBENZENE	1 ND	SW846 8260B
1,3-DICHLOROBENZENE	1 ND	SW846 8260B
1,4-DICHLOROBENZENE	1 ND	SW846 8260B
DICHLORODIFLUOROMETHANE	1 ND	SW846 8260B
1,2-DICHLOROPROPANE	1 ND	SW846 8260B
cis 1,3-DICHLOROPROPENE	1 ND	SW846 8260B
trans 1,3-DICHLOROPROPENE	1 ND	SW846 8260B
2-BUTANONE (MEK)	10 ND	SW846 8260B
4-METHYL-2-PENTANONE (MIBK)	5 ND	SW846 8260B
1,1,1,2-TETRACHLOROETHANE	1 ND	SW846 8260B
1,1,2,2-TETRACHLOROETHANE	1 ND	SW846 8260B
1,1,2-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROFLUOROMETHANE	1 ND	SW846 8260B
1,2,3-TRICHLOROPROPANE	2 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP010W
Sample Date	4/19/2017

FORM 19

ANNUAL WATER QUALITY ANALYSES

SUBTITLE D - Detection Zone Add-On LIst - When the MCL of any VOC is exceeded in the detection zone Form 50 monitoring, the following analytes must be monitored annually in the groundwater monitoring wells.

ORGANICS AND METALS (Enter all data in ug/l)

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
ACETONE	10 ND	SW846 8260B
ACRYLONITRILE	5 ND	SW846 8260B
BROMOCHLOROMETHANE) CHLOROBROMOMETHAN	1 ND	SW846 8260B
BROMODICHLOROMETHANE	1 ND	SW846 8260B
CARBON DISULFIDE	1 ND	SW846 8260B
CHLOROFORM	1 ND	SW846 8260B
1,2-DIBROMO-3-CHLOROPROPANE (DBCP) (DIBROMO	7 ND	SW846 8260B
trans 1,4-DICHLORO-2-BUTENE	3 ND	SW846 8260B
2-HEXANONE	5 ND	SW846 8260B
DIBROMOMETHANE	1 ND	SW846 8260B
IODOMETHANE	1 ND	SW846 8260B
STYRENE	1 ND	SW846 8260B
VINYL ACETATE	5 ND	SW846 8260B
ANTIMONY	2.2 ND	EPA 200.8
BERYLLIUM	1.1 ND	EPA 200.8
COBALT	5.6 ND	SW846 6010C
NICKEL	19	SW846 6010C
THALLIUM	1.1 ND	EPA 200.8
VANADIUM	2.2 ND	SW846 6010C

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP010W
Sample Date	4/19/2017

FORM 19

ANNUAL WATER QUALITY ANALYSES

Qualitatively Identified Organic Compounds

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

Constituent	CAS Number

2540-FM-BWM0041 Rev. 6/2005

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

Date Prepared/Revised
05/12/2017
DEP USE ONLY
Date Received

FORM 19
MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

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

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facitlity ID (as issued by DEP): 100008

SECTION B. FACILITY INFORMATION

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

Monitoring Point Number: CWMP005W — X Well ___ Spring ___ Stream ___ Other

X Upgradient/Upstream ___ Downgradient/Downstream

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

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

Depth to Water Level: 43.51 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: -0.37 ft — Elevation of Water Level: 469.92 ft./MSL

Sampling Depth: 130 ft — Volume of Water Column: 141.71 gal

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

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

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

Spring Flow Rate: ___ gpm

Sample Date (mm/dd/yy): 4/20/2017 — Sample Collection Time: 12:00

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS Environmental

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 2224022001 — Final Lab Analysis CompletionDate: 5/3/2017

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

Comments:

I.D. No 100008
Monitoring Point No. CWMP005W
Sample Date 4/20/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	ASTM D6919-09
BICARBONATE	14	SM20 2321
CALCIUM, TOTAL	14.2	SW846 6010C
CALCIUM, DISSOLVED	14.4	SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	7 ND	EPA 410.4
CHLORIDE	63.5	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	56 ND	SW846 6010C
IRON, DISSOLVED (ug/l)	56 ND	SW846 6010C
MAGNESIUM, TOTAL	8.5	SW846 6010C
MAGNESIUM, DISSOLVED	8.7	SW846 6010C
MANGANESE, TOTAL (ug/l)	49	SW846 6010C
MANGANESE, DISSOLVED (ug/l)	50	SW846 6010C
NITRATE-NITROGEN	9.5	EPA 300
pH-FIELD (SU)	4.84	FIELD
pH-LAB (SU)	5.76	SM4500B
POTASSIUM, TOTAL	2.2	SW846 6010C
POTASSIUM, DISSOLVED	2.2	6SW846 010C
SODIUM, TOTAL	29.3	SW846 6010C
SODIUM, DISSOLVED	30.3	SW 846 6010C
SPEC. COND., FIELD (umhos/cm)	365	FIELD
SPEC. COND., LAB (umhos/cm)	301	EPA 120.1
SULFATE	2.6	EPA 300
ALKALINITY	14	SM20 2320B
TDS (TOTAL DISSOLVED SOLIDS)	220	SM20 2540C
TOC (TOTAL ORGANIC CARBON)	0.7	SM20 5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.38	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	4/20/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE (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.

I.D. No	100008
Monitoring Point No.	CWMP005W
Sample Date	4/20/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

1-A. Metals (Enter all data in ug/l) If initial background analyses of four consecutive analyses show essentially identical (within 5%) dissolved and total analyses, dissolved analyses may not be required, subject to written DEP approval.

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
ARSENIC, TOTAL	3.3 ND	SW846 6010C
ARSENIC, DISSOLVED	3 ND	SW846 6010C
BARIUM, TOTAL	48	SW846 6010C
BARIUM, DISSOLVED	49	SW846 6010C
CADMIUM, TOTAL	1.1 ND	SW846 6010C
CADMIUM, DISSOLVED	1.1 ND	SW846 6010C
CHROMIUM, TOTAL	2.2 ND	SW846 6010C
CHROMIUM, DISSOLVED	2.2 ND	SW846 6010C
COPPER, TOTAL	5.6 ND	SW846 6010C
COPPER, DISSOLVED	5.6 ND	SW846 6010C
LEAD-FLAMELESS, TOTAL	2.2 ND	SW846 6010C
LEAD, DISSOLVED	2.2 ND	SW846 6010C
MERCURY, TOTAL	0.5 ND	SW846 7470A
MERCURY, DISSOLVED	0.5 ND	SW846 7470A
SELENIUM, TOTAL	5.6 ND	SW846 6010C
SELENIUM, DISSOLVED	5.6 ND	SW846 6010C
SILVER, TOTAL	2.2 ND	SW846 6010C
SILVER, DISSOLVED	2.2 ND	SW846 6010C
ZINC, TOTAL	9.8	SW846 6010C
ZINC, DISSOLVED	8	SW846 6010C

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP005W
Sample Date	4/20/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
BROMOFORM	1 ND	SW846 8260B
BROMOMETHANE	1 ND	SW846 8260B
CARBON TETRACHLORIDE	1 ND	SW846 8260B
CHLOROBENZENE	1 ND	SW846 8260B
CHLOROETHANE	1 ND	SW846 8260B
DIBROMOCHLOROMETHANE (CHLORODIBROMOMET	1 ND	SW846 8260B
CHLOROMETHANE	1 ND	SW846 8260B
3-CHLORO-1-PROPENE	1 ND	SW846 8260B
1,2-DICHLOROBENZENE	1 ND	SW846 8260B
1,3-DICHLOROBENZENE	1 ND	SW846 8260B
1,4-DICHLOROBENZENE	1 ND	SW846 8260B
DICHLORODIFLUOROMETHANE	1 ND	SW846 8260B
1,2-DICHLOROPROPANE	1 ND	SW846 8260B
cis 1,3-DICHLOROPROPENE	1 ND	SW846 8260B
trans 1,3-DICHLOROPROPENE	1 ND	SW846 8260B
2-BUTANONE (MEK)	10 ND	SW846 8260B
4-METHYL-2-PENTANONE (MIBK)	5 ND	SW846 8260B
1,1,1,2-TETRACHLOROETHANE	1 ND	SW846 8260B
1,1,2,2-TETRACHLOROETHANE	1 ND	SW846 8260B
1,1,2-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROFLUOROMETHANE	1 ND	SW846 8260B
1,2,3-TRICHLOROPROPANE	2 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP005W
Sample Date	4/20/2017

FORM 19

ANNUAL WATER QUALITY ANALYSES

SUBTITLE D - Detection Zone Add-On LIst - When the MCL of any VOC is exceeded in the detection zone Form 50 monitoring, the following analytes must be monitored annually in the groundwater monitoring wells.

ORGANICS AND METALS (Enter all data in ug/l)

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
ACETONE	10 ND	SW846 8260B
ACRYLONITRILE	5 ND	SW846 8260B
BROMOCHLOROMETHANE) CHLOROBROMOMETHAN	1 ND	SW846 8260B
BROMODICHLOROMETHANE	1 ND	SW846 8260B
CARBON DISULFIDE	1 ND	SW846 8260B
CHLOROFORM	1 ND	SW846 8260B
1,2-DIBROMO-3-CHLOROPROPANE (DBCP) (DIBROMO	7 ND	SW846 8260B
trans 1,4-DICHLORO-2-BUTENE	3 ND	SW846 8260B
2-HEXANONE	5 ND	SW846 8260B
DIBROMOMETHANE	1 ND	SW846 8260B
IODOMETHANE	1 ND	SW846 8260B
STYRENE	1 ND	SW846 8260B
VINYL ACETATE	5 ND	SW846 8260B
ANTIMONY	2.2 ND	EPA 200.8
BERYLLIUM	1.1 ND	EPA 200.8
COBALT	5.6 ND	SW846 6010C
NICKEL	5.7	SW846 6010C
THALLIUM	1.1 ND	EPA 200.8
VANADIUM	2.2 ND	SW846 6010C

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP005W
Sample Date	4/20/2017

FORM 19

ANNUAL WATER QUALITY ANALYSES

Qualitatively Identified Organic Compounds

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

Constituent	CAS Number

2540-FM-BWM0041 Rev. 6/2005

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

Date Prepared/Revised
05/12/2017
DEP USE ONLY
Date Received

FORM 19
MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

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

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facitlity ID (as issued by DEP): 100008

SECTION B. FACILITY INFORMATION

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

Monitoring Point Number: CWMP004W — X Well ___ Spring ___ Stream ___ Other

___ Upgradient/Upstream X Downgradient/Downstream

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

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

Depth to Water Level: 130.78 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: -1.37 ft — Elevation of Water Level: 398.75 ft./MSL

Sampling Depth: 130 ft — Volume of Water Column: 13.54 gal

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

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

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

Spring Flow Rate: ___ gpm

Sample Date (mm/dd/yy): 4/21/2017 — Sample Collection Time: 10:05

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS Environmental

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 2224366001 — Final Lab Analysis CompletionDate: 5/3/2017

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

Comments:

I.D. No 100008
Monitoring Point No. CWMP004W
Sample Date 4/21/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	ASTM D6919-09
BICARBONATE	26	SM20 2321
CALCIUM, TOTAL	19.4	SW846 6010C
CALCIUM, DISSOLVED	20.1	SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	7 ND	EPA 410.4
CHLORIDE	44.2	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	56 ND	SW846 6010C
IRON, DISSOLVED (ug/l)	56 ND	SW846 6010C
MAGNESIUM, TOTAL	6.6	SW846 6010C
MAGNESIUM, DISSOLVED	6.5	SW846 6010C
MANGANESE, TOTAL (ug/l)	8.7	SW846 6010C
MANGANESE, DISSOLVED (ug/l)	8.3	SW846 6010C
NITRATE-NITROGEN	7	EPA 300
pH-FIELD (SU)	5.66	FIELD
pH-LAB (SU)	6.16	SM4500B
POTASSIUM, TOTAL	1.3	SW846 6010C
POTASSIUM, DISSOLVED	1.3	6SW846 010C
SODIUM, TOTAL	14.7	SW846 6010C
SODIUM, DISSOLVED	14.7	SW 846 6010C
SPEC. COND., FIELD (umhos/cm)	290	FIELD
SPEC. COND., LAB (umhos/cm)	229	EPA 120.1
SULFATE	6	EPA 300
ALKALINITY	26	SM20 2320B
TDS (TOTAL DISSOLVED SOLIDS)	191	SM20 2540C
TOC (TOTAL ORGANIC CARBON)	0.71	SM20 5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.6	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	4/21/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE (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.

I.D. No	100008
Monitoring Point No.	CWMP004W
Sample Date	4/21/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

1-A. Metals (Enter all data in ug/l) If initial background analyses of four consecutive analyses show essentially identical (within 5%) dissolved and total analyses, dissolved analyses may not be required, subject to written DEP approval.

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
ARSENIC, TOTAL	3.3 ND	SW846 6010C
ARSENIC, DISSOLVED	3 ND	SW846 6010C
BARIUM, TOTAL	11	SW846 6010C
BARIUM, DISSOLVED	11	SW846 6010C
CADMIUM, TOTAL	1.1 ND	SW846 6010C
CADMIUM, DISSOLVED	1.1 ND	SW846 6010C
CHROMIUM, TOTAL	2.9	SW846 6010C
CHROMIUM, DISSOLVED	2.2 ND	SW846 6010C
COPPER, TOTAL	5.6 ND	SW846 6010C
COPPER, DISSOLVED	5.6 ND	SW846 6010C
LEAD-FLAMELESS, TOTAL	2.2 ND	SW846 6010C
LEAD, DISSOLVED	2.2 ND	SW846 6010C
MERCURY, TOTAL	0.5 ND	SW846 7470A
MERCURY, DISSOLVED	0.5 ND	SW846 7470A
SELENIUM, TOTAL	5.6 ND	SW846 6010C
SELENIUM, DISSOLVED	5.6 ND	SW846 6010C
SILVER, TOTAL	2.2 ND	SW846 6010C
SILVER, DISSOLVED	2.2 ND	SW846 6010C
ZINC, TOTAL	5.6 ND	SW846 6010C
ZINC, DISSOLVED	5.6 ND	SW846 6010C

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP004W
Sample Date	4/21/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
BROMOFORM	1 ND	SW846 8260B
BROMOMETHANE	1 ND	SW846 8260B
CARBON TETRACHLORIDE	1 ND	SW846 8260B
CHLOROBENZENE	1 ND	SW846 8260B
CHLOROETHANE	1 ND	SW846 8260B
DIBROMOCHLOROMETHANE (CHLORODIBROMOMET	1 ND	SW846 8260B
CHLOROMETHANE	1 ND	SW846 8260B
3-CHLORO-1-PROPENE	1 ND	SW846 8260B
1,2-DICHLOROBENZENE	1 ND	SW846 8260B
1,3-DICHLOROBENZENE	1 ND	SW846 8260B
1,4-DICHLOROBENZENE	1 ND	SW846 8260B
DICHLORODIFLUOROMETHANE	1 ND	SW846 8260B
1,2-DICHLOROPROPANE	1 ND	SW846 8260B
cis 1,3-DICHLOROPROPENE	1 ND	SW846 8260B
trans 1,3-DICHLOROPROPENE	1 ND	SW846 8260B
2-BUTANONE (MEK)	10 ND	SW846 8260B
4-METHYL-2-PENTANONE (MIBK)	5 ND	SW846 8260B
1,1,1,2-TETRACHLOROETHANE	1 ND	SW846 8260B
1,1,2,2-TETRACHLOROETHANE	1 ND	SW846 8260B
1,1,2-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROFLUOROMETHANE	1 ND	SW846 8260B
1,2,3-TRICHLOROPROPANE	2 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP004W
Sample Date	4/21/2017

FORM 19

ANNUAL WATER QUALITY ANALYSES

SUBTITLE D - Detection Zone Add-On LIst - When the MCL of any VOC is exceeded in the detection zone Form 50 monitoring, the following analytes must be monitored annually in the groundwater monitoring wells.

ORGANICS AND METALS (Enter all data in ug/l)

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
ACETONE	10 ND	SW846 8260B
ACRYLONITRILE	5 ND	SW846 8260B
BROMOCHLOROMETHANE) CHLOROBROMOMETHAN	1 ND	SW846 8260B
BROMODICHLOROMETHANE	1 ND	SW846 8260B
CARBON DISULFIDE	1 ND	SW846 8260B
CHLOROFORM	1 ND	SW846 8260B
1,2-DIBROMO-3-CHLOROPROPANE (DBCP) (DIBROMO	7 ND	SW846 8260B
trans 1,4-DICHLORO-2-BUTENE	3 ND	SW846 8260B
2-HEXANONE	5 ND	SW846 8260B
DIBROMOMETHANE	1 ND	SW846 8260B
IODOMETHANE	1 ND	SW846 8260B
STYRENE	1 ND	SW846 8260B
VINYL ACETATE	5 ND	SW846 8260B
ANTIMONY	2.2 ND	EPA 200.8
BERYLLIUM	1.1 ND	EPA 200.8
COBALT	5.6 ND	SW846 6010C
NICKEL	5.6 ND	SW846 6010C
THALLIUM	1.1 ND	EPA 200.8
VANADIUM	2.2 ND	SW846 6010C

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP004W
Sample Date	4/21/2017

FORM 19

ANNUAL WATER QUALITY ANALYSES

Qualitatively Identified Organic Compounds

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

Constituent	CAS Number

2540-FM-BWM0041 Rev. 6/2005

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

Date Prepared/Revised
05/12/2017
DEP USE ONLY
Date Received

FORM 19
MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

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

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facitlity ID (as issued by DEP): 100008

SECTION B. FACILITY INFORMATION

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

Monitoring Point Number: CWMP012W — X Well ___ Spring ___ Stream ___ Other

___ Upgradient/Upstream X Downgradient/Downstream

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

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

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

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

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

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

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

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

Spring Flow Rate: ___ gpm

Sample Date (mm/dd/yy): 4/28/2017 — Sample Collection Time: 14:57

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS Environmental

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 2225995001 — Final Lab Analysis CompletionDate: 5/10/2017

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

Comments:

I.D. No 100008
Monitoring Point No. CWMP012W
Sample Date 4/28/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	ASTM D6919-09
BICARBONATE	69	SM20 2321
CALCIUM, TOTAL	33.5	SW846 6010C
CALCIUM, DISSOLVED	30.6	SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	12	EPA 410.4
CHLORIDE	37	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	30100	SW846 6010C
IRON, DISSOLVED (ug/l)	180	SW846 6010C
MAGNESIUM, TOTAL	10	SW846 6010C
MAGNESIUM, DISSOLVED	9.1	SW846 6010C
MANGANESE, TOTAL (ug/l)	260	SW846 6010C
MANGANESE, DISSOLVED (ug/l)	110	SW846 6010C
NITRATE-NITROGEN	11.5	EPA 300
pH-FIELD (SU)	5.18	FIELD
pH-LAB (SU)	6.6	SM4500B
POTASSIUM, TOTAL	1.6	SW846 6010C
POTASSIUM, DISSOLVED	1.5	6SW846 010C
SODIUM, TOTAL	14	SW846 6010C
SODIUM, DISSOLVED	13.1	SW 846 6010C
SPEC. COND., FIELD (umhos/cm)	384	FIELD
SPEC. COND., LAB (umhos/cm)	308	EPA 120.1
SULFATE	4.9	EPA 300
ALKALINITY	69	SM20 2320B
TDS (TOTAL DISSOLVED SOLIDS)	206	SM20 2540C
TOC (TOTAL ORGANIC CARBON)	0.71	SM20 5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	54.4	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.	CWMP012W
Sample Date	4/28/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

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

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP012W
Sample Date	4/28/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

1-A. Metals (Enter all data in ug/l) If initial background analyses of four consecutive analyses show essentially identical (within 5%) dissolved and total analyses, dissolved analyses may not be required, subject to written DEP approval.

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
ARSENIC, TOTAL	3.3 ND	SW846 6010C
ARSENIC, DISSOLVED	3 ND	SW846 6010C
BARIUM, TOTAL	100	SW846 6010C
BARIUM, DISSOLVED	86	SW846 6010C
CADMIUM, TOTAL	1.1 ND	SW846 6010C
CADMIUM, DISSOLVED	1.1 ND	SW846 6010C
CHROMIUM, TOTAL	2.2 ND	SW846 6010C
CHROMIUM, DISSOLVED	2.2 ND	SW846 6010C
COPPER, TOTAL	7.2	SW846 6010C
COPPER, DISSOLVED	5.6 ND	SW846 6010C
LEAD-FLAMELESS, TOTAL	8	SW846 6010C
LEAD, DISSOLVED	2.2 ND	SW846 6010C
MERCURY, TOTAL	0.54	SW846 7470A
MERCURY, DISSOLVED	0.5 ND	SW846 7470A
SELENIUM, TOTAL	5.6 ND	SW846 6010C
SELENIUM, DISSOLVED	5.6 ND	SW846 6010C
SILVER, TOTAL	2.2 ND	SW846 6010C
SILVER, DISSOLVED	2.2 ND	SW846 6010C
ZINC, TOTAL	6.4	SW846 6010C
ZINC, DISSOLVED	5.6 ND	SW846 6010C

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP012W
Sample Date	4/28/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
BROMOFORM	1 ND	SW846 8260B
BROMOMETHANE	1 ND	SW846 8260B
CARBON TETRACHLORIDE	1 ND	SW846 8260B
CHLOROBENZENE	1 ND	SW846 8260B
CHLOROETHANE	1 ND	SW846 8260B
DIBROMOCHLOROMETHANE (CHLORODIBROMOMET	1 ND	SW846 8260B
CHLOROMETHANE	1 ND	SW846 8260B
3-CHLORO-1-PROPENE	1 ND	SW846 8260B
1,2-DICHLOROBENZENE	1 ND	SW846 8260B
1,3-DICHLOROBENZENE	1 ND	SW846 8260B
1,4-DICHLOROBENZENE	1 ND	SW846 8260B
DICHLORODIFLUOROMETHANE	1 ND	SW846 8260B
1,2-DICHLOROPROPANE	1 ND	SW846 8260B
cis 1,3-DICHLOROPROPENE	1 ND	SW846 8260B
trans 1,3-DICHLOROPROPENE	1 ND	SW846 8260B
2-BUTANONE (MEK)	10 ND	SW846 8260B
4-METHYL-2-PENTANONE (MIBK)	5 ND	SW846 8260B
1,1,1,2-TETRACHLOROETHANE	1 ND	SW846 8260B
1,1,2,2-TETRACHLOROETHANE	1 ND	SW846 8260B
1,1,2-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROFLUOROMETHANE	1 ND	SW846 8260B
1,2,3-TRICHLOROPROPANE	2 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP012W
Sample Date	4/28/2017

FORM 19

ANNUAL WATER QUALITY ANALYSES

SUBTITLE D - Detection Zone Add-On LIst - When the MCL of any VOC is exceeded in the detection zone Form 50 monitoring, the following analytes must be monitored annually in the groundwater monitoring wells.

ORGANICS AND METALS (Enter all data in ug/l)

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
ACETONE	10 ND	SW846 8260B
ACRYLONITRILE	5 ND	SW846 8260B
BROMOCHLOROMETHANE) CHLOROBROMOMETHAN	1 ND	SW846 8260B
BROMODICHLOROMETHANE	1 ND	SW846 8260B
CARBON DISULFIDE	1 ND	SW846 8260B
CHLOROFORM	1 ND	SW846 8260B
1,2-DIBROMO-3-CHLOROPROPANE (DBCP) (DIBROMO	7 ND	SW846 8260B
trans 1,4-DICHLORO-2-BUTENE	3 ND	SW846 8260B
2-HEXANONE	5 ND	SW846 8260B
DIBROMOMETHANE	1 ND	SW846 8260B
IODOMETHANE	1 ND	SW846 8260B
STYRENE	1 ND	SW846 8260B
VINYL ACETATE	5 ND	SW846 8260B
ANTIMONY	2.2 ND	EPA 200.8
BERYLLIUM	1.1 ND	EPA 200.8
COBALT	5.6 ND	SW846 6010C
NICKEL	10	SW846 6010C
THALLIUM	1.1 ND	EPA 200.8
VANADIUM	2.2 ND	SW846 6010C

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP012W
Sample Date	4/28/2017

FORM 19

ANNUAL WATER QUALITY ANALYSES

Qualitatively Identified Organic Compounds

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

Constituent	CAS Number

2540-FM-BWM0041 Rev. 6/2005

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

Date Prepared/Revised
05/12/2017
DEP USE ONLY
Date Received

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MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facitlity ID (as issued by DEP): 100008

SECTION B. FACILITY INFORMATION

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

Monitoring Point Number: CWMP002W — X Well ___ Spring ___ Stream ___ Other

___ Upgradient/Upstream X Downgradient/Downstream

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

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

Depth to Water Level: 92.71 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: -1.19 ft — Elevation of Water Level: 433.10 ft./MSL

Sampling Depth: 85 ft — Volume of Water Column: 10.71 gal

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

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

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

Spring Flow Rate: ___ gpm

Sample Date (mm/dd/yy): 4/28/2017 — Sample Collection Time: 15:58

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS Environmental

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 2226006001 — Final Lab Analysis CompletionDate: 5/10/2017

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

Comments:

I.D. No 100008
Monitoring Point No. CWMP002W
Sample Date 4/28/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	ASTM D6919-09
BICARBONATE	61	SM20 2321
CALCIUM, TOTAL	53.6	SW846 6010C
CALCIUM, DISSOLVED	47.1	SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	7 ND	EPA 410.4
CHLORIDE	113	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	56 ND	SW846 6010C
IRON, DISSOLVED (ug/l)	56 ND	SW846 6010C
MAGNESIUM, TOTAL	16.3	SW846 6010C
MAGNESIUM, DISSOLVED	14.5	SW846 6010C
MANGANESE, TOTAL (ug/l)	1100	SW846 6010C
MANGANESE, DISSOLVED (ug/l)	1000	SW846 6010C
NITRATE-NITROGEN	3.7	EPA 300
pH-FIELD (SU)	4.95	FIELD
pH-LAB (SU)	6.21	SM4500B
POTASSIUM, TOTAL	2.8	SW846 6010C
POTASSIUM, DISSOLVED	2.5	6SW846 010C
SODIUM, TOTAL	23.1	SW846 6010C
SODIUM, DISSOLVED	20.4	SW 846 6010C
SPEC. COND., FIELD (umhos/cm)	602	FIELD
SPEC. COND., LAB (umhos/cm)	536	EPA 120.1
SULFATE	26.2	EPA 300
ALKALINITY	61	SM20 2320B
TDS (TOTAL DISSOLVED SOLIDS)	317	SM20 2540C
TOC (TOTAL ORGANIC CARBON)	2.7	SM20 5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.12	SM 2130B

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

I.D. No	100008
Monitoring Point No.	CWMP002W
Sample Date	4/28/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE (EDB) (ETHYLENE D	1 ND	SW846 8260B
1,1-DICHLOROETHANE	7.5	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	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.

I.D. No	100008
Monitoring Point No.	CWMP002W
Sample Date	4/28/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

1-A. Metals (Enter all data in ug/l) If initial background analyses of four consecutive analyses show essentially identical (within 5%) dissolved and total analyses, dissolved analyses may not be required, subject to written DEP approval.

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
ARSENIC, TOTAL	3.3 ND	SW846 6010C
ARSENIC, DISSOLVED	3 ND	SW846 6010C
BARIUM, TOTAL	41	SW846 6010C
BARIUM, DISSOLVED	37	SW846 6010C
CADMIUM, TOTAL	1.1 ND	SW846 6010C
CADMIUM, DISSOLVED	1.1 ND	SW846 6010C
CHROMIUM, TOTAL	2.2 ND	SW846 6010C
CHROMIUM, DISSOLVED	2.2 ND	SW846 6010C
COPPER, TOTAL	5.6 ND	SW846 6010C
COPPER, DISSOLVED	5.6 ND	SW846 6010C
LEAD-FLAMELESS, TOTAL	2.2 ND	SW846 6010C
LEAD, DISSOLVED	2.2 ND	SW846 6010C
MERCURY, TOTAL	0.5 ND	SW846 7470A
MERCURY, DISSOLVED	0.5 ND	SW846 7470A
SELENIUM, TOTAL	5.6 ND	SW846 6010C
SELENIUM, DISSOLVED	5.6 ND	SW846 6010C
SILVER, TOTAL	2.2 ND	SW846 6010C
SILVER, DISSOLVED	2.2 ND	SW846 6010C
ZINC, TOTAL	6.2	SW846 6010C
ZINC, DISSOLVED	6.4	SW846 6010C

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP002W
Sample Date	4/28/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
BROMOFORM	1 ND	SW846 8260B
BROMOMETHANE	1 ND	SW846 8260B
CARBON TETRACHLORIDE	1 ND	SW846 8260B
CHLOROBENZENE	1 ND	SW846 8260B
CHLOROETHANE	2.3	SW846 8260B
DIBROMOCHLOROMETHANE (CHLORODIBROMOMET	1 ND	SW846 8260B
CHLOROMETHANE	1 ND	SW846 8260B
3-CHLORO-1-PROPENE	1 ND	SW846 8260B
1,2-DICHLOROBENZENE	1 ND	SW846 8260B
1,3-DICHLOROBENZENE	1 ND	SW846 8260B
1,4-DICHLOROBENZENE	1 ND	SW846 8260B
DICHLORODIFLUOROMETHANE	1 ND	SW846 8260B
1,2-DICHLOROPROPANE	1 ND	SW846 8260B
cis 1,3-DICHLOROPROPENE	1 ND	SW846 8260B
trans 1,3-DICHLOROPROPENE	1 ND	SW846 8260B
2-BUTANONE (MEK)	10 ND	SW846 8260B
4-METHYL-2-PENTANONE (MIBK)	5 ND	SW846 8260B
1,1,1,2-TETRACHLOROETHANE	1 ND	SW846 8260B
1,1,2,2-TETRACHLOROETHANE	1 ND	SW846 8260B
1,1,2-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROFLUOROMETHANE	1 ND	SW846 8260B
1,2,3-TRICHLOROPROPANE	2 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP002W
Sample Date	4/28/2017

FORM 19

ANNUAL WATER QUALITY ANALYSES

SUBTITLE D - Detection Zone Add-On LIst - When the MCL of any VOC is exceeded in the detection zone Form 50 monitoring, the following analytes must be monitored annually in the groundwater monitoring wells.

ORGANICS AND METALS (Enter all data in ug/l)

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
ACETONE	10 ND	SW846 8260B
ACRYLONITRILE	5 ND	SW846 8260B
BROMOCHLOROMETHANE) CHLOROBROMOMETHAN	1 ND	SW846 8260B
BROMODICHLOROMETHANE	1 ND	SW846 8260B
CARBON DISULFIDE	1 ND	SW846 8260B
CHLOROFORM	1 ND	SW846 8260B
1,2-DIBROMO-3-CHLOROPROPANE (DBCP) (DIBROMO	7 ND	SW846 8260B
trans 1,4-DICHLORO-2-BUTENE	3 ND	SW846 8260B
2-HEXANONE	5 ND	SW846 8260B
DIBROMOMETHANE	1 ND	SW846 8260B
IODOMETHANE	1 ND	SW846 8260B
STYRENE	1 ND	SW846 8260B
VINYL ACETATE	5 ND	SW846 8260B
ANTIMONY	2.2 ND	EPA 200.8
BERYLLIUM	1.1 ND	EPA 200.8
COBALT	25	SW846 6010C
NICKEL	28	SW846 6010C
THALLIUM	1.1 ND	EPA 200.8
VANADIUM	2.2 ND	SW846 6010C

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP002W
Sample Date	4/28/2017

FORM 19

ANNUAL WATER QUALITY ANALYSES

Qualitatively Identified Organic Compounds

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

Constituent	CAS Number

2540-FM-BWM0041 Rev. 6/2005

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

Date Prepared/Revised
05/12/2017
DEP USE ONLY
Date Received

FORM 19
MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

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

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facitlity ID (as issued by DEP): 100008

SECTION B. FACILITY INFORMATION

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

Monitoring Point Number: CWMP003W — X Well ___ Spring ___ Stream ___ Other

___ Upgradient/Upstream X Downgradient/Downstream

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

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

Depth to Water Level: 129.62 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: -1.29 ft — Elevation of Water Level: 394.59 ft./MSL

Sampling Depth: 100 ft — Volume of Water Column: -80.22 gal

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

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

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

Spring Flow Rate: ___ gpm

Sample Date (mm/dd/yy): 4/28/2017 — Sample Collection Time: 16:13

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS Environmental

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 2226006002 — Final Lab Analysis CompletionDate: 5/10/2017

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

Comments:

I.D. No 100008
Monitoring Point No. CWMP003W
Sample Date 4/28/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	ASTM D6919-09
BICARBONATE	20	SM20 2321
CALCIUM, TOTAL	29.6	SW846 6010C
CALCIUM, DISSOLVED	26.1	SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	7 ND	EPA 410.4
CHLORIDE	77.8	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	56 ND	SW846 6010C
IRON, DISSOLVED (ug/l)	56 ND	SW846 6010C
MAGNESIUM, TOTAL	10.3	SW846 6010C
MAGNESIUM, DISSOLVED	9.3	SW846 6010C
MANGANESE, TOTAL (ug/l)	5.6 ND	SW846 6010C
MANGANESE, DISSOLVED (ug/l)	5.6 ND	SW846 6010C
NITRATE-NITROGEN	9.4	EPA 300
pH-FIELD (SU)	5.26	FIELD
pH-LAB (SU)	6.42	SM4500B
POTASSIUM, TOTAL	1.7	SW846 6010C
POTASSIUM, DISSOLVED	1.5	6SW846 010C
SODIUM, TOTAL	20.2	SW846 6010C
SODIUM, DISSOLVED	18.2	SW 846 6010C
SPEC. COND., FIELD (umhos/cm)	409	FIELD
SPEC. COND., LAB (umhos/cm)	329	EPA 120.1
SULFATE	6	EPA 300
ALKALINITY	20	SM20 2320B
TDS (TOTAL DISSOLVED SOLIDS)	227	SM20 2540C
TOC (TOTAL ORGANIC CARBON)	0.5 ND	SM20 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.	CWMP003W
Sample Date	4/28/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE (EDB) (ETHYLENE D	1 ND	SW846 8260B
1,1-DICHLOROETHANE	2.3	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.

I.D. No	100008
Monitoring Point No.	CWMP003W
Sample Date	4/28/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

1-A. Metals (Enter all data in ug/l) If initial background analyses of four consecutive analyses show essentially identical (within 5%) dissolved and total analyses, dissolved analyses may not be required, subject to written DEP approval.

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
ARSENIC, TOTAL	3.3 ND	SW846 6010C
ARSENIC, DISSOLVED	3 ND	SW846 6010C
BARIUM, TOTAL	15	SW846 6010C
BARIUM, DISSOLVED	14	SW846 6010C
CADMIUM, TOTAL	1.1 ND	SW846 6010C
CADMIUM, DISSOLVED	1.1 ND	SW846 6010C
CHROMIUM, TOTAL	2.2 ND	SW846 6010C
CHROMIUM, DISSOLVED	2.2 ND	SW846 6010C
COPPER, TOTAL	5.6 ND	SW846 6010C
COPPER, DISSOLVED	5.6 ND	SW846 6010C
LEAD-FLAMELESS, TOTAL	2.2 ND	SW846 6010C
LEAD, DISSOLVED	2.2 ND	SW846 6010C
MERCURY, TOTAL	0.5 ND	SW846 7470A
MERCURY, DISSOLVED	0.5 ND	SW846 7470A
SELENIUM, TOTAL	5.6 ND	SW846 6010C
SELENIUM, DISSOLVED	5.6 ND	SW846 6010C
SILVER, TOTAL	2.2 ND	SW846 6010C
SILVER, DISSOLVED	2.2 ND	SW846 6010C
ZINC, TOTAL	5.7	SW846 6010C
ZINC, DISSOLVED	5.6 ND	SW846 6010C

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP003W
Sample Date	4/28/2017

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
BROMOFORM	1 ND	SW846 8260B
BROMOMETHANE	1 ND	SW846 8260B
CARBON TETRACHLORIDE	1 ND	SW846 8260B
CHLOROBENZENE	1 ND	SW846 8260B
CHLOROETHANE	1 ND	SW846 8260B
DIBROMOCHLOROMETHANE (CHLORODIBROMOMET	1 ND	SW846 8260B
CHLOROMETHANE	1 ND	SW846 8260B
3-CHLORO-1-PROPENE	1 ND	SW846 8260B
1,2-DICHLOROBENZENE	1 ND	SW846 8260B
1,3-DICHLOROBENZENE	1 ND	SW846 8260B
1,4-DICHLOROBENZENE	1 ND	SW846 8260B
DICHLORODIFLUOROMETHANE	1 ND	SW846 8260B
1,2-DICHLOROPROPANE	1 ND	SW846 8260B
cis 1,3-DICHLOROPROPENE	1 ND	SW846 8260B
trans 1,3-DICHLOROPROPENE	1 ND	SW846 8260B
2-BUTANONE (MEK)	10 ND	SW846 8260B
4-METHYL-2-PENTANONE (MIBK)	5 ND	SW846 8260B
1,1,1,2-TETRACHLOROETHANE	1 ND	SW846 8260B
1,1,2,2-TETRACHLOROETHANE	1 ND	SW846 8260B
1,1,2-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROFLUOROMETHANE	1 ND	SW846 8260B
1,2,3-TRICHLOROPROPANE	2 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP003W
Sample Date	4/28/2017

FORM 19

ANNUAL WATER QUALITY ANALYSES

SUBTITLE D - Detection Zone Add-On LIst - When the MCL of any VOC is exceeded in the detection zone Form 50 monitoring, the following analytes must be monitored annually in the groundwater monitoring wells.

ORGANICS AND METALS (Enter all data in ug/l)

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
ACETONE	10 ND	SW846 8260B
ACRYLONITRILE	5 ND	SW846 8260B
BROMOCHLOROMETHANE) CHLOROBROMOMETHAN	1 ND	SW846 8260B
BROMODICHLOROMETHANE	1 ND	SW846 8260B
CARBON DISULFIDE	1 ND	SW846 8260B
CHLOROFORM	1 ND	SW846 8260B
1,2-DIBROMO-3-CHLOROPROPANE (DBCP) (DIBROMO	7 ND	SW846 8260B
trans 1,4-DICHLORO-2-BUTENE	3 ND	SW846 8260B
2-HEXANONE	5 ND	SW846 8260B
DIBROMOMETHANE	1 ND	SW846 8260B
IODOMETHANE	1 ND	SW846 8260B
STYRENE	1 ND	SW846 8260B
VINYL ACETATE	5 ND	SW846 8260B
ANTIMONY	2.2 ND	EPA 200.8
BERYLLIUM	1.1 ND	EPA 200.8
COBALT	5.6 ND	SW846 6010C
NICKEL	11	SW846 6010C
THALLIUM	1.1 ND	EPA 200.8
VANADIUM	2.2 ND	SW846 6010C

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP003W
Sample Date	4/28/2017

FORM 19

ANNUAL WATER QUALITY ANALYSES

Qualitatively Identified Organic Compounds

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

Constituent	CAS Number

ALS Environmental

34 Dogwood Lane ▪ Middletown, PA 17057 ▪ Phone: 717-944-5541 ▪ Fax: 717-944-1430 ▪ www.alsglobal.com

NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

May 8, 2017

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

Certificate of Analysis

Project Name:	**2017-CRESWELL**	Workorder:	**2223292**
Purchase Order:		Workorder ID:	**2ND QTR 2017 CWMP-FORM 19A**

Dear Mr. Brown:

Enclosed are the analytical results for samples received by the laboratory on Tuesday, April 18, 2017.

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

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

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

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

CC: Mr. Mark Reider , Mr. Jeff Musser

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

Susan J. Scherer

Ms. Susan J Scherer
Project Coordinator

ALS Environmental

34 Dogwood Lane ▪ Middletown, PA 17057 ▪ Phone: 717-944-5541 ▪ Fax: 717-944-1430 ▪ www.alsglobal.com

NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

SAMPLE SUMMARY

Workorder: 2223292 2ND QTR 2017 CWMP-FORM 19A

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
2223292001	CWMP007W	Ground Water	4/18/2017 10:27	4/18/2017 16:00	Mr. Brian G Shade
2223292002	CWMP001W	Ground Water	4/18/2017 11:42	4/18/2017 16:00	Mr. Brian G Shade
2223292003	CWMP008W	Ground Water	4/18/2017 14:17	4/18/2017 16:00	Mr. Brian G Shade
2223292004	CWMP009W	Ground Water	4/18/2017 14:50	4/18/2017 16:00	Mr. Brian G Shade

ALS Environmental

34 Dogwood Lane ▪ Middletown, PA 17057 ▪ Phone: 717-944-5541 ▪ Fax: 717-944-1430 ▪ www.alsglobal.com

NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

SAMPLE SUMMARY

Workorder: 2223292 2ND QTR 2017 CWMP-FORM 19A

Notes

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

Standard Acronyms/Flags

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

ALS Environmental

34 Dogwood Lane ▪ Middletown, PA 17057 ▪ Phone: 717-944-5541 ▪ Fax: 717-944-1430 ▪ www.alsglobal.com

NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2223292 2ND QTR 2017 CWMP-FORM 19A

Lab ID: **2223292001** Date Collected: 4/18/2017 10:27 Matrix: Ground Water

Sample ID: **CWMP007W** Date Received: 4/18/2017 16:00

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	SW846 8260B			4/22/17 03:05	SYB	K
Acrylonitrile	ND		ug/L	5.0	SW846 8260B			4/22/17 03:05	SYB	K
Benzene	ND		ug/L	1.0	SW846 8260B			4/22/17 03:05	SYB	K
Bromochloromethane	ND		ug/L	1.0	SW846 8260B			4/22/17 03:05	SYB	K
Bromodichloromethane	ND		ug/L	1.0	SW846 8260B			4/22/17 03:05	SYB	K
Bromoform	ND		ug/L	1.0	SW846 8260B			4/22/17 03:05	SYB	K
Bromomethane	ND		ug/L	1.0	SW846 8260B			4/22/17 03:05	SYB	K
2-Butanone	ND		ug/L	10.0	SW846 8260B			4/22/17 03:05	SYB	K
Carbon Disulfide	ND		ug/L	1.0	SW846 8260B			4/22/17 03:05	SYB	K
Carbon Tetrachloride	ND		ug/L	1.0	SW846 8260B			4/22/17 03:05	SYB	K
Chlorobenzene	ND		ug/L	1.0	SW846 8260B			4/22/17 03:05	SYB	K
Chlorodibromomethane	ND		ug/L	1.0	SW846 8260B			4/22/17 03:05	SYB	K
Chloroethane	ND		ug/L	1.0	SW846 8260B			4/22/17 03:05	SYB	K
Chloroform	ND		ug/L	1.0	SW846 8260B			4/22/17 03:05	SYB	K
Chloromethane	ND		ug/L	1.0	SW846 8260B			4/22/17 03:05	SYB	K
3-Chloro-1-propene	ND		ug/L	1.0	SW846 8260B			4/22/17 03:05	SYB	K
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	SW846 8260B			4/22/17 03:05	SYB	K
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			4/22/17 03:05	SYB	K
Dibromomethane	ND		ug/L	1.0	SW846 8260B			4/22/17 03:05	SYB	K
trans-1,4-Dichloro-2-butene	ND		ug/L	3.0	SW846 8260B			4/22/17 03:05	SYB	K
1,2-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/22/17 03:05	SYB	K
1,3-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/22/17 03:05	SYB	K
1,4-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/22/17 03:05	SYB	K
Dichlorodifluoromethane	ND		ug/L	1.0	SW846 8260B			4/22/17 03:05	SYB	K
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/22/17 03:05	SYB	K
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/22/17 03:05	SYB	K
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/22/17 03:05	SYB	K
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/22/17 03:05	SYB	K
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/22/17 03:05	SYB	K
1,2-Dichloropropane	ND		ug/L	1.0	SW846 8260B			4/22/17 03:05	SYB	K
cis-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			4/22/17 03:05	SYB	K
trans-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			4/22/17 03:05	SYB	K
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			4/22/17 03:05	SYB	K
2-Hexanone	ND		ug/L	5.0	SW846 8260B			4/22/17 03:05	SYB	K
Iodomethane	ND		ug/L	1.0	SW846 8260B			4/22/17 03:05	SYB	K
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	SW846 8260B			4/22/17 03:05	SYB	K

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2223292 2ND QTR 2017 CWMP-FORM 19A

Lab ID: **2223292001** Date Collected: 4/18/2017 10:27 Matrix: Ground Water

Sample ID: **CWMP007W** Date Received: 4/18/2017 16:00

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			4/22/17 03:05	SYB	K
Styrene	ND		ug/L	1.0	SW846 8260B			4/22/17 03:05	SYB	K
1,1,1,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/22/17 03:05	SYB	K
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/22/17 03:05	SYB	K
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			4/22/17 03:05	SYB	K
Toluene	ND		ug/L	1.0	SW846 8260B			4/22/17 03:05	SYB	K
Total Xylenes	ND		ug/L	3.0	SW846 8260B			4/22/17 03:05	SYB	K
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/22/17 03:05	SYB	K
1,1,2-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/22/17 03:05	SYB	K
Trichloroethene	ND		ug/L	1.0	SW846 8260B			4/22/17 03:05	SYB	K
Trichlorofluoromethane	ND		ug/L	1.0	SW846 8260B			4/22/17 03:05	SYB	K
1,2,3-Trichloropropane	ND		ug/L	2.0	SW846 8260B			4/22/17 03:05	SYB	K
Vinyl Acetate	ND		ug/L	5.0	SW846 8260B			4/22/17 03:05	SYB	K
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			4/22/17 03:05	SYB	K
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	87.3		%	62 - 133	SW846 8260B			4/22/17 03:05	SYB	K
4-Bromofluorobenzene (S)	102		%	79 - 114	SW846 8260B			4/22/17 03:05	SYB	K
Dibromofluoromethane (S)	97		%	78 - 116	SW846 8260B			4/22/17 03:05	SYB	K
Toluene-d8 (S)	103		%	76 - 127	SW846 8260B			4/22/17 03:05	SYB	K
LIBRARY SEARCH - VOLATILES										
No TIC's Detected	.				Lib Search VOC			4/22/17 03:05	CPK	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	11		mg/L	5	S2320B-97			4/19/17 11:28	MSA	B
Alkalinity, Total	11	1	mg/L	5	S2320B-97			4/19/17 11:28	MSA	B
Ammonia-N	ND		mg/L	0.100	D6919-09			4/25/17 05:54	CMM	C
Chemical Oxygen Demand (COD)	ND		mg/L	7	EPA 410.4			4/20/17 11:23	AK	C
Chloride	68.5		mg/L	2.0	EPA 300.0			4/19/17 12:33	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			4/19/17 12:33	CHW	B
Nitrate-N	10.4		mg/L	0.20	EPA 300.0			4/19/17 12:33	CHW	B
pH	6.09	2	pH_Units		S4500HB-11			4/19/17 11:28	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	4/23/17 00:00	JLG	4/23/17 08:44	JLG	I
Specific Conductance	344		umhos/cm	1	S2510B-97			4/19/17 11:28	MSA	B
Sulfate	15.4		mg/L	2.0	EPA 300.0			4/19/17 12:33	CHW	B
Total Dissolved Solids	237		mg/L	5	S2540C-11			4/21/17 15:57	JAS	B
Total Organic Carbon (TOC)	0.51		mg/L	0.50	S5310B-00			4/26/17 12:12	PAG	G
Turbidity	ND		NTU	0.10	S2130B-01			4/18/17 23:40	MSA	B

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ANALYTICAL RESULTS

Workorder: 2223292 2ND QTR 2017 CWMP-FORM 19A

Lab ID: **2223292001** Date Collected: 4/18/2017 10:27 Matrix: Ground Water
Sample ID: **CWMP007W** Date Received: 4/18/2017 16:00

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Antimony, Total	ND		mg/L	0.0022	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 16:43	MO	E3
Arsenic, Total	ND		mg/L	0.0033	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 16:43	MO	E3
Arsenic, Dissolved	ND		mg/L	0.0030	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 06:59	ZMC	E4
Barium, Total	0.053		mg/L	0.0056	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 16:43	MO	E3
Barium, Dissolved	0.052		mg/L	0.0056	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 06:59	ZMC	E4
Beryllium, Total	ND		mg/L	0.0011	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 16:43	MO	E3
Cadmium, Total	ND		mg/L	0.0011	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 16:43	MO	E3
Cadmium, Dissolved	ND		mg/L	0.0011	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 06:59	ZMC	E4
Calcium, Total	19.8		mg/L	0.11	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 16:43	MO	E3
Calcium, Dissolved	18.6		mg/L	0.11	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 06:59	ZMC	E4
Chromium, Total	ND		mg/L	0.0022	SW846 6020A	4/24/17 07:50	ZMC	4/25/17 10:42	MO	E3
Chromium, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 06:59	ZMC	E4
Cobalt, Total	ND		mg/L	0.0056	SW846 6020A	4/24/17 07:50	ZMC	4/25/17 10:42	MO	E3
Copper, Total	ND		mg/L	0.0056	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 16:43	MO	E3
Copper, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 06:59	ZMC	E4
Iron, Total	ND		mg/L	0.056	SW846 6020A	4/24/17 07:50	ZMC	4/25/17 10:42	MO	E3
Iron, Dissolved	ND		mg/L	0.056	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 06:59	ZMC	E4
Lead, Total	ND		mg/L	0.0022	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 16:43	MO	E3
Lead, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 06:59	ZMC	E4
Magnesium, Total	10.1		mg/L	0.11	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 16:43	MO	E3
Magnesium, Dissolved	9.5		mg/L	0.11	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 06:59	ZMC	E4
Manganese, Total	0.0068		mg/L	0.0056	SW846 6020A	4/24/17 07:50	ZMC	4/25/17 10:42	MO	E3
Manganese, Dissolved	0.0066		mg/L	0.0056	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 06:59	ZMC	E4
Mercury, Total	ND		mg/L	0.00050	SW846 7470A	4/21/17 00:30	AXC	4/21/17 03:54	AXC	E2
Mercury, Dissolved	ND		mg/L	0.00050	SW846 7470A	4/26/17 01:05	AXC	4/26/17 05:16	AXC	D1
Nickel, Total	0.0064		mg/L	0.0056	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 16:43	MO	E3
Potassium, Total	2.2		mg/L	0.11	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 16:43	MO	E3
Potassium, Dissolved	2.1		mg/L	0.11	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 06:59	ZMC	E4
Selenium, Total	ND		mg/L	0.0056	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 16:43	MO	E3
Selenium, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 06:59	ZMC	E4
Silver, Total	ND		mg/L	0.0022	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 16:43	MO	E3
Silver, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 06:59	ZMC	E4
Sodium, Total	33.9		mg/L	0.11	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 16:43	MO	E3
Sodium, Dissolved	32.2		mg/L	0.11	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 06:59	ZMC	E4
Thallium, Total	ND		mg/L	0.0011	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 16:43	MO	E3
Vanadium, Total	ND		mg/L	0.0022	SW846 6020A	4/24/17 07:50	ZMC	4/25/17 10:42	MO	E3
Zinc, Total	0.0064		mg/L	0.0056	SW846 6020A	4/24/17 07:50	ZMC	4/25/17 10:42	MO	E3

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ANALYTICAL RESULTS

Workorder: 2223292 2ND QTR 2017 CWMP-FORM 19A

Lab ID: **2223292001** Date Collected: 4/18/2017 10:27 Matrix: Ground Water

Sample ID: **CWMP007W** Date Received: 4/18/2017 16:00

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
Zinc, Dissolved	0.0062		mg/L	0.0056	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 06:59	ZMC	E4
FIELD PARAMETERS										
Depth to Water Level	6.200		Feet		Field			4/18/17 10:27	CLT	F
Elev Top MW Casing above MSL	453.40		Feet		Field			4/18/17 10:27	CLT	F
Flow Rate	1.82		gal/min		Field			4/18/17 10:27	CLT	F
Ground Water Elevation	447.200		ft/MSL		Field			4/18/17 10:27	CLT	F
pH, Field (SM4500B)	4.890		pH_Units		Field			4/18/17 10:27	CLT	F
Sample Depth	33.000		Feet		Field			4/18/17 10:27	CLT	F
Specific Conductance, Field	422		umhos/cm	1	Field			4/18/17 10:27	CLT	F
Temperature	10.95		Deg. C		Field			4/18/17 10:27	CLT	F
Total Well Depth	36.500		Feet		Field			4/18/17 10:27	CLT	F
Volume in Water Column	44.541		Gallons		Field			4/18/17 10:27	CLT	F
Water Level After Purge	6.780		Feet		Field			4/18/17 10:27	CLT	F
Well Volumes Purged	2.86		Vol		Field			4/18/17 10:27	CLT	F

Susan J. Scherer

Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2223292 2ND QTR 2017 CWMP-FORM 19A

Lab ID: **2223292002** Date Collected: 4/18/2017 11:42 Matrix: Ground Water

Sample ID: **CWMP001W** Date Received: 4/18/2017 16:00

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	SW846 8260B			4/20/17 02:01	CJG	J
Acrylonitrile	ND		ug/L	5.0	SW846 8260B			4/20/17 02:01	CJG	J
Benzene	ND		ug/L	1.0	SW846 8260B			4/20/17 02:01	CJG	J
Bromochloromethane	ND		ug/L	1.0	SW846 8260B			4/20/17 02:01	CJG	J
Bromodichloromethane	ND		ug/L	1.0	SW846 8260B			4/20/17 02:01	CJG	J
Bromoform	ND		ug/L	1.0	SW846 8260B			4/20/17 02:01	CJG	J
Bromomethane	ND		ug/L	1.0	SW846 8260B			4/20/17 02:01	CJG	J
2-Butanone	ND		ug/L	10.0	SW846 8260B			4/20/17 02:01	CJG	J
Carbon Disulfide	ND		ug/L	1.0	SW846 8260B			4/20/17 02:01	CJG	J
Carbon Tetrachloride	ND		ug/L	1.0	SW846 8260B			4/20/17 02:01	CJG	J
Chlorobenzene	ND		ug/L	1.0	SW846 8260B			4/20/17 02:01	CJG	J
Chlorodibromomethane	ND		ug/L	1.0	SW846 8260B			4/20/17 02:01	CJG	J
Chloroethane	ND		ug/L	1.0	SW846 8260B			4/20/17 02:01	CJG	J
Chloroform	ND		ug/L	1.0	SW846 8260B			4/20/17 02:01	CJG	J
Chloromethane	ND		ug/L	1.0	SW846 8260B			4/20/17 02:01	CJG	J
3-Chloro-1-propene	ND		ug/L	1.0	SW846 8260B			4/20/17 02:01	CJG	J
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	SW846 8260B			4/20/17 02:01	CJG	J
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			4/20/17 02:01	CJG	J
Dibromomethane	ND		ug/L	1.0	SW846 8260B			4/20/17 02:01	CJG	J
trans-1,4-Dichloro-2-butene	ND		ug/L	3.0	SW846 8260B			4/20/17 02:01	CJG	J
1,2-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/20/17 02:01	CJG	J
1,3-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/20/17 02:01	CJG	J
1,4-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/20/17 02:01	CJG	J
Dichlorodifluoromethane	ND		ug/L	1.0	SW846 8260B			4/20/17 02:01	CJG	J
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/20/17 02:01	CJG	J
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/20/17 02:01	CJG	J
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/20/17 02:01	CJG	J
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/20/17 02:01	CJG	J
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/20/17 02:01	CJG	J
1,2-Dichloropropane	ND		ug/L	1.0	SW846 8260B			4/20/17 02:01	CJG	J
cis-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			4/20/17 02:01	CJG	J
trans-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			4/20/17 02:01	CJG	J
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			4/20/17 02:01	CJG	J
2-Hexanone	ND		ug/L	5.0	SW846 8260B			4/20/17 02:01	CJG	J
Iodomethane	ND		ug/L	1.0	SW846 8260B			4/20/17 02:01	CJG	J
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	SW846 8260B			4/20/17 02:01	CJG	J

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ANALYTICAL RESULTS

Workorder: 2223292 2ND QTR 2017 CWMP-FORM 19A

Lab ID: **2223292002** Date Collected: 4/18/2017 11:42 Matrix: Ground Water

Sample ID: **CWMP001W** Date Received: 4/18/2017 16:00

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			4/20/17 02:01	CJG	J
Styrene	ND		ug/L	1.0	SW846 8260B			4/20/17 02:01	CJG	J
1,1,1,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/20/17 02:01	CJG	J
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/20/17 02:01	CJG	J
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			4/20/17 02:01	CJG	J
Toluene	ND		ug/L	1.0	SW846 8260B			4/20/17 02:01	CJG	J
Total Xylenes	ND		ug/L	3.0	SW846 8260B			4/20/17 02:01	CJG	J
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/20/17 02:01	CJG	J
1,1,2-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/20/17 02:01	CJG	J
Trichloroethene	ND		ug/L	1.0	SW846 8260B			4/20/17 02:01	CJG	J
Trichlorofluoromethane	ND		ug/L	1.0	SW846 8260B			4/20/17 02:01	CJG	J
1,2,3-Trichloropropane	ND		ug/L	2.0	SW846 8260B			4/20/17 02:01	CJG	J
Vinyl Acetate	ND		ug/L	5.0	SW846 8260B			4/20/17 02:01	CJG	J
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			4/20/17 02:01	CJG	J
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	82		%	62 - 133	SW846 8260B			4/20/17 02:01	CJG	J
4-Bromofluorobenzene (S)	105		%	79 - 114	SW846 8260B			4/20/17 02:01	CJG	J
Dibromofluoromethane (S)	93.5		%	78 - 116	SW846 8260B			4/20/17 02:01	CJG	J
Toluene-d8 (S)	105		%	76 - 127	SW846 8260B			4/20/17 02:01	CJG	J
LIBRARY SEARCH - VOLATILES										
No TIC's Detected	.				Lib Search VOC			4/20/17 02:01	CPK	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	6		mg/L	5	S2320B-97			4/19/17 11:38	MSA	B
Alkalinity, Total	6	1	mg/L	5	S2320B-97			4/19/17 11:38	MSA	B
Ammonia-N	ND		mg/L	0.100	D6919-09			4/25/17 06:13	CMM	C
Chemical Oxygen Demand (COD)	ND		mg/L	7	EPA 410.4			4/20/17 11:23	AK	C
Chloride	29.6		mg/L	1.0	EPA 300.0			4/19/17 12:45	CHW	B
Fluoride	ND		mg/L	0.10	EPA 300.0			4/19/17 12:45	CHW	B
Nitrate-N	20.0		mg/L	0.50	EPA 300.0			4/19/17 12:58	CHW	B
pH	5.98	2	pH_Units		S4500HB-11			4/19/17 11:38	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	4/23/17 00:00	JLG	4/23/17 08:44	JLG	I
Specific Conductance	264		umhos/cm	1	S2510B-97			4/19/17 11:38	MSA	B
Sulfate	1.9		mg/L	1.0	EPA 300.0			4/19/17 12:45	CHW	B
Total Dissolved Solids	189		mg/L	5	S2540C-11			4/21/17 15:57	JAS	B
Total Organic Carbon (TOC)	ND		mg/L	0.50	S5310B-00			4/26/17 12:12	PAG	G
Turbidity	22.5		NTU	0.10	S2130B-01			4/18/17 23:40	MSA	B

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2223292 2ND QTR 2017 CWMP-FORM 19A

Lab ID: **2223292002** Date Collected: 4/18/2017 11:42 Matrix: Ground Water
Sample ID: **CWMP001W** Date Received: 4/18/2017 16:00

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Antimony, Total	ND		mg/L	0.0022	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 16:46	MO	E3
Arsenic, Total	ND		mg/L	0.0033	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 16:46	MO	E3
Arsenic, Dissolved	ND		mg/L	0.0030	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:03	ZMC	E4
Barium, Total	0.092		mg/L	0.0056	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 16:46	MO	E3
Barium, Dissolved	0.086		mg/L	0.0056	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:03	ZMC	E4
Beryllium, Total	ND		mg/L	0.0011	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 16:46	MO	E3
Cadmium, Total	ND		mg/L	0.0011	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 16:46	MO	E3
Cadmium, Dissolved	ND		mg/L	0.0011	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:03	ZMC	E4
Calcium, Total	17.2		mg/L	0.11	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 16:46	MO	E3
Calcium, Dissolved	15.4		mg/L	0.11	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:03	ZMC	E4
Chromium, Total	ND		mg/L	0.0022	SW846 6020A	4/24/17 07:50	ZMC	4/25/17 10:46	MO	E3
Chromium, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:03	ZMC	E4
Cobalt, Total	ND		mg/L	0.0056	SW846 6020A	4/24/17 07:50	ZMC	4/25/17 10:46	MO	E3
Copper, Total	ND		mg/L	0.0056	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 16:46	MO	E3
Copper, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:03	ZMC	E4
Iron, Total	0.60		mg/L	0.056	SW846 6020A	4/24/17 07:50	ZMC	4/25/17 10:46	MO	E3
Iron, Dissolved	ND		mg/L	0.056	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:03	ZMC	E4
Lead, Total	0.0023		mg/L	0.0022	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 16:46	MO	E3
Lead, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:03	ZMC	E4
Magnesium, Total	12.1		mg/L	0.11	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 16:46	MO	E3
Magnesium, Dissolved	11.0		mg/L	0.11	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:03	ZMC	E4
Manganese, Total	0.060		mg/L	0.0056	SW846 6020A	4/24/17 07:50	ZMC	4/25/17 10:46	MO	E3
Manganese, Dissolved	0.053		mg/L	0.0056	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:03	ZMC	E4
Mercury, Total	ND		mg/L	0.00050	SW846 7470A	4/21/17 00:30	AXC	4/21/17 03:55	AXC	E2
Mercury, Dissolved	ND		mg/L	0.00050	SW846 7470A	4/26/17 01:05	AXC	4/26/17 05:17	AXC	D1
Nickel, Total	0.0080		mg/L	0.0056	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 16:46	MO	E3
Potassium, Total	2.4		mg/L	0.11	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 16:46	MO	E3
Potassium, Dissolved	2.2		mg/L	0.11	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:03	ZMC	E4
Selenium, Total	ND		mg/L	0.0056	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 16:46	MO	E3
Selenium, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:03	ZMC	E4
Silver, Total	ND		mg/L	0.0022	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 16:46	MO	E3
Silver, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:03	ZMC	E4
Sodium, Total	15.6		mg/L	0.11	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 16:46	MO	E3
Sodium, Dissolved	14.8		mg/L	0.11	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:03	ZMC	E4
Thallium, Total	ND		mg/L	0.0011	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 16:46	MO	E3
Vanadium, Total	ND		mg/L	0.0022	SW846 6020A	4/24/17 07:50	ZMC	4/25/17 10:46	MO	E3
Zinc, Total	0.020		mg/L	0.0056	SW846 6020A	4/24/17 07:50	ZMC	4/25/17 10:46	MO	E3

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ANALYTICAL RESULTS

Workorder: 2223292 2ND QTR 2017 CWMP-FORM 19A

Lab ID: **2223292002** Date Collected: 4/18/2017 11:42 Matrix: Ground Water

Sample ID: **CWMP001W** Date Received: 4/18/2017 16:00

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
Zinc, Dissolved	0.017		mg/L	0.0056	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:03	ZMC	E4
FIELD PARAMETERS										
Depth to Water Level	30.690		Feet		Field			4/18/17 11:42	CLT	F
Elev Top MW Casing above MSL	515.13		Feet		Field			4/18/17 11:42	CLT	F
Flow Rate	1.97		gal/min		Field			4/18/17 11:42	CLT	F
Ground Water Elevation	484.440		ft/MSL		Field			4/18/17 11:42	CLT	F
pH, Field (SM4500B)	4.950		pH_Units		Field			4/18/17 11:42	CLT	F
Sample Depth	57.000		Feet		Field			4/18/17 11:42	CLT	F
Specific Conductance, Field	328		umhos/cm	1	Field			4/18/17 11:42	CLT	F
Temperature	11.76		Deg. C		Field			4/18/17 11:42	CLT	F
Total Well Depth	66.300		Feet		Field			4/18/17 11:42	CLT	F
Volume in Water Column	52.347		Gallons		Field			4/18/17 11:42	CLT	F
Water Level After Purge	53.080		Feet		Field			4/18/17 11:42	CLT	F
Well Volumes Purged	2.26		Vol		Field			4/18/17 11:42	CLT	F

Susan J. Scherer

Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2223292 2ND QTR 2017 CWMP-FORM 19A

Lab ID: **2223292003** Date Collected: 4/18/2017 14:17 Matrix: Ground Water

Sample ID: **CWMP008W** Date Received: 4/18/2017 16:00

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	SW846 8260B			4/20/17 02:19	CJG	J
Acrylonitrile	ND		ug/L	5.0	SW846 8260B			4/20/17 02:19	CJG	J
Benzene	1.5		ug/L	1.0	SW846 8260B			4/20/17 02:19	CJG	J
Bromochloromethane	ND		ug/L	1.0	SW846 8260B			4/20/17 02:19	CJG	J
Bromodichloromethane	ND		ug/L	1.0	SW846 8260B			4/20/17 02:19	CJG	J
Bromoform	ND		ug/L	1.0	SW846 8260B			4/20/17 02:19	CJG	J
Bromomethane	ND		ug/L	1.0	SW846 8260B			4/20/17 02:19	CJG	J
2-Butanone	ND		ug/L	10.0	SW846 8260B			4/20/17 02:19	CJG	J
Carbon Disulfide	ND		ug/L	1.0	SW846 8260B			4/20/17 02:19	CJG	J
Carbon Tetrachloride	ND		ug/L	1.0	SW846 8260B			4/20/17 02:19	CJG	J
Chlorobenzene	8.4		ug/L	1.0	SW846 8260B			4/20/17 02:19	CJG	J
Chlorodibromomethane	ND		ug/L	1.0	SW846 8260B			4/20/17 02:19	CJG	J
Chloroethane	8.2		ug/L	1.0	SW846 8260B			4/20/17 02:19	CJG	J
Chloroform	ND		ug/L	1.0	SW846 8260B			4/20/17 02:19	CJG	J
Chloromethane	ND		ug/L	1.0	SW846 8260B			4/20/17 02:19	CJG	J
3-Chloro-1-propene	ND		ug/L	1.0	SW846 8260B			4/20/17 02:19	CJG	J
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	SW846 8260B			4/20/17 02:19	CJG	J
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			4/20/17 02:19	CJG	J
Dibromomethane	ND		ug/L	1.0	SW846 8260B			4/20/17 02:19	CJG	J
trans-1,4-Dichloro-2-butene	ND		ug/L	3.0	SW846 8260B			4/20/17 02:19	CJG	J
1,2-Dichlorobenzene	1.6		ug/L	1.0	SW846 8260B			4/20/17 02:19	CJG	J
1,3-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/20/17 02:19	CJG	J
1,4-Dichlorobenzene	11.3		ug/L	1.0	SW846 8260B			4/20/17 02:19	CJG	J
Dichlorodifluoromethane	ND		ug/L	1.0	SW846 8260B			4/20/17 02:19	CJG	J
1,1-Dichloroethane	3.0		ug/L	1.0	SW846 8260B			4/20/17 02:19	CJG	J
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/20/17 02:19	CJG	J
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/20/17 02:19	CJG	J
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/20/17 02:19	CJG	J
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/20/17 02:19	CJG	J
1,2-Dichloropropane	ND		ug/L	1.0	SW846 8260B			4/20/17 02:19	CJG	J
cis-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			4/20/17 02:19	CJG	J
trans-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			4/20/17 02:19	CJG	J
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			4/20/17 02:19	CJG	J
2-Hexanone	ND		ug/L	5.0	SW846 8260B			4/20/17 02:19	CJG	J
Iodomethane	ND		ug/L	1.0	SW846 8260B			4/20/17 02:19	CJG	J
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	SW846 8260B			4/20/17 02:19	CJG	J

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ANALYTICAL RESULTS

Workorder: 2223292 2ND QTR 2017 CWMP-FORM 19A

Lab ID: **2223292003** Date Collected: 4/18/2017 14:17 Matrix: Ground Water

Sample ID: **CWMP008W** Date Received: 4/18/2017 16:00

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			4/20/17 02:19	CJG	J
Styrene	ND		ug/L	1.0	SW846 8260B			4/20/17 02:19	CJG	J
1,1,1,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/20/17 02:19	CJG	J
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/20/17 02:19	CJG	J
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			4/20/17 02:19	CJG	J
Toluene	ND		ug/L	1.0	SW846 8260B			4/20/17 02:19	CJG	J
Total Xylenes	ND		ug/L	3.0	SW846 8260B			4/20/17 02:19	CJG	J
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/20/17 02:19	CJG	J
1,1,2-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/20/17 02:19	CJG	J
Trichloroethene	ND		ug/L	1.0	SW846 8260B			4/20/17 02:19	CJG	J
Trichlorofluoromethane	ND		ug/L	1.0	SW846 8260B			4/20/17 02:19	CJG	J
1,2,3-Trichloropropane	ND		ug/L	2.0	SW846 8260B			4/20/17 02:19	CJG	J
Vinyl Acetate	ND		ug/L	5.0	SW846 8260B			4/20/17 02:19	CJG	J
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			4/20/17 02:19	CJG	J
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	78.6		%	62 - 133	SW846 8260B			4/20/17 02:19	CJG	J
4-Bromofluorobenzene (S)	104		%	79 - 114	SW846 8260B			4/20/17 02:19	CJG	J
Dibromofluoromethane (S)	95.7		%	78 - 116	SW846 8260B			4/20/17 02:19	CJG	J
Toluene-d8 (S)	110		%	76 - 127	SW846 8260B			4/20/17 02:19	CJG	J
LIBRARY SEARCH - VOLATILES										
No TIC's Detected	.				Lib Search VOC			4/20/17 02:19	CPK	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	380		mg/L	5	S2320B-97			4/19/17 11:50	MSA	B
Alkalinity, Total	380	1	mg/L	5	S2320B-97			4/19/17 11:50	MSA	B
Ammonia-N	5.60		mg/L	0.100	D6919-09			4/25/17 06:32	CMM	C
Chemical Oxygen Demand (COD)	23		mg/L	7	EPA 410.4			4/20/17 11:23	AK	C
Chloride	32.4		mg/L	2.0	EPA 300.0			4/19/17 13:10	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			4/19/17 13:10	CHW	B
Nitrate-N	ND		mg/L	0.20	EPA 300.0			4/19/17 13:10	CHW	B
pH	6.65	2	pH_Units		S4500HB-11			4/19/17 11:50	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	4/23/17 00:00	JLG	4/23/17 08:44	JLG	I
Specific Conductance	772		umhos/cm	1	S2510B-97			4/19/17 11:50	MSA	B
Sulfate	8.0		mg/L	2.0	EPA 300.0			4/19/17 13:10	CHW	B
Total Dissolved Solids	427		mg/L	5	S2540C-11			4/21/17 15:57	JAS	B
Total Organic Carbon (TOC)	8.1		mg/L	0.50	S5310B-00			4/26/17 12:12	PAG	G
Turbidity	3.31		NTU	0.10	S2130B-01			4/18/17 23:40	MSA	B

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ANALYTICAL RESULTS

Workorder: 2223292 2ND QTR 2017 CWMP-FORM 19A

Lab ID: **2223292003** Date Collected: 4/18/2017 14:17 Matrix: Ground Water
Sample ID: **CWMP008W** Date Received: 4/18/2017 16:00

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Antimony, Total	ND		mg/L	0.0022	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 16:50	MO	E3
Arsenic, Total	ND		mg/L	0.0033	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 16:50	MO	E3
Arsenic, Dissolved	ND		mg/L	0.0030	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:07	ZMC	E4
Barium, Total	0.12		mg/L	0.0056	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 16:50	MO	E3
Barium, Dissolved	0.12		mg/L	0.0056	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:07	ZMC	E4
Beryllium, Total	ND		mg/L	0.0011	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 16:50	MO	E3
Cadmium, Total	ND		mg/L	0.0011	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 16:50	MO	E3
Cadmium, Dissolved	ND		mg/L	0.0011	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:07	ZMC	E4
Calcium, Total	65.8		mg/L	0.11	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 16:50	MO	E3
Calcium, Dissolved	59.8		mg/L	0.11	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:07	ZMC	E4
Chromium, Total	ND		mg/L	0.0022	SW846 6020A	4/24/17 07:50	ZMC	4/25/17 10:50	MO	E3
Chromium, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:07	ZMC	E4
Cobalt, Total	0.031		mg/L	0.0056	SW846 6020A	4/24/17 07:50	ZMC	4/25/17 10:50	MO	E3
Copper, Total	ND		mg/L	0.0056	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 16:50	MO	E3
Copper, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:07	ZMC	E4
Iron, Total	23.9		mg/L	0.056	SW846 6020A	4/24/17 07:50	ZMC	4/25/17 10:50	MO	E3
Iron, Dissolved	24.7		mg/L	0.56	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 08:05	ZMC	E4
Lead, Total	ND		mg/L	0.0022	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 16:50	MO	E3
Lead, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:07	ZMC	E4
Magnesium, Total	30.4		mg/L	0.11	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 16:50	MO	E3
Magnesium, Dissolved	27.8		mg/L	0.11	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:07	ZMC	E4
Manganese, Total	16.9		mg/L	0.056	SW846 6020A	4/24/17 07:50	ZMC	4/25/17 10:54	MO	E3
Manganese, Dissolved	16.0		mg/L	0.056	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 08:05	ZMC	E4
Mercury, Total	ND		mg/L	0.00050	SW846 7470A	4/21/17 00:30	AXC	4/21/17 03:56	AXC	E2
Mercury, Dissolved	ND		mg/L	0.00050	SW846 7470A	4/26/17 01:05	AXC	4/26/17 05:18	AXC	D1
Nickel, Total	0.020		mg/L	0.0056	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 16:50	MO	E3
Potassium, Total	7.5		mg/L	0.11	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 16:50	MO	E3
Potassium, Dissolved	7.2		mg/L	0.11	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:07	ZMC	E4
Selenium, Total	ND		mg/L	0.0056	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 16:50	MO	E3
Selenium, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:07	ZMC	E4
Silver, Total	ND		mg/L	0.0022	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 16:50	MO	E3
Silver, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:07	ZMC	E4
Sodium, Total	35.6		mg/L	0.11	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 16:50	MO	E3
Sodium, Dissolved	32.9		mg/L	0.11	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:07	ZMC	E4
Thallium, Total	ND		mg/L	0.0011	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 16:50	MO	E3
Vanadium, Total	ND		mg/L	0.0022	SW846 6020A	4/24/17 07:50	ZMC	4/25/17 10:50	MO	E3
Zinc, Total	ND		mg/L	0.0056	SW846 6020A	4/24/17 07:50	ZMC	4/25/17 10:50	MO	E3

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2223292 2ND QTR 2017 CWMP-FORM 19A

Lab ID: **2223292003** Date Collected: 4/18/2017 14:17 Matrix: Ground Water

Sample ID: **CWMP008W** Date Received: 4/18/2017 16:00

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
Zinc, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:07	ZMC	E4
FIELD PARAMETERS										
Depth to Water Level	3.510		Feet		Field			4/18/17 14:17	CLT	F
Elev Top MW Casing above MSL	422.30		Feet		Field			4/18/17 14:17	CLT	F
Flow Rate	0.94		gal/min		Field			4/18/17 14:17	CLT	F
Ground Water Elevation	418.790		ft/MSL		Field			4/18/17 14:17	CLT	F
pH, Field (SM4500B)	6.000		pH_Units		Field			4/18/17 14:17	CLT	F
Sample Depth	19.000		Feet		Field			4/18/17 14:17	CLT	F
Specific Conductance, Field	882		umhos/cm	1	Field			4/18/17 14:17	CLT	F
Temperature	11.22		Deg. C		Field			4/18/17 14:17	CLT	F
Total Well Depth	22.800		Feet		Field			4/18/17 14:17	CLT	F
Volume in Water Column	3.086		Gallons		Field			4/18/17 14:17	CLT	F
Water Level After Purge	14.090		Feet		Field			4/18/17 14:17	CLT	F
Well Volumes Purged	6.08		Vol		Field			4/18/17 14:17	CLT	F

Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2223292 2ND QTR 2017 CWMP-FORM 19A

Lab ID: **2223292004** Date Collected: 4/18/2017 14:50 Matrix: Ground Water

Sample ID: **CWMP009W** Date Received: 4/18/2017 16:00

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	SW846 8260B			4/20/17 02:37	CJG	J
Acrylonitrile	ND		ug/L	5.0	SW846 8260B			4/20/17 02:37	CJG	J
Benzene	1.2		ug/L	1.0	SW846 8260B			4/20/17 02:37	CJG	J
Bromochloromethane	ND		ug/L	1.0	SW846 8260B			4/20/17 02:37	CJG	J
Bromodichloromethane	ND		ug/L	1.0	SW846 8260B			4/20/17 02:37	CJG	J
Bromoform	ND		ug/L	1.0	SW846 8260B			4/20/17 02:37	CJG	J
Bromomethane	ND		ug/L	1.0	SW846 8260B			4/20/17 02:37	CJG	J
2-Butanone	ND		ug/L	10.0	SW846 8260B			4/20/17 02:37	CJG	J
Carbon Disulfide	ND		ug/L	1.0	SW846 8260B			4/20/17 02:37	CJG	J
Carbon Tetrachloride	ND		ug/L	1.0	SW846 8260B			4/20/17 02:37	CJG	J
Chlorobenzene	13.7		ug/L	1.0	SW846 8260B			4/20/17 02:37	CJG	J
Chlorodibromomethane	ND		ug/L	1.0	SW846 8260B			4/20/17 02:37	CJG	J
Chloroethane	12.7		ug/L	1.0	SW846 8260B			4/20/17 02:37	CJG	J
Chloroform	ND		ug/L	1.0	SW846 8260B			4/20/17 02:37	CJG	J
Chloromethane	ND		ug/L	1.0	SW846 8260B			4/20/17 02:37	CJG	J
3-Chloro-1-propene	ND		ug/L	1.0	SW846 8260B			4/20/17 02:37	CJG	J
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	SW846 8260B			4/20/17 02:37	CJG	J
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			4/20/17 02:37	CJG	J
Dibromomethane	ND		ug/L	1.0	SW846 8260B			4/20/17 02:37	CJG	J
trans-1,4-Dichloro-2-butene	ND		ug/L	3.0	SW846 8260B			4/20/17 02:37	CJG	J
1,2-Dichlorobenzene	1.5		ug/L	1.0	SW846 8260B			4/20/17 02:37	CJG	J
1,3-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/20/17 02:37	CJG	J
1,4-Dichlorobenzene	7.2		ug/L	1.0	SW846 8260B			4/20/17 02:37	CJG	J
Dichlorodifluoromethane	ND		ug/L	1.0	SW846 8260B			4/20/17 02:37	CJG	J
1,1-Dichloroethane	1.8		ug/L	1.0	SW846 8260B			4/20/17 02:37	CJG	J
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/20/17 02:37	CJG	J
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/20/17 02:37	CJG	J
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/20/17 02:37	CJG	J
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/20/17 02:37	CJG	J
1,2-Dichloropropane	ND		ug/L	1.0	SW846 8260B			4/20/17 02:37	CJG	J
cis-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			4/20/17 02:37	CJG	J
trans-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			4/20/17 02:37	CJG	J
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			4/20/17 02:37	CJG	J
2-Hexanone	ND		ug/L	5.0	SW846 8260B			4/20/17 02:37	CJG	J
Iodomethane	ND		ug/L	1.0	SW846 8260B			4/20/17 02:37	CJG	J
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	SW846 8260B			4/20/17 02:37	CJG	J

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ANALYTICAL RESULTS

Workorder: 2223292 2ND QTR 2017 CWMP-FORM 19A

Lab ID: **2223292004** Date Collected: 4/18/2017 14:50 Matrix: Ground Water

Sample ID: **CWMP009W** Date Received: 4/18/2017 16:00

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			4/20/17 02:37	CJG	J
Styrene	ND		ug/L	1.0	SW846 8260B			4/20/17 02:37	CJG	J
1,1,1,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/20/17 02:37	CJG	J
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/20/17 02:37	CJG	J
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			4/20/17 02:37	CJG	J
Toluene	ND		ug/L	1.0	SW846 8260B			4/20/17 02:37	CJG	J
Total Xylenes	ND		ug/L	3.0	SW846 8260B			4/20/17 02:37	CJG	J
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/20/17 02:37	CJG	J
1,1,2-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/20/17 02:37	CJG	J
Trichloroethene	ND		ug/L	1.0	SW846 8260B			4/20/17 02:37	CJG	J
Trichlorofluoromethane	ND		ug/L	1.0	SW846 8260B			4/20/17 02:37	CJG	J
1,2,3-Trichloropropane	ND		ug/L	2.0	SW846 8260B			4/20/17 02:37	CJG	J
Vinyl Acetate	ND		ug/L	5.0	SW846 8260B			4/20/17 02:37	CJG	J
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			4/20/17 02:37	CJG	J
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	84		%	62 - 133	SW846 8260B			4/20/17 02:37	CJG	J
4-Bromofluorobenzene (S)	104		%	79 - 114	SW846 8260B			4/20/17 02:37	CJG	J
Dibromofluoromethane (S)	95.9		%	78 - 116	SW846 8260B			4/20/17 02:37	CJG	J
Toluene-d8 (S)	109		%	76 - 127	SW846 8260B			4/20/17 02:37	CJG	J
LIBRARY SEARCH - VOLATILES										
No TIC's Detected	.				Lib Search VOC			4/20/17 02:37	CPK	G
WET CHEMISTRY										
Alkalinity, Bicarbonate	533		mg/L	5	S2320B-97			4/19/17 12:03	MSA	B
Alkalinity, Total	533	1	mg/L	5	S2320B-97			4/19/17 12:03	MSA	B
Ammonia-N	35.8		mg/L	0.100	D6919-09			4/25/17 06:51	CMM	C
Chemical Oxygen Demand (COD)	98		mg/L	7	EPA 410.4			4/20/17 11:23	AK	C
Chloride	541		mg/L	10.0	EPA 300.0			4/19/17 13:35	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			4/19/17 13:22	CHW	B
Nitrate-N	ND		mg/L	0.20	EPA 300.0			4/19/17 13:22	CHW	B
pH	6.71	2	pH_Units		S4500HB-11			4/19/17 12:03	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	4/23/17 00:00	JLG	4/23/17 08:44	JLG	I
Specific Conductance	2590		umhos/cm	1	S2510B-97			4/19/17 12:03	MSA	B
Sulfate	5.3		mg/L	2.0	EPA 300.0			4/19/17 13:22	CHW	B
Total Dissolved Solids	1430		mg/L	5	S2540C-11			4/21/17 15:57	JAS	B
Total Organic Carbon (TOC)	30.7		mg/L	5.0	S5310B-00			4/28/17 11:27	PAG	G
Turbidity	22.1		NTU	0.10	S2130B-01			4/18/17 23:40	MSA	B

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ANALYTICAL RESULTS

Workorder: 2223292 2ND QTR 2017 CWMP-FORM 19A

Lab ID: **2223292004** Date Collected: 4/18/2017 14:50 Matrix: Ground Water
Sample ID: **CWMP009W** Date Received: 4/18/2017 16:00

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Antimony, Total	ND		mg/L	0.0022	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 16:54	MO	E3
Arsenic, Total	0.0034		mg/L	0.0033	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 16:54	MO	E3
Arsenic, Dissolved	0.0030		mg/L	0.0030	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:11	ZMC	E4
Barium, Total	0.85		mg/L	0.0056	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 16:54	MO	E3
Barium, Dissolved	0.76		mg/L	0.0056	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:11	ZMC	E4
Beryllium, Total	ND		mg/L	0.0011	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 16:54	MO	E3
Cadmium, Total	ND		mg/L	0.0011	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 16:54	MO	E3
Cadmium, Dissolved	ND		mg/L	0.0011	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:11	ZMC	E4
Calcium, Total	179		mg/L	1.1	SW846 6020A	4/24/17 07:50	ZMC	4/25/17 10:58	MO	E3
Calcium, Dissolved	160		mg/L	1.1	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 08:09	ZMC	E4
Chromium, Total	ND		mg/L	0.0022	SW846 6020A	4/24/17 07:50	ZMC	4/25/17 11:14	MO	E3
Chromium, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:11	ZMC	E4
Cobalt, Total	0.058		mg/L	0.0056	SW846 6020A	4/24/17 07:50	ZMC	4/25/17 11:14	MO	E3
Copper, Total	ND		mg/L	0.0056	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 16:54	MO	E3
Copper, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:11	ZMC	E4
Iron, Total	38.7		mg/L	0.056	SW846 6020A	4/24/17 07:50	ZMC	4/25/17 11:14	MO	E3
Iron, Dissolved	34.5		mg/L	0.056	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:11	ZMC	E4
Lead, Total	ND		mg/L	0.0022	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 16:54	MO	E3
Lead, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:11	ZMC	E4
Magnesium, Total	83.6		mg/L	0.11	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 16:54	MO	E3
Magnesium, Dissolved	75.3		mg/L	0.11	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:11	ZMC	E4
Manganese, Total	14.8		mg/L	0.056	SW846 6020A	4/24/17 07:50	ZMC	4/25/17 10:58	MO	E3
Manganese, Dissolved	13.7		mg/L	0.056	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 08:09	ZMC	E4
Mercury, Total	ND		mg/L	0.00050	SW846 7470A	4/21/17 00:30	AXC	4/21/17 03:57	AXC	E2
Mercury, Dissolved	ND		mg/L	0.00050	SW846 7470A	4/26/17 01:05	AXC	4/26/17 05:23	AXC	D1
Nickel, Total	0.067		mg/L	0.0056	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 16:54	MO	E3
Potassium, Total	34.8		mg/L	0.11	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 16:54	MO	E3
Potassium, Dissolved	32.9		mg/L	0.11	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:11	ZMC	E4
Selenium, Total	ND		mg/L	0.0056	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 16:54	MO	E3
Selenium, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:11	ZMC	E4
Silver, Total	ND		mg/L	0.0022	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 16:54	MO	E3
Silver, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:11	ZMC	E4
Sodium, Total	155		mg/L	1.1	SW846 6020A	4/24/17 07:50	ZMC	4/25/17 10:58	MO	E3
Sodium, Dissolved	163		mg/L	1.1	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 08:09	ZMC	E4
Thallium, Total	ND		mg/L	0.0011	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 16:54	MO	E3
Vanadium, Total	ND		mg/L	0.0022	SW846 6020A	4/24/17 07:50	ZMC	4/25/17 11:14	MO	E3
Zinc, Total	ND		mg/L	0.0056	SW846 6020A	4/24/17 07:50	ZMC	4/25/17 11:14	MO	E3

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ANALYTICAL RESULTS

Workorder: 2223292 2ND QTR 2017 CWMP-FORM 19A

Lab ID: **2223292004** Date Collected: 4/18/2017 14:50 Matrix: Ground Water

Sample ID: **CWMP009W** Date Received: 4/18/2017 16:00

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
Zinc, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:11	ZMC	E4
FIELD PARAMETERS										
Depth to Water Level	9.320		Feet		Field			4/18/17 14:50	CLT	F
Elev Top MW Casing above MSL	404.20		Feet		Field			4/18/17 14:50	CLT	F
Flow Rate	1.69		gal/min		Field			4/18/17 14:50	CLT	F
Ground Water Elevation	394.880		ft/MSL		Field			4/18/17 14:50	CLT	F
pH, Field (SM4500B)	5.850		pH_Units		Field			4/18/17 14:50	CLT	F
Sample Depth	16.000		Feet		Field			4/18/17 14:50	CLT	F
Specific Conductance, Field	2903		umhos/cm	1	Field			4/18/17 14:50	CLT	F
Temperature	9.49		Deg. C		Field			4/18/17 14:50	CLT	F
Total Well Depth	19.700		Feet		Field			4/18/17 14:50	CLT	F
Volume in Water Column	6.747		Gallons		Field			4/18/17 14:50	CLT	F
Water Level After Purge	11.690		Feet		Field			4/18/17 14:50	CLT	F
Well Volumes Purged	4.01		Vol		Field			4/18/17 14:50	CLT	F

Susan J. Scherer

Ms. Susan J Scherer
Project Coordinator

PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
2223292001	1	CWMP007W	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
2223292001	2	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.				
2223292002	1	CWMP001W	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
2223292002	2	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.				
2223292003	1	CWMP008W	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
2223292003	2	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.				
2223292004	1	CWMP009W	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
2223292004	2	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.				

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CHAIN OF CUSTODY/ REQUEST FOR ANALYSIS

Generated by ALS

2222329 2

1 of 1

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

Client Name: Lancaster County Solid Waste MA

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

Contact: Mark Reider

Phone#: (717) 735-0193

Project Name/#: Annual CWMP Sampling

Bill To: Lancaster County Solid Waste MA

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

Date Required: _____ Approved By: _____

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

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

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

ANALYSES/METHOD REQUESTED

Sample Description/Location (as it will appear on the lab report)	Sample Date	Time	*G or C	**Matrix	TOC	O-OH	VOC (Form 19A) + LS	*FM	Sample Depth for AUX Data	NH3-N, COD	Diss: Fe, Mn, Na, Ba, Cr, Cu, Pb, Mg, K, Zn, As, Cd, Se, Ag, Hg, Ca	Metals: Fe, Mn, Na, Ba, Cr, Cu, Pb, Mg, K, Zn, As, Cd, Se, Ag, Hg, Ca	pH, Cl, SpC, F, SO4, NO3, Tb, TDS	Alkalinity, HCO3	Sample/COC Comments
			Enter Number of Containers Per Sample or Field Results Below.												
1. CWMP007W	4-18-17	1027	G	GW	2	1	2	X	X	1	1	1	1	1	
2 CWMP001W		1142													
3 CWMP008W		1417													
4 CWMP009W		1450													
5															
6															
7															
8															
9															
10															

Receipt Information (Completed by Receiving Lab)

Cooler Temp: 2 Therm ID: 316

No. of Coolers: _____

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

Courier/Tracking #:

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

Project Comments:

LOGGED BY(signature): _____ DATE 4-18-17 TIME 1850

REVIEWED BY(signature): _____ DATE _____ TIME _____

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
1 SAMPLED BY			2	4/18	1610
3			4		
5			6		
7			8		
9			10		

Data Deliverables: ☐Standard ☐CLP-like ☐USACE

Special Processing: USACE ☐ Navy ☐

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

Reportable to PADEP? Yes ☐ PWSID # _____

Sample Disposal: Lab [X] Special ☐

EDDS: Format Type- _____

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

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

Rev 8/04

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

May 8, 2017

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

Certificate of Analysis

Project Name:	**2017-CRESWELL**	Workorder:	**2223701**
Purchase Order:		Workorder ID:	**2ND QTR 2017 CWMP-FORM 19A**

Dear Mr. Brown:

Enclosed are the analytical results for samples received by the laboratory on Wednesday, April 19, 2017.

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

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

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

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

CC: Mr. Mark Reider , Mr. Jeff Musser

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

Susan J. Scherer

Ms. Susan J Scherer
Project Coordinator

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SAMPLE SUMMARY

Workorder: 2223701 2ND QTR 2017 CWMP-FORM 19A

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
2223701001	CWMP018S	Ground Water	4/19/2017 11:04	4/19/2017 16:48	Mr. Brian G Shade
2223701002	CWMP017S	Ground Water	4/19/2017 11:30	4/19/2017 16:48	Mr. Brian G Shade
2223701003	CWMP016W	Ground Water	4/19/2017 13:38	4/19/2017 16:48	Mr. Brian G Shade
2223701004	CWMP010W	Ground Water	4/19/2017 14:40	4/19/2017 16:48	Mr. Brian G Shade

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SAMPLE SUMMARY

Workorder: 2223701 2ND QTR 2017 CWMP-FORM 19A

Notes

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

Standard Acronyms/Flags

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

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ANALYTICAL RESULTS

Workorder: 2223701 2ND QTR 2017 CWMP-FORM 19A

Lab ID: **2223701001** Date Collected: 4/19/2017 11:04 Matrix: Ground Water

Sample ID: **CWMP018S** Date Received: 4/19/2017 16:48

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	SW846 8260B			4/21/17 22:27	CJG	J
Acrylonitrile	ND		ug/L	5.0	SW846 8260B			4/21/17 22:27	CJG	J
Benzene	ND		ug/L	1.0	SW846 8260B			4/21/17 22:27	CJG	J
Bromochloromethane	ND		ug/L	1.0	SW846 8260B			4/21/17 22:27	CJG	J
Bromodichloromethane	ND		ug/L	1.0	SW846 8260B			4/21/17 22:27	CJG	J
Bromoform	ND		ug/L	1.0	SW846 8260B			4/21/17 22:27	CJG	J
Bromomethane	ND		ug/L	1.0	SW846 8260B			4/21/17 22:27	CJG	J
2-Butanone	ND		ug/L	10.0	SW846 8260B			4/21/17 22:27	CJG	J
Carbon Disulfide	ND		ug/L	1.0	SW846 8260B			4/21/17 22:27	CJG	J
Carbon Tetrachloride	ND		ug/L	1.0	SW846 8260B			4/21/17 22:27	CJG	J
Chlorobenzene	ND		ug/L	1.0	SW846 8260B			4/21/17 22:27	CJG	J
Chlorodibromomethane	ND		ug/L	1.0	SW846 8260B			4/21/17 22:27	CJG	J
Chloroethane	ND	5	ug/L	1.0	SW846 8260B			4/21/17 22:27	CJG	J
Chloroform	ND		ug/L	1.0	SW846 8260B			4/21/17 22:27	CJG	J
Chloromethane	ND	4	ug/L	1.0	SW846 8260B			4/21/17 22:27	CJG	J
3-Chloro-1-propene	ND		ug/L	1.0	SW846 8260B			4/21/17 22:27	CJG	J
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	SW846 8260B			4/21/17 22:27	CJG	J
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			4/21/17 22:27	CJG	J
Dibromomethane	ND		ug/L	1.0	SW846 8260B			4/21/17 22:27	CJG	J
trans-1,4-Dichloro-2-butene	ND		ug/L	3.0	SW846 8260B			4/21/17 22:27	CJG	J
1,2-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/21/17 22:27	CJG	J
1,3-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/21/17 22:27	CJG	J
1,4-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/21/17 22:27	CJG	J
Dichlorodifluoromethane	ND	3	ug/L	1.0	SW846 8260B			4/21/17 22:27	CJG	J
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/21/17 22:27	CJG	J
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/21/17 22:27	CJG	J
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/21/17 22:27	CJG	J
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/21/17 22:27	CJG	J
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/21/17 22:27	CJG	J
1,2-Dichloropropane	ND		ug/L	1.0	SW846 8260B			4/21/17 22:27	CJG	J
cis-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			4/21/17 22:27	CJG	J
trans-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			4/21/17 22:27	CJG	J
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			4/21/17 22:27	CJG	J
2-Hexanone	ND		ug/L	5.0	SW846 8260B			4/21/17 22:27	CJG	J
Iodomethane	ND		ug/L	1.0	SW846 8260B			4/21/17 22:27	CJG	J
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	SW846 8260B			4/21/17 22:27	CJG	J

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2223701 2ND QTR 2017 CWMP-FORM 19A

Lab ID: **2223701001** Date Collected: 4/19/2017 11:04 Matrix: Ground Water

Sample ID: **CWMP018S** Date Received: 4/19/2017 16:48

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			4/21/17 22:27	CJG	J
Styrene	ND		ug/L	1.0	SW846 8260B			4/21/17 22:27	CJG	J
1,1,1,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/21/17 22:27	CJG	J
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/21/17 22:27	CJG	J
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			4/21/17 22:27	CJG	J
Toluene	ND		ug/L	1.0	SW846 8260B			4/21/17 22:27	CJG	J
Total Xylenes	ND		ug/L	3.0	SW846 8260B			4/21/17 22:27	CJG	J
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/21/17 22:27	CJG	J
1,1,2-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/21/17 22:27	CJG	J
Trichloroethene	ND		ug/L	1.0	SW846 8260B			4/21/17 22:27	CJG	J
Trichlorofluoromethane	ND		ug/L	1.0	SW846 8260B			4/21/17 22:27	CJG	J
1,2,3-Trichloropropane	ND		ug/L	2.0	SW846 8260B			4/21/17 22:27	CJG	J
Vinyl Acetate	ND		ug/L	5.0	SW846 8260B			4/21/17 22:27	CJG	J
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			4/21/17 22:27	CJG	J
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	101		%	62 - 133	SW846 8260B			4/21/17 22:27	CJG	J
4-Bromofluorobenzene (S)	102		%	79 - 114	SW846 8260B			4/21/17 22:27	CJG	J
Dibromofluoromethane (S)	98.9		%	78 - 116	SW846 8260B			4/21/17 22:27	CJG	J
Toluene-d8 (S)	99		%	76 - 127	SW846 8260B			4/21/17 22:27	CJG	J
LIBRARY SEARCH - VOLATILES										
No TIC's Detected	.				Lib Search VOC			4/21/17 22:27	CPK	J
WET CHEMISTRY										
Alkalinity, Bicarbonate	212		mg/L	5	S2320B-97			4/20/17 08:35	MSA	B
Alkalinity, Total	240	1	mg/L	5	S2320B-97			4/20/17 08:35	MSA	B
Ammonia-N	ND		mg/L	0.100	D6919-09			4/26/17 07:04	CMM	C
Chemical Oxygen Demand (COD)	23		mg/L	7	EPA 410.4			4/26/17 15:09	AK	C
Chloride	519		mg/L	10.0	EPA 300.0			4/20/17 12:46	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			4/20/17 12:33	CHW	B
Nitrate-N	19.2		mg/L	0.20	EPA 300.0			4/20/17 12:33	CHW	B
pH	8.62	2	pH_Units		S4500HB-11			4/20/17 08:35	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	4/23/17 00:00	JLG	4/23/17 08:44	JLG	I
Specific Conductance	2170		umhos/cm	1	S2510B-97			4/20/17 08:35	MSA	B
Sulfate	36.2		mg/L	2.0	EPA 300.0			4/20/17 12:33	CHW	B
Total Dissolved Solids	1200		mg/L	5	S2540C-11			4/24/17 16:29	JAS	B
Total Organic Carbon (TOC)	7.1		mg/L	0.50	S5310B-00			4/26/17 12:12	PAG	G
Turbidity	0.78		NTU	0.10	S2130B-01			4/20/17 23:06	MSA	B

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2223701 2ND QTR 2017 CWMP-FORM 19A

Lab ID: **2223701001** Date Collected: 4/19/2017 11:04 Matrix: Ground Water
Sample ID: **CWMP018S** Date Received: 4/19/2017 16:48

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Antimony, Total	ND		mg/L	0.0022	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 16:58	MO	E1
Arsenic, Total	ND		mg/L	0.0033	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 16:58	MO	E1
Arsenic, Dissolved	ND		mg/L	0.0030	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:15	ZMC	D1
Barium, Total	0.030		mg/L	0.0056	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 16:58	MO	E1
Barium, Dissolved	0.029		mg/L	0.0056	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:15	ZMC	D1
Beryllium, Total	ND		mg/L	0.0011	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 16:58	MO	E1
Cadmium, Total	ND		mg/L	0.0011	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 16:58	MO	E1
Cadmium, Dissolved	ND		mg/L	0.0011	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:15	ZMC	D1
Calcium, Total	63.4		mg/L	0.11	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 16:58	MO	E1
Calcium, Dissolved	56.3		mg/L	0.11	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:15	ZMC	D1
Chromium, Total	ND		mg/L	0.0022	SW846 6020A	4/24/17 07:50	ZMC	4/25/17 11:18	MO	E1
Chromium, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:15	ZMC	D1
Cobalt, Total	ND		mg/L	0.0056	SW846 6020A	4/24/17 07:50	ZMC	4/25/17 11:18	MO	E1
Copper, Total	0.0097		mg/L	0.0056	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 16:58	MO	E1
Copper, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:15	ZMC	D1
Iron, Total	0.068		mg/L	0.056	SW846 6020A	4/24/17 07:50	ZMC	4/25/17 11:18	MO	E1
Iron, Dissolved	ND		mg/L	0.056	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:15	ZMC	D1
Lead, Total	ND		mg/L	0.0022	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 16:58	MO	E1
Lead, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:15	ZMC	D1
Magnesium, Total	67.7		mg/L	1.1	SW846 6020A	4/24/17 07:50	ZMC	4/25/17 11:22	MO	E1
Magnesium, Dissolved	55.6		mg/L	0.11	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:15	ZMC	D1
Manganese, Total	0.0099		mg/L	0.0056	SW846 6020A	4/24/17 07:50	ZMC	4/25/17 11:18	MO	E1
Manganese, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:15	ZMC	D1
Mercury, Total	ND		mg/L	0.00050	SW846 7470A	4/25/17 01:00	AXC	4/25/17 04:58	AXC	E2
Mercury, Dissolved	ND		mg/L	0.00050	SW846 7470A	4/26/17 01:05	AXC	4/26/17 05:27	AXC	D2
Nickel, Total	0.013		mg/L	0.0056	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 16:58	MO	E1
Potassium, Total	15.6		mg/L	1.1	SW846 6020A	4/24/17 07:50	ZMC	4/25/17 11:22	MO	E1
Potassium, Dissolved	15.3		mg/L	0.11	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:15	ZMC	D1
Selenium, Total	ND		mg/L	0.0056	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 16:58	MO	E1
Selenium, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:15	ZMC	D1
Silver, Total	ND		mg/L	0.0022	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 16:58	MO	E1
Silver, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:15	ZMC	D1
Sodium, Total	314		mg/L	1.1	SW846 6020A	4/24/17 07:50	ZMC	4/25/17 11:22	MO	E1
Sodium, Dissolved	291		mg/L	1.1	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 08:13	ZMC	D1
Thallium, Total	ND		mg/L	0.0011	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 16:58	MO	E1
Vanadium, Total	ND		mg/L	0.0022	SW846 6020A	4/24/17 07:50	ZMC	4/25/17 11:18	MO	E1
Zinc, Total	0.0089		mg/L	0.0056	SW846 6020A	4/24/17 07:50	ZMC	4/25/17 11:18	MO	E1

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ANALYTICAL RESULTS

Workorder: 2223701 2ND QTR 2017 CWMP-FORM 19A

Lab ID: **2223701001** Date Collected: 4/19/2017 11:04 Matrix: Ground Water

Sample ID: **CWMP018S** Date Received: 4/19/2017 16:48

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
Zinc, Dissolved	0.0071		mg/L	0.0056	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:15	ZMC	D1
FIELD PARAMETERS										
Dissolved Oxygen	8.170		mg/L	0.010	Field			4/19/17 11:03	BGS	F
pH, Field (SM4500B)	8.170		pH_Units		Field			4/19/17 11:03	BGS	F
Specific Conductance, Field	2331		umhos/cm	1	Field			4/19/17 11:03	BGS	F
Temperature	12.11		Deg. C		Field			4/19/17 11:03	BGS	F

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ANALYTICAL RESULTS

Workorder: 2223701 2ND QTR 2017 CWMP-FORM 19A

Lab ID: **2223701002** Date Collected: 4/19/2017 11:30 Matrix: Ground Water

Sample ID: **CWMP017S** Date Received: 4/19/2017 16:48

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	SW846 8260B			4/21/17 22:50	CJG	J
Acrylonitrile	ND		ug/L	5.0	SW846 8260B			4/21/17 22:50	CJG	J
Benzene	ND		ug/L	1.0	SW846 8260B			4/21/17 22:50	CJG	J
Bromochloromethane	ND		ug/L	1.0	SW846 8260B			4/21/17 22:50	CJG	J
Bromodichloromethane	ND		ug/L	1.0	SW846 8260B			4/21/17 22:50	CJG	J
Bromoform	ND		ug/L	1.0	SW846 8260B			4/21/17 22:50	CJG	J
Bromomethane	ND		ug/L	1.0	SW846 8260B			4/21/17 22:50	CJG	J
2-Butanone	ND		ug/L	10.0	SW846 8260B			4/21/17 22:50	CJG	J
Carbon Disulfide	ND		ug/L	1.0	SW846 8260B			4/21/17 22:50	CJG	J
Carbon Tetrachloride	ND		ug/L	1.0	SW846 8260B			4/21/17 22:50	CJG	J
Chlorobenzene	ND		ug/L	1.0	SW846 8260B			4/21/17 22:50	CJG	J
Chlorodibromomethane	ND		ug/L	1.0	SW846 8260B			4/21/17 22:50	CJG	J
Chloroethane	ND	5	ug/L	1.0	SW846 8260B			4/21/17 22:50	CJG	J
Chloroform	ND		ug/L	1.0	SW846 8260B			4/21/17 22:50	CJG	J
Chloromethane	ND	4	ug/L	1.0	SW846 8260B			4/21/17 22:50	CJG	J
3-Chloro-1-propene	ND		ug/L	1.0	SW846 8260B			4/21/17 22:50	CJG	J
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	SW846 8260B			4/21/17 22:50	CJG	J
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			4/21/17 22:50	CJG	J
Dibromomethane	ND		ug/L	1.0	SW846 8260B			4/21/17 22:50	CJG	J
trans-1,4-Dichloro-2-butene	ND		ug/L	3.0	SW846 8260B			4/21/17 22:50	CJG	J
1,2-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/21/17 22:50	CJG	J
1,3-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/21/17 22:50	CJG	J
1,4-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/21/17 22:50	CJG	J
Dichlorodifluoromethane	ND	3	ug/L	1.0	SW846 8260B			4/21/17 22:50	CJG	J
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/21/17 22:50	CJG	J
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/21/17 22:50	CJG	J
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/21/17 22:50	CJG	J
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/21/17 22:50	CJG	J
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/21/17 22:50	CJG	J
1,2-Dichloropropane	ND		ug/L	1.0	SW846 8260B			4/21/17 22:50	CJG	J
cis-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			4/21/17 22:50	CJG	J
trans-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			4/21/17 22:50	CJG	J
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			4/21/17 22:50	CJG	J
2-Hexanone	ND		ug/L	5.0	SW846 8260B			4/21/17 22:50	CJG	J
Iodomethane	ND		ug/L	1.0	SW846 8260B			4/21/17 22:50	CJG	J
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	SW846 8260B			4/21/17 22:50	CJG	J

ANALYTICAL RESULTS

Workorder: 2223701 2ND QTR 2017 CWMP-FORM 19A

Lab ID: **2223701002** Date Collected: 4/19/2017 11:30 Matrix: Ground Water

Sample ID: **CWMP017S** Date Received: 4/19/2017 16:48

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			4/21/17 22:50	CJG	J
Styrene	ND		ug/L	1.0	SW846 8260B			4/21/17 22:50	CJG	J
1,1,1,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/21/17 22:50	CJG	J
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/21/17 22:50	CJG	J
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			4/21/17 22:50	CJG	J
Toluene	ND		ug/L	1.0	SW846 8260B			4/21/17 22:50	CJG	J
Total Xylenes	ND		ug/L	3.0	SW846 8260B			4/21/17 22:50	CJG	J
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/21/17 22:50	CJG	J
1,1,2-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/21/17 22:50	CJG	J
Trichloroethene	ND		ug/L	1.0	SW846 8260B			4/21/17 22:50	CJG	J
Trichlorofluoromethane	ND		ug/L	1.0	SW846 8260B			4/21/17 22:50	CJG	J
1,2,3-Trichloropropane	ND		ug/L	2.0	SW846 8260B			4/21/17 22:50	CJG	J
Vinyl Acetate	ND		ug/L	5.0	SW846 8260B			4/21/17 22:50	CJG	J
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			4/21/17 22:50	CJG	J
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	99.5		%	62 - 133	SW846 8260B			4/21/17 22:50	CJG	J
4-Bromofluorobenzene (S)	99		%	79 - 114	SW846 8260B			4/21/17 22:50	CJG	J
Dibromofluoromethane (S)	96.8		%	78 - 116	SW846 8260B			4/21/17 22:50	CJG	J
Toluene-d8 (S)	97.1		%	76 - 127	SW846 8260B			4/21/17 22:50	CJG	J
LIBRARY SEARCH - VOLATILES										
No TIC's Detected	.				Lib Search VOC			4/21/17 22:50	CPK	J
METALS										
Antimony, Total	ND		mg/L	0.0022	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 17:02	MO	E1
Arsenic, Total	ND		mg/L	0.0033	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 17:02	MO	E1
Arsenic, Dissolved	ND		mg/L	0.0030	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:19	ZMC	D1
Barium, Total	0.027		mg/L	0.0056	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 17:02	MO	E1
Barium, Dissolved	0.026		mg/L	0.0056	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:19	ZMC	D1
Beryllium, Total	ND		mg/L	0.0011	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 17:02	MO	E1
Cadmium, Total	ND		mg/L	0.0011	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 17:02	MO	E1
Cadmium, Dissolved	ND		mg/L	0.0011	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:19	ZMC	D1
Calcium, Total	78.3		mg/L	0.11	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 17:02	MO	E1
Calcium, Dissolved	71.8		mg/L	0.11	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:19	ZMC	D1
Chromium, Total	ND		mg/L	0.0022	SW846 6020A	4/24/17 07:50	ZMC	4/25/17 11:25	MO	E1
Chromium, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:19	ZMC	D1
Cobalt, Total	ND		mg/L	0.0056	SW846 6020A	4/24/17 07:50	ZMC	4/25/17 11:25	MO	E1
Copper, Total	0.014		mg/L	0.0056	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 17:02	MO	E1
Copper, Dissolved	0.0098		mg/L	0.0056	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:19	ZMC	D1

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ANALYTICAL RESULTS

Workorder: 2223701 2ND QTR 2017 CWMP-FORM 19A

Lab ID: **2223701002** Date Collected: 4/19/2017 11:30 Matrix: Ground Water

Sample ID: **CWMP017S** Date Received: 4/19/2017 16:48

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
Iron, Total	0.11		mg/L	0.056	SW846 6020A	4/24/17 07:50	ZMC	4/25/17 11:25	MO	E1
Iron, Dissolved	0.060		mg/L	0.056	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:19	ZMC	D1
Lead, Total	ND		mg/L	0.0022	SW846 6020A	4/24/17 07:50	ZMC	4/25/17 11:25	MO	E1
Lead, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:19	ZMC	D1
Magnesium, Total	100		mg/L	1.1	SW846 6020A	4/24/17 07:50	ZMC	4/25/17 15:52	MO	E1
Magnesium, Dissolved	86.4		mg/L	0.11	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:19	ZMC	D1
Manganese, Total	0.091		mg/L	0.0056	SW846 6020A	4/24/17 07:50	ZMC	4/25/17 11:25	MO	E1
Manganese, Dissolved	0.080		mg/L	0.0056	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:19	ZMC	D1
Mercury, Total	ND		mg/L	0.00050	SW846 7470A	4/25/17 01:00	AXC	4/25/17 04:59	AXC	E2
Mercury, Dissolved	ND		mg/L	0.00050	SW846 7470A	4/26/17 01:05	AXC	4/26/17 05:28	AXC	D2
Nickel, Total	0.0098		mg/L	0.0056	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 17:02	MO	E1
Potassium, Total	20.9		mg/L	1.1	SW846 6020A	4/24/17 07:50	ZMC	4/25/17 15:52	MO	E1
Potassium, Dissolved	19.6		mg/L	0.11	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:19	ZMC	D1
Selenium, Total	ND		mg/L	0.0056	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 17:02	MO	E1
Selenium, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:19	ZMC	D1
Silver, Total	ND		mg/L	0.0022	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 17:02	MO	E1
Silver, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:19	ZMC	D1
Sodium, Total	537		mg/L	1.1	SW846 6020A	4/24/17 07:50	ZMC	4/25/17 15:52	MO	E1
Sodium, Dissolved	534		mg/L	1.1	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 08:48	ZMC	D1
Thallium, Total	ND		mg/L	0.0011	SW846 6020A	4/24/17 07:50	ZMC	4/25/17 11:25	MO	E1
Vanadium, Total	ND		mg/L	0.0022	SW846 6020A	4/24/17 07:50	ZMC	4/25/17 11:25	MO	E1
Zinc, Total	0.058		mg/L	0.0056	SW846 6020A	4/24/17 07:50	ZMC	4/25/17 11:25	MO	E1
Zinc, Dissolved	0.050		mg/L	0.0056	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:19	ZMC	D1
WET CHEMISTRY										
Alkalinity, Bicarbonate	339		mg/L	5	S2320B-97			4/20/17 08:46	MSA	B
Alkalinity, Total	339	1	mg/L	5	S2320B-97			4/20/17 08:46	MSA	B
Ammonia-N	ND		mg/L	0.100	D6919-09			4/26/17 07:22	CMM	C
Chemical Oxygen Demand (COD)	14		mg/L	7	EPA 410.4			4/21/17 10:00	AK	C
Chloride	846		mg/L	25.0	EPA 300.0			4/20/17 13:11	CHW	B
Fluoride	0.20		mg/L	0.20	EPA 300.0			4/20/17 12:59	CHW	B
Nitrate-N	29.8		mg/L	2.5	EPA 300.0			4/20/17 13:11	CHW	B
pH	8.07	2	pH_Units		S4500HB-11			4/20/17 08:46	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	4/23/17 00:00	JLG	4/23/17 08:44	JLG	I
Specific Conductance	3420		umhos/cm	1	S2510B-97			4/20/17 08:46	MSA	B
Sulfate	47.5		mg/L	2.0	EPA 300.0			4/20/17 12:59	CHW	B
Total Dissolved Solids	1950		mg/L	5	S2540C-11			4/24/17 16:29	JAS	B
Total Organic Carbon (TOC)	4.7		mg/L	0.50	S5310B-00			4/26/17 12:12	PAG	G

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ANALYTICAL RESULTS

Workorder: 2223701 2ND QTR 2017 CWMP-FORM 19A

Lab ID: **2223701002** Date Collected: 4/19/2017 11:30 Matrix: Ground Water

Sample ID: **CWMP017S** Date Received: 4/19/2017 16:48

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
Turbidity	1.32		NTU	0.10	S2130B-01			4/20/17 23:06	MSA	B
FIELD PARAMETERS										
Dissolved Oxygen	7.790		mg/L	0.010	Field			4/19/17 11:30	BGS	F
pH, Field (SM4500B)	7.790		pH_Units		Field			4/19/17 11:30	BGS	F
Specific Conductance, Field	3753		umhos/cm	1	Field			4/19/17 11:30	BGS	F
Temperature	16.60		Deg. C		Field			4/19/17 11:30	BGS	F

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ANALYTICAL RESULTS

Workorder: 2223701 2ND QTR 2017 CWMP-FORM 19A

Lab ID: **2223701003** Date Collected: 4/19/2017 13:38 Matrix: Ground Water

Sample ID: **CWMP016W** Date Received: 4/19/2017 16:48

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	SW846 8260B			4/21/17 23:13	CJG	J
Acrylonitrile	ND		ug/L	5.0	SW846 8260B			4/21/17 23:13	CJG	J
Benzene	ND		ug/L	1.0	SW846 8260B			4/21/17 23:13	CJG	J
Bromochloromethane	ND		ug/L	1.0	SW846 8260B			4/21/17 23:13	CJG	J
Bromodichloromethane	ND		ug/L	1.0	SW846 8260B			4/21/17 23:13	CJG	J
Bromoform	ND		ug/L	1.0	SW846 8260B			4/21/17 23:13	CJG	J
Bromomethane	ND		ug/L	1.0	SW846 8260B			4/21/17 23:13	CJG	J
2-Butanone	ND		ug/L	10.0	SW846 8260B			4/21/17 23:13	CJG	J
Carbon Disulfide	ND		ug/L	1.0	SW846 8260B			4/21/17 23:13	CJG	J
Carbon Tetrachloride	ND		ug/L	1.0	SW846 8260B			4/21/17 23:13	CJG	J
Chlorobenzene	ND		ug/L	1.0	SW846 8260B			4/21/17 23:13	CJG	J
Chlorodibromomethane	ND		ug/L	1.0	SW846 8260B			4/21/17 23:13	CJG	J
Chloroethane	ND	6	ug/L	1.0	SW846 8260B			4/21/17 23:13	CJG	J
Chloroform	ND		ug/L	1.0	SW846 8260B			4/21/17 23:13	CJG	J
Chloromethane	ND	5	ug/L	1.0	SW846 8260B			4/21/17 23:13	CJG	J
3-Chloro-1-propene	ND		ug/L	1.0	SW846 8260B			4/21/17 23:13	CJG	J
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	SW846 8260B			4/21/17 23:13	CJG	J
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			4/21/17 23:13	CJG	J
Dibromomethane	ND		ug/L	1.0	SW846 8260B			4/21/17 23:13	CJG	J
trans-1,4-Dichloro-2-butene	ND		ug/L	3.0	SW846 8260B			4/21/17 23:13	CJG	J
1,2-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/21/17 23:13	CJG	J
1,3-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/21/17 23:13	CJG	J
1,4-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/21/17 23:13	CJG	J
Dichlorodifluoromethane	ND	4	ug/L	1.0	SW846 8260B			4/21/17 23:13	CJG	J
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/21/17 23:13	CJG	J
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/21/17 23:13	CJG	J
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/21/17 23:13	CJG	J
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/21/17 23:13	CJG	J
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/21/17 23:13	CJG	J
1,2-Dichloropropane	ND		ug/L	1.0	SW846 8260B			4/21/17 23:13	CJG	J
cis-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			4/21/17 23:13	CJG	J
trans-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			4/21/17 23:13	CJG	J
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			4/21/17 23:13	CJG	J
2-Hexanone	ND		ug/L	5.0	SW846 8260B			4/21/17 23:13	CJG	J
Iodomethane	ND		ug/L	1.0	SW846 8260B			4/21/17 23:13	CJG	J
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	SW846 8260B			4/21/17 23:13	CJG	J

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2223701 2ND QTR 2017 CWMP-FORM 19A

Lab ID: **2223701003** Date Collected: 4/19/2017 13:38 Matrix: Ground Water

Sample ID: **CWMP016W** Date Received: 4/19/2017 16:48

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			4/21/17 23:13	CJG	J
Styrene	ND		ug/L	1.0	SW846 8260B			4/21/17 23:13	CJG	J
1,1,1,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/21/17 23:13	CJG	J
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/21/17 23:13	CJG	J
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			4/21/17 23:13	CJG	J
Toluene	ND		ug/L	1.0	SW846 8260B			4/21/17 23:13	CJG	J
Total Xylenes	ND		ug/L	3.0	SW846 8260B			4/21/17 23:13	CJG	J
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/21/17 23:13	CJG	J
1,1,2-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/21/17 23:13	CJG	J
Trichloroethene	ND		ug/L	1.0	SW846 8260B			4/21/17 23:13	CJG	J
Trichlorofluoromethane	ND		ug/L	1.0	SW846 8260B			4/21/17 23:13	CJG	J
1,2,3-Trichloropropane	ND		ug/L	2.0	SW846 8260B			4/21/17 23:13	CJG	J
Vinyl Acetate	ND		ug/L	5.0	SW846 8260B			4/21/17 23:13	CJG	J
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			4/21/17 23:13	CJG	J
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	100		%	62 - 133	SW846 8260B			4/21/17 23:13	CJG	J
4-Bromofluorobenzene (S)	103		%	79 - 114	SW846 8260B			4/21/17 23:13	CJG	J
Dibromofluoromethane (S)	97.9		%	78 - 116	SW846 8260B			4/21/17 23:13	CJG	J
Toluene-d8 (S)	97.1		%	76 - 127	SW846 8260B			4/21/17 23:13	CJG	J
LIBRARY SEARCH - VOLATILES										
No TIC's Detected	.				Lib Search VOC			4/21/17 23:13	CPK	J
WET CHEMISTRY										
Alkalinity, Bicarbonate	8		mg/L	5	S2320B-97			4/20/17 08:55	MSA	B
Alkalinity, Total	8	1	mg/L	5	S2320B-97			4/20/17 08:55	MSA	B
Ammonia-N	ND		mg/L	0.100	D6919-09			4/26/17 07:41	CMM	C
Chemical Oxygen Demand (COD)	ND		mg/L	7	EPA 410.4			4/21/17 10:00	AK	C
Chloride	2.5		mg/L	2.0	EPA 300.0			4/20/17 13:24	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			4/20/17 13:24	CHW	B
Nitrate-N	0.54		mg/L	0.20	EPA 300.0			4/20/17 13:24	CHW	B
pH	6.47	2	pH_Units		S4500HB-11			4/20/17 08:55	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	4/23/17 00:00	JLG	4/23/17 08:44	JLG	I
Specific Conductance	52		umhos/cm	1	S2510B-97			4/20/17 08:55	MSA	B
Sulfate	12.2		mg/L	2.0	EPA 300.0			4/20/17 13:24	CHW	B
Total Dissolved Solids	62	3	mg/L	5	S2540C-11			4/24/17 16:29	JAS	B
Total Organic Carbon (TOC)	0.86		mg/L	0.50	S5310B-00			4/26/17 12:12	PAG	G
Turbidity	0.68		NTU	0.10	S2130B-01			4/20/17 23:06	MSA	B

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ANALYTICAL RESULTS

Workorder: 2223701 2ND QTR 2017 CWMP-FORM 19A

Lab ID: **2223701003** Date Collected: 4/19/2017 13:38 Matrix: Ground Water
Sample ID: **CWMP016W** Date Received: 4/19/2017 16:48

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Antimony, Total	ND		mg/L	0.0022	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 17:06	MO	E1
Arsenic, Total	ND		mg/L	0.0033	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 17:06	MO	E1
Arsenic, Dissolved	ND		mg/L	0.0030	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:23	ZMC	D1
Barium, Total	0.010		mg/L	0.0056	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 17:06	MO	E1
Barium, Dissolved	0.0086		mg/L	0.0056	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:23	ZMC	D1
Beryllium, Total	ND		mg/L	0.0011	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 17:06	MO	E1
Cadmium, Total	ND		mg/L	0.0011	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 17:06	MO	E1
Cadmium, Dissolved	ND		mg/L	0.0011	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:23	ZMC	D1
Calcium, Total	5.3		mg/L	0.11	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 17:06	MO	E1
Calcium, Dissolved	4.8		mg/L	0.11	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:23	ZMC	D1
Chromium, Total	ND		mg/L	0.0022	SW846 6020A	4/24/17 07:50	ZMC	4/25/17 11:29	MO	E1
Chromium, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:23	ZMC	D1
Cobalt, Total	ND		mg/L	0.0056	SW846 6020A	4/24/17 07:50	ZMC	4/25/17 11:29	MO	E1
Copper, Total	ND		mg/L	0.0056	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 17:06	MO	E1
Copper, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:23	ZMC	D1
Iron, Total	0.17		mg/L	0.056	SW846 6020A	4/24/17 07:50	ZMC	4/25/17 11:29	MO	E1
Iron, Dissolved	ND		mg/L	0.056	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:23	ZMC	D1
Lead, Total	ND		mg/L	0.0022	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 17:06	MO	E1
Lead, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:23	ZMC	D1
Magnesium, Total	1.3		mg/L	0.11	SW846 6020A	4/24/17 07:50	ZMC	4/25/17 11:29	MO	E1
Magnesium, Dissolved	1.2		mg/L	0.11	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:23	ZMC	D1
Manganese, Total	0.0070		mg/L	0.0056	SW846 6020A	4/24/17 07:50	ZMC	4/25/17 11:29	MO	E1
Manganese, Dissolved	0.0058		mg/L	0.0056	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:23	ZMC	D1
Mercury, Total	ND		mg/L	0.00050	SW846 7470A	4/25/17 01:00	AXC	4/25/17 05:05	AXC	E2
Mercury, Dissolved	ND		mg/L	0.00050	SW846 7470A	4/26/17 01:05	AXC	4/26/17 05:29	AXC	D2
Nickel, Total	ND		mg/L	0.0056	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 17:06	MO	E1
Potassium, Total	0.43		mg/L	0.11	SW846 6020A	4/24/17 07:50	ZMC	4/25/17 11:29	MO	E1
Potassium, Dissolved	0.43		mg/L	0.11	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:23	ZMC	D1
Selenium, Total	ND		mg/L	0.0056	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 17:06	MO	E1
Selenium, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:23	ZMC	D1
Silver, Total	ND		mg/L	0.0022	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 17:06	MO	E1
Silver, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:23	ZMC	D1
Sodium, Total	3.4		mg/L	0.11	SW846 6020A	4/24/17 07:50	ZMC	4/25/17 11:29	MO	E1
Sodium, Dissolved	3.1		mg/L	0.11	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:23	ZMC	D1
Thallium, Total	ND		mg/L	0.0011	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 17:06	MO	E1
Vanadium, Total	ND		mg/L	0.0022	SW846 6020A	4/24/17 07:50	ZMC	4/25/17 11:29	MO	E1
Zinc, Total	ND		mg/L	0.0056	SW846 6020A	4/24/17 07:50	ZMC	4/25/17 11:29	MO	E1

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ANALYTICAL RESULTS

Workorder: 2223701 2ND QTR 2017 CWMP-FORM 19A

Lab ID: **2223701003** Date Collected: 4/19/2017 13:38 Matrix: Ground Water

Sample ID: **CWMP016W** Date Received: 4/19/2017 16:48

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
Zinc, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:23	ZMC	D1
FIELD PARAMETERS										
Depth to Water Level	9.710		Feet		Field			4/19/17 13:38	CLT	F
Elev Top MW Casing above MSL	311.97		Feet		Field			4/19/17 13:38	CLT	F
Flow Rate	2.54		gal/min		Field			4/19/17 13:38	CLT	F
Ground Water Elevation	302.260		ft/MSL		Field			4/19/17 13:38	CLT	F
pH, Field (SM4500B)	5.020		pH_Units		Field			4/19/17 13:38	CLT	F
Sample Depth	71.000		Feet		Field			4/19/17 13:38	CLT	F
Specific Conductance, Field	65		umhos/cm	1	Field			4/19/17 13:38	CLT	F
Temperature	10.31		Deg. C		Field			4/19/17 13:38	CLT	F
Total Well Depth	73.520		Feet		Field			4/19/17 13:38	CLT	F
Volume in Water Column	93.801		Gallons		Field			4/19/17 13:38	CLT	F
Water Level After Purge	20.080		Feet		Field			4/19/17 13:38	CLT	F
Well Volumes Purged	1.90		Vol		Field			4/19/17 13:38	CLT	F

Susan J. Scherer

Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2223701 2ND QTR 2017 CWMP-FORM 19A

Lab ID: **2223701004** Date Collected: 4/19/2017 14:40 Matrix: Ground Water

Sample ID: **CWMP010W** Date Received: 4/19/2017 16:48

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	SW846 8260B			4/21/17 23:36	CJG	J
Acrylonitrile	ND		ug/L	5.0	SW846 8260B			4/21/17 23:36	CJG	J
Benzene	ND		ug/L	1.0	SW846 8260B			4/21/17 23:36	CJG	J
Bromochloromethane	ND		ug/L	1.0	SW846 8260B			4/21/17 23:36	CJG	J
Bromodichloromethane	ND		ug/L	1.0	SW846 8260B			4/21/17 23:36	CJG	J
Bromoform	ND		ug/L	1.0	SW846 8260B			4/21/17 23:36	CJG	J
Bromomethane	ND		ug/L	1.0	SW846 8260B			4/21/17 23:36	CJG	J
2-Butanone	ND		ug/L	10.0	SW846 8260B			4/21/17 23:36	CJG	J
Carbon Disulfide	ND		ug/L	1.0	SW846 8260B			4/21/17 23:36	CJG	J
Carbon Tetrachloride	ND		ug/L	1.0	SW846 8260B			4/21/17 23:36	CJG	J
Chlorobenzene	ND		ug/L	1.0	SW846 8260B			4/21/17 23:36	CJG	J
Chlorodibromomethane	ND		ug/L	1.0	SW846 8260B			4/21/17 23:36	CJG	J
Chloroethane	ND	6	ug/L	1.0	SW846 8260B			4/21/17 23:36	CJG	J
Chloroform	ND		ug/L	1.0	SW846 8260B			4/21/17 23:36	CJG	J
Chloromethane	ND	5	ug/L	1.0	SW846 8260B			4/21/17 23:36	CJG	J
3-Chloro-1-propene	ND		ug/L	1.0	SW846 8260B			4/21/17 23:36	CJG	J
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	SW846 8260B			4/21/17 23:36	CJG	J
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			4/21/17 23:36	CJG	J
Dibromomethane	ND		ug/L	1.0	SW846 8260B			4/21/17 23:36	CJG	J
trans-1,4-Dichloro-2-butene	ND		ug/L	3.0	SW846 8260B			4/21/17 23:36	CJG	J
1,2-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/21/17 23:36	CJG	J
1,3-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/21/17 23:36	CJG	J
1,4-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/21/17 23:36	CJG	J
Dichlorodifluoromethane	ND	4	ug/L	1.0	SW846 8260B			4/21/17 23:36	CJG	J
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/21/17 23:36	CJG	J
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/21/17 23:36	CJG	J
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/21/17 23:36	CJG	J
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/21/17 23:36	CJG	J
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/21/17 23:36	CJG	J
1,2-Dichloropropane	ND		ug/L	1.0	SW846 8260B			4/21/17 23:36	CJG	J
cis-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			4/21/17 23:36	CJG	J
trans-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			4/21/17 23:36	CJG	J
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			4/21/17 23:36	CJG	J
2-Hexanone	ND		ug/L	5.0	SW846 8260B			4/21/17 23:36	CJG	J
Iodomethane	ND		ug/L	1.0	SW846 8260B			4/21/17 23:36	CJG	J
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	SW846 8260B			4/21/17 23:36	CJG	J

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ANALYTICAL RESULTS

Workorder: 2223701 2ND QTR 2017 CWMP-FORM 19A

Lab ID: **2223701004** Date Collected: 4/19/2017 14:40 Matrix: Ground Water

Sample ID: **CWMP010W** Date Received: 4/19/2017 16:48

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			4/21/17 23:36	CJG	J
Styrene	ND		ug/L	1.0	SW846 8260B			4/21/17 23:36	CJG	J
1,1,1,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/21/17 23:36	CJG	J
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/21/17 23:36	CJG	J
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			4/21/17 23:36	CJG	J
Toluene	ND		ug/L	1.0	SW846 8260B			4/21/17 23:36	CJG	J
Total Xylenes	ND		ug/L	3.0	SW846 8260B			4/21/17 23:36	CJG	J
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/21/17 23:36	CJG	J
1,1,2-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/21/17 23:36	CJG	J
Trichloroethene	ND		ug/L	1.0	SW846 8260B			4/21/17 23:36	CJG	J
Trichlorofluoromethane	ND		ug/L	1.0	SW846 8260B			4/21/17 23:36	CJG	J
1,2,3-Trichloropropane	ND		ug/L	2.0	SW846 8260B			4/21/17 23:36	CJG	J
Vinyl Acetate	ND		ug/L	5.0	SW846 8260B			4/21/17 23:36	CJG	J
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			4/21/17 23:36	CJG	J
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	99.3		%	62 - 133	SW846 8260B			4/21/17 23:36	CJG	J
4-Bromofluorobenzene (S)	99.6		%	79 - 114	SW846 8260B			4/21/17 23:36	CJG	J
Dibromofluoromethane (S)	96.7		%	78 - 116	SW846 8260B			4/21/17 23:36	CJG	J
Toluene-d8 (S)	97.6		%	76 - 127	SW846 8260B			4/21/17 23:36	CJG	J
LIBRARY SEARCH - VOLATILES										
No TIC's Detected	.				Lib Search VOC			4/21/17 23:36	CPK	J
WET CHEMISTRY										
Alkalinity, Bicarbonate	147		mg/L	5	S2320B-97			4/20/17 09:43	MSA	B
Alkalinity, Total	147	1	mg/L	5	S2320B-97			4/20/17 09:43	MSA	B
Ammonia-N	ND		mg/L	0.100	D6919-09			4/26/17 08:00	CMM	C
Chemical Oxygen Demand (COD)	9		mg/L	7	EPA 410.4			4/21/17 10:00	AK	C
Chloride	181		mg/L	2.0	EPA 300.0			4/20/17 13:37	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			4/20/17 13:37	CHW	B
Nitrate-N	4.1		mg/L	0.20	EPA 300.0			4/20/17 13:37	CHW	B
pH	7.23	2	pH_Units		S4500HB-11			4/20/17 09:43	MSA	B
Phenolics	ND	3	mg/L	0.005	SW846 9066	4/23/17 00:00	JLG	4/23/17 08:44	JLG	I
Specific Conductance	931		umhos/cm	1	S2510B-97			4/20/17 09:43	MSA	B
Sulfate	31.3		mg/L	2.0	EPA 300.0			4/20/17 13:37	CHW	B
Total Dissolved Solids	525		mg/L	5	S2540C-11			4/24/17 16:29	JAS	B
Total Organic Carbon (TOC)	3.8		mg/L	0.50	S5310B-00			4/26/17 12:12	PAG	G
Turbidity	1.21		NTU	0.10	S2130B-01			4/20/17 23:06	MSA	B

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2223701 2ND QTR 2017 CWMP-FORM 19A

Lab ID: **2223701004** Date Collected: 4/19/2017 14:40 Matrix: Ground Water
Sample ID: **CWMP010W** Date Received: 4/19/2017 16:48

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Antimony, Total	ND		mg/L	0.0022	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 17:10	MO	E1
Arsenic, Total	ND		mg/L	0.0033	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 17:10	MO	E1
Arsenic, Dissolved	ND		mg/L	0.0030	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:38	ZMC	D1
Barium, Total	0.035		mg/L	0.0056	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 17:10	MO	E1
Barium, Dissolved	0.031		mg/L	0.0056	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:38	ZMC	D1
Beryllium, Total	ND		mg/L	0.0011	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 17:10	MO	E1
Cadmium, Total	ND		mg/L	0.0011	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 17:10	MO	E1
Cadmium, Dissolved	ND		mg/L	0.0011	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:38	ZMC	D1
Calcium, Total	30.6		mg/L	0.11	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 17:10	MO	E1
Calcium, Dissolved	26.5		mg/L	0.11	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:38	ZMC	D1
Chromium, Total	0.0036		mg/L	0.0022	SW846 6020A	4/24/17 07:50	ZMC	4/25/17 11:33	MO	E1
Chromium, Dissolved	0.0029		mg/L	0.0022	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:38	ZMC	D1
Cobalt, Total	ND		mg/L	0.0056	SW846 6020A	4/24/17 07:50	ZMC	4/25/17 11:33	MO	E1
Copper, Total	0.0080		mg/L	0.0056	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 17:10	MO	E1
Copper, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:38	ZMC	D1
Iron, Total	0.11		mg/L	0.056	SW846 6020A	4/24/17 07:50	ZMC	4/25/17 11:33	MO	E1
Iron, Dissolved	ND		mg/L	0.056	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:38	ZMC	D1
Lead, Total	ND		mg/L	0.0022	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 17:10	MO	E1
Lead, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:38	ZMC	D1
Magnesium, Total	25.0		mg/L	1.1	SW846 6020A	4/24/17 07:50	ZMC	4/25/17 15:56	MO	E1
Magnesium, Dissolved	23.5		mg/L	0.11	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:38	ZMC	D1
Manganese, Total	0.084		mg/L	0.0056	SW846 6020A	4/24/17 07:50	ZMC	4/25/17 11:33	MO	E1
Manganese, Dissolved	0.0075		mg/L	0.0056	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:38	ZMC	D1
Mercury, Total	ND		mg/L	0.00050	SW846 7470A	4/25/17 01:00	AXC	4/25/17 05:06	AXC	E2
Mercury, Dissolved	ND		mg/L	0.00050	SW846 7470A	4/26/17 01:05	AXC	4/26/17 05:30	AXC	D2
Nickel, Total	0.019		mg/L	0.0056	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 17:10	MO	E1
Potassium, Total	6.0		mg/L	1.1	SW846 6020A	4/24/17 07:50	ZMC	4/25/17 15:56	MO	E1
Potassium, Dissolved	5.7		mg/L	0.11	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:38	ZMC	D1
Selenium, Total	ND		mg/L	0.0056	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 17:10	MO	E1
Selenium, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:38	ZMC	D1
Silver, Total	ND		mg/L	0.0022	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 17:10	MO	E1
Silver, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:38	ZMC	D1
Sodium, Total	128		mg/L	1.1	SW846 6020A	4/24/17 07:50	ZMC	4/25/17 15:56	MO	E1
Sodium, Dissolved	122		mg/L	1.1	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 08:41	ZMC	D1
Thallium, Total	ND		mg/L	0.0011	SW846 6020A	4/24/17 07:50	ZMC	4/24/17 17:10	MO	E1
Vanadium, Total	ND		mg/L	0.0022	SW846 6020A	4/24/17 07:50	ZMC	4/25/17 11:33	MO	E1
Zinc, Total	ND		mg/L	0.0056	SW846 6020A	4/24/17 07:50	ZMC	4/25/17 11:33	MO	E1

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2223701 2ND QTR 2017 CWMP-FORM 19A

Lab ID: **2223701004** Date Collected: 4/19/2017 14:40 Matrix: Ground Water

Sample ID: **CWMP010W** Date Received: 4/19/2017 16:48

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
Zinc, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:38	ZMC	D1
FIELD PARAMETERS										
Depth to Water Level	8.880		Feet		Field			4/19/17 14:39	CLT	F
Elev Top MW Casing above MSL	360.90		Feet		Field			4/19/17 14:39	CLT	F
Flow Rate	1.12		gal/min		Field			4/19/17 14:39	CLT	F
Ground Water Elevation	352.020		ft/MSL		Field			4/19/17 14:39	CLT	F
pH, Field (SM4500B)	5.950		pH_Units		Field			4/19/17 14:39	CLT	F
Sample Depth	17.000		Feet		Field			4/19/17 14:39	CLT	F
Specific Conductance, Field	1149		umhos/cm	1	Field			4/19/17 14:39	CLT	F
Temperature	8.40		Deg. C		Field			4/19/17 14:39	CLT	F
Total Well Depth	19.600		Feet		Field			4/19/17 14:39	CLT	F
Volume in Water Column	6.968		Gallons		Field			4/19/17 14:39	CLT	F
Water Level After Purge	16.280		Feet		Field			4/19/17 14:39	CLT	F
Well Volumes Purged	1.45		Vol		Field			4/19/17 14:39	CLT	F

Susan J. Scherer

Ms. Susan J Scherer
Project Coordinator

PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
2223701001	1	CWMP018S	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
2223701001	2	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.				
2223701001	3	CWMP018S	SW846 8260B	Dichlorodifluoromethane
The QC sample type LCS for method SW846 8260B was outside the control limits for the analyte Dichlorodifluoromethane. The % Recovery was reported as 6.93 and the control limits were 17 to 166.				
2223701001	4	CWMP018S	SW846 8260B	Chloromethane
The QC sample type LCS for method SW846 8260B was outside the control limits for the analyte Chloromethane. The % Recovery was reported as 29.6 and the control limits were 38 to 156.				
2223701001	5	CWMP018S	SW846 8260B	Chloroethane
The QC sample type LCS for method SW846 8260B was outside the control limits for the analyte Chloroethane. The % Recovery was reported as 48.4 and the control limits were 51 to 142.				
2223701002	1	CWMP017S	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
2223701002	2	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.				
2223701002	3	CWMP017S	SW846 8260B	Dichlorodifluoromethane
The QC sample type LCS for method SW846 8260B was outside the control limits for the analyte Dichlorodifluoromethane. The % Recovery was reported as 6.93 and the control limits were 17 to 166.				
2223701002	4	CWMP017S	SW846 8260B	Chloromethane
The QC sample type LCS for method SW846 8260B was outside the control limits for the analyte Chloromethane. The % Recovery was reported as 29.6 and the control limits were 38 to 156.				
2223701002	5	CWMP017S	SW846 8260B	Chloroethane
The QC sample type LCS for method SW846 8260B was outside the control limits for the analyte Chloroethane. The % Recovery was reported as 48.4 and the control limits were 51 to 142.				
2223701003	1	CWMP016W	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
2223701003	2	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.				
2223701003	3	CWMP016W	S2540C-11	Total Dissolved Solids
The method blank associated with this analyte had a result of 17 mg/l. Criteria states that the method blank should be less than 5 mg/l.				
2223701003	4	CWMP016W	SW846 8260B	Dichlorodifluoromethane
The QC sample type LCS for method SW846 8260B was outside the control limits for the analyte Dichlorodifluoromethane. The % Recovery was reported as 6.93 and the control limits were 17 to 166.				
2223701003	5	CWMP016W	SW846 8260B	Chloromethane
The QC sample type LCS for method SW846 8260B was outside the control limits for the analyte Chloromethane. The % Recovery was reported as 29.6 and the control limits were 38 to 156.				
2223701003	6	CWMP016W	SW846 8260B	Chloroethane
The QC sample type LCS for method SW846 8260B was outside the control limits for the analyte Chloroethane. The % Recovery was reported as 48.4 and the control limits were 51 to 142.				
2223701004	1	CWMP010W	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				

ANALYTICAL RESULTS

Workorder: 2223701 2ND QTR 2017 CWMP-FORM 19A

2223701004	2	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.

2223701004	3	CWMP010W	SW846 9066	Phenolics

The recovery of the Matrix Spike (MS) associated to this analyte was outside of the established control limits.

2223701004	4	CWMP010W	SW846 8260B	Dichlorodifluoromethane

The QC sample type LCS for method SW846 8260B was outside the control limits for the analyte Dichlorodifluoromethane. The % Recovery was reported as 6.93 and the control limits were 17 to 166.

2223701004	5	CWMP010W	SW846 8260B	Chloromethane

The QC sample type LCS for method SW846 8260B was outside the control limits for the analyte Chloromethane. The % Recovery was reported as 29.6 and the control limits were 38 to 156.

2223701004	6	CWMP010W	SW846 8260B	Chloroethane

The QC sample type LCS for method SW846 8260B was outside the control limits for the analyte Chloroethane. The % Recovery was reported as 48.4 and the control limits were 51 to 142.

CHAIN OF CUSTODY / REQUEST FOR ANALYSIS

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1 of 1

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

Client Name: Lancaster County Solid Waste MA

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

Contact: Mark Reider

Phone#: (717) 735-0193

Project Name/#: Annual CWMP Sampling

Bill To: Lancaster County Solid Waste MA

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

Date Required: _____ Approved By: _____

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

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

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

ANALYSES/METHOD REQUESTED

Sample Description/Location (as it will appear on the lab report)	Sample Date	Time	*G or C	**Matrix	TOC	O-OH	VOC (Form 19A) + LS	*FM	Sample Depth for AUX Data	NH3-N, COD	Diss: Fe, Mn, Na, Ba, Cr, Cu, Pb, Mg, K, Zn, As, Cd, Se, Ag, Hg, Ca	Metals: Fe, Mn, Na, Ba, Cr, Cu, Pb, Mg, K, Zn, As, Cd, Se, Ag, Hg, Ca	pH, Cl, SpC, F, SO4, NO3, Tb, TDS	Alkalinity, HCO3
			Enter Number of Containers Per Sample or Field Results Below											
1 CWMP018S	4-19-17	1104	G	GW	2	1	2	X	X	1	1	1	1	1
2 CWMP017S		1130												
3 CWMP016W		1338												
4 CWMP010W		1440												
5														
6														
7														
8														
9														
10														

Cooler Temp: 2 Therm ID: 318

No. of Coolers: _____

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

Courier/Tracking #:

Sample/COC Comments

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

Project Comments:

LOGGED BY(signature): DATE 4-19-17 TIME

REVIEWED BY(signature): DATE TIME

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
1 [signature] ALS	4-19-17	1648	2 [signature]	4/19	1648
3			4		
5			6		
7			8		
9			10		

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

Special Processing: USACE [ ] Navy [ ]

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

Reportable to PADEP? Yes [ ]

PWSID # _____

Sample Disposal: Lab [X] Special [ ]

EDDS: Format Type- _____

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

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May 11, 2017

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

Certificate of Analysis

Project Name:	**2017-CRESWELL**	Workorder:	**2224022**
Purchase Order:		Workorder ID:	**2ND QTR 2017 CWMP-FORM 19A**

Dear Mr. Brown:

Enclosed are the analytical results for samples received by the laboratory on Thursday, April 20, 2017.

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

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

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

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

CC: Mr. Mark Reider , Mr. Jeff Musser

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

Susan J. Scherer

Ms. Susan J Scherer
Project Coordinator

ALS Environmental

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SAMPLE SUMMARY

Workorder: 2224022 2ND QTR 2017 CWMP-FORM 19A

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
2224022001	CWMP005W	Ground Water	4/20/2017 12:00	4/20/2017 12:43	Mr. Brian G Shade

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SAMPLE SUMMARY

Workorder: 2224022 2ND QTR 2017 CWMP-FORM 19A

Notes

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

Standard Acronyms/Flags

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

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ANALYTICAL RESULTS

Workorder: 2224022 2ND QTR 2017 CWMP-FORM 19A

Lab ID: **2224022001** Date Collected: 4/20/2017 12:00 Matrix: Ground Water

Sample ID: **CWMP005W** Date Received: 4/20/2017 12:43

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	SW846 8260B			4/25/17 12:46	DD	J
Acrylonitrile	ND		ug/L	5.0	SW846 8260B			4/25/17 12:46	DD	J
Benzene	ND		ug/L	1.0	SW846 8260B			4/25/17 12:46	DD	J
Bromochloromethane	ND		ug/L	1.0	SW846 8260B			4/25/17 12:46	DD	J
Bromodichloromethane	ND		ug/L	1.0	SW846 8260B			4/25/17 12:46	DD	J
Bromoform	ND		ug/L	1.0	SW846 8260B			4/25/17 12:46	DD	J
Bromomethane	ND		ug/L	1.0	SW846 8260B			4/25/17 12:46	DD	J
2-Butanone	ND		ug/L	10.0	SW846 8260B			4/25/17 12:46	DD	J
Carbon Disulfide	ND		ug/L	1.0	SW846 8260B			4/25/17 12:46	DD	J
Carbon Tetrachloride	ND		ug/L	1.0	SW846 8260B			4/25/17 12:46	DD	J
Chlorobenzene	ND		ug/L	1.0	SW846 8260B			4/25/17 12:46	DD	J
Chlorodibromomethane	ND		ug/L	1.0	SW846 8260B			4/25/17 12:46	DD	J
Chloroethane	ND		ug/L	1.0	SW846 8260B			4/25/17 12:46	DD	J
Chloroform	ND		ug/L	1.0	SW846 8260B			4/25/17 12:46	DD	J
Chloromethane	ND		ug/L	1.0	SW846 8260B			4/25/17 12:46	DD	J
3-Chloro-1-propene	ND		ug/L	1.0	SW846 8260B			4/25/17 12:46	DD	J
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	SW846 8260B			4/25/17 12:46	DD	J
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			4/25/17 12:46	DD	J
Dibromomethane	ND		ug/L	1.0	SW846 8260B			4/25/17 12:46	DD	J
trans-1,4-Dichloro-2-butene	ND		ug/L	3.0	SW846 8260B			4/25/17 12:46	DD	J
1,2-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/25/17 12:46	DD	J
1,3-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/25/17 12:46	DD	J
1,4-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/25/17 12:46	DD	J
Dichlorodifluoromethane	ND		ug/L	1.0	SW846 8260B			4/25/17 12:46	DD	J
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/25/17 12:46	DD	J
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/25/17 12:46	DD	J
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/25/17 12:46	DD	J
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/25/17 12:46	DD	J
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/25/17 12:46	DD	J
1,2-Dichloropropane	ND		ug/L	1.0	SW846 8260B			4/25/17 12:46	DD	J
cis-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			4/25/17 12:46	DD	J
trans-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			4/25/17 12:46	DD	J
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			4/25/17 12:46	DD	J
2-Hexanone	ND		ug/L	5.0	SW846 8260B			4/25/17 12:46	DD	J
Iodomethane	ND		ug/L	1.0	SW846 8260B			4/25/17 12:46	DD	J
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	SW846 8260B			4/25/17 12:46	DD	J

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2224022 2ND QTR 2017 CWMP-FORM 19A

Lab ID: **2224022001** Date Collected: 4/20/2017 12:00 Matrix: Ground Water

Sample ID: **CWMP005W** Date Received: 4/20/2017 12:43

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			4/25/17 12:46	DD	J
Styrene	ND		ug/L	1.0	SW846 8260B			4/25/17 12:46	DD	J
1,1,1,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/25/17 12:46	DD	J
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/25/17 12:46	DD	J
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			4/25/17 12:46	DD	J
Toluene	ND		ug/L	1.0	SW846 8260B			4/25/17 12:46	DD	J
Total Xylenes	ND		ug/L	3.0	SW846 8260B			4/25/17 12:46	DD	J
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/25/17 12:46	DD	J
1,1,2-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/25/17 12:46	DD	J
Trichloroethene	ND		ug/L	1.0	SW846 8260B			4/25/17 12:46	DD	J
Trichlorofluoromethane	ND		ug/L	1.0	SW846 8260B			4/25/17 12:46	DD	J
1,2,3-Trichloropropane	ND		ug/L	2.0	SW846 8260B			4/25/17 12:46	DD	J
Vinyl Acetate	ND		ug/L	5.0	SW846 8260B			4/25/17 12:46	DD	J
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			4/25/17 12:46	DD	J
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	96.5		%	62 - 133	SW846 8260B			4/25/17 12:46	DD	J
4-Bromofluorobenzene (S)	100		%	79 - 114	SW846 8260B			4/25/17 12:46	DD	J
Dibromofluoromethane (S)	93.6		%	78 - 116	SW846 8260B			4/25/17 12:46	DD	J
Toluene-d8 (S)	96.4		%	76 - 127	SW846 8260B			4/25/17 12:46	DD	J
LIBRARY SEARCH - VOLATILES										
No TIC's Detected	.				Lib Search VOC			4/25/17 12:46	CPK	J
WET CHEMISTRY										
Alkalinity, Bicarbonate	14		mg/L	5	S2320B-97			4/21/17 04:30	MSA	B
Alkalinity, Total	14	1	mg/L	5	S2320B-97			4/21/17 04:30	MSA	B
Ammonia-N	ND		mg/L	0.100	D6919-09			4/27/17 20:48	CMM	C
Chemical Oxygen Demand (COD)	ND		mg/L	7	EPA 410.4			4/21/17 10:00	AK	C
Chloride	63.5		mg/L	2.0	EPA 300.0			4/21/17 08:58	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			4/21/17 08:58	CHW	B
Nitrate-N	9.5		mg/L	0.20	EPA 300.0			4/21/17 08:58	CHW	B
pH	5.76	2	pH_Units		S4500HB-11			4/21/17 04:30	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	4/23/17 00:00	JLG	5/3/17 11:38	JLG	I
Specific Conductance	301		umhos/cm	1	S2510B-97			4/21/17 04:30	MSA	B
Sulfate	2.6		mg/L	2.0	EPA 300.0			4/21/17 08:58	CHW	B
Total Dissolved Solids	220		mg/L	5	S2540C-11			4/25/17 13:54	JAS	B
Total Organic Carbon (TOC)	0.70		mg/L	0.50	S5310B-00			4/26/17 12:12	PAG	G
Turbidity	0.38		NTU	0.10	S2130B-01			4/20/17 23:06	MSA	B

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ANALYTICAL RESULTS

Workorder: 2224022 2ND QTR 2017 CWMP-FORM 19A

Lab ID: **2224022001** Date Collected: 4/20/2017 12:00 Matrix: Ground Water
Sample ID: **CWMP005W** Date Received: 4/20/2017 12:43

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Antimony, Total	ND		mg/L	0.0022	SW846 6020A	4/24/17 09:00	ZMC	4/27/17 10:29	MO	E1
Arsenic, Total	ND		mg/L	0.0033	SW846 6020A	4/24/17 09:00	ZMC	4/27/17 10:29	MO	E1
Arsenic, Dissolved	ND		mg/L	0.0030	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:58	ZMC	D1
Barium, Total	0.048		mg/L	0.0056	SW846 6020A	4/24/17 09:00	ZMC	4/27/17 10:29	MO	E1
Barium, Dissolved	0.049		mg/L	0.0056	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:58	ZMC	D1
Beryllium, Total	ND		mg/L	0.0011	SW846 6020A	4/24/17 09:00	ZMC	4/27/17 10:29	MO	E1
Cadmium, Total	ND		mg/L	0.0011	SW846 6020A	4/24/17 09:00	ZMC	4/27/17 10:29	MO	E1
Cadmium, Dissolved	ND		mg/L	0.0011	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:58	ZMC	D1
Calcium, Total	14.2		mg/L	0.11	SW846 6020A	4/24/17 09:00	ZMC	4/27/17 10:29	MO	E1
Calcium, Dissolved	14.4		mg/L	0.11	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:58	ZMC	D1
Chromium, Total	ND		mg/L	0.0022	SW846 6020A	4/24/17 09:00	ZMC	4/27/17 10:29	MO	E1
Chromium, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:58	ZMC	D1
Cobalt, Total	ND		mg/L	0.0056	SW846 6020A	4/24/17 09:00	ZMC	4/27/17 10:29	MO	E1
Copper, Total	ND		mg/L	0.0056	SW846 6020A	4/24/17 09:00	ZMC	4/27/17 10:29	MO	E1
Copper, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:58	ZMC	D1
Iron, Total	ND		mg/L	0.056	SW846 6020A	4/24/17 09:00	ZMC	4/27/17 10:29	MO	E1
Iron, Dissolved	ND		mg/L	0.056	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:58	ZMC	D1
Lead, Total	ND		mg/L	0.0022	SW846 6020A	4/24/17 09:00	ZMC	4/27/17 10:29	MO	E1
Lead, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:58	ZMC	D1
Magnesium, Total	8.5		mg/L	0.11	SW846 6020A	4/24/17 09:00	ZMC	4/27/17 10:29	MO	E1
Magnesium, Dissolved	8.7		mg/L	0.11	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:58	ZMC	D1
Manganese, Total	0.049		mg/L	0.0056	SW846 6020A	4/24/17 09:00	ZMC	4/27/17 10:29	MO	E1
Manganese, Dissolved	0.050		mg/L	0.0056	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:58	ZMC	D1
Mercury, Total	ND		mg/L	0.00050	SW846 7470A	4/25/17 01:00	AXC	4/25/17 05:07	AXC	E2
Mercury, Dissolved	ND		mg/L	0.00050	SW846 7470A	4/26/17 01:05	AXC	4/26/17 05:31	AXC	D2
Nickel, Total	0.0057		mg/L	0.0056	SW846 6020A	4/24/17 09:00	ZMC	4/27/17 10:29	MO	E1
Potassium, Total	2.2		mg/L	0.11	SW846 6020A	4/24/17 09:00	ZMC	4/27/17 10:29	MO	E1
Potassium, Dissolved	2.2		mg/L	0.11	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:58	ZMC	D1
Selenium, Total	ND		mg/L	0.0056	SW846 6020A	4/24/17 09:00	ZMC	4/27/17 10:29	MO	E1
Selenium, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:58	ZMC	D1
Silver, Total	ND		mg/L	0.0022	SW846 6020A	4/24/17 09:00	ZMC	4/27/17 10:29	MO	E1
Silver, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:58	ZMC	D1
Sodium, Total	29.3		mg/L	0.11	SW846 6020A	4/24/17 09:00	ZMC	4/27/17 10:29	MO	E1
Sodium, Dissolved	30.3		mg/L	0.11	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:58	ZMC	D1
Thallium, Total	ND		mg/L	0.0011	SW846 6020A	4/24/17 09:00	ZMC	4/27/17 10:29	MO	E1
Vanadium, Total	ND		mg/L	0.0022	SW846 6020A	4/24/17 09:00	ZMC	4/27/17 10:29	MO	E1
Zinc, Total	0.0098		mg/L	0.0056	SW846 6020A	4/24/17 09:00	ZMC	4/27/17 10:29	MO	E1

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2224022 2ND QTR 2017 CWMP-FORM 19A

Lab ID: **2224022001** Date Collected: 4/20/2017 12:00 Matrix: Ground Water

Sample ID: **CWMP005W** Date Received: 4/20/2017 12:43

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
Zinc, Dissolved	0.0080		mg/L	0.0056	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 07:58	ZMC	D1
FIELD PARAMETERS										
Depth to Water Level	43.510		Feet		Field			4/20/17 10:10	CLT	F
Elev Top MW Casing above MSL	513.43		Feet		Field			4/20/17 10:10	CLT	F
Flow Rate	4.17		gal/min		Field			4/20/17 10:10	CLT	F
Ground Water Elevation	469.920		ft/MSL		Field			4/20/17 10:10	CLT	F
pH, Field (SM4500B)	4.840		pH_Units		Field			4/20/17 10:10	CLT	F
Sample Depth	130.000		Feet		Field			4/20/17 10:10	CLT	F
Specific Conductance, Field	365		umhos/cm	1	Field			4/20/17 10:10	CLT	F
Temperature	11.18		Deg. C		Field			4/20/17 10:10	CLT	F
Total Well Depth	138.920		Feet		Field			4/20/17 10:10	CLT	F
Volume in Water Column	140.253		Gallons		Field			4/20/17 10:10	CLT	F
Water Level After Purge	45.970		Feet		Field			4/20/17 10:10	CLT	F
Well Volumes Purged	2.08		Vol		Field			4/20/17 10:10	CLT	F

Susan J. Scherer

Ms. Susan J Scherer
Project Coordinator

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PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
2224022001	1	CWMP005W	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
2224022001	2	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.				

CHAIN OF CUSTODY / REQUEST FOR ANALYSIS

Generated by ALS

1 of 1

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

2-2-2-4-0-2-2- (by Receiving Lab)

Client Name: Lancaster County Solid Waste MA

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

Contact: Mark Reider

Phone#: (717) 735-0193

Project Name/#: Annual CWMP Sampling

Bill To: Lancaster County Solid Waste MA

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

Date Required: _____ Approved By: _____

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

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

Cooler Temp: 4.2°C Therm ID: TH-318

No. of Coolers: _____

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

Courier/Tracking #:

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

ANALYSES/METHOD REQUESTED

Sample Description/Location (as it will appear on the lab report)	Sample Date	Time	*G or C	**Matrix	TOC	O-OH	VOC (Form 19A) + LS	*FM	Sample Depth for AUX Data	NH3-N, COD	Diss: Fe, Mn, Na, Ba, Cr, Cu, Pb, Mg, K, Zn, As, Cd, Se, Ag, Hg, Ca	Metals: Fe, Mn, Na, Ba, Cr, Cu, Pb, Mg, K, Zn, As, Cd, Se, Ag, Hg, Ca	pH, Cl, SpC, F, SO4, NO3, Tb, TDS	Alkalinity, HCO3	Sample/COC Comments
					Enter Number of Containers Per Sample or Field Results Below.										
1. CWMP005W	4-2017	1010	G	GW	2	1	2	X	X	1	1	1	1	1	
2															
3															
4															
5															
6															
7															
8															
9															
10															

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

Project Comments:

LOGGED BY(signature): Date: Time:

REVIEWED BY(signature): Date: Time:

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
1 [illegible] ALS	4/20/17	1243	2 [illegible] ALS	4/20	1243
3			4		
5			6		
7			8		
9			10		

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

Special Processing: USACE ☐ Navy ☐ ☐

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

Reportable to PADEP? Yes ☐ PWSID # _____

Sample Disposal: Lab [X] Special ☐

EDDS: Format Type _____

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

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May 11, 2017

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

Certificate of Analysis

Project Name:	**2017-CRESWELL**	Workorder:	**2224366**
Purchase Order:		Workorder ID:	**2ND QTR 2017 CWMP-FORM 19A**

Dear Mr. Brown:

Enclosed are the analytical results for samples received by the laboratory on Friday, April 21, 2017.

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

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

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

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

CC: Mr. Mark Reider , Mr. Jeff Musser

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

Susan J. Scherer

Ms. Susan J Scherer
Project Coordinator

ALS Environmental

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SAMPLE SUMMARY

Workorder: 2224366 2ND QTR 2017 CWMP-FORM 19A

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
2224366001	CWMP004W	Ground Water	4/21/2017 10:05	4/21/2017 12:38	Mr. Brian G Shade

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SAMPLE SUMMARY

Workorder: 2224366 2ND QTR 2017 CWMP-FORM 19A

Notes

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

Standard Acronyms/Flags

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

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2224366 2ND QTR 2017 CWMP-FORM 19A

Lab ID: **2224366001** Date Collected: 4/21/2017 10:05 Matrix: Ground Water

Sample ID: **CWMP004W** Date Received: 4/21/2017 12:38

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	SW846 8260B			4/26/17 15:19	TMP	J
Acrylonitrile	ND		ug/L	5.0	SW846 8260B			4/26/17 15:19	TMP	J
Benzene	ND		ug/L	1.0	SW846 8260B			4/26/17 15:19	TMP	J
Bromochloromethane	ND		ug/L	1.0	SW846 8260B			4/26/17 15:19	TMP	J
Bromodichloromethane	ND		ug/L	1.0	SW846 8260B			4/26/17 15:19	TMP	J
Bromoform	ND		ug/L	1.0	SW846 8260B			4/26/17 15:19	TMP	J
Bromomethane	ND		ug/L	1.0	SW846 8260B			4/26/17 15:19	TMP	J
2-Butanone	ND		ug/L	10.0	SW846 8260B			4/26/17 15:19	TMP	J
Carbon Disulfide	ND		ug/L	1.0	SW846 8260B			4/26/17 15:19	TMP	J
Carbon Tetrachloride	ND		ug/L	1.0	SW846 8260B			4/26/17 15:19	TMP	J
Chlorobenzene	ND		ug/L	1.0	SW846 8260B			4/26/17 15:19	TMP	J
Chlorodibromomethane	ND		ug/L	1.0	SW846 8260B			4/26/17 15:19	TMP	J
Chloroethane	ND		ug/L	1.0	SW846 8260B			4/26/17 15:19	TMP	J
Chloroform	ND		ug/L	1.0	SW846 8260B			4/26/17 15:19	TMP	J
Chloromethane	ND		ug/L	1.0	SW846 8260B			4/26/17 15:19	TMP	J
3-Chloro-1-propene	ND		ug/L	1.0	SW846 8260B			4/26/17 15:19	TMP	J
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	SW846 8260B			4/26/17 15:19	TMP	J
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			4/26/17 15:19	TMP	J
Dibromomethane	ND		ug/L	1.0	SW846 8260B			4/26/17 15:19	TMP	J
trans-1,4-Dichloro-2-butene	ND		ug/L	3.0	SW846 8260B			4/26/17 15:19	TMP	J
1,2-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/26/17 15:19	TMP	J
1,3-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/26/17 15:19	TMP	J
1,4-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/26/17 15:19	TMP	J
Dichlorodifluoromethane	ND		ug/L	1.0	SW846 8260B			4/26/17 15:19	TMP	J
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/26/17 15:19	TMP	J
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/26/17 15:19	TMP	J
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/26/17 15:19	TMP	J
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/26/17 15:19	TMP	J
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/26/17 15:19	TMP	J
1,2-Dichloropropane	ND		ug/L	1.0	SW846 8260B			4/26/17 15:19	TMP	J
cis-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			4/26/17 15:19	TMP	J
trans-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			4/26/17 15:19	TMP	J
1,3-Dichloropropene, Total	ND		ug/L	2.0	SW846 8260B			4/26/17 15:19	TMP	J
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			4/26/17 15:19	TMP	J
2-Hexanone	ND		ug/L	5.0	SW846 8260B			4/26/17 15:19	TMP	J
Iodomethane	ND		ug/L	1.0	SW846 8260B			4/26/17 15:19	TMP	J

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ANALYTICAL RESULTS

Workorder: 2224366 2ND QTR 2017 CWMP-FORM 19A

Lab ID: **2224366001** Date Collected: 4/21/2017 10:05 Matrix: Ground Water

Sample ID: **CWMP004W** Date Received: 4/21/2017 12:38

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	SW846 8260B			4/26/17 15:19	TMP	J
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			4/26/17 15:19	TMP	J
Styrene	ND		ug/L	1.0	SW846 8260B			4/26/17 15:19	TMP	J
1,1,1,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/26/17 15:19	TMP	J
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/26/17 15:19	TMP	J
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			4/26/17 15:19	TMP	J
Toluene	ND		ug/L	1.0	SW846 8260B			4/26/17 15:19	TMP	J
Total Xylenes	ND		ug/L	3.0	SW846 8260B			4/26/17 15:19	TMP	J
1,2,4-Trichlorobenzene	ND		ug/L	2.0	SW846 8260B			4/26/17 15:19	TMP	J
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/26/17 15:19	TMP	J
1,1,2-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/26/17 15:19	TMP	J
Trichloroethene	ND		ug/L	1.0	SW846 8260B			4/26/17 15:19	TMP	J
Trichlorofluoromethane	ND		ug/L	1.0	SW846 8260B			4/26/17 15:19	TMP	J
1,2,3-Trichloropropane	ND		ug/L	2.0	SW846 8260B			4/26/17 15:19	TMP	J
Vinyl Acetate	ND		ug/L	5.0	SW846 8260B			4/26/17 15:19	TMP	J
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			4/26/17 15:19	TMP	J
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	93.2		%	62 - 133	SW846 8260B			4/26/17 15:19	TMP	J
4-Bromofluorobenzene (S)	100		%	79 - 114	SW846 8260B			4/26/17 15:19	TMP	J
Dibromofluoromethane (S)	90.5		%	78 - 116	SW846 8260B			4/26/17 15:19	TMP	J
Toluene-d8 (S)	96.5		%	76 - 127	SW846 8260B			4/26/17 15:19	TMP	J
LIBRARY SEARCH - VOLATILES										
No TIC's Detected	.				Lib Search VOC			4/26/17 15:19	CPK	J
WET CHEMISTRY										
Alkalinity, Bicarbonate	26		mg/L	5	S2320B-97			4/23/17 23:17	MSA	B
Alkalinity, Total	26	1	mg/L	5	S2320B-97			4/23/17 23:17	MSA	B
Ammonia-N	ND		mg/L	0.100	D6919-09			4/28/17 03:26	AK	C
Chemical Oxygen Demand (COD)	ND		mg/L	7	EPA 410.4			4/25/17 14:19	AK	C
Chloride	44.2		mg/L	2.0	EPA 300.0			4/22/17 16:52	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			4/22/17 16:52	CHW	B
Nitrate-N	7.0		mg/L	0.20	EPA 300.0			4/22/17 16:52	CHW	B
pH	6.16	2	pH_Units		S4500HB-11			4/23/17 23:17	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	4/23/17 00:00	JLG	5/3/17 11:38	JLG	I
Specific Conductance	229		umhos/cm	1	S2510B-97			4/23/17 23:17	MSA	B
Sulfate	6.0		mg/L	2.0	EPA 300.0			4/22/17 16:52	CHW	B

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ANALYTICAL RESULTS

Workorder: 2224366 2ND QTR 2017 CWMP-FORM 19A

Lab ID: **2224366001** Date Collected: 4/21/2017 10:05 Matrix: Ground Water
Sample ID: **CWMP004W** Date Received: 4/21/2017 12:38

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
Total Dissolved Solids	191		mg/L	5	S2540C-11			4/25/17 15:00	JAS	A
Total Organic Carbon (TOC)	0.71		mg/L	0.50	S5310B-00			4/26/17 12:12	PAG	G
Turbidity	0.60		NTU	0.10	S2130B-01			4/22/17 07:34	CHW	B
METALS										
Antimony, Total	ND		mg/L	0.0022	SW846 6020A	4/25/17 08:40	ZMC	4/27/17 10:33	MO	E2
Arsenic, Total	ND		mg/L	0.0033	SW846 6020A	4/25/17 08:40	ZMC	4/27/17 10:33	MO	E2
Arsenic, Dissolved	ND		mg/L	0.0030	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 08:01	ZMC	D1
Barium, Total	0.011		mg/L	0.0056	SW846 6020A	4/25/17 08:40	ZMC	4/27/17 10:33	MO	E2
Barium, Dissolved	0.011		mg/L	0.0056	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 08:01	ZMC	D1
Beryllium, Total	ND		mg/L	0.0011	SW846 6020A	4/25/17 08:40	ZMC	4/27/17 10:33	MO	E2
Cadmium, Total	ND		mg/L	0.0011	SW846 6020A	4/25/17 08:40	ZMC	4/27/17 10:33	MO	E2
Cadmium, Dissolved	ND		mg/L	0.0011	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 08:01	ZMC	D1
Calcium, Total	19.4		mg/L	0.11	SW846 6020A	4/25/17 08:40	ZMC	4/27/17 10:33	MO	E2
Calcium, Dissolved	20.1		mg/L	0.11	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 08:01	ZMC	D1
Chromium, Total	0.0029		mg/L	0.0022	SW846 6020A	4/25/17 08:40	ZMC	4/27/17 10:33	MO	E2
Chromium, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 08:01	ZMC	D1
Cobalt, Total	ND		mg/L	0.0056	SW846 6020A	4/25/17 08:40	ZMC	4/27/17 10:33	MO	E2
Copper, Total	ND		mg/L	0.0056	SW846 6020A	4/25/17 08:40	ZMC	4/27/17 10:33	MO	E2
Copper, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 08:01	ZMC	D1
Iron, Total	ND		mg/L	0.056	SW846 6020A	4/25/17 08:40	ZMC	4/27/17 10:33	MO	E2
Iron, Dissolved	ND		mg/L	0.056	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 08:01	ZMC	D1
Lead, Total	ND		mg/L	0.0022	SW846 6020A	4/25/17 08:40	ZMC	4/27/17 10:33	MO	E2
Lead, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 08:01	ZMC	D1
Magnesium, Total	6.6		mg/L	0.11	SW846 6020A	4/25/17 08:40	ZMC	4/27/17 10:33	MO	E2
Magnesium, Dissolved	6.5		mg/L	0.11	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 08:01	ZMC	D1
Manganese, Total	0.0087		mg/L	0.0056	SW846 6020A	4/25/17 08:40	ZMC	4/27/17 10:33	MO	E2
Manganese, Dissolved	0.0083		mg/L	0.0056	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 08:01	ZMC	D1
Mercury, Total	ND		mg/L	0.00050	SW846 7470A	4/25/17 01:00	AXC	4/25/17 05:11	AXC	E1
Mercury, Dissolved	ND		mg/L	0.00050	SW846 7470A	4/26/17 01:05	AXC	4/26/17 05:35	AXC	D2
Nickel, Total	ND		mg/L	0.0056	SW846 6020A	4/25/17 08:40	ZMC	4/27/17 10:33	MO	E2
Potassium, Total	1.3		mg/L	0.11	SW846 6020A	4/25/17 08:40	ZMC	4/27/17 10:33	MO	E2
Potassium, Dissolved	1.3		mg/L	0.11	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 08:01	ZMC	D1
Selenium, Total	ND		mg/L	0.0056	SW846 6020A	4/25/17 08:40	ZMC	4/27/17 10:33	MO	E2
Selenium, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 08:01	ZMC	D1
Silver, Total	ND		mg/L	0.0022	SW846 6020A	4/25/17 08:40	ZMC	4/27/17 10:33	MO	E2
Silver, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 08:01	ZMC	D1
Sodium, Total	14.7		mg/L	0.11	SW846 6020A	4/25/17 08:40	ZMC	4/27/17 10:33	MO	E2
Sodium, Dissolved	14.7		mg/L	0.11	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 08:01	ZMC	D1

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ANALYTICAL RESULTS

Workorder: 2224366 2ND QTR 2017 CWMP-FORM 19A

Lab ID: **2224366001** Date Collected: 4/21/2017 10:05 Matrix: Ground Water
Sample ID: **CWMP004W** Date Received: 4/21/2017 12:38

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
Thallium, Total	ND		mg/L	0.0011	SW846 6020A	4/25/17 08:40	ZMC	4/27/17 10:33	MO	E2
Vanadium, Total	ND		mg/L	0.0022	SW846 6020A	4/25/17 08:40	ZMC	4/27/17 10:33	MO	E2
Zinc, Total	ND		mg/L	0.0056	SW846 6020A	4/25/17 08:40	ZMC	4/27/17 10:33	MO	E2
Zinc, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/24/17 10:40	ZMC	4/27/17 08:01	ZMC	D1
FIELD PARAMETERS										
Depth to Water Level	130.780		Feet		Field			4/21/17 10:05	CLT	F
Elev Top MW Casing above MSL	529.53		Feet		Field			4/21/17 10:05	CLT	F
Ground Water Elevation	398.750		ft/MSL		Field			4/21/17 10:05	CLT	F
pH, Field (SM4500B)	5.660		pH_Units		Field			4/21/17 10:05	CLT	F
Sample Depth	130.000		Feet		Field			4/21/17 10:05	CLT	F
Specific Conductance, Field	290		umhos/cm	1	Field			4/21/17 10:05	CLT	F
Temperature	12.36		Deg. C		Field			4/21/17 10:05	CLT	F
Total Well Depth	140.000		Feet		Field			4/21/17 10:05	CLT	F

Susan J. Scherer
Ms. Susan J Scherer
Project Coordinator

PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
2224366001	1	CWMP004W	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
2224366001	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.				

CHAIN OF CUSTODY / REQUEST FOR ANALYSIS

Generated by ALS

1 of 1

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

* 2 2 2 4 3 6 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/#: Annual CWMP Sampling

Bill To: Lancaster County Solid Waste MA

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

Date Required: _____ Approved By: _____

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

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

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

ANALYSES/METHOD REQUESTED

Sample Description/Location (as it will appear on the lab report)	Sample Date	Time	*G or C	**Matrix	TOC	O-OH	VOC (Form 19A) + LS	*FM	Sample Depth for AUX Data	NH3-N, COD	Diss: Fe, Mn, Na, Ba, Cr, Cu, Pb, Mg, K, Zn, As, Cd, Se, Ag, Hg, Ca	Metals: Fe, Mn, Na, Ba, Cr, Cu, Pb, Mg, K, Zn, As, Cd, Se, Ag, Hg, Ca	pH, Cl, SpC, F, SO4, NO3, Tb, TDS	Alkalinity, HCO3	Sample/COC Comments
			Enter Number of Containers Per Sample or Field Results Below.												
1. CWMP004W	4-21-17	1005	G	GW	2	1	2	X	X	1	1	1	1	1	Include Subtitle D
2															
3															
4															
5															
6															
7															
8															
9															
10															

* G=Grab; C=Composite

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

Cooler Temp: 1 Therm ID: 318

No. of Coolers: _____

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

Courier/Tracking #:

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

Project Comments:

LOGGED BY (signature): _____ DATE: 4-21-17 TIME: 1124

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

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
1 [signature] ALS	4/21/17	1238	2 [signature]	4/21	1238
3			4		
5			6		
7			8		
9			10		

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

Special Processing: USACE ☐ Navy ☐ ☐

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

Reportable to PADEP? Yes ☐

PWSID # _____

Sample Disposal: Lab ☒ Special ☐

EDDS: Format Type- _____

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

Rev 8/04

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May 11, 2017

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

Certificate of Analysis

Project Name:	**2017-CRESWELL**	Workorder:	**2226006**
Purchase Order:		Workorder ID:	**2ND QTR 2017 CWMP-FORM 19A**

Dear Mr. Brown:

Enclosed are the analytical results for samples received by the laboratory on Friday, April 28, 2017.

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

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

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

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

CC: Mr. Mark Reider , Mr. Jeff Musser

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

Susan J. Scherer

Ms. Susan J Scherer
Project Coordinator

ALS Environmental

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

SAMPLE SUMMARY

Workorder: 2226006 2ND QTR 2017 CWMP-FORM 19A

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
2226006001	CWMP002W	Ground Water	4/28/2017 15:58	4/28/2017 18:17	Mr. Brian G Shade
2226006002	CWMP003W	Ground Water	4/28/2017 16:13	4/28/2017 18:17	Mr. Brian G Shade
2226006003	Field Blank	Water	4/28/2017 16:30	4/28/2017 18:17	Mr. Brian G Shade
2226006004	Trip Blank	Water	4/28/2017 18:17	4/28/2017 18:17	Mr. Brian G Shade

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SAMPLE SUMMARY

Workorder: 2226006 2ND QTR 2017 CWMP-FORM 19A

Notes

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

Standard Acronyms/Flags

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

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ANALYTICAL RESULTS

Workorder: 2226006 2ND QTR 2017 CWMP-FORM 19A

Lab ID: **2226006001** Date Collected: 4/28/2017 15:58 Matrix: Ground Water

Sample ID: **CWMP002W** Date Received: 4/28/2017 18:17

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	SW846 8260B			5/2/17 12:41	TMP	J
Acrylonitrile	ND		ug/L	5.0	SW846 8260B			5/2/17 12:41	TMP	J
Benzene	ND		ug/L	1.0	SW846 8260B			5/2/17 12:41	TMP	J
Bromochloromethane	ND		ug/L	1.0	SW846 8260B			5/2/17 12:41	TMP	J
Bromodichloromethane	ND		ug/L	1.0	SW846 8260B			5/2/17 12:41	TMP	J
Bromoform	ND		ug/L	1.0	SW846 8260B			5/2/17 12:41	TMP	J
Bromomethane	ND		ug/L	1.0	SW846 8260B			5/2/17 12:41	TMP	J
2-Butanone	ND		ug/L	10.0	SW846 8260B			5/2/17 12:41	TMP	J
Carbon Disulfide	ND		ug/L	1.0	SW846 8260B			5/2/17 12:41	TMP	J
Carbon Tetrachloride	ND		ug/L	1.0	SW846 8260B			5/2/17 12:41	TMP	J
Chlorobenzene	ND		ug/L	1.0	SW846 8260B			5/2/17 12:41	TMP	J
Chlorodibromomethane	ND		ug/L	1.0	SW846 8260B			5/2/17 12:41	TMP	J
Chloroethane	2.3		ug/L	1.0	SW846 8260B			5/2/17 12:41	TMP	J
Chloroform	ND		ug/L	1.0	SW846 8260B			5/2/17 12:41	TMP	J
Chloromethane	ND		ug/L	1.0	SW846 8260B			5/2/17 12:41	TMP	J
3-Chloro-1-propene	ND		ug/L	1.0	SW846 8260B			5/2/17 12:41	TMP	J
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	SW846 8260B			5/2/17 12:41	TMP	J
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			5/2/17 12:41	TMP	J
Dibromomethane	ND		ug/L	1.0	SW846 8260B			5/2/17 12:41	TMP	J
trans-1,4-Dichloro-2-butene	ND		ug/L	3.0	SW846 8260B			5/2/17 12:41	TMP	J
1,2-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			5/2/17 12:41	TMP	J
1,3-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			5/2/17 12:41	TMP	J
1,4-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			5/2/17 12:41	TMP	J
Dichlorodifluoromethane	ND		ug/L	1.0	SW846 8260B			5/2/17 12:41	TMP	J
1,1-Dichloroethane	7.5		ug/L	1.0	SW846 8260B			5/2/17 12:41	TMP	J
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			5/2/17 12:41	TMP	J
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			5/2/17 12:41	TMP	J
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			5/2/17 12:41	TMP	J
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			5/2/17 12:41	TMP	J
1,2-Dichloropropane	ND		ug/L	1.0	SW846 8260B			5/2/17 12:41	TMP	J
cis-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			5/2/17 12:41	TMP	J
trans-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			5/2/17 12:41	TMP	J
1,3-Dichloropropene, Total	ND		ug/L	2.0	SW846 8260B			5/2/17 12:41	TMP	J
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			5/2/17 12:41	TMP	J
2-Hexanone	ND		ug/L	5.0	SW846 8260B			5/2/17 12:41	TMP	J
Iodomethane	ND		ug/L	1.0	SW846 8260B			5/2/17 12:41	TMP	J

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ANALYTICAL RESULTS

Workorder: 2226006 2ND QTR 2017 CWMP-FORM 19A

Lab ID: **2226006001** Date Collected: 4/28/2017 15:58 Matrix: Ground Water

Sample ID: **CWMP002W** Date Received: 4/28/2017 18:17

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	SW846 8260B			5/2/17 12:41	TMP	J
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			5/2/17 12:41	TMP	J
Styrene	ND		ug/L	1.0	SW846 8260B			5/2/17 12:41	TMP	J
1,1,1,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			5/2/17 12:41	TMP	J
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			5/2/17 12:41	TMP	J
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			5/2/17 12:41	TMP	J
Toluene	ND		ug/L	1.0	SW846 8260B			5/2/17 12:41	TMP	J
Total Xylenes	ND		ug/L	3.0	SW846 8260B			5/2/17 12:41	TMP	J
1,2,4-Trichlorobenzene	ND		ug/L	2.0	SW846 8260B			5/2/17 12:41	TMP	J
1,1,1-Trichloroethane	1.0		ug/L	1.0	SW846 8260B			5/2/17 12:41	TMP	J
1,1,2-Trichloroethane	ND		ug/L	1.0	SW846 8260B			5/2/17 12:41	TMP	J
Trichloroethene	ND		ug/L	1.0	SW846 8260B			5/2/17 12:41	TMP	J
Trichlorofluoromethane	ND		ug/L	1.0	SW846 8260B			5/2/17 12:41	TMP	J
1,2,3-Trichloropropane	ND		ug/L	2.0	SW846 8260B			5/2/17 12:41	TMP	J
Vinyl Acetate	ND		ug/L	5.0	SW846 8260B			5/2/17 12:41	TMP	J
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			5/2/17 12:41	TMP	J
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	93.3		%	62 - 133	SW846 8260B			5/2/17 12:41	TMP	J
4-Bromofluorobenzene (S)	105		%	79 - 114	SW846 8260B			5/2/17 12:41	TMP	J
Dibromofluoromethane (S)	94.2		%	78 - 116	SW846 8260B			5/2/17 12:41	TMP	J
Toluene-d8 (S)	96.4		%	76 - 127	SW846 8260B			5/2/17 12:41	TMP	J
LIBRARY SEARCH - VOLATILES										
No TIC's Detected	.				Lib Search VOC			5/2/17 12:41	JAH	J
WET CHEMISTRY										
Alkalinity, Bicarbonate	61		mg/L	5	S2320B-97			5/1/17 16:20	MSA	B
Alkalinity, Total	61	1	mg/L	5	S2320B-97			5/1/17 16:20	MSA	A
Ammonia-N	ND		mg/L	0.100	D6919-09			5/4/17 14:47	CMM	C
Chemical Oxygen Demand (COD)	ND		mg/L	7	EPA 410.4			5/4/17 20:09	AK	C
Chloride	113		mg/L	2.0	EPA 300.0			4/29/17 16:48	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			4/29/17 16:48	CHW	B
Nitrate-N	3.7		mg/L	0.20	EPA 300.0			4/29/17 16:48	CHW	B
pH	6.21	2	pH_Units		S4500HB-11			5/1/17 16:20	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	5/4/17 00:00	JLG	5/4/17 10:24	JLG	I
Specific Conductance	536		umhos/cm	1	S2510B-97			5/1/17 16:20	MSA	B
Sulfate	26.2		mg/L	2.0	EPA 300.0			4/29/17 16:48	CHW	B

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ANALYTICAL RESULTS

Workorder: 2226006 2ND QTR 2017 CWMP-FORM 19A

Lab ID: **2226006001** Date Collected: 4/28/2017 15:58 Matrix: Ground Water
Sample ID: **CWMP002W** Date Received: 4/28/2017 18:17

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
Total Dissolved Solids	317		mg/L	5	S2540C-11			5/4/17 16:34	JAS	B
Total Organic Carbon (TOC)	2.7		mg/L	0.50	S5310B-00			5/3/17 13:31	PAG	G
Turbidity	0.12		NTU	0.10	S2130B-01			4/29/17 05:35	MBW	B
METALS										
Antimony, Total	ND		mg/L	0.0022	SW846 6020A	5/2/17 06:25	LXC	5/10/17 05:53	ZMC	E1
Arsenic, Total	ND		mg/L	0.0033	SW846 6020A	5/2/17 06:25	LXC	5/10/17 05:53	ZMC	E1
Arsenic, Dissolved	ND		mg/L	0.0030	SW846 6020A	5/3/17 05:25	LXC	5/10/17 05:57	ZMC	D1
Barium, Total	0.041		mg/L	0.0056	SW846 6020A	5/2/17 06:25	LXC	5/10/17 05:53	ZMC	E1
Barium, Dissolved	0.037		mg/L	0.0056	SW846 6020A	5/3/17 05:25	LXC	5/10/17 05:57	ZMC	D1
Beryllium, Total	ND		mg/L	0.0011	SW846 6020A	5/2/17 06:25	LXC	5/10/17 05:53	ZMC	E1
Cadmium, Total	ND		mg/L	0.0011	SW846 6020A	5/2/17 06:25	LXC	5/10/17 05:53	ZMC	E1
Cadmium, Dissolved	ND		mg/L	0.0011	SW846 6020A	5/3/17 05:25	LXC	5/10/17 05:57	ZMC	D1
Calcium, Total	53.6		mg/L	0.11	SW846 6020A	5/2/17 06:25	LXC	5/10/17 05:53	ZMC	E1
Calcium, Dissolved	47.1		mg/L	0.11	SW846 6020A	5/3/17 05:25	LXC	5/10/17 05:57	ZMC	D1
Chromium, Total	ND		mg/L	0.0022	SW846 6020A	5/2/17 06:25	LXC	5/10/17 05:53	ZMC	E1
Chromium, Dissolved	ND		mg/L	0.0022	SW846 6020A	5/3/17 05:25	LXC	5/10/17 05:57	ZMC	D1
Cobalt, Total	0.025		mg/L	0.0056	SW846 6020A	5/2/17 06:25	LXC	5/10/17 05:53	ZMC	E1
Copper, Total	ND		mg/L	0.0056	SW846 6020A	5/2/17 06:25	LXC	5/10/17 05:53	ZMC	E1
Copper, Dissolved	ND		mg/L	0.0056	SW846 6020A	5/3/17 05:25	LXC	5/10/17 05:57	ZMC	D1
Iron, Total	ND		mg/L	0.056	SW846 6020A	5/2/17 06:25	LXC	5/10/17 05:53	ZMC	E1
Iron, Dissolved	ND		mg/L	0.056	SW846 6020A	5/3/17 05:25	LXC	5/10/17 05:57	ZMC	D1
Lead, Total	ND		mg/L	0.0022	SW846 6020A	5/2/17 06:25	LXC	5/10/17 05:53	ZMC	E1
Lead, Dissolved	ND		mg/L	0.0022	SW846 6020A	5/3/17 05:25	LXC	5/10/17 05:57	ZMC	D1
Magnesium, Total	16.3		mg/L	0.11	SW846 6020A	5/2/17 06:25	LXC	5/10/17 05:53	ZMC	E1
Magnesium, Dissolved	14.5		mg/L	0.11	SW846 6020A	5/3/17 05:25	LXC	5/10/17 05:57	ZMC	D1
Manganese, Total	1.1		mg/L	0.0056	SW846 6020A	5/2/17 06:25	LXC	5/10/17 05:53	ZMC	E1
Manganese, Dissolved	1.0		mg/L	0.0056	SW846 6020A	5/3/17 05:25	LXC	5/10/17 05:57	ZMC	D1
Mercury, Total	ND		mg/L	0.00050	SW846 7470A	5/2/17 01:00	AXC	5/2/17 04:11	AXC	E2
Mercury, Dissolved	ND		mg/L	0.00050	SW846 7470A	5/5/17 00:05	AXC	5/5/17 03:52	AXC	D2
Nickel, Total	0.028		mg/L	0.0056	SW846 6020A	5/2/17 06:25	LXC	5/10/17 05:53	ZMC	E1
Potassium, Total	2.8		mg/L	0.11	SW846 6020A	5/2/17 06:25	LXC	5/10/17 05:53	ZMC	E1
Potassium, Dissolved	2.5		mg/L	0.11	SW846 6020A	5/3/17 05:25	LXC	5/10/17 05:57	ZMC	D1
Selenium, Total	ND		mg/L	0.0056	SW846 6020A	5/2/17 06:25	LXC	5/10/17 05:53	ZMC	E1
Selenium, Dissolved	ND		mg/L	0.0056	SW846 6020A	5/3/17 05:25	LXC	5/10/17 05:57	ZMC	D1
Silver, Total	ND		mg/L	0.0022	SW846 6020A	5/2/17 06:25	LXC	5/10/17 05:53	ZMC	E1
Silver, Dissolved	ND		mg/L	0.0022	SW846 6020A	5/3/17 05:25	LXC	5/10/17 05:57	ZMC	D1
Sodium, Total	23.1		mg/L	0.11	SW846 6020A	5/2/17 06:25	LXC	5/10/17 05:53	ZMC	E1
Sodium, Dissolved	20.4		mg/L	0.11	SW846 6020A	5/3/17 05:25	LXC	5/10/17 05:57	ZMC	D1

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ANALYTICAL RESULTS

Workorder: 2226006 2ND QTR 2017 CWMP-FORM 19A

Lab ID: **2226006001** Date Collected: 4/28/2017 15:58 Matrix: Ground Water

Sample ID: **CWMP002W** Date Received: 4/28/2017 18:17

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
Thallium, Total	ND		mg/L	0.0011	SW846 6020A	5/2/17 06:25	LXC	5/10/17 05:53	ZMC	E1
Vanadium, Total	ND		mg/L	0.0022	SW846 6020A	5/2/17 06:25	LXC	5/10/17 05:53	ZMC	E1
Zinc, Total	0.0062		mg/L	0.0056	SW846 6020A	5/2/17 06:25	LXC	5/10/17 05:53	ZMC	E1
Zinc, Dissolved	0.0064		mg/L	0.0056	SW846 6020A	5/3/17 05:25	LXC	5/10/17 05:57	ZMC	D1
FIELD PARAMETERS										
Depth to Water Level	92.710		Feet		Field			4/28/17 15:57	CLT	F
Elev Top MW Casing above MSL	525.81		Feet		Field			4/28/17 15:57	CLT	F
Ground Water Elevation	433.100		ft/MSL		Field			4/28/17 15:57	CLT	F
pH, Field (SM4500B)	4.950		pH_Units		Field			4/28/17 15:57	CLT	F
Sample Depth	85.000		Feet		Field			4/28/17 15:57	CLT	F
Specific Conductance, Field	602		umhos/cm	1	Field			4/28/17 15:57	CLT	F
Temperature	12.44		Deg. C		Field			4/28/17 15:57	CLT	F
Total Well Depth	100.000		Feet		Field			4/28/17 15:57	CLT	F

Susan J. Scherer

Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2226006 2ND QTR 2017 CWMP-FORM 19A

Lab ID: **2226006002** Date Collected: 4/28/2017 16:13 Matrix: Ground Water

Sample ID: **CWMP003W** Date Received: 4/28/2017 18:17

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	SW846 8260B			5/2/17 12:18	TMP	J
Acrylonitrile	ND		ug/L	5.0	SW846 8260B			5/2/17 12:18	TMP	J
Benzene	ND		ug/L	1.0	SW846 8260B			5/2/17 12:18	TMP	J
Bromochloromethane	ND		ug/L	1.0	SW846 8260B			5/2/17 12:18	TMP	J
Bromodichloromethane	ND		ug/L	1.0	SW846 8260B			5/2/17 12:18	TMP	J
Bromoform	ND		ug/L	1.0	SW846 8260B			5/2/17 12:18	TMP	J
Bromomethane	ND		ug/L	1.0	SW846 8260B			5/2/17 12:18	TMP	J
2-Butanone	ND		ug/L	10.0	SW846 8260B			5/2/17 12:18	TMP	J
Carbon Disulfide	ND		ug/L	1.0	SW846 8260B			5/2/17 12:18	TMP	J
Carbon Tetrachloride	ND		ug/L	1.0	SW846 8260B			5/2/17 12:18	TMP	J
Chlorobenzene	ND		ug/L	1.0	SW846 8260B			5/2/17 12:18	TMP	J
Chlorodibromomethane	ND		ug/L	1.0	SW846 8260B			5/2/17 12:18	TMP	J
Chloroethane	ND		ug/L	1.0	SW846 8260B			5/2/17 12:18	TMP	J
Chloroform	ND		ug/L	1.0	SW846 8260B			5/2/17 12:18	TMP	J
Chloromethane	ND		ug/L	1.0	SW846 8260B			5/2/17 12:18	TMP	J
3-Chloro-1-propene	ND		ug/L	1.0	SW846 8260B			5/2/17 12:18	TMP	J
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	SW846 8260B			5/2/17 12:18	TMP	J
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			5/2/17 12:18	TMP	J
Dibromomethane	ND		ug/L	1.0	SW846 8260B			5/2/17 12:18	TMP	J
trans-1,4-Dichloro-2-butene	ND		ug/L	3.0	SW846 8260B			5/2/17 12:18	TMP	J
1,2-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			5/2/17 12:18	TMP	J
1,3-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			5/2/17 12:18	TMP	J
1,4-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			5/2/17 12:18	TMP	J
Dichlorodifluoromethane	ND		ug/L	1.0	SW846 8260B			5/2/17 12:18	TMP	J
1,1-Dichloroethane	2.3		ug/L	1.0	SW846 8260B			5/2/17 12:18	TMP	J
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			5/2/17 12:18	TMP	J
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			5/2/17 12:18	TMP	J
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			5/2/17 12:18	TMP	J
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			5/2/17 12:18	TMP	J
1,2-Dichloropropane	ND		ug/L	1.0	SW846 8260B			5/2/17 12:18	TMP	J
cis-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			5/2/17 12:18	TMP	J
trans-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			5/2/17 12:18	TMP	J
1,3-Dichloropropene, Total	ND		ug/L	2.0	SW846 8260B			5/2/17 12:18	TMP	J
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			5/2/17 12:18	TMP	J
2-Hexanone	ND		ug/L	5.0	SW846 8260B			5/2/17 12:18	TMP	J
Iodomethane	ND		ug/L	1.0	SW846 8260B			5/2/17 12:18	TMP	J

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2226006 2ND QTR 2017 CWMP-FORM 19A

Lab ID: **2226006002** Date Collected: 4/28/2017 16:13 Matrix: Ground Water

Sample ID: **CWMP003W** Date Received: 4/28/2017 18:17

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	SW846 8260B			5/2/17 12:18	TMP	J
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			5/2/17 12:18	TMP	J
Styrene	ND		ug/L	1.0	SW846 8260B			5/2/17 12:18	TMP	J
1,1,1,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			5/2/17 12:18	TMP	J
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			5/2/17 12:18	TMP	J
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			5/2/17 12:18	TMP	J
Toluene	ND		ug/L	1.0	SW846 8260B			5/2/17 12:18	TMP	J
Total Xylenes	ND		ug/L	3.0	SW846 8260B			5/2/17 12:18	TMP	J
1,2,4-Trichlorobenzene	ND		ug/L	2.0	SW846 8260B			5/2/17 12:18	TMP	J
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			5/2/17 12:18	TMP	J
1,1,2-Trichloroethane	ND		ug/L	1.0	SW846 8260B			5/2/17 12:18	TMP	J
Trichloroethene	ND		ug/L	1.0	SW846 8260B			5/2/17 12:18	TMP	J
Trichlorofluoromethane	ND		ug/L	1.0	SW846 8260B			5/2/17 12:18	TMP	J
1,2,3-Trichloropropane	ND		ug/L	2.0	SW846 8260B			5/2/17 12:18	TMP	J
Vinyl Acetate	ND		ug/L	5.0	SW846 8260B			5/2/17 12:18	TMP	J
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			5/2/17 12:18	TMP	J
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	93		%	62 - 133	SW846 8260B			5/2/17 12:18	TMP	J
4-Bromofluorobenzene (S)	102		%	79 - 114	SW846 8260B			5/2/17 12:18	TMP	J
Dibromofluoromethane (S)	93.9		%	78 - 116	SW846 8260B			5/2/17 12:18	TMP	J
Toluene-d8 (S)	91.5		%	76 - 127	SW846 8260B			5/2/17 12:18	TMP	J
LIBRARY SEARCH - VOLATILES										
No TIC's Detected	.				Lib Search VOC			5/2/17 12:18	JAH	J
WET CHEMISTRY										
Alkalinity, Bicarbonate	20		mg/L	5	S2320B-97			5/1/17 17:06	MSA	B
Alkalinity, Total	20	1	mg/L	5	S2320B-97			5/1/17 17:06	MSA	B
Ammonia-N	ND		mg/L	0.100	D6919-09			5/4/17 15:06	CMM	C
Chemical Oxygen Demand (COD)	ND		mg/L	7	EPA 410.4			5/4/17 20:09	AK	C
Chloride	77.8		mg/L	2.0	EPA 300.0			4/29/17 17:03	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			4/29/17 17:03	CHW	B
Nitrate-N	9.4		mg/L	0.20	EPA 300.0			4/29/17 17:03	CHW	B
pH	6.42	2	pH_Units		S4500HB-11			5/1/17 17:06	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	5/4/17 00:00	JLG	5/4/17 10:24	JLG	I
Specific Conductance	329		umhos/cm	1	S2510B-97			5/1/17 17:06	MSA	B
Sulfate	6.0		mg/L	2.0	EPA 300.0			4/29/17 17:03	CHW	B

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ANALYTICAL RESULTS

Workorder: 2226006 2ND QTR 2017 CWMP-FORM 19A

Lab ID: **2226006002** Date Collected: 4/28/2017 16:13 Matrix: Ground Water
Sample ID: **CWMP003W** Date Received: 4/28/2017 18:17

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
Total Dissolved Solids	227		mg/L	5	S2540C-11			5/4/17 16:34	JAS	B
Total Organic Carbon (TOC)	ND		mg/L	0.50	S5310B-00			5/3/17 13:31	PAG	G
Turbidity	ND		NTU	0.10	S2130B-01			4/29/17 05:35	MBW	B
METALS										
Antimony, Total	ND		mg/L	0.0022	SW846 6020A	5/2/17 06:25	LXC	5/10/17 06:01	ZMC	E1
Arsenic, Total	ND		mg/L	0.0033	SW846 6020A	5/2/17 06:25	LXC	5/10/17 06:01	ZMC	E1
Arsenic, Dissolved	ND		mg/L	0.0030	SW846 6020A	5/3/17 05:25	LXC	5/10/17 06:05	ZMC	D1
Barium, Total	0.015		mg/L	0.0056	SW846 6020A	5/2/17 06:25	LXC	5/10/17 06:01	ZMC	E1
Barium, Dissolved	0.014		mg/L	0.0056	SW846 6020A	5/3/17 05:25	LXC	5/10/17 06:05	ZMC	D1
Beryllium, Total	ND		mg/L	0.0011	SW846 6020A	5/2/17 06:25	LXC	5/10/17 06:01	ZMC	E1
Cadmium, Total	ND		mg/L	0.0011	SW846 6020A	5/2/17 06:25	LXC	5/10/17 06:01	ZMC	E1
Cadmium, Dissolved	ND		mg/L	0.0011	SW846 6020A	5/3/17 05:25	LXC	5/10/17 06:05	ZMC	D1
Calcium, Total	29.6		mg/L	0.11	SW846 6020A	5/2/17 06:25	LXC	5/10/17 06:01	ZMC	E1
Calcium, Dissolved	26.1		mg/L	0.11	SW846 6020A	5/3/17 05:25	LXC	5/10/17 06:05	ZMC	D1
Chromium, Total	ND		mg/L	0.0022	SW846 6020A	5/2/17 06:25	LXC	5/10/17 06:01	ZMC	E1
Chromium, Dissolved	ND		mg/L	0.0022	SW846 6020A	5/3/17 05:25	LXC	5/10/17 06:05	ZMC	D1
Cobalt, Total	ND		mg/L	0.0056	SW846 6020A	5/2/17 06:25	LXC	5/10/17 06:01	ZMC	E1
Copper, Total	ND		mg/L	0.0056	SW846 6020A	5/2/17 06:25	LXC	5/10/17 06:01	ZMC	E1
Copper, Dissolved	ND		mg/L	0.0056	SW846 6020A	5/3/17 05:25	LXC	5/10/17 06:05	ZMC	D1
Iron, Total	ND		mg/L	0.056	SW846 6020A	5/2/17 06:25	LXC	5/10/17 06:01	ZMC	E1
Iron, Dissolved	ND		mg/L	0.056	SW846 6020A	5/3/17 05:25	LXC	5/10/17 06:05	ZMC	D1
Lead, Total	ND		mg/L	0.0022	SW846 6020A	5/2/17 06:25	LXC	5/10/17 06:01	ZMC	E1
Lead, Dissolved	ND		mg/L	0.0022	SW846 6020A	5/3/17 05:25	LXC	5/10/17 06:05	ZMC	D1
Magnesium, Total	10.3		mg/L	0.11	SW846 6020A	5/2/17 06:25	LXC	5/10/17 06:01	ZMC	E1
Magnesium, Dissolved	9.3		mg/L	0.11	SW846 6020A	5/3/17 05:25	LXC	5/10/17 06:05	ZMC	D1
Manganese, Total	ND		mg/L	0.0056	SW846 6020A	5/2/17 06:25	LXC	5/10/17 06:01	ZMC	E1
Manganese, Dissolved	ND		mg/L	0.0056	SW846 6020A	5/3/17 05:25	LXC	5/10/17 06:05	ZMC	D1
Mercury, Total	ND		mg/L	0.00050	SW846 7470A	5/2/17 01:00	AXC	5/2/17 04:12	AXC	E2
Mercury, Dissolved	ND		mg/L	0.00050	SW846 7470A	5/5/17 00:05	AXC	5/5/17 03:53	AXC	D2
Nickel, Total	0.011		mg/L	0.0056	SW846 6020A	5/2/17 06:25	LXC	5/10/17 06:01	ZMC	E1
Potassium, Total	1.7		mg/L	0.11	SW846 6020A	5/2/17 06:25	LXC	5/10/17 06:01	ZMC	E1
Potassium, Dissolved	1.5		mg/L	0.11	SW846 6020A	5/3/17 05:25	LXC	5/10/17 06:05	ZMC	D1
Selenium, Total	ND		mg/L	0.0056	SW846 6020A	5/2/17 06:25	LXC	5/10/17 06:01	ZMC	E1
Selenium, Dissolved	ND		mg/L	0.0056	SW846 6020A	5/3/17 05:25	LXC	5/10/17 06:05	ZMC	D1
Silver, Total	ND		mg/L	0.0022	SW846 6020A	5/2/17 06:25	LXC	5/10/17 06:01	ZMC	E1
Silver, Dissolved	ND		mg/L	0.0022	SW846 6020A	5/3/17 05:25	LXC	5/10/17 06:05	ZMC	D1
Sodium, Total	20.2		mg/L	0.11	SW846 6020A	5/2/17 06:25	LXC	5/10/17 06:01	ZMC	E1
Sodium, Dissolved	18.2		mg/L	0.11	SW846 6020A	5/3/17 05:25	LXC	5/10/17 06:05	ZMC	D1

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ANALYTICAL RESULTS

Workorder: 2226006 2ND QTR 2017 CWMP-FORM 19A

Lab ID: **2226006002** Date Collected: 4/28/2017 16:13 Matrix: Ground Water

Sample ID: **CWMP003W** Date Received: 4/28/2017 18:17

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
Thallium, Total	ND		mg/L	0.0011	SW846 6020A	5/2/17 06:25	LXC	5/10/17 06:01	ZMC	E1
Vanadium, Total	ND		mg/L	0.0022	SW846 6020A	5/2/17 06:25	LXC	5/10/17 06:01	ZMC	E1
Zinc, Total	0.0057		mg/L	0.0056	SW846 6020A	5/2/17 06:25	LXC	5/10/17 06:01	ZMC	E1
Zinc, Dissolved	ND		mg/L	0.0056	SW846 6020A	5/3/17 05:25	LXC	5/10/17 06:05	ZMC	D1
FIELD PARAMETERS										
Depth to Water Level	129.620		Feet		Field			4/28/17 16:12	CLT	F
Elev Top MW Casing above MSL	524.21		Feet		Field			4/28/17 16:12	CLT	F
Ground Water Elevation	394.590		ft/MSL		Field			4/28/17 16:12	CLT	F
pH, Field (SM4500B)	5.260		pH_Units		Field			4/28/17 16:12	CLT	F
Sample Depth	100.000		Feet		Field			4/28/17 16:12	CLT	F
Specific Conductance, Field	409		umhos/cm	1	Field			4/28/17 16:12	CLT	F
Temperature	13.16		Deg. C		Field			4/28/17 16:12	CLT	F
Total Well Depth	140.000		Feet		Field			4/28/17 16:12	CLT	F

Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2226006 2ND QTR 2017 CWMP-FORM 19A

Lab ID: **2226006003** Date Collected: 4/28/2017 16:30 Matrix: Water

Sample ID: **Field Blank** Date Received: 4/28/2017 18:17

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	SW846 8260B			5/2/17 11:55	TMP	A
Acrylonitrile	ND		ug/L	5.0	SW846 8260B			5/2/17 11:55	TMP	A
Benzene	ND		ug/L	1.0	SW846 8260B			5/2/17 11:55	TMP	A
Bromochloromethane	ND		ug/L	1.0	SW846 8260B			5/2/17 11:55	TMP	A
Bromodichloromethane	ND		ug/L	1.0	SW846 8260B			5/2/17 11:55	TMP	A
Bromoform	ND		ug/L	1.0	SW846 8260B			5/2/17 11:55	TMP	A
Bromomethane	ND		ug/L	1.0	SW846 8260B			5/2/17 11:55	TMP	A
2-Butanone	ND		ug/L	10.0	SW846 8260B			5/2/17 11:55	TMP	A
Carbon Disulfide	ND		ug/L	1.0	SW846 8260B			5/2/17 11:55	TMP	A
Carbon Tetrachloride	ND		ug/L	1.0	SW846 8260B			5/2/17 11:55	TMP	A
Chlorobenzene	ND		ug/L	1.0	SW846 8260B			5/2/17 11:55	TMP	A
Chlorodibromomethane	ND		ug/L	1.0	SW846 8260B			5/2/17 11:55	TMP	A
Chloroethane	ND		ug/L	1.0	SW846 8260B			5/2/17 11:55	TMP	A
Chloroform	ND		ug/L	1.0	SW846 8260B			5/2/17 11:55	TMP	A
Chloromethane	ND		ug/L	1.0	SW846 8260B			5/2/17 11:55	TMP	A
3-Chloro-1-propene	ND		ug/L	1.0	SW846 8260B			5/2/17 11:55	TMP	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	SW846 8260B			5/2/17 11:55	TMP	A
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			5/2/17 11:55	TMP	A
Dibromomethane	ND		ug/L	1.0	SW846 8260B			5/2/17 11:55	TMP	A
trans-1,4-Dichloro-2-butene	ND		ug/L	3.0	SW846 8260B			5/2/17 11:55	TMP	A
1,2-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			5/2/17 11:55	TMP	A
1,3-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			5/2/17 11:55	TMP	A
1,4-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			5/2/17 11:55	TMP	A
Dichlorodifluoromethane	ND		ug/L	1.0	SW846 8260B			5/2/17 11:55	TMP	A
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			5/2/17 11:55	TMP	A
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			5/2/17 11:55	TMP	A
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			5/2/17 11:55	TMP	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			5/2/17 11:55	TMP	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			5/2/17 11:55	TMP	A
1,2-Dichloropropane	ND		ug/L	1.0	SW846 8260B			5/2/17 11:55	TMP	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			5/2/17 11:55	TMP	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			5/2/17 11:55	TMP	A
1,3-Dichloropropene, Total	ND		ug/L	2.0	SW846 8260B			5/2/17 11:55	TMP	A
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			5/2/17 11:55	TMP	A
2-Hexanone	ND		ug/L	5.0	SW846 8260B			5/2/17 11:55	TMP	A
Iodomethane	ND		ug/L	1.0	SW846 8260B			5/2/17 11:55	TMP	A

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ANALYTICAL RESULTS

Workorder: 2226006 2ND QTR 2017 CWMP-FORM 19A

Lab ID: **2226006003** Date Collected: 4/28/2017 16:30 Matrix: Water

Sample ID: **Field Blank** Date Received: 4/28/2017 18:17

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	SW846 8260B			5/2/17 11:55	TMP	A
Methylene Chloride	1.6		ug/L	1.0	SW846 8260B			5/2/17 11:55	TMP	A
Styrene	ND		ug/L	1.0	SW846 8260B			5/2/17 11:55	TMP	A
1,1,1,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			5/2/17 11:55	TMP	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			5/2/17 11:55	TMP	A
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			5/2/17 11:55	TMP	A
Toluene	ND		ug/L	1.0	SW846 8260B			5/2/17 11:55	TMP	A
Total Xylenes	ND		ug/L	3.0	SW846 8260B			5/2/17 11:55	TMP	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	SW846 8260B			5/2/17 11:55	TMP	A
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			5/2/17 11:55	TMP	A
1,1,2-Trichloroethane	ND		ug/L	1.0	SW846 8260B			5/2/17 11:55	TMP	A
Trichloroethene	ND		ug/L	1.0	SW846 8260B			5/2/17 11:55	TMP	A
Trichlorofluoromethane	ND		ug/L	1.0	SW846 8260B			5/2/17 11:55	TMP	A
1,2,3-Trichloropropane	ND		ug/L	2.0	SW846 8260B			5/2/17 11:55	TMP	A
Vinyl Acetate	ND		ug/L	5.0	SW846 8260B			5/2/17 11:55	TMP	A
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			5/2/17 11:55	TMP	A
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	91.1		%	62 - 133	SW846 8260B			5/2/17 11:55	TMP	A
4-Bromofluorobenzene (S)	104		%	79 - 114	SW846 8260B			5/2/17 11:55	TMP	A
Dibromofluoromethane (S)	93.8		%	78 - 116	SW846 8260B			5/2/17 11:55	TMP	A
Toluene-d8 (S)	93.5		%	76 - 127	SW846 8260B			5/2/17 11:55	TMP	A
LIBRARY SEARCH - VOLATILES										
No TIC's Detected	.				Lib Search VOC			5/2/17 11:55	JAH	A
WET CHEMISTRY										
Alkalinity, Bicarbonate	ND		mg/L	5	S2320B-97			5/1/17 17:15	MSA	
Alkalinity, Total	ND	1	mg/L	5	S2320B-97			5/1/17 17:15	MSA	
Ammonia-N	ND		mg/L	0.100	D6919-09			5/4/17 15:25	CMM	
Chemical Oxygen Demand (COD)	ND		mg/L	7	EPA 410.4			5/4/17 20:09	AK	
Chloride	ND		mg/L	1.0	EPA 300.0			4/29/17 17:19	CHW	I
Fluoride	ND		mg/L	0.10	EPA 300.0			4/29/17 17:19	CHW	I
Nitrate-N	ND		mg/L	0.10	EPA 300.0			4/29/17 17:19	CHW	I
pH	6.24	2	pH_Units		S4500HB-11			5/1/17 17:15	MSA	
Phenolics	ND		mg/L	0.005	SW846 9066	5/4/17 00:00	JLG	5/4/17 10:24	JLG	
Specific Conductance	ND		umhos/cm	1	S2510B-97			5/1/17 17:15	MSA	
Sulfate	ND		mg/L	1.0	EPA 300.0			4/29/17 17:19	CHW	I

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2226006 2ND QTR 2017 CWMP-FORM 19A

Lab ID: **2226006003** Date Collected: 4/28/2017 16:30 Matrix: Water

Sample ID: **Field Blank** Date Received: 4/28/2017 18:17

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
Total Dissolved Solids	23		mg/L	5	S2540C-11			5/4/17 16:34	JAS	J
Total Organic Carbon (TOC)	ND		mg/L	0.50	S5310B-00			5/3/17 13:31	PAG	
Turbidity	ND		NTU	0.10	S2130B-01			4/29/17 05:35	MBW	I
METALS										
Antimony, Total	ND		mg/L	0.0022	SW846 6020A	5/2/17 06:25	LXC	5/10/17 06:09	ZMC	K
Arsenic, Total	ND		mg/L	0.0033	SW846 6020A	5/2/17 06:25	LXC	5/10/17 06:09	ZMC	K
Arsenic, Dissolved	ND		mg/L	0.0030	SW846 6020A	5/3/17 05:25	LXC	5/10/17 06:12	ZMC	M
Barium, Total	ND		mg/L	0.0056	SW846 6020A	5/2/17 06:25	LXC	5/10/17 06:09	ZMC	K
Barium, Dissolved	ND		mg/L	0.0056	SW846 6020A	5/3/17 05:25	LXC	5/10/17 06:12	ZMC	M
Beryllium, Total	ND		mg/L	0.0011	SW846 6020A	5/2/17 06:25	LXC	5/10/17 06:09	ZMC	K
Cadmium, Total	ND		mg/L	0.0011	SW846 6020A	5/2/17 06:25	LXC	5/10/17 06:09	ZMC	K
Cadmium, Dissolved	ND		mg/L	0.0011	SW846 6020A	5/3/17 05:25	LXC	5/10/17 06:12	ZMC	M
Calcium, Total	ND		mg/L	0.11	SW846 6020A	5/2/17 06:25	LXC	5/10/17 06:09	ZMC	K
Calcium, Dissolved	ND		mg/L	0.11	SW846 6020A	5/3/17 05:25	LXC	5/10/17 06:12	ZMC	M
Chromium, Total	ND		mg/L	0.0022	SW846 6020A	5/2/17 06:25	LXC	5/10/17 06:09	ZMC	K
Chromium, Dissolved	ND		mg/L	0.0022	SW846 6020A	5/3/17 05:25	LXC	5/10/17 06:12	ZMC	M
Cobalt, Total	ND		mg/L	0.0056	SW846 6020A	5/2/17 06:25	LXC	5/10/17 06:09	ZMC	K
Copper, Total	ND		mg/L	0.0056	SW846 6020A	5/2/17 06:25	LXC	5/10/17 06:09	ZMC	K
Copper, Dissolved	ND		mg/L	0.0056	SW846 6020A	5/3/17 05:25	LXC	5/10/17 06:12	ZMC	M
Iron, Total	ND		mg/L	0.056	SW846 6020A	5/2/17 06:25	LXC	5/10/17 06:09	ZMC	K
Iron, Dissolved	ND		mg/L	0.056	SW846 6020A	5/3/17 05:25	LXC	5/10/17 06:12	ZMC	M
Lead, Total	ND		mg/L	0.0022	SW846 6020A	5/2/17 06:25	LXC	5/10/17 06:09	ZMC	K
Lead, Dissolved	ND		mg/L	0.0022	SW846 6020A	5/3/17 05:25	LXC	5/10/17 06:12	ZMC	M
Magnesium, Total	ND		mg/L	0.11	SW846 6020A	5/2/17 06:25	LXC	5/10/17 06:09	ZMC	K
Magnesium, Dissolved	ND		mg/L	0.11	SW846 6020A	5/3/17 05:25	LXC	5/10/17 06:12	ZMC	M
Manganese, Total	ND		mg/L	0.0056	SW846 6020A	5/2/17 06:25	LXC	5/10/17 06:09	ZMC	K
Manganese, Dissolved	ND		mg/L	0.0056	SW846 6020A	5/3/17 05:25	LXC	5/10/17 06:12	ZMC	M
Mercury, Total	ND		mg/L	0.0025	SW846 7470A	5/2/17 01:00	AXC	5/2/17 04:14	AXC	L
Mercury, Dissolved	ND		mg/L	0.00050	SW846 7470A	5/5/17 00:05	AXC	5/5/17 03:54	AXC	N
Nickel, Total	ND		mg/L	0.0056	SW846 6020A	5/2/17 06:25	LXC	5/10/17 06:09	ZMC	K
Potassium, Total	ND		mg/L	0.11	SW846 6020A	5/2/17 06:25	LXC	5/10/17 06:09	ZMC	K
Potassium, Dissolved	ND		mg/L	0.11	SW846 6020A	5/3/17 05:25	LXC	5/10/17 06:12	ZMC	M
Selenium, Total	ND		mg/L	0.0056	SW846 6020A	5/2/17 06:25	LXC	5/10/17 06:09	ZMC	K
Selenium, Dissolved	ND		mg/L	0.0056	SW846 6020A	5/3/17 05:25	LXC	5/10/17 06:12	ZMC	M
Silver, Total	ND		mg/L	0.0022	SW846 6020A	5/2/17 06:25	LXC	5/10/17 06:09	ZMC	K
Silver, Dissolved	ND		mg/L	0.0022	SW846 6020A	5/3/17 05:25	LXC	5/10/17 06:12	ZMC	M
Sodium, Total	ND		mg/L	0.11	SW846 6020A	5/2/17 06:25	LXC	5/10/17 06:09	ZMC	K
Sodium, Dissolved	ND		mg/L	0.11	SW846 6020A	5/3/17 05:25	LXC	5/10/17 06:12	ZMC	M

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2226006 2ND QTR 2017 CWMP-FORM 19A

Lab ID: **2226006003** Date Collected: 4/28/2017 16:30 Matrix: Water

Sample ID: **Field Blank** Date Received: 4/28/2017 18:17

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
Thallium, Total	ND		mg/L	0.0011	SW846 6020A	5/2/17 06:25	LXC	5/10/17 06:09	ZMC	K
Vanadium, Total	ND		mg/L	0.0022	SW846 6020A	5/2/17 06:25	LXC	5/10/17 06:09	ZMC	K
Zinc, Total	ND		mg/L	0.0056	SW846 6020A	5/2/17 06:25	LXC	5/10/17 06:09	ZMC	K
Zinc, Dissolved	ND		mg/L	0.0056	SW846 6020A	5/3/17 05:25	LXC	5/10/17 06:12	ZMC	M

Susan J. Scherer

Ms. Susan J Scherer
Project Coordinator

ALS Environmental

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ANALYTICAL RESULTS

Workorder: 2226006 2ND QTR 2017 CWMP-FORM 19A

Lab ID: **2226006004** Date Collected: 4/28/2017 18:17 Matrix: Water

Sample ID: **Trip Blank** Date Received: 4/28/2017 18:17

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	SW846 8260B			5/2/17 11:32	TMP	A
Acrylonitrile	ND		ug/L	5.0	SW846 8260B			5/2/17 11:32	TMP	A
Benzene	ND		ug/L	1.0	SW846 8260B			5/2/17 11:32	TMP	A
Bromochloromethane	ND		ug/L	1.0	SW846 8260B			5/2/17 11:32	TMP	A
Bromodichloromethane	ND		ug/L	1.0	SW846 8260B			5/2/17 11:32	TMP	A
Bromoform	ND		ug/L	1.0	SW846 8260B			5/2/17 11:32	TMP	A
Bromomethane	ND		ug/L	1.0	SW846 8260B			5/2/17 11:32	TMP	A
2-Butanone	ND		ug/L	10.0	SW846 8260B			5/2/17 11:32	TMP	A
Carbon Disulfide	ND		ug/L	1.0	SW846 8260B			5/2/17 11:32	TMP	A
Carbon Tetrachloride	ND		ug/L	1.0	SW846 8260B			5/2/17 11:32	TMP	A
Chlorobenzene	ND		ug/L	1.0	SW846 8260B			5/2/17 11:32	TMP	A
Chlorodibromomethane	ND		ug/L	1.0	SW846 8260B			5/2/17 11:32	TMP	A
Chloroethane	ND		ug/L	1.0	SW846 8260B			5/2/17 11:32	TMP	A
Chloroform	ND		ug/L	1.0	SW846 8260B			5/2/17 11:32	TMP	A
Chloromethane	ND		ug/L	1.0	SW846 8260B			5/2/17 11:32	TMP	A
3-Chloro-1-propene	ND		ug/L	1.0	SW846 8260B			5/2/17 11:32	TMP	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	SW846 8260B			5/2/17 11:32	TMP	A
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			5/2/17 11:32	TMP	A
Dibromomethane	ND		ug/L	1.0	SW846 8260B			5/2/17 11:32	TMP	A
trans-1,4-Dichloro-2-butene	ND		ug/L	3.0	SW846 8260B			5/2/17 11:32	TMP	A
1,2-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			5/2/17 11:32	TMP	A
1,3-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			5/2/17 11:32	TMP	A
1,4-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			5/2/17 11:32	TMP	A
Dichlorodifluoromethane	ND		ug/L	1.0	SW846 8260B			5/2/17 11:32	TMP	A
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			5/2/17 11:32	TMP	A
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			5/2/17 11:32	TMP	A
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			5/2/17 11:32	TMP	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			5/2/17 11:32	TMP	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			5/2/17 11:32	TMP	A
1,2-Dichloropropane	ND		ug/L	1.0	SW846 8260B			5/2/17 11:32	TMP	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			5/2/17 11:32	TMP	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			5/2/17 11:32	TMP	A
1,3-Dichloropropene, Total	ND		ug/L	2.0	SW846 8260B			5/2/17 11:32	TMP	A
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			5/2/17 11:32	TMP	A
2-Hexanone	ND		ug/L	5.0	SW846 8260B			5/2/17 11:32	TMP	A
Iodomethane	ND		ug/L	1.0	SW846 8260B			5/2/17 11:32	TMP	A

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ANALYTICAL RESULTS

Workorder: 2226006 2ND QTR 2017 CWMP-FORM 19A

Lab ID: **2226006004** Date Collected: 4/28/2017 18:17 Matrix: Water

Sample ID: **Trip Blank** Date Received: 4/28/2017 18:17

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	SW846 8260B			5/2/17 11:32	TMP	A
Methylene Chloride	2.5		ug/L	1.0	SW846 8260B			5/2/17 11:32	TMP	A
Styrene	ND		ug/L	1.0	SW846 8260B			5/2/17 11:32	TMP	A
1,1,1,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			5/2/17 11:32	TMP	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			5/2/17 11:32	TMP	A
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			5/2/17 11:32	TMP	A
Toluene	ND		ug/L	1.0	SW846 8260B			5/2/17 11:32	TMP	A
Total Xylenes	ND		ug/L	3.0	SW846 8260B			5/2/17 11:32	TMP	A
1,2,4-Trichlorobenzene	ND		ug/L	2.0	SW846 8260B			5/2/17 11:32	TMP	A
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			5/2/17 11:32	TMP	A
1,1,2-Trichloroethane	ND		ug/L	1.0	SW846 8260B			5/2/17 11:32	TMP	A
Trichloroethene	ND		ug/L	1.0	SW846 8260B			5/2/17 11:32	TMP	A
Trichlorofluoromethane	ND		ug/L	1.0	SW846 8260B			5/2/17 11:32	TMP	A
1,2,3-Trichloropropane	ND		ug/L	2.0	SW846 8260B			5/2/17 11:32	TMP	A
Vinyl Acetate	ND		ug/L	5.0	SW846 8260B			5/2/17 11:32	TMP	A
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			5/2/17 11:32	TMP	A
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	92.1		%	62 - 133	SW846 8260B			5/2/17 11:32	TMP	A
4-Bromofluorobenzene (S)	102		%	79 - 114	SW846 8260B			5/2/17 11:32	TMP	A
Dibromofluoromethane (S)	93.3		%	78 - 116	SW846 8260B			5/2/17 11:32	TMP	A
Toluene-d8 (S)	93.1		%	76 - 127	SW846 8260B			5/2/17 11:32	TMP	A
LIBRARY SEARCH - VOLATILES										
No TIC's Detected	.				Lib Search VOC			5/2/17 11:32	JAH	A

Ms. Susan J Scherer
Project Coordinator

PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
2226006001	1	CWMP002W	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
2226006001	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.				
2226006002	1	CWMP003W	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
2226006002	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.				
2226006003	1	Field Blank	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
2226006003	2	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.				

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CHAIN OF CUSTODY/ REQUEST FOR ANALYSIS

Generated by ALS SS

COC # ALS C

1 of 1

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

Client Name: Lancaster County Solid Waste MA

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

Contact: Mark Reider

Phone#: (717) 735-0193

Project Name/#: Annual CWMP Sampling

Bill To: Lancaster County Solid Waste MA

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

Date Required: _____ Approved By: _____

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

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

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

ANALYSES/METHOD REQUESTED

Sample Description/Location (as it will appear on the lab report)	Sample Date	Time	*G or C	**Matrix	TOC	O-OH	VOC (Form 15R) + LS River Road VOC	*FM	Sample Depth for AUX Data	NH3-N, COD	Diss: Fe, Mn, Na, Ba, Cr, Cu, Pb, Mg, K, Zn, As, Cd, Se, Ag, Hg, Ca	Metals: Fe, Mn, Na, Ba, Cr, Cu, Pb, Mg, K, Zn, As, Cd, Se, Ag, Hg, Ca	pH, Cl, SpC, F, SO4, NO3, Tb, TDS	Alkalinity, HCO3
					Enter Number of Containers Per Sample or Field Results Below.									
1 CWMW8002W	4-28-17	1538	G	GW	2	1	2	x	x	1	1	1	1	1
2 CWMP003W		1613			↓	↓	↓	↓	↓	↓	↓	↓	↓	↓
3 Field Blank		1620												
4 Trip Blank														
5														
6														
7														
8														
9														
10														

Receipt Information (Completed by Receiving Lab)

Cooler Temp: 5 Therm ID: T4318

No. of Coolers: _____

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

Courier/Tracking #:

Sample/COC Comments

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

Project Comments:

LOGGED BY(signature): _____ DATE 4/28/17 TIME 2020

REVIEWED BY(signature): _____ DATE _____ TIME _____

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
1 [illegible] ALS	4-28-17	1207	2 [illegible]	4/28/17	1817
3			4		
5			6		
7			8		
9			10		

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

Special Processing: USACE ☐ Navy ☐ ☐

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

Reportable to PADEP? Yes ☐ PWSID # _____

Sample Disposal: Lab [X] Special ☐

EDDS: Format Type: _____

*G=Grab; C=Composite **Matrix - Al=Air; DW=Drinking Water; GW=Groundwater; Ot=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

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May 12, 2017

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

Certificate of Analysis

Project Name:	**2017-CRESWELL**	Workorder:	**2225995**
Purchase Order:		Workorder ID:	**2ND QTR 2017 CWMP-FORM 19A**

Dear Mr. Brown:

Enclosed are the analytical results for samples received by the laboratory on Friday, April 28, 2017.

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

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

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

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

CC: Mr. Mark Reider , Mr. Jeff Musser

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

Susan J. Scherer

Ms. Susan J Scherer
Project Coordinator

ALS Environmental

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NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01
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SAMPLE SUMMARY

Workorder: 2225995 2ND QTR 2017 CWMP-FORM 19A

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
2225995001	CWMP012W	Ground Water	4/28/2017 14:57	4/28/2017 18:17	Mr. Brian G Shade

ALS Environmental

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

SAMPLE SUMMARY

Workorder: 2225995 2ND QTR 2017 CWMP-FORM 19A

Notes

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

Standard Acronyms/Flags

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

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NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2225995 2ND QTR 2017 CWMP-FORM 19A

Lab ID: **2225995001** Date Collected: 4/28/2017 14:57 Matrix: Ground Water

Sample ID: **CWMP012W** Date Received: 4/28/2017 18:17

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	SW846 8260B			5/2/17 13:04	TMP	J
Acrylonitrile	ND		ug/L	5.0	SW846 8260B			5/2/17 13:04	TMP	J
Benzene	ND		ug/L	1.0	SW846 8260B			5/2/17 13:04	TMP	J
Bromochloromethane	ND		ug/L	1.0	SW846 8260B			5/2/17 13:04	TMP	J
Bromodichloromethane	ND		ug/L	1.0	SW846 8260B			5/2/17 13:04	TMP	J
Bromoform	ND		ug/L	1.0	SW846 8260B			5/2/17 13:04	TMP	J
Bromomethane	ND		ug/L	1.0	SW846 8260B			5/2/17 13:04	TMP	J
2-Butanone	ND		ug/L	10.0	SW846 8260B			5/2/17 13:04	TMP	J
Carbon Disulfide	ND		ug/L	1.0	SW846 8260B			5/2/17 13:04	TMP	J
Carbon Tetrachloride	ND		ug/L	1.0	SW846 8260B			5/2/17 13:04	TMP	J
Chlorobenzene	ND		ug/L	1.0	SW846 8260B			5/2/17 13:04	TMP	J
Chlorodibromomethane	ND		ug/L	1.0	SW846 8260B			5/2/17 13:04	TMP	J
Chloroethane	ND		ug/L	1.0	SW846 8260B			5/2/17 13:04	TMP	J
Chloroform	ND		ug/L	1.0	SW846 8260B			5/2/17 13:04	TMP	J
Chloromethane	ND		ug/L	1.0	SW846 8260B			5/2/17 13:04	TMP	J
3-Chloro-1-propene	ND		ug/L	1.0	SW846 8260B			5/2/17 13:04	TMP	J
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	SW846 8260B			5/2/17 13:04	TMP	J
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			5/2/17 13:04	TMP	J
Dibromomethane	ND		ug/L	1.0	SW846 8260B			5/2/17 13:04	TMP	J
trans-1,4-Dichloro-2-butene	ND		ug/L	3.0	SW846 8260B			5/2/17 13:04	TMP	J
1,2-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			5/2/17 13:04	TMP	J
1,3-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			5/2/17 13:04	TMP	J
1,4-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			5/2/17 13:04	TMP	J
Dichlorodifluoromethane	ND		ug/L	1.0	SW846 8260B			5/2/17 13:04	TMP	J
1,1-Dichloroethane	1.2		ug/L	1.0	SW846 8260B			5/2/17 13:04	TMP	J
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			5/2/17 13:04	TMP	J
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			5/2/17 13:04	TMP	J
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			5/2/17 13:04	TMP	J
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			5/2/17 13:04	TMP	J
1,2-Dichloropropane	ND		ug/L	1.0	SW846 8260B			5/2/17 13:04	TMP	J
cis-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			5/2/17 13:04	TMP	J
trans-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			5/2/17 13:04	TMP	J
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			5/2/17 13:04	TMP	J
2-Hexanone	ND		ug/L	5.0	SW846 8260B			5/2/17 13:04	TMP	J
Iodomethane	ND		ug/L	1.0	SW846 8260B			5/2/17 13:04	TMP	J
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	SW846 8260B			5/2/17 13:04	TMP	J

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ANALYTICAL RESULTS

Workorder: 2225995 2ND QTR 2017 CWMP-FORM 19A

Lab ID: **2225995001** Date Collected: 4/28/2017 14:57 Matrix: Ground Water

Sample ID: **CWMP012W** Date Received: 4/28/2017 18:17

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			5/2/17 13:04	TMP	J
Styrene	ND		ug/L	1.0	SW846 8260B			5/2/17 13:04	TMP	J
1,1,1,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			5/2/17 13:04	TMP	J
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			5/2/17 13:04	TMP	J
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			5/2/17 13:04	TMP	J
Toluene	ND		ug/L	1.0	SW846 8260B			5/2/17 13:04	TMP	J
Total Xylenes	ND		ug/L	3.0	SW846 8260B			5/2/17 13:04	TMP	J
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			5/2/17 13:04	TMP	J
1,1,2-Trichloroethane	ND		ug/L	1.0	SW846 8260B			5/2/17 13:04	TMP	J
Trichloroethene	ND		ug/L	1.0	SW846 8260B			5/2/17 13:04	TMP	J
Trichlorofluoromethane	ND		ug/L	1.0	SW846 8260B			5/2/17 13:04	TMP	J
1,2,3-Trichloropropane	ND		ug/L	2.0	SW846 8260B			5/2/17 13:04	TMP	J
Vinyl Acetate	ND		ug/L	5.0	SW846 8260B			5/2/17 13:04	TMP	J
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			5/2/17 13:04	TMP	J
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	91.4		%	62 - 133	SW846 8260B			5/2/17 13:04	TMP	J
4-Bromofluorobenzene (S)	104		%	79 - 114	SW846 8260B			5/2/17 13:04	TMP	J
Dibromofluoromethane (S)	92.1		%	78 - 116	SW846 8260B			5/2/17 13:04	TMP	J
Toluene-d8 (S)	93.9		%	76 - 127	SW846 8260B			5/2/17 13:04	TMP	J
LIBRARY SEARCH - VOLATILES										
No TIC's Detected	.				Lib Search VOC			5/2/17 13:04	JAH	J
WET CHEMISTRY										
Alkalinity, Bicarbonate	69		mg/L	5	S2320B-97			5/1/17 15:24	MSA	B
Alkalinity, Total	69	1	mg/L	5	S2320B-97			5/1/17 15:24	MSA	A
Ammonia-N	ND		mg/L	0.100	D6919-09			5/4/17 13:51	CMM	C
Chemical Oxygen Demand (COD)	12		mg/L	7	EPA 410.4			5/9/17 18:22	AK	C
Chloride	37.0		mg/L	2.0	EPA 300.0			4/29/17 14:00	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			4/29/17 14:00	CHW	B
Nitrate-N	11.5		mg/L	0.20	EPA 300.0			4/29/17 14:00	CHW	B
pH	6.60	2	pH_Units		S4500HB-11			5/1/17 15:24	MSA	B
Phenolics	ND		mg/L	0.005	SW846 9066	5/4/17 00:00	JLG	5/7/17 10:17	JLG	I
Specific Conductance	308		umhos/cm	1	S2510B-97			5/1/17 15:24	MSA	B
Sulfate	4.9		mg/L	2.0	EPA 300.0			4/29/17 14:00	CHW	B
Total Dissolved Solids	206		mg/L	5	S2540C-11			5/4/17 20:16	JAS	B
Total Organic Carbon (TOC)	0.71		mg/L	0.50	S5310B-00			5/9/17 14:30	PAG	G
Turbidity	54.4		NTU	0.10	S2130B-01			4/29/17 05:35	MBW	B

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State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2225995 2ND QTR 2017 CWMP-FORM 19A

Lab ID: **2225995001** Date Collected: 4/28/2017 14:57 Matrix: Ground Water
Sample ID: **CWMP012W** Date Received: 4/28/2017 18:17

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Antimony, Total	ND		mg/L	0.0022	SW846 6020A	5/2/17 06:25	LXC	5/10/17 05:34	ZMC	E1
Arsenic, Total	ND		mg/L	0.0033	SW846 6020A	5/2/17 06:25	LXC	5/10/17 05:34	ZMC	E1
Arsenic, Dissolved	ND		mg/L	0.0030	SW846 6020A	5/3/17 05:25	LXC	5/10/17 05:38	ZMC	D1
Barium, Total	0.10		mg/L	0.0056	SW846 6020A	5/2/17 06:25	LXC	5/10/17 05:34	ZMC	E1
Barium, Dissolved	0.086		mg/L	0.0056	SW846 6020A	5/3/17 05:25	LXC	5/10/17 05:38	ZMC	D1
Beryllium, Total	ND		mg/L	0.0011	SW846 6020A	5/2/17 06:25	LXC	5/10/17 05:34	ZMC	E1
Cadmium, Total	ND		mg/L	0.0011	SW846 6020A	5/2/17 06:25	LXC	5/10/17 05:34	ZMC	E1
Cadmium, Dissolved	ND		mg/L	0.0011	SW846 6020A	5/3/17 05:25	LXC	5/10/17 05:38	ZMC	D1
Calcium, Total	33.5		mg/L	0.11	SW846 6020A	5/2/17 06:25	LXC	5/10/17 05:34	ZMC	E1
Calcium, Dissolved	30.6		mg/L	0.11	SW846 6020A	5/3/17 05:25	LXC	5/10/17 05:38	ZMC	D1
Chromium, Total	ND		mg/L	0.0022	SW846 6020A	5/2/17 06:25	LXC	5/10/17 05:34	ZMC	E1
Chromium, Dissolved	ND		mg/L	0.0022	SW846 6020A	5/3/17 05:25	LXC	5/10/17 05:38	ZMC	D1
Cobalt, Total	ND		mg/L	0.0056	SW846 6020A	5/2/17 06:25	LXC	5/10/17 05:34	ZMC	E1
Copper, Total	0.0072		mg/L	0.0056	SW846 6020A	5/2/17 06:25	LXC	5/10/17 05:34	ZMC	E1
Copper, Dissolved	ND		mg/L	0.0056	SW846 6020A	5/3/17 05:25	LXC	5/10/17 05:38	ZMC	D1
Iron, Total	30.1		mg/L	0.056	SW846 6020A	5/2/17 06:25	LXC	5/10/17 05:34	ZMC	E1
Iron, Dissolved	0.18		mg/L	0.056	SW846 6020A	5/3/17 05:25	LXC	5/10/17 05:38	ZMC	D1
Lead, Total	0.0080		mg/L	0.0022	SW846 6020A	5/2/17 06:25	LXC	5/10/17 05:34	ZMC	E1
Lead, Dissolved	ND		mg/L	0.0022	SW846 6020A	5/3/17 05:25	LXC	5/10/17 05:38	ZMC	D1
Magnesium, Total	10		mg/L	0.11	SW846 6020A	5/2/17 06:25	LXC	5/10/17 05:34	ZMC	E1
Magnesium, Dissolved	9.1		mg/L	0.11	SW846 6020A	5/3/17 05:25	LXC	5/10/17 05:38	ZMC	D1
Manganese, Total	0.26		mg/L	0.0056	SW846 6020A	5/2/17 06:25	LXC	5/10/17 05:34	ZMC	E1
Manganese, Dissolved	0.11		mg/L	0.0056	SW846 6020A	5/3/17 05:25	LXC	5/10/17 05:38	ZMC	D1
Mercury, Total	0.00054		mg/L	0.00050	SW846 7470A	5/2/17 01:00	AXC	5/2/17 04:10	AXC	E2
Mercury, Dissolved	ND		mg/L	0.00050	SW846 7470A	5/5/17 00:05	AXC	5/5/17 03:51	AXC	D2
Nickel, Total	0.010		mg/L	0.0056	SW846 6020A	5/2/17 06:25	LXC	5/10/17 05:34	ZMC	E1
Potassium, Total	1.6		mg/L	0.11	SW846 6020A	5/2/17 06:25	LXC	5/10/17 05:34	ZMC	E1
Potassium, Dissolved	1.5		mg/L	0.11	SW846 6020A	5/3/17 05:25	LXC	5/10/17 05:38	ZMC	D1
Selenium, Total	ND		mg/L	0.0056	SW846 6020A	5/2/17 06:25	LXC	5/10/17 05:34	ZMC	E1
Selenium, Dissolved	ND		mg/L	0.0056	SW846 6020A	5/3/17 05:25	LXC	5/10/17 05:38	ZMC	D1
Silver, Total	ND		mg/L	0.0022	SW846 6020A	5/2/17 06:25	LXC	5/10/17 05:34	ZMC	E1
Silver, Dissolved	ND		mg/L	0.0022	SW846 6020A	5/3/17 05:25	LXC	5/10/17 05:38	ZMC	D1
Sodium, Total	14.0		mg/L	0.11	SW846 6020A	5/2/17 06:25	LXC	5/10/17 05:34	ZMC	E1
Sodium, Dissolved	13.1		mg/L	0.11	SW846 6020A	5/3/17 05:25	LXC	5/10/17 05:38	ZMC	D1
Thallium, Total	ND		mg/L	0.0011	SW846 6020A	5/2/17 06:25	LXC	5/10/17 05:34	ZMC	E1
Vanadium, Total	ND		mg/L	0.0022	SW846 6020A	5/2/17 06:25	LXC	5/10/17 05:34	ZMC	E1
Zinc, Total	0.0064		mg/L	0.0056	SW846 6020A	5/2/17 06:25	LXC	5/10/17 05:34	ZMC	E1

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ANALYTICAL RESULTS

Workorder: 2225995 2ND QTR 2017 CWMP-FORM 19A

Lab ID: **2225995001** Date Collected: 4/28/2017 14:57 Matrix: Ground Water

Sample ID: **CWMP012W** Date Received: 4/28/2017 18:17

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
Zinc, Dissolved	ND		mg/L	0.0056	SW846 6020A	5/3/17 05:25	LXC	5/10/17 05:38	ZMC	D1
FIELD PARAMETERS										
pH, Field (SM4500B)	5.180		pH_Units		Field			4/28/17 14:56	CLT	F
Specific Conductance, Field	384		umhos/cm	1	Field			4/28/17 14:56	CLT	F
Temperature	14.05		Deg. C		Field			4/28/17 14:56	CLT	F
Water Level After Purge	63.780		Feet		Field			4/28/17 14:56	CLT	F

Ms. Susan J Scherer
Project Coordinator

ALS Environmental

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PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
2225995001	1	CWMP012W	S2320B-97	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
2225995001	2	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.				

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CHAIN OF CUSTODY/ REQUEST FOR ANALYSIS

Generated by ALS SS

COC #:

ALS Qu

1 of 1

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

Client Name: Lancaster County Solid Waste MA

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

Contact: Mark Reider

Phone#: (717) 735-0193

Project Name/#: Annual CWMP Sampling

Bill To: Lancaster County Solid Waste MA

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

Date Required: _____ Approved By: _____

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

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

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

ANALYSES/METHOD REQUESTED

Sample Description/Location (as it will appear on the lab report)	Sample Date	Time	*G or C	**Matrix	TOC	O-OH	VOC (Form 19A) + LS	*FM	Sample Depth for AUX Data	NH3-N, COD	Diss: Fe, Mn, Na, Ba, Cr, Cu, Pb, Mg, K, Zn, As, Cd, Se, Ag, Hg, Ca	Metals: Fe, Mn, Na, Ba, Cr, Cu, Pb, Mg, K, Zn, As, Cd, Se, Ag, Hg, Ca	pH, Cl, SpC, F, SO4, NO3, Tb, TDS	Alkalinity, HCO3
			Enter Number of Containers Per Sample or Field Results Below.											
1 COMPOSITE	4/28/17	1457	G	GW	2	1	2	X	X	1	1	1	1	1
2														
3														
4														
5														
6														
7														
8														
9														
10														

Receipt Information (completed by Receiving Lab)

Cooler Temp: 5 Therm ID: T#318

No. of Coolers: _____

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

Courier/Tracking #:

Sample/COC Comments

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

Project Comments:

LOGGED BY(signature): [signature] DATE: 4/28/17 TIME: 2001

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

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
1 [signature] ALS	4-28-17	1457	2 [signature]	4/28/17	1817
3		1817	4		
5			6		
7			8		
9			10		

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

Special Processing: USACE [ ] Navy [ ]

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

Reportable to PADEP? Yes [ ] PWSID # _____

Sample Disposal: Lab [X] Special [ ]

EDDS: Format Type _____

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

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

Rev 8/04