LCSWMA

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

July 24, 2019

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

REF: Creswell Landfill (BWM Permit #100008)
Groundwater Monitoring; 2nd Quarter 2019

Dear Mr. Long:

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

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

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

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

Respectfully Submitted,

Nick R. Rogers
FFLF Facility Manager

Enclosures

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

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

Date Prepared/Revised
07/24/2019
DEP USE ONLY
Date Received

FORM 19
MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

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

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facitlity ID (as issued by DEP): 100008

SECTION B. FACILITY INFORMATION

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

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

___ Upgradient/Upstream X Downgradient/Downstream

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

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

Depth to Water Level: 5.41 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: 1.50 ft — Elevation of Water Level: 447.99 ft./MSL

Sampling Depth: 33 ft — Volume of Water Column: 45.66 gal

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

Well Purged: X Yes ___ No — Well Volumes Purged: 2.2

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

Spring Flow Rate: ___ gpm

Sample Date (mm/dd/yy): 4/15/2019 — Sample Collection Time: 11:06

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3028156001 — Final Lab Analysis CompletionDate: 5/8/2019

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

Comments:

I.D. No	100008
Monitoring Point No.	CWMP007W
Sample Date	4/15/2019

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	ASTM D6919-09
BICARBONATE	9	SM20 2321
CALCIUM, TOTAL	15.3	SW846 6010C
CALCIUM, DISSOLVED	17.9	SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	67.2	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	9	SW846 6010C
MAGNESIUM, DISSOLVED	9.9	SW846 6010C
MANGANESE, TOTAL (ug/l)	6.5	SW846 6010C
MANGANESE, DISSOLVED (ug/l)	6.3	SW846 6010C
NITRATE-NITROGEN	9	EPA 300
pH-FIELD (SU)	5.04	FIELD
pH-LAB (SU)	6.02	SM4500B
POTASSIUM, TOTAL	1.9	SW846 6010C
POTASSIUM, DISSOLVED	2	6SW846 010C
SODIUM, TOTAL	29.2	SW846 6010C
SODIUM, DISSOLVED	32	SW 846 6010C
SPEC. COND., FIELD (umhos/cm)	388	FIELD
SPEC. COND., LAB (umhos/cm)	336	EPA 120.1
SULFATE	20.6	EPA 300
ALKALINITY	9	SM20 2320B
TDS (TOTAL DISSOLVED SOLIDS)	276	SM20 2540C
TOC (TOTAL ORGANIC CARBON)	1.1	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	4/15/2019

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

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

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP007W
Sample Date	4/15/2019

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	51	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	6.8	SW846 6010C
ZINC, DISSOLVED	9.4	SW846 6010C

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP007W
Sample Date	4/15/2019

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	4/15/2019

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.	CWMP007W
Sample Date	4/15/2019

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
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FORM 19

MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facitlity ID (as issued by DEP): 100008

SECTION B. FACILITY INFORMATION

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

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

X Upgradient/Upstream ___ Downgradient/Downstream

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

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

Depth to Water Level: 22.21 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: 1.23 ft — Elevation of Water Level: 492.92 ft./MSL

Sampling Depth: 57 ft — Volume of Water Column: 64.75 gal

Total Well Depth: 66.3 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): 4/15/2019 — Sample Collection Time: 12:40

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3028156002 — Final Lab Analysis CompletionDate: 5/8/2019

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

Comments:

I.D. No	100008
Monitoring Point No.	CWMP001W
Sample Date	4/15/2019

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	ASTM D6919-09
BICARBONATE	5	SM20 2321
CALCIUM, TOTAL	12.9	SW846 6010C
CALCIUM, DISSOLVED	14.5	SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	29.1	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	3000	SW846 6010C
IRON, DISSOLVED (ug/l)	56 ND	SW846 6010C
MAGNESIUM, TOTAL	10.4	SW846 6010C
MAGNESIUM, DISSOLVED	10.8	SW846 6010C
MANGANESE, TOTAL (ug/l)	67	SW846 6010C
MANGANESE, DISSOLVED (ug/l)	45	SW846 6010C
NITRATE-NITROGEN	18.1	EPA 300
pH-FIELD (SU)	4.88	FIELD
pH-LAB (SU)	5.75	SM4500B
POTASSIUM, TOTAL	2.1	SW846 6010C
POTASSIUM, DISSOLVED	2	6SW846 010C
SODIUM, TOTAL	12.7	SW846 6010C
SODIUM, DISSOLVED	13.7	SW 846 6010C
SPEC. COND., FIELD (umhos/cm)	284	FIELD
SPEC. COND., LAB (umhos/cm)	244	EPA 120.1
SULFATE	2.3	EPA 300
ALKALINITY	5	SM20 2320B
TDS (TOTAL DISSOLVED SOLIDS)	272	SM20 2540C
TOC (TOTAL ORGANIC CARBON)	1.1	SM20 5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	63.4	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.	CWMP001W
Sample Date	4/15/2019

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

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

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP001W
Sample Date	4/15/2019

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	85	SW846 6010C
BARIUM, DISSOLVED	79	SW846 6010C
CADMIUM, TOTAL	1.1 ND	SW846 6010C
CADMIUM, DISSOLVED	1.1 ND	SW846 6010C
CHROMIUM, TOTAL	2.3	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	7.7	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	21	SW846 6010C
ZINC, DISSOLVED	19	SW846 6010C

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP001W
Sample Date	4/15/2019

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
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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	6.5	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.

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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
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Date Received

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Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facitlity ID (as issued by DEP): 100008

SECTION B. FACILITY INFORMATION

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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: 34.31 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: -0.37 ft — Elevation of Water Level: 479.12 ft./MSL

Sampling Depth: 130 ft — Volume of Water Column: 155.22 gal

Total Well Depth: 140 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): 4/15/2019 — Sample Collection Time: 14:30

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3028156003 — Final Lab Analysis CompletionDate: 5/8/2019

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

Comments:

I.D. No	100008
Monitoring Point No.	CWMP005W
Sample Date	4/15/2019

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	ASTM D6919-09
BICARBONATE	13	SM20 2321
CALCIUM, TOTAL	10	SW846 6010C
CALCIUM, DISSOLVED	12.7	SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	55.5	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	6.5	SW846 6010C
MAGNESIUM, DISSOLVED	7.6	SW846 6010C
MANGANESE, TOTAL (ug/l)	36	SW846 6010C
MANGANESE, DISSOLVED (ug/l)	42	SW846 6010C
NITRATE-NITROGEN	7.1	EPA 300
pH-FIELD (SU)	5.24	FIELD
pH-LAB (SU)	6.01	SM4500B
POTASSIUM, TOTAL	1.8	SW846 6010C
POTASSIUM, DISSOLVED	1.9	6SW846 010C
SODIUM, TOTAL	24.7	SW846 6010C
SODIUM, DISSOLVED	28.8	SW 846 6010C
SPEC. COND., FIELD (umhos/cm)	308	FIELD
SPEC. COND., LAB (umhos/cm)	266	EPA 120.1
SULFATE	4.4	EPA 300
ALKALINITY	13	SM20 2320B
TDS (TOTAL DISSOLVED SOLIDS)	216	SM20 2540C
TOC (TOTAL ORGANIC CARBON)	1	SM20 5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.2	SM 2130B

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

I.D. No	100008
Monitoring Point No.	CWMP005W
Sample Date	4/15/2019

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

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

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP005W
Sample Date	4/15/2019

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	42	SW846 6010C
BARIUM, DISSOLVED	43	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	6.8	SW846 6010C
ZINC, DISSOLVED	8.1	SW846 6010C

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP005W
Sample Date	4/15/2019

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	4/15/2019

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.	CWMP005W
Sample Date	4/15/2019

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
07/24/2019
DEP USE ONLY
Date Received

FORM 19

MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

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

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facitlity ID (as issued by DEP): 100008

SECTION B. FACILITY INFORMATION

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

Monitoring Point Number: 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: 7.91 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: 2.53 ft — Elevation of Water Level: 304.06 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: 1.8

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

Spring Flow Rate: ___ gpm

Sample Date (mm/dd/yy): 4/16/2019 — Sample Collection Time: 11:19

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3028184001 — Final Lab Analysis CompletionDate: 5/8/2019

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

Comments:

I.D. No	100008
Monitoring Point No.	CWMP016W
Sample Date	4/16/2019

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	ASTM D6919-09
BICARBONATE	6	SM20 2321
CALCIUM, TOTAL	3.8	SW846 6010C
CALCIUM, DISSOLVED	3.6	SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	2.1	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	210	SW846 6010C
IRON, DISSOLVED (ug/l)	56 ND	SW846 6010C
MAGNESIUM, TOTAL	1.1	SW846 6010C
MAGNESIUM, DISSOLVED	1	SW846 6010C
MANGANESE, TOTAL (ug/l)	12	SW846 6010C
MANGANESE, DISSOLVED (ug/l)	9.5	SW846 6010C
NITRATE-NITROGEN	0.78	EPA 300
pH-FIELD (SU)	4.45	FIELD
pH-LAB (SU)	6.32	SM4500B
POTASSIUM, TOTAL	0.42	SW846 6010C
POTASSIUM, DISSOLVED	0.39	6SW846 010C
SODIUM, TOTAL	2.3	SW846 6010C
SODIUM, DISSOLVED	2.1	SW 846 6010C
SPEC. COND., FIELD (umhos/cm)	59	FIELD
SPEC. COND., LAB (umhos/cm)	48	EPA 120.1
SULFATE	12	EPA 300
ALKALINITY	6	SM20 2320B
TDS (TOTAL DISSOLVED SOLIDS)	242	SM20 2540C
TOC (TOTAL ORGANIC CARBON)	1.4	SM20 5310B
TOTAL PHENOLICS (ug/l)	-3	SW846 9066
TURBIDITY (N.T.U.)	0.87	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	4/16/2019

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

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

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP016W
Sample Date	4/16/2019

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	9.700001	SW846 6010C
BARIUM, DISSOLVED	9.5	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	4/16/2019

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	4/16/2019

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	7.1	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	4/16/2019

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
07/24/2019
DEP USE ONLY
Date Received

FORM 19
MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

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

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facitlity ID (as issued by DEP): 100008

SECTION B. FACILITY INFORMATION

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

Monitoring Point Number: 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: 8.46 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: 2.10 ft — Elevation of Water Level: 352.44 ft./MSL

Sampling Depth: 17 ft — Volume of Water Column: 7.27 gal

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

Well Purged: X Yes ___ No — Well Volumes Purged: 1.6

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

Spring Flow Rate: ___ gpm

Sample Date (mm/dd/yy): 4/16/2019 — Sample Collection Time: 12:26

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3028184002 — Final Lab Analysis CompletionDate: 5/8/2019

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

Comments:

I.D. No	100008
Monitoring Point No.	CWMP010W
Sample Date	4/16/2019

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	ASTM D6919-09
BICARBONATE	85	SM20 2321
CALCIUM, TOTAL	16.1	SW846 6010C
CALCIUM, DISSOLVED	16.7	SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	75.5	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	320	SW846 6010C
IRON, DISSOLVED (ug/l)	56 ND	SW846 6010C
MAGNESIUM, TOTAL	14.7	SW846 6010C
MAGNESIUM, DISSOLVED	15.4	SW846 6010C
MANGANESE, TOTAL (ug/l)	73	SW846 6010C
MANGANESE, DISSOLVED (ug/l)	5.6 ND	SW846 6010C
NITRATE-NITROGEN	3.5	EPA 300
pH-FIELD (SU)	5.77	FIELD
pH-LAB (SU)	6.99	SM4500B
POTASSIUM, TOTAL	3	SW846 6010C
POTASSIUM, DISSOLVED	3	6SW846 010C
SODIUM, TOTAL	36.9	SW846 6010C
SODIUM, DISSOLVED	38.8	SW 846 6010C
SPEC. COND., FIELD (umhos/cm)	713	FIELD
SPEC. COND., LAB (umhos/cm)	445	EPA 120.1
SULFATE	23.2	EPA 300
ALKALINITY	85	SM20 2320B
TDS (TOTAL DISSOLVED SOLIDS)	262	SM20 2540C
TOC (TOTAL ORGANIC CARBON)	2.5	SM20 5310B
TOTAL PHENOLICS (ug/l)	-2	SW846 9066
TURBIDITY (N.T.U.)	4.12	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.	CWMP010W
Sample Date	4/16/2019

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

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

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP010W
Sample Date	4/16/2019

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	21	SW846 6010C
BARIUM, DISSOLVED	20	SW846 6010C
CADMIUM, TOTAL	1.1 ND	SW846 6010C
CADMIUM, DISSOLVED	1.1 ND	SW846 6010C
CHROMIUM, TOTAL	2.3	SW846 6010C
CHROMIUM, DISSOLVED	2.2 ND	SW846 6010C
COPPER, TOTAL	6.4	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	SW846 6010C

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP010W
Sample Date	4/16/2019

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	4/16/2019

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	6.9	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	4/16/2019

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
07/24/2019
DEP USE ONLY
Date Received

FORM 19
MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

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

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facitlity ID (as issued by DEP): 100008

SECTION B. FACILITY INFORMATION

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

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

___ Upgradient/Upstream X Downgradient/Downstream

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

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

Depth to Water Level: 8.89 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: 2.70 ft — Elevation of Water Level: 395.31 ft./MSL

Sampling Depth: 16 ft — Volume of Water Column: 7.06 gal

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

Well Purged: X Yes ___ No — Well Volumes Purged: 12.2

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

Spring Flow Rate: ___ gpm

Sample Date (mm/dd/yy): 4/16/2019 — Sample Collection Time: 13:27

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3028184003 — Final Lab Analysis CompletionDate: 5/8/2019

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

Comments:

I.D. No	100008
Monitoring Point No.	CWMP009W
Sample Date	4/16/2019

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	22.2	ASTM D6919-09
BICARBONATE	545	SM20 2321
CALCIUM, TOTAL	88.9	SW846 6010C
CALCIUM, DISSOLVED	97.9	SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	90	EPA 410.4
CHLORIDE	357	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	27800	SW846 6010C
IRON, DISSOLVED (ug/l)	28200	SW846 6010C
MAGNESIUM, TOTAL	55	SW846 6010C
MAGNESIUM, DISSOLVED	56.4	SW846 6010C
MANGANESE, TOTAL (ug/l)	7100	SW846 6010C
MANGANESE, DISSOLVED (ug/l)	7800	SW846 6010C
NITRATE-NITROGEN	0.2 ND	EPA 300
pH-FIELD (SU)	6.11	FIELD
pH-LAB (SU)	6.74	SM4500B
POTASSIUM, TOTAL	24.7	SW846 6010C
POTASSIUM, DISSOLVED	25.2	6SW846 010C
SODIUM, TOTAL	122	SW846 6010C
SODIUM, DISSOLVED	125	SW 846 6010C
SPEC. COND., FIELD (umhos/cm)	2180	FIELD
SPEC. COND., LAB (umhos/cm)	2080	EPA 120.1
SULFATE	7.2	EPA 300
ALKALINITY	545	SM20 2320B
TDS (TOTAL DISSOLVED SOLIDS)	1100	SM20 2540C
TOC (TOTAL ORGANIC CARBON)	30.9	SM20 5310B
TOTAL PHENOLICS (ug/l)	9.999999E-02	SW846 9066
TURBIDITY (N.T.U.)	49.8	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	4/16/2019

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
BENZENE	4.2	SW846 8260B
1,2-DIBROMOETHANE (EDB) (ETHYLENE D	1 ND	SW846 8260B
1,1-DICHLOROETHANE	1.3	SW846 8260B
1,1-DICHLOROETHENE	1 ND	SW846 8260B
1,2-DICHLOROETHANE	1 ND	SW846 8260B
cis 1,2-DICHLOROETHENE	1 ND	SW846 8260B
trans 1,2-DICHLOROETHENE	1 ND	SW846 8260B
ETHYLBENZENE	1 ND	SW846 8260B
METHYLENE CHLORIDE	1 ND	SW846 8260B
TETRACHLOROETHENE	1 ND	SW846 8260B
TOLUENE	1 ND	SW846 8260B
1,1,1-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROETHENE	1 ND	SW846 8260B
VINYL CHLORIDE	1 ND	SW846 8260B
XYLENES (TOTAL)	3 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP009W
Sample Date	4/16/2019

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	3.4	SW846 6010C
BARIUM, TOTAL	540	SW846 6010C
BARIUM, DISSOLVED	550	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	4/16/2019

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	46.9	SW846 8260B
CHLOROETHANE	15.7	SW846 8260B
DIBROMOCHLOROMETHANE (CHLORODIBROMOMET	1 ND	SW846 8260B
CHLOROMETHANE	1 ND	SW846 8260B
3-CHLORO-1-PROPENE	1 ND	SW846 8260B
1,2-DICHLOROBENZENE	3.8	SW846 8260B
1,3-DICHLOROBENZENE	1 ND	SW846 8260B
1,4-DICHLOROBENZENE	10	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	4/16/2019

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	34	SW846 6010C
NICKEL	42	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	4/16/2019

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
TRIMETHYLSILANOL	1066-40-6
ETHYL ETHER	60-29-7
ISOBUTANE	75-28-5
2-METHYL-2-PROPANOL	75-65-0

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

Date Prepared/Revised
07/24/2019
DEP USE ONLY
Date Received

FORM 19
MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

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

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facitlity ID (as issued by DEP): 100008

SECTION B. FACILITY INFORMATION

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

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

___ Upgradient/Upstream X Downgradient/Downstream

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

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

Depth to Water Level: 2.64 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: 2.80 ft — Elevation of Water Level: 419.66 ft./MSL

Sampling Depth: 19 ft — Volume of Water Column: 3.29 gal

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

Well Purged: X Yes ___ No — Well Volumes Purged: 10.1

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

Spring Flow Rate: ___ gpm

Sample Date (mm/dd/yy): 4/16/2019 — Sample Collection Time: 14:08

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3028184004 — Final Lab Analysis CompletionDate: 5/8/2019

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

Comments:

I.D. No	100008
Monitoring Point No.	CWMP008W
Sample Date	4/16/2019

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	6.23	ASTM D6919-09
BICARBONATE	487	SM20 2321
CALCIUM, TOTAL	57.1	SW846 6010C
CALCIUM, DISSOLVED	58.3	SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	39	EPA 410.4
CHLORIDE	42.1	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	32700	SW846 6010C
IRON, DISSOLVED (ug/l)	32500	SW846 6010C
MAGNESIUM, TOTAL	31.7	SW846 6010C
MAGNESIUM, DISSOLVED	32.5	SW846 6010C
MANGANESE, TOTAL (ug/l)	13600	SW846 6010C
MANGANESE, DISSOLVED (ug/l)	14000	SW846 6010C
NITRATE-NITROGEN	0.2 ND	EPA 300
pH-FIELD (SU)	6.14	FIELD
pH-LAB (SU)	6.63	SM4500B
POTASSIUM, TOTAL	8	SW846 6010C
POTASSIUM, DISSOLVED	8.3	6SW846 010C
SODIUM, TOTAL	35.7	SW846 6010C
SODIUM, DISSOLVED	36.6	SW 846 6010C
SPEC. COND., FIELD (umhos/cm)	996	FIELD
SPEC. COND., LAB (umhos/cm)	939	EPA 120.1
SULFATE	5.6	EPA 300
ALKALINITY	487	SM20 2320B
TDS (TOTAL DISSOLVED SOLIDS)	600	SM20 2540C
TOC (TOTAL ORGANIC CARBON)	11.6	SM20 5310B
TOTAL PHENOLICS (ug/l)	-1	SW846 9066
TURBIDITY (N.T.U.)	30.7	SM 2130B

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

I.D. No	100008
Monitoring Point No.	CWMP008W
Sample Date	4/16/2019

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
BENZENE	3.6	SW846 8260B
1,2-DIBROMOETHANE (EDB) (ETHYLENE D	1 ND	SW846 8260B
1,1-DICHLOROETHANE	3.5	SW846 8260B
1,1-DICHLOROETHENE	1 ND	SW846 8260B
1,2-DICHLOROETHANE	1 ND	SW846 8260B
cis 1,2-DICHLOROETHENE	1 ND	SW846 8260B
trans 1,2-DICHLOROETHENE	1 ND	SW846 8260B
ETHYLBENZENE	1 ND	SW846 8260B
METHYLENE CHLORIDE	1 ND	SW846 8260B
TETRACHLOROETHENE	1 ND	SW846 8260B
TOLUENE	1 ND	SW846 8260B
1,1,1-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROETHENE	1 ND	SW846 8260B
VINYL CHLORIDE	1 ND	SW846 8260B
XYLENES (TOTAL)	3 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP008W
Sample Date	4/16/2019

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	170	SW846 6010C
BARIUM, DISSOLVED	170	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	4/16/2019

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	12.2	SW846 8260B
CHLOROETHANE	8.8	SW846 8260B
DIBROMOCHLOROMETHANE (CHLORODIBROMOMET	1 ND	SW846 8260B
CHLOROMETHANE	1 ND	SW846 8260B
3-CHLORO-1-PROPENE	1 ND	SW846 8260B
1,2-DICHLOROBENZENE	2	SW846 8260B
1,3-DICHLOROBENZENE	1 ND	SW846 8260B
1,4-DICHLOROBENZENE	14.2	SW846 8260B
DICHLORODIFLUOROMETHANE	1.4	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	4/16/2019

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	32	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	4/16/2019

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
TRIMETHYLSILANOL	1066-40-6
DIETHYL SULFIDE	352-93-2
ETHYL ETHER	60-29-7
CHLORODIFLUOROMETHANE	75-45-6

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

Date Prepared/Revised
07/24/2019
DEP USE ONLY
Date Received

FORM 19
MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

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

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facitlity ID (as issued by DEP): 100008

SECTION B. FACILITY INFORMATION

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

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

___ Upgradient/Upstream X Downgradient/Downstream

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

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

Depth to Water Level: 68.28 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: -1.19 ft — Elevation of Water Level: 457.53 ft./MSL

Sampling Depth: 85 ft — Volume of Water Column: 46.59 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): 4/17/2019 — Sample Collection Time: 11:20

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3028580001 — Final Lab Analysis CompletionDate: 5/10/2019

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

Comments:

I.D. No	100008
Monitoring Point No.	CWMP002W
Sample Date	4/17/2019

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.34	ASTM D6919-09
BICARBONATE	78	SM20 2321
CALCIUM, TOTAL	43.4	SW846 6010C
CALCIUM, DISSOLVED	38.6	SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	17	EPA 410.4
CHLORIDE	96.8	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	100 ND	SW846 6010C
IRON, DISSOLVED (ug/l)	56 ND	SW846 6010C
MAGNESIUM, TOTAL	16.4	SW846 6010C
MAGNESIUM, DISSOLVED	16.1	SW846 6010C
MANGANESE, TOTAL (ug/l)	890	SW846 6010C
MANGANESE, DISSOLVED (ug/l)	820	SW846 6010C
NITRATE-NITROGEN	3.4	EPA 300
pH-FIELD (SU)	5.57	FIELD
pH-LAB (SU)	6.38	SM4500B
POTASSIUM, TOTAL	2.3	SW846 6010C
POTASSIUM, DISSOLVED	2.3	6SW846 010C
SODIUM, TOTAL	22.9	SW846 6010C
SODIUM, DISSOLVED	21.8	SW 846 6010C
SPEC. COND., FIELD (umhos/cm)	608	FIELD
SPEC. COND., LAB (umhos/cm)	582	EPA 120.1
SULFATE	15	EPA 300
ALKALINITY	78	SM20 2320B
TDS (TOTAL DISSOLVED SOLIDS)	285	SM20 2540C
TOC (TOTAL ORGANIC CARBON)	5.4	SM20 5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	0.14	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	4/17/2019

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE (EDB) (ETHYLENE D	1 ND	SW846 8260B
1,1-DICHLOROETHANE	10.8	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.	CWMP002W
Sample Date	4/17/2019

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	5.9 ND	SW846 6010C
ARSENIC, DISSOLVED	3 ND	SW846 6010C
BARIUM, TOTAL	65	SW846 6010C
BARIUM, DISSOLVED	62	SW846 6010C
CADMIUM, TOTAL	2 ND	SW846 6010C
CADMIUM, DISSOLVED	1.1 ND	SW846 6010C
CHROMIUM, TOTAL	4 ND	SW846 6010C
CHROMIUM, DISSOLVED	2.2 ND	SW846 6010C
COPPER, TOTAL	10 ND	SW846 6010C
COPPER, DISSOLVED	5.6 ND	SW846 6010C
LEAD-FLAMELESS, TOTAL	4 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	10 ND	SW846 6010C
SELENIUM, DISSOLVED	5.6 ND	SW846 6010C
SILVER, TOTAL	4 ND	SW846 6010C
SILVER, DISSOLVED	2.2 ND	SW846 6010C
ZINC, TOTAL	10 ND	SW846 6010C
ZINC, DISSOLVED	9.700001	SW846 6010C

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP002W
Sample Date	4/17/2019

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	26.2	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 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	4/17/2019

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	4 ND	EPA 200.8
BERYLLIUM	2 ND	EPA 200.8
COBALT	23	SW846 6010C
NICKEL	26	SW846 6010C
THALLIUM	2 ND	EPA 200.8
VANADIUM	4 ND	SW846 6010C

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP002W
Sample Date	4/17/2019

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
ISOBUTANE	75-28-5

2540-FM-BWM0041 Rev. 6/2005

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

Date Prepared/Revised
07/24/2019
DEP USE ONLY
Date Received

FORM 19
MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

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

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facitlity ID (as issued by DEP): 100008

SECTION B. FACILITY INFORMATION

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

Monitoring Point Number: 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: 54.6 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: -1.37 ft — Elevation of Water Level: 474.93 ft./MSL

Sampling Depth: 130 ft — Volume of Water Column: 125.42 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): 4/17/2019 — Sample Collection Time: 13:51

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3028580002 — Final Lab Analysis CompletionDate: 5/13/2019

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

Comments:

I.D. No	100008
Monitoring Point No.	CWMP004W
Sample Date	4/17/2019

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	ASTM D6919-09
BICARBONATE	16	SM20 2321
CALCIUM, TOTAL	16.8	SW846 6010C
CALCIUM, DISSOLVED	16.5	SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	51.5	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	7.6	SW846 6010C
MAGNESIUM, DISSOLVED	8	SW846 6010C
MANGANESE, TOTAL (ug/l)	12	SW846 6010C
MANGANESE, DISSOLVED (ug/l)	14	SW846 6010C
NITRATE-NITROGEN	6.2	EPA 300
pH-FIELD (SU)	5.37	FIELD
pH-LAB (SU)	6.49	SM4500B
POTASSIUM, TOTAL	1.3	SW846 6010C
POTASSIUM, DISSOLVED	1.3	6SW846 010C
SODIUM, TOTAL	20.2	SW846 6010C
SODIUM, DISSOLVED	20.4	SW 846 6010C
SPEC. COND., FIELD (umhos/cm)	351	FIELD
SPEC. COND., LAB (umhos/cm)	291	EPA 120.1
SULFATE	6.1	EPA 300
ALKALINITY	16	SM20 2320B
TDS (TOTAL DISSOLVED SOLIDS)	219	SM20 2540C
TOC (TOTAL ORGANIC CARBON)	1.5	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.	CWMP004W
Sample Date	4/17/2019

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

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

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP004W
Sample Date	4/17/2019

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	39	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	2.3	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	8.1	SW846 6010C

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP004W
Sample Date	4/17/2019

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	4/17/2019

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	4/17/2019

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
07/24/2019
DEP USE ONLY
Date Received

FORM 19
MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

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

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facitlity ID (as issued by DEP): 100008

SECTION B. FACILITY INFORMATION

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

Monitoring Point Number: 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: 100.51 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: -1.29 ft — Elevation of Water Level: 423.70 ft./MSL

Sampling Depth: 100 ft — Volume of Water Column: -37.47 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): 4/17/2019 — Sample Collection Time: 13:41

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3028580003 — Final Lab Analysis CompletionDate: 5/13/2019

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

Comments:

I.D. No	100008
Monitoring Point No.	CWMP003W
Sample Date	4/17/2019

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	ASTM D6919-09
BICARBONATE	32	SM20 2321
CALCIUM, TOTAL	27.9	SW846 6010C
CALCIUM, DISSOLVED	28.1	SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	70.3	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	9.8	SW846 6010C
MAGNESIUM, DISSOLVED	10.5	SW846 6010C
MANGANESE, TOTAL (ug/l)	5.6 ND	SW846 6010C
MANGANESE, DISSOLVED (ug/l)	5.6 ND	SW846 6010C
NITRATE-NITROGEN	7.1	EPA 300
pH-FIELD (SU)	5.77	FIELD
pH-LAB (SU)	6.44	SM4500B
POTASSIUM, TOTAL	1.5	SW846 6010C
POTASSIUM, DISSOLVED	1.6	6SW846 010C
SODIUM, TOTAL	23.3	SW846 6010C
SODIUM, DISSOLVED	23.7	SW 846 6010C
SPEC. COND., FIELD (umhos/cm)	455	FIELD
SPEC. COND., LAB (umhos/cm)	421	EPA 120.1
SULFATE	5.1	EPA 300
ALKALINITY	32	SM20 2320B
TDS (TOTAL DISSOLVED SOLIDS)	227	SM20 2540C
TOC (TOTAL ORGANIC CARBON)	1.7	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	4/17/2019

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE (EDB) (ETHYLENE D	1 ND	SW846 8260B
1,1-DICHLOROETHANE	1.3	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	4/17/2019

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	25	SW846 6010C
BARIUM, DISSOLVED	25	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	SW846 6010C
ZINC, DISSOLVED	9.2	SW846 6010C

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP003W
Sample Date	4/17/2019

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	4/17/2019

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	8.5	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	4/17/2019

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
07/24/2019
DEP USE ONLY
Date Received

FORM 19
MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

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

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facitlity ID (as issued by DEP): 100008

SECTION B. FACILITY INFORMATION

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

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

___ Upgradient/Upstream X Downgradient/Downstream

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

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

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

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

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

Total Well Depth: 100 ft — Sampling Method: ___ Pumped ___ Bailed X 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): 4/17/2019 — Sample Collection Time: 11:20

Sample Collector's Name: Ms. Jordan Gallagher

Sample Collector's Affiliation: LCSWMA

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): 3028583001 — Final Lab Analysis CompletionDate: 4/25/2019

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

Comments:

I.D. No	100008
Monitoring Point No.	CWMP002W
Sample Date	4/17/2019

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN		ASTM D6919-09
BICARBONATE		SM20 2321
CALCIUM, TOTAL		SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)		EPA 410.4
CHLORIDE		EPA 300
FLUORIDE		EPA 300
IRON, TOTAL (ug/l)	67 ND	SW846 6010C
IRON, DISSOLVED (ug/l)	60 ND	SW846 6010C
MAGNESIUM, TOTAL		SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)		SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	3.6	EPA 300
pH-FIELD (SU)		FIELD
pH-LAB (SU)		SM4500B
POTASSIUM, TOTAL		SW846 6010C
POTASSIUM, DISSOLVED		6SW846 010C
SODIUM, TOTAL		SW846 6010C
SODIUM, DISSOLVED		SW 846 6010C
SPEC. COND., FIELD (umhos/cm)		FIELD
SPEC. COND., LAB (umhos/cm)		EPA 120.1
SULFATE	20.3	EPA 300
ALKALINITY	73	SM20 2320B
TDS (TOTAL DISSOLVED SOLIDS)		SM20 2540C
TOC (TOTAL ORGANIC CARBON)	5.2	SM20 5310B
TOTAL PHENOLICS (ug/l)		SW846 9066
TURBIDITY (N.T.U.)		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	4/17/2019

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE (EDB) (ETHYLENE D	1 ND	SW846 8260B
1,1-DICHLOROETHANE	10.5	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	4/17/2019

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		SW846 6010C
ARSENIC, DISSOLVED		SW846 6010C
BARIUM, TOTAL		SW846 6010C
BARIUM, DISSOLVED		SW846 6010C
CADMIUM, TOTAL		SW846 6010C
CADMIUM, DISSOLVED		SW846 6010C
CHROMIUM, TOTAL		SW846 6010C
CHROMIUM, DISSOLVED		SW846 6010C
COPPER, TOTAL		SW846 6010C
COPPER, DISSOLVED		SW846 6010C
LEAD-FLAMELESS, TOTAL		SW846 6010C
LEAD, DISSOLVED		SW846 6010C
MERCURY, TOTAL		SW846 7470A
MERCURY, DISSOLVED		SW846 7470A
SELENIUM, TOTAL		SW846 6010C
SELENIUM, DISSOLVED		SW846 6010C
SILVER, TOTAL		SW846 6010C
SILVER, DISSOLVED		SW846 6010C
ZINC, TOTAL		SW846 6010C
ZINC, DISSOLVED		SW846 6010C

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP002W
Sample Date	4/17/2019

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
BROMOFORM		SW846 8260B
BROMOMETHANE		SW846 8260B
CARBON TETRACHLORIDE		SW846 8260B
CHLOROBENZENE		SW846 8260B
CHLOROETHANE	28.1	SW846 8260B
DIBROMOCHLOROMETHANE (CHLORODIBROMOMET		SW846 8260B
CHLOROMETHANE		SW846 8260B
3-CHLORO-1-PROPENE		SW846 8260B
1,2-DICHLOROBENZENE		SW846 8260B
1,3-DICHLOROBENZENE		SW846 8260B
1,4-DICHLOROBENZENE		SW846 8260B
DICHLORODIFLUOROMETHANE		SW846 8260B
1,2-DICHLOROPROPANE		SW846 8260B
cis 1,3-DICHLOROPROPENE		SW846 8260B
trans 1,3-DICHLOROPROPENE		SW846 8260B
2-BUTANONE (MEK)		SW846 8260B
4-METHYL-2-PENTANONE (MIBK)		SW846 8260B
1,1,1,2-TETRACHLOROETHANE		SW846 8260B
1,1,2,2-TETRACHLOROETHANE		SW846 8260B
1,1,2-TRICHLOROETHANE		SW846 8260B
TRICHLOROFLUOROMETHANE		SW846 8260B
1,2,3-TRICHLOROPROPANE		SW846 8260B

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP002W
Sample Date	4/17/2019

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		SW846 8260B
ACRYLONITRILE		SW846 8260B
BROMOCHLOROMETHANE) CHLOROBROMOMETHAN		SW846 8260B
BROMODICHLOROMETHANE		SW846 8260B
CARBON DISULFIDE		SW846 8260B
CHLOROFORM		SW846 8260B
1,2-DIBROMO-3-CHLOROPROPANE (DBCP) (DIBROMO		SW846 8260B
trans 1,4-DICHLORO-2-BUTENE		SW846 8260B
2-HEXANONE		SW846 8260B
DIBROMOMETHANE		SW846 8260B
IODOMETHANE		SW846 8260B
STYRENE		SW846 8260B
VINYL ACETATE		SW846 8260B
ANTIMONY		EPA 200.8
BERYLLIUM		EPA 200.8
COBALT		SW846 6010C
NICKEL		SW846 6010C
THALLIUM		EPA 200.8
VANADIUM		SW846 6010C

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP002W
Sample Date	4/17/2019

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
07/24/2019
DEP USE ONLY
Date Received

FORM 19
MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facitlity ID (as issued by DEP): 100008

SECTION B. FACILITY INFORMATION

Monitoring Wells must be designed and constructed in accordance with Department Standards. INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (Do 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 o 57 ' 20.17 " — Longitude: 76 o 26 ' 8.37 "

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

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

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

Total Well Depth: 75 ft — Sampling Method: ___ Pumped ___ Bailed X 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): 4/17/2019 — Sample Collection Time: 13:41

Sample Collector's Name: Ms. Jordan Gallagher

Sample Collector's Affiliation: LCSWMA

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): 3028583002 — Final Lab Analysis CompletionDate: 4/25/2019

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

Comments:

I.D. No	100008
Monitoring Point No.	CWMP003W
Sample Date	4/17/2019

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN		ASTM D6919-09
BICARBONATE		SM20 2321
CALCIUM, TOTAL		SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)		EPA 410.4
CHLORIDE		EPA 300
FLUORIDE		EPA 300
IRON, TOTAL (ug/l)	67 ND	SW846 6010C
IRON, DISSOLVED (ug/l)	60 ND	SW846 6010C
MAGNESIUM, TOTAL		SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)		SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	7.3	EPA 300
pH-FIELD (SU)		FIELD
pH-LAB (SU)		SM4500B
POTASSIUM, TOTAL		SW846 6010C
POTASSIUM, DISSOLVED		6SW846 010C
SODIUM, TOTAL		SW846 6010C
SODIUM, DISSOLVED		SW 846 6010C
SPEC. COND., FIELD (umhos/cm)		FIELD
SPEC. COND., LAB (umhos/cm)		EPA 120.1
SULFATE	5.2	EPA 300
ALKALINITY	37	SM20 2320B
TDS (TOTAL DISSOLVED SOLIDS)		SM20 2540C
TOC (TOTAL ORGANIC CARBON)	1	SM20 5310B
TOTAL PHENOLICS (ug/l)		SW846 9066
TURBIDITY (N.T.U.)		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	4/17/2019

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE (EDB) (ETHYLENE D	1 ND	SW846 8260B
1,1-DICHLOROETHANE	1.2	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.	CWMP003W
Sample Date	4/17/2019

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		SW846 6010C
ARSENIC, DISSOLVED		SW846 6010C
BARIUM, TOTAL		SW846 6010C
BARIUM, DISSOLVED		SW846 6010C
CADMIUM, TOTAL		SW846 6010C
CADMIUM, DISSOLVED		SW846 6010C
CHROMIUM, TOTAL		SW846 6010C
CHROMIUM, DISSOLVED		SW846 6010C
COPPER, TOTAL		SW846 6010C
COPPER, DISSOLVED		SW846 6010C
LEAD-FLAMELESS, TOTAL		SW846 6010C
LEAD, DISSOLVED		SW846 6010C
MERCURY, TOTAL		SW846 7470A
MERCURY, DISSOLVED		SW846 7470A
SELENIUM, TOTAL		SW846 6010C
SELENIUM, DISSOLVED		SW846 6010C
SILVER, TOTAL		SW846 6010C
SILVER, DISSOLVED		SW846 6010C
ZINC, TOTAL		SW846 6010C
ZINC, DISSOLVED		SW846 6010C

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP003W
Sample Date	4/17/2019

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

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

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP003W
Sample Date	4/17/2019

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		SW846 8260B
ACRYLONITRILE		SW846 8260B
BROMOCHLOROMETHANE) CHLOROBROMOMETHAN		SW846 8260B
BROMODICHLOROMETHANE		SW846 8260B
CARBON DISULFIDE		SW846 8260B
CHLOROFORM		SW846 8260B
1,2-DIBROMO-3-CHLOROPROPANE (DBCP) (DIBROMO		SW846 8260B
trans 1,4-DICHLORO-2-BUTENE		SW846 8260B
2-HEXANONE		SW846 8260B
DIBROMOMETHANE		SW846 8260B
IODOMETHANE		SW846 8260B
STYRENE		SW846 8260B
VINYL ACETATE		SW846 8260B
ANTIMONY		EPA 200.8
BERYLLIUM		EPA 200.8
COBALT		SW846 6010C
NICKEL		SW846 6010C
THALLIUM		EPA 200.8
VANADIUM		SW846 6010C

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP003W
Sample Date	4/17/2019

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
07/24/2019
DEP USE ONLY
Date Received

FORM 19
MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

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

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facitlity ID (as issued by DEP): 100008

SECTION B. FACILITY INFORMATION

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

Monitoring Point Number: 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: ___ ft — Measured from: ___ Land Surface X TOC

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

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

Total Well Depth: 140 ft — Sampling Method: ___ Pumped ___ Bailed X 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): 4/17/2019 — Sample Collection Time: 13:50

Sample Collector's Name: Ms. Jordan Gallagher

Sample Collector's Affiliation: LCSWMA

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): 3028583003 — Final Lab Analysis CompletionDate: 4/25/2019

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

Comments:

I.D. No	100008
Monitoring Point No.	CWMP004W
Sample Date	4/17/2019

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN		ASTM D6919-09
BICARBONATE		SM20 2321
CALCIUM, TOTAL		SW846 6010C
CALCIUM, DISSOLVED		SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)		EPA 410.4
CHLORIDE		EPA 300
FLUORIDE		EPA 300
IRON, TOTAL (ug/l)	67 ND	SW846 6010C
IRON, DISSOLVED (ug/l)	60 ND	SW846 6010C
MAGNESIUM, TOTAL		SW846 6010C
MAGNESIUM, DISSOLVED		SW846 6010C
MANGANESE, TOTAL (ug/l)		SW846 6010C
MANGANESE, DISSOLVED (ug/l)		SW846 6010C
NITRATE-NITROGEN	6.8	EPA 300
pH-FIELD (SU)		FIELD
pH-LAB (SU)		SM4500B
POTASSIUM, TOTAL		SW846 6010C
POTASSIUM, DISSOLVED		6SW846 010C
SODIUM, TOTAL		SW846 6010C
SODIUM, DISSOLVED		SW 846 6010C
SPEC. COND., FIELD (umhos/cm)		FIELD
SPEC. COND., LAB (umhos/cm)		EPA 120.1
SULFATE	6.5	EPA 300
ALKALINITY	13	SM20 2320B
TDS (TOTAL DISSOLVED SOLIDS)		SM20 2540C
TOC (TOTAL ORGANIC CARBON)	1.1	SM20 5310B
TOTAL PHENOLICS (ug/l)		SW846 9066
TURBIDITY (N.T.U.)		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	4/17/2019

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

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

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP004W
Sample Date	4/17/2019

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		SW846 6010C
ARSENIC, DISSOLVED		SW846 6010C
BARIUM, TOTAL		SW846 6010C
BARIUM, DISSOLVED		SW846 6010C
CADMIUM, TOTAL		SW846 6010C
CADMIUM, DISSOLVED		SW846 6010C
CHROMIUM, TOTAL		SW846 6010C
CHROMIUM, DISSOLVED		SW846 6010C
COPPER, TOTAL		SW846 6010C
COPPER, DISSOLVED		SW846 6010C
LEAD-FLAMELESS, TOTAL		SW846 6010C
LEAD, DISSOLVED		SW846 6010C
MERCURY, TOTAL		SW846 7470A
MERCURY, DISSOLVED		SW846 7470A
SELENIUM, TOTAL		SW846 6010C
SELENIUM, DISSOLVED		SW846 6010C
SILVER, TOTAL		SW846 6010C
SILVER, DISSOLVED		SW846 6010C
ZINC, TOTAL		SW846 6010C
ZINC, DISSOLVED		SW846 6010C

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP004W
Sample Date	4/17/2019

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

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

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP004W
Sample Date	4/17/2019

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		SW846 8260B
ACRYLONITRILE		SW846 8260B
BROMOCHLOROMETHANE) CHLOROBROMOMETHAN		SW846 8260B
BROMODICHLOROMETHANE		SW846 8260B
CARBON DISULFIDE		SW846 8260B
CHLOROFORM		SW846 8260B
1,2-DIBROMO-3-CHLOROPROPANE (DBCP) (DIBROMO		SW846 8260B
trans 1,4-DICHLORO-2-BUTENE		SW846 8260B
2-HEXANONE		SW846 8260B
DIBROMOMETHANE		SW846 8260B
IODOMETHANE		SW846 8260B
STYRENE		SW846 8260B
VINYL ACETATE		SW846 8260B
ANTIMONY		EPA 200.8
BERYLLIUM		EPA 200.8
COBALT		SW846 6010C
NICKEL		SW846 6010C
THALLIUM		EPA 200.8
VANADIUM		SW846 6010C

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP004W
Sample Date	4/17/2019

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
07/24/2019
DEP USE ONLY
Date Received

FORM 19
MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

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

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facitlity ID (as issued by DEP): 100008

SECTION B. FACILITY INFORMATION

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

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

___ Upgradient/Upstream X Downgradient/Downstream

Location (County): Lancaster County — Municipality: Manor

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

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

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

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

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

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

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

Spring Flow Rate: ___ gpm

Sample Date (mm/dd/yy): 4/18/2019 — Sample Collection Time: 9:20

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3028887001 — Final Lab Analysis CompletionDate: 5/16/2019

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

Comments:

I.D. No 100008
Monitoring Point No. CWMP018S
Sample Date 4/18/2019

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	ASTM D6919-09
BICARBONATE	255	SM20 2321
CALCIUM, TOTAL	46.8	SW846 6010C
CALCIUM, DISSOLVED	50.2	SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	19	EPA 410.4
CHLORIDE	284	EPA 300
FLUORIDE	0.5 ND	EPA 300
IRON, TOTAL (ug/l)	99	SW846 6010C
IRON, DISSOLVED (ug/l)	88	SW846 6010C
MAGNESIUM, TOTAL	51	SW846 6010C
MAGNESIUM, DISSOLVED	59.1	SW846 6010C
MANGANESE, TOTAL (ug/l)	110	SW846 6010C
MANGANESE, DISSOLVED (ug/l)	120	SW846 6010C
NITRATE-NITROGEN	16.4	EPA 300
pH-FIELD (SU)	7.52	FIELD
pH-LAB (SU)	8.36	SM4500B
POTASSIUM, TOTAL	13.3	SW846 6010C
POTASSIUM, DISSOLVED	13.2	6SW846 010C
SODIUM, TOTAL	182	SW846 6010C
SODIUM, DISSOLVED	197	SW 846 6010C
SPEC. COND., FIELD (umhos/cm)	1720	FIELD
SPEC. COND., LAB (umhos/cm)	1720	EPA 120.1
SULFATE	25.1	EPA 300
ALKALINITY	262	SM20 2320B
TDS (TOTAL DISSOLVED SOLIDS)	930	SM20 2540C
TOC (TOTAL ORGANIC CARBON)	8.2	SM20 5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	7.21	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.	CWMP018S
Sample Date	4/18/2019

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

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

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP018S
Sample Date	4/18/2019

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	38	SW846 6010C
BARIUM, DISSOLVED	36	SW846 6010C
CADMIUM, TOTAL	1.1 ND	SW846 6010C
CADMIUM, DISSOLVED	1.1 ND	SW846 6010C
CHROMIUM, TOTAL	2.5	SW846 6010C
CHROMIUM, DISSOLVED	2.2 ND	SW846 6010C
COPPER, TOTAL	12	SW846 6010C
COPPER, DISSOLVED	11	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	32	SW846 6010C
ZINC, DISSOLVED	35	SW846 6010C

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP018S
Sample Date	4/18/2019

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	4/18/2019

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	12	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	4/18/2019

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
07/24/2019
DEP USE ONLY
Date Received

FORM 19
MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

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

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facitlity ID (as issued by DEP): 100008

SECTION B. FACILITY INFORMATION

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

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

___ Upgradient/Upstream X Downgradient/Downstream

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

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

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

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

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

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

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

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

Spring Flow Rate: ___ gpm

Sample Date (mm/dd/yy): 4/18/2019 — Sample Collection Time: 10:21

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3028887002 — Final Lab Analysis CompletionDate: 5/16/2019

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

Comments:

I.D. No	100008
Monitoring Point No.	CWMP017S
Sample Date	4/18/2019

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	ASTM D6919-09
BICARBONATE	236	SM20 2321
CALCIUM, TOTAL	40.5	SW846 6010C
CALCIUM, DISSOLVED	41	SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	305	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	260	SW846 6010C
IRON, DISSOLVED (ug/l)	140	SW846 6010C
MAGNESIUM, TOTAL	48.8	SW846 6010C
MAGNESIUM, DISSOLVED	53.5	SW846 6010C
MANGANESE, TOTAL (ug/l)	90	SW846 6010C
MANGANESE, DISSOLVED (ug/l)	97	SW846 6010C
NITRATE-NITROGEN	13.1	EPA 300
pH-FIELD (SU)	7.54	FIELD
pH-LAB (SU)	8.16	SM4500B
POTASSIUM, TOTAL	8.2	SW846 6010C
POTASSIUM, DISSOLVED	8.1	6SW846 010C
SODIUM, TOTAL	194	SW846 6010C
SODIUM, DISSOLVED	201	SW 846 6010C
SPEC. COND., FIELD (umhos/cm)	1757	FIELD
SPEC. COND., LAB (umhos/cm)	1690	EPA 120.1
SULFATE	42.5	EPA 300
ALKALINITY	236	SM20 2320B
TDS (TOTAL DISSOLVED SOLIDS)	1460	SM20 2540C
TOC (TOTAL ORGANIC CARBON)	4.3	SM20 5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	4.09	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	4/18/2019

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

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

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP017S
Sample Date	4/18/2019

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	42	SW846 6010C
BARIUM, DISSOLVED	39	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	7.4	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	47	SW846 6010C
ZINC, DISSOLVED	43	SW846 6010C

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP017S
Sample Date	4/18/2019

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	4/18/2019

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.	CWMP017S
Sample Date	4/18/2019

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
07/24/2019
DEP USE ONLY
Date Received

FORM 19

MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

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

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facitlity ID (as issued by DEP): 100008

SECTION B. FACILITY INFORMATION

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

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

___ Upgradient/Upstream X Downgradient/Downstream

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

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

Depth to Water Level: ___ 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: ___ Pumped X Bailed ___ 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): 4/19/2019 — Sample Collection Time: 8:50

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 3029259001 — Final Lab Analysis CompletionDate: 5/16/2019

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

Comments:

I.D. No	100008
Monitoring Point No.	CWMP012W
Sample Date	4/19/2019

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	ASTM D6919-09
BICARBONATE	73	SM20 2321
CALCIUM, TOTAL	26.7	SW846 6010C
CALCIUM, DISSOLVED	25.5	SW846 6010C
COD (CHEMICAL OXYGEN DEMAND)	15 ND	EPA 410.4
CHLORIDE	29.8	EPA 300
FLUORIDE	0.2 ND	EPA 300
IRON, TOTAL (ug/l)	12900	SW846 6010C
IRON, DISSOLVED (ug/l)	56 ND	SW846 6010C
MAGNESIUM, TOTAL	7.6	SW846 6010C
MAGNESIUM, DISSOLVED	8.4	SW846 6010C
MANGANESE, TOTAL (ug/l)	250	SW846 6010C
MANGANESE, DISSOLVED (ug/l)	65	SW846 6010C
NITRATE-NITROGEN	6.8	EPA 300
pH-FIELD (SU)	5.68	FIELD
pH-LAB (SU)	6.44	SM4500B
POTASSIUM, TOTAL	1.2	SW846 6010C
POTASSIUM, DISSOLVED	1.2	6SW846 010C
SODIUM, TOTAL	11.9	SW846 6010C
SODIUM, DISSOLVED	11.6	SW 846 6010C
SPEC. COND., FIELD (umhos/cm)	305	FIELD
SPEC. COND., LAB (umhos/cm)	288	EPA 120.1
SULFATE	5.1	EPA 300
ALKALINITY	73	SM20 2320B
TDS (TOTAL DISSOLVED SOLIDS)	170	SM20 2540C
TOC (TOTAL ORGANIC CARBON)	3.3	SM20 5310B
TOTAL PHENOLICS (ug/l)	5 ND	SW846 9066
TURBIDITY (N.T.U.)	399	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	4/19/2019

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

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

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP012W
Sample Date	4/19/2019

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	90	SW846 6010C
BARIUM, DISSOLVED	84	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	17	SW846 6010C

T Please indicate detection limit if analyte is not detected.

I.D. No	100008
Monitoring Point No.	CWMP012W
Sample Date	4/19/2019

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	4/19/2019

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	9.2	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	4/19/2019

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

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

May 8, 2019

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

Certificate of Analysis

Project Name:	**CRESWELL**	Workorder:	**3028156**
Purchase Order:	**PO1000127**	Workorder ID:	**2ND QTR 2019 CWMP-FORM 19A**

Dear Mr. Brown:

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

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

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

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

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

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

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

Susan J. Scherer

Ms. Susan J Scherer
Project Coordinator

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SAMPLE SUMMARY

Workorder: 3028156 2ND QTR 2019 CWMP-FORM 19A

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
3028156001	CWMP007W	Ground Water	4/15/2019 11:06	4/15/2019 16:56	Mr. Brian G Shade
3028156002	CWMP001W	Ground Water	4/15/2019 12:40	4/15/2019 16:56	Mr. Brian G Shade
3028156003	CWMP005W	Ground Water	4/15/2019 14:30	4/15/2019 16:56	Mr. Brian G Shade
3028156004	Field Blank	Water	4/15/2019 15:01	4/15/2019 16:56	Mr. Brian G Shade
3028156005	Trip Blank	Water	4/15/2019 16:56	4/15/2019 16:56	Mr. Brian G Shade

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SAMPLE SUMMARY

Workorder: 3028156 2ND QTR 2019 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 incubator and the "Analyzed" value is the date/time out the incubator.
-- An Analysis-Prep Method Cross Reference Table is included after Analytical Results & Qualifiers section in this report.

Standard Acronyms/Flags

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

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ANALYTICAL RESULTS

Workorder: 3028156 2ND QTR 2019 CWMP-FORM 19A

Lab ID: **3028156001** Date Collected: 4/15/2019 11:06 Matrix: Ground Water

Sample ID: **CWMP007W** Date Received: 4/15/2019 16:56

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	SW846 8260B			4/20/19 08:05	PDK	D
Acrylonitrile	ND		ug/L	5.0	SW846 8260B			4/20/19 08:05	PDK	D
Benzene	ND		ug/L	1.0	SW846 8260B			4/20/19 08:05	PDK	D
Bromochloromethane	ND		ug/L	1.0	SW846 8260B			4/20/19 08:05	PDK	D
Bromodichloromethane	ND		ug/L	1.0	SW846 8260B			4/20/19 08:05	PDK	D
Bromoform	ND		ug/L	1.0	SW846 8260B			4/20/19 08:05	PDK	D
Bromomethane	ND		ug/L	1.0	SW846 8260B			4/20/19 08:05	PDK	D
2-Butanone	ND		ug/L	10.0	SW846 8260B			4/20/19 08:05	PDK	D
Carbon Disulfide	ND		ug/L	1.0	SW846 8260B			4/20/19 08:05	PDK	D
Carbon Tetrachloride	ND		ug/L	1.0	SW846 8260B			4/20/19 08:05	PDK	D
Chlorobenzene	ND		ug/L	1.0	SW846 8260B			4/20/19 08:05	PDK	D
Chlorodibromomethane	ND		ug/L	1.0	SW846 8260B			4/20/19 08:05	PDK	D
Chloroethane	ND		ug/L	1.0	SW846 8260B			4/20/19 08:05	PDK	D
Chloroform	ND		ug/L	1.0	SW846 8260B			4/20/19 08:05	PDK	D
Chloromethane	ND		ug/L	1.0	SW846 8260B			4/20/19 08:05	PDK	D
3-Chloro-1-propene	ND		ug/L	1.0	SW846 8260B			4/20/19 08:05	PDK	D
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	SW846 8260B			4/20/19 08:05	PDK	D
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			4/20/19 08:05	PDK	D
Dibromomethane	ND		ug/L	1.0	SW846 8260B			4/20/19 08:05	PDK	D
trans-1,4-Dichloro-2-butene	ND		ug/L	3.0	SW846 8260B			4/20/19 08:05	PDK	D
1,2-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/20/19 08:05	PDK	D
1,3-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/20/19 08:05	PDK	D
1,4-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/20/19 08:05	PDK	D
Dichlorodifluoromethane	ND		ug/L	1.0	SW846 8260B			4/20/19 08:05	PDK	D
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/20/19 08:05	PDK	D
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/20/19 08:05	PDK	D
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/20/19 08:05	PDK	D
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/20/19 08:05	PDK	D
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/20/19 08:05	PDK	D
1,2-Dichloropropane	ND		ug/L	1.0	SW846 8260B			4/20/19 08:05	PDK	D
cis-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			4/20/19 08:05	PDK	D
trans-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			4/20/19 08:05	PDK	D
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			4/20/19 08:05	PDK	D
2-Hexanone	ND		ug/L	5.0	SW846 8260B			4/20/19 08:05	PDK	D
Iodomethane	ND		ug/L	1.0	SW846 8260B			4/20/19 08:05	PDK	D
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	SW846 8260B			4/20/19 08:05	PDK	D

ANALYTICAL RESULTS

Workorder: 3028156 2ND QTR 2019 CWMP-FORM 19A

Lab ID: **3028156001** Date Collected: 4/15/2019 11:06 Matrix: Ground Water

Sample ID: **CWMP007W** Date Received: 4/15/2019 16:56

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			4/20/19 08:05	PDK	D
Styrene	ND		ug/L	1.0	SW846 8260B			4/20/19 08:05	PDK	D
1,1,1,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/20/19 08:05	PDK	D
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/20/19 08:05	PDK	D
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			4/20/19 08:05	PDK	D
Toluene	ND		ug/L	1.0	SW846 8260B			4/20/19 08:05	PDK	D
Total Xylenes	ND		ug/L	3.0	SW846 8260B			4/20/19 08:05	PDK	D
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/20/19 08:05	PDK	D
1,1,2-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/20/19 08:05	PDK	D
Trichloroethene	ND		ug/L	1.0	SW846 8260B			4/20/19 08:05	PDK	D
Trichlorofluoromethane	ND		ug/L	1.0	SW846 8260B			4/20/19 08:05	PDK	D
1,2,3-Trichloropropane	ND		ug/L	2.0	SW846 8260B			4/20/19 08:05	PDK	D
Vinyl Acetate	ND		ug/L	5.0	SW846 8260B			4/20/19 08:05	PDK	D
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			4/20/19 08:05	PDK	D
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	102		%	62 - 133	SW846 8260B			4/20/19 08:05	PDK	D
4-Bromofluorobenzene (S)	104		%	79 - 114	SW846 8260B			4/20/19 08:05	PDK	D
Dibromofluoromethane (S)	101		%	78 - 116	SW846 8260B			4/20/19 08:05	PDK	D
Toluene-d8 (S)	109		%	76 - 127	SW846 8260B			4/20/19 08:05	PDK	D
LIBRARY SEARCH - VOLATILES										
No TIC's Detected	.				Lib Search VOC			4/20/19 08:05	JAH	D
WET CHEMISTRY										
Alkalinity, Bicarbonate	9		mg/L	5	SM2320B-2011			4/17/19 22:28	MLM	F
Alkalinity, Total	9	3	mg/L	5	SM2320B-2011			4/17/19 22:28	MLM	F
Ammonia-N, Low Level	ND		mg/L	0.10	SM 4500-NH3G	4/26/19 18:00	NJA	4/27/19 13:12	NJA	
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			4/24/19 15:15	AK	H
Chloride	67.2		mg/L	2.0	EPA 300.0			4/16/19 18:39	CHW	F
Fluoride	ND		mg/L	0.20	EPA 300.0			4/16/19 18:39	CHW	F
Nitrate-N	9.0		mg/L	0.20	EPA 300.0			4/16/19 18:39	CHW	F
pH	6.02	2	pH_Units		S4500HB-11			4/17/19 22:28	MLM	F
Phenolics	ND	1	mg/L	0.005	SW846 9066	4/22/19 09:08	C_D	4/24/19 16:24	RXB	C
Specific Conductance	336		umhos/cm	1	SM2510B-2011			4/17/19 22:28	MLM	F
Sulfate	20.6		mg/L	2.0	EPA 300.0			4/16/19 18:39	CHW	F
Total Dissolved Solids	276		mg/L	5	S2540C-11			4/22/19 12:20	EXS	F
Total Organic Carbon (TOC)	1.1		mg/L	0.50	SM5310B-2011			4/18/19 08:22	PAG	A
Turbidity	ND		NTU	0.10	SM2130B-2011			4/17/19 00:25	MBW	F

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ANALYTICAL RESULTS

Workorder: 3028156 2ND QTR 2019 CWMP-FORM 19A

Lab ID: **3028156001** Date Collected: 4/15/2019 11:06 Matrix: Ground Water

Sample ID: **CWMP007W** Date Received: 4/15/2019 16:56

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Antimony, Total	ND		mg/L	0.0022	SW846 6020A	4/26/19 14:00	AHI	5/8/19 14:42	MO	J1
Arsenic, Total	ND		mg/L	0.0033	SW846 6020A	4/26/19 14:00	AHI	5/8/19 14:42	MO	J1
Arsenic, Dissolved	ND		mg/L	0.0030	SW846 6020A	4/26/19 14:05	AHI	5/7/19 11:15	MO	I1
Barium, Total	0.048		mg/L	0.0056	SW846 6020A	4/26/19 14:00	AHI	5/8/19 14:42	MO	J1
Barium, Dissolved	0.051		mg/L	0.0056	SW846 6020A	4/26/19 14:05	AHI	5/7/19 11:15	MO	I1
Beryllium, Total	ND		mg/L	0.0011	SW846 6020A	4/26/19 14:00	AHI	5/8/19 14:42	MO	J1
Cadmium, Total	ND		mg/L	0.0011	SW846 6020A	4/26/19 14:00	AHI	5/8/19 14:42	MO	J1
Cadmium, Dissolved	ND		mg/L	0.0011	SW846 6020A	4/26/19 14:05	AHI	5/7/19 11:15	MO	I1
Calcium, Total	15.3		mg/L	0.11	SW846 6020A	4/26/19 14:00	AHI	5/8/19 14:42	MO	J1
Calcium, Dissolved	17.9		mg/L	0.11	SW846 6020A	4/26/19 14:05	AHI	5/7/19 11:15	MO	I1
Chromium, Total	ND		mg/L	0.0022	SW846 6020A	4/26/19 14:00	AHI	5/8/19 14:42	MO	J1
Chromium, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/26/19 14:05	AHI	5/7/19 11:15	MO	I1
Cobalt, Total	ND		mg/L	0.0056	SW846 6020A	4/26/19 14:00	AHI	5/8/19 14:42	MO	J1
Copper, Total	ND		mg/L	0.0056	SW846 6020A	4/26/19 14:00	AHI	5/8/19 14:42	MO	J1
Copper, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/26/19 14:05	AHI	5/7/19 11:15	MO	I1
Iron, Total	ND		mg/L	0.056	SW846 6020A	4/26/19 14:00	AHI	5/8/19 14:42	MO	J1
Iron, Dissolved	ND		mg/L	0.056	SW846 6020A	4/26/19 14:05	AHI	5/7/19 11:15	MO	I1
Lead, Total	ND		mg/L	0.0022	SW846 6020A	4/26/19 14:00	AHI	5/8/19 14:42	MO	J1
Lead, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/26/19 14:05	AHI	5/7/19 11:15	MO	I1
Magnesium, Total	9.0		mg/L	0.11	SW846 6020A	4/26/19 14:00	AHI	5/8/19 14:42	MO	J1
Magnesium, Dissolved	9.9		mg/L	0.11	SW846 6020A	4/26/19 14:05	AHI	5/7/19 11:15	MO	I1
Manganese, Total	0.0065		mg/L	0.0056	SW846 6020A	4/26/19 14:00	AHI	5/8/19 14:42	MO	J1
Manganese, Dissolved	0.0063		mg/L	0.0056	SW846 6020A	4/26/19 14:05	AHI	5/7/19 11:15	MO	I1
Mercury, Total	ND		mg/L	0.00050	SW846 7470A	4/21/19 23:35	MSA	4/22/19 03:31	MSA	J
Mercury, Dissolved	ND		mg/L	0.00050	SW846 7470A	4/21/19 23:35	MSA	4/22/19 03:18	MSA	I
Nickel, Total	ND		mg/L	0.0056	SW846 6020A	4/26/19 14:00	AHI	5/8/19 14:42	MO	J1
Potassium, Total	1.9		mg/L	0.11	SW846 6020A	4/26/19 14:00	AHI	5/8/19 14:42	MO	J1
Potassium, Dissolved	2.0		mg/L	0.11	SW846 6020A	4/26/19 14:05	AHI	5/7/19 11:15	MO	I1
Selenium, Total	ND		mg/L	0.0056	SW846 6020A	4/26/19 14:00	AHI	5/8/19 14:42	MO	J1
Selenium, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/26/19 14:05	AHI	5/7/19 11:15	MO	I1
Silver, Total	ND		mg/L	0.0022	SW846 6020A	4/26/19 14:00	AHI	5/8/19 14:42	MO	J1
Silver, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/26/19 14:05	AHI	5/7/19 11:15	MO	I1
Sodium, Total	29.2		mg/L	0.11	SW846 6020A	4/26/19 14:00	AHI	5/8/19 14:42	MO	J1
Sodium, Dissolved	32.0		mg/L	0.11	SW846 6020A	4/26/19 14:05	AHI	5/7/19 11:15	MO	I1
Thallium, Total	ND		mg/L	0.0011	SW846 6020A	4/26/19 14:00	AHI	5/8/19 14:42	MO	J1
Vanadium, Total	ND		mg/L	0.0022	SW846 6020A	4/26/19 14:00	AHI	5/8/19 14:42	MO	J1
Zinc, Total	0.0068		mg/L	0.0056	SW846 6020A	4/26/19 14:00	AHI	5/8/19 14:42	MO	J1

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ANALYTICAL RESULTS

Workorder: 3028156 2ND QTR 2019 CWMP-FORM 19A

Lab ID: **3028156001** Date Collected: 4/15/2019 11:06 Matrix: Ground Water

Sample ID: **CWMP007W** Date Received: 4/15/2019 16:56

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
Zinc, Dissolved	0.0094		mg/L	0.0056	SW846 6020A	4/26/19 14:05	AHI	5/7/19 11:15	MO	I1
FIELD PARAMETERS										
Depth to Water Level	5.41		Feet		Field			4/15/19 11:06	CLT	K
Elev Top MW Casing above MSL	453.40		Feet		Field			4/15/19 11:06	CLT	K
Flow Rate	1.68		gal/min		Field			4/15/19 11:06	CLT	K
Ground Water Elevation	447.99		ft/MSL		Field			4/15/19 11:06	CLT	K
pH, Field (SM4500B)	5.04		pH_Units		Field			4/15/19 11:06	CLT	K
Sample Depth	33.00		Feet		Field			4/15/19 11:06	CLT	K
Specific Conductance, Field	388		umhos/cm	1	Field			4/15/19 11:06	CLT	K
Temperature	10.13		Deg. C		Field			4/15/19 11:06	CLT	K
Total Well Depth	36.50		Feet		Field			4/15/19 11:06	CLT	K
Volume in Water Column	45.70		Gallons		Field			4/15/19 11:06	CLT	K
Water Level After Purge	5.51		Feet		Field			4/15/19 11:06	CLT	K
Well Volumes Purged	2.20		Vol		Field			4/15/19 11:06	CLT	K

Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 3028156 2ND QTR 2019 CWMP-FORM 19A

Lab ID: **3028156002** Date Collected: 4/15/2019 12:40 Matrix: Ground Water

Sample ID: **CWMP001W** Date Received: 4/15/2019 16:56

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	SW846 8260B			4/20/19 08:28	PDK	D
Acrylonitrile	ND		ug/L	5.0	SW846 8260B			4/20/19 08:28	PDK	D
Benzene	ND		ug/L	1.0	SW846 8260B			4/20/19 08:28	PDK	D
Bromochloromethane	ND		ug/L	1.0	SW846 8260B			4/20/19 08:28	PDK	D
Bromodichloromethane	ND		ug/L	1.0	SW846 8260B			4/20/19 08:28	PDK	D
Bromoform	ND		ug/L	1.0	SW846 8260B			4/20/19 08:28	PDK	D
Bromomethane	ND		ug/L	1.0	SW846 8260B			4/20/19 08:28	PDK	D
2-Butanone	ND		ug/L	10.0	SW846 8260B			4/20/19 08:28	PDK	D
Carbon Disulfide	ND		ug/L	1.0	SW846 8260B			4/20/19 08:28	PDK	D
Carbon Tetrachloride	ND		ug/L	1.0	SW846 8260B			4/20/19 08:28	PDK	D
Chlorobenzene	ND		ug/L	1.0	SW846 8260B			4/20/19 08:28	PDK	D
Chlorodibromomethane	ND		ug/L	1.0	SW846 8260B			4/20/19 08:28	PDK	D
Chloroethane	ND		ug/L	1.0	SW846 8260B			4/20/19 08:28	PDK	D
Chloroform	ND		ug/L	1.0	SW846 8260B			4/20/19 08:28	PDK	D
Chloromethane	ND		ug/L	1.0	SW846 8260B			4/20/19 08:28	PDK	D
3-Chloro-1-propene	ND		ug/L	1.0	SW846 8260B			4/20/19 08:28	PDK	D
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	SW846 8260B			4/20/19 08:28	PDK	D
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			4/20/19 08:28	PDK	D
Dibromomethane	ND		ug/L	1.0	SW846 8260B			4/20/19 08:28	PDK	D
trans-1,4-Dichloro-2-butene	ND		ug/L	3.0	SW846 8260B			4/20/19 08:28	PDK	D
1,2-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/20/19 08:28	PDK	D
1,3-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/20/19 08:28	PDK	D
1,4-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/20/19 08:28	PDK	D
Dichlorodifluoromethane	ND		ug/L	1.0	SW846 8260B			4/20/19 08:28	PDK	D
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/20/19 08:28	PDK	D
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/20/19 08:28	PDK	D
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/20/19 08:28	PDK	D
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/20/19 08:28	PDK	D
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/20/19 08:28	PDK	D
1,2-Dichloropropane	ND		ug/L	1.0	SW846 8260B			4/20/19 08:28	PDK	D
cis-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			4/20/19 08:28	PDK	D
trans-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			4/20/19 08:28	PDK	D
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			4/20/19 08:28	PDK	D
2-Hexanone	ND		ug/L	5.0	SW846 8260B			4/20/19 08:28	PDK	D
Iodomethane	ND		ug/L	1.0	SW846 8260B			4/20/19 08:28	PDK	D
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	SW846 8260B			4/20/19 08:28	PDK	D

ANALYTICAL RESULTS

Workorder: 3028156 2ND QTR 2019 CWMP-FORM 19A

Lab ID: **3028156002** Date Collected: 4/15/2019 12:40 Matrix: Ground Water

Sample ID: **CWMP001W** Date Received: 4/15/2019 16:56

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			4/20/19 08:28	PDK	D
Styrene	ND		ug/L	1.0	SW846 8260B			4/20/19 08:28	PDK	D
1,1,1,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/20/19 08:28	PDK	D
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/20/19 08:28	PDK	D
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			4/20/19 08:28	PDK	D
Toluene	ND		ug/L	1.0	SW846 8260B			4/20/19 08:28	PDK	D
Total Xylenes	ND		ug/L	3.0	SW846 8260B			4/20/19 08:28	PDK	D
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/20/19 08:28	PDK	D
1,1,2-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/20/19 08:28	PDK	D
Trichloroethene	ND		ug/L	1.0	SW846 8260B			4/20/19 08:28	PDK	D
Trichlorofluoromethane	ND		ug/L	1.0	SW846 8260B			4/20/19 08:28	PDK	D
1,2,3-Trichloropropane	ND		ug/L	2.0	SW846 8260B			4/20/19 08:28	PDK	D
Vinyl Acetate	ND		ug/L	5.0	SW846 8260B			4/20/19 08:28	PDK	D
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			4/20/19 08:28	PDK	D
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	105		%	62 - 133	SW846 8260B			4/20/19 08:28	PDK	D
4-Bromofluorobenzene (S)	103		%	79 - 114	SW846 8260B			4/20/19 08:28	PDK	D
Dibromofluoromethane (S)	100		%	78 - 116	SW846 8260B			4/20/19 08:28	PDK	D
Toluene-d8 (S)	108		%	76 - 127	SW846 8260B			4/20/19 08:28	PDK	D
LIBRARY SEARCH - VOLATILES										
No TIC's Detected	.				Lib Search VOC			4/20/19 08:28	JAH	D
WET CHEMISTRY										
Alkalinity, Bicarbonate	5		mg/L	5	SM2320B-2011			4/17/19 22:51	MLM	F
Alkalinity, Total	5	2	mg/L	5	SM2320B-2011			4/17/19 22:51	MLM	F
Ammonia-N, Low Level	ND		mg/L	0.10	SM 4500-NH3G	4/26/19 18:00	NJA	4/27/19 13:12	NJA	
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			4/24/19 15:15	AK	H
Chloride	29.1		mg/L	2.0	EPA 300.0			4/16/19 18:51	CHW	F
Fluoride	ND		mg/L	0.20	EPA 300.0			4/16/19 18:51	CHW	F
Nitrate-N	18.1		mg/L	0.20	EPA 300.0			4/16/19 18:51	CHW	F
pH	5.75	1	pH_Units		S4500HB-11			4/17/19 22:51	MLM	F
Phenolics	ND		mg/L	0.005	SW846 9066	4/22/19 09:08	C_D	4/24/19 16:24	RXB	C
Specific Conductance	244		umhos/cm	1	SM2510B-2011			4/17/19 22:51	MLM	F
Sulfate	2.3		mg/L	2.0	EPA 300.0			4/16/19 18:51	CHW	F
Total Dissolved Solids	272		mg/L	5	S2540C-11			4/22/19 12:20	EXS	F
Total Organic Carbon (TOC)	1.1		mg/L	0.50	SM5310B-2011			4/18/19 08:22	PAG	A
Turbidity	63.4		NTU	0.10	SM2130B-2011			4/17/19 00:25	MBW	F

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ANALYTICAL RESULTS

Workorder: 3028156 2ND QTR 2019 CWMP-FORM 19A

Lab ID: **3028156002** Date Collected: 4/15/2019 12:40 Matrix: Ground Water

Sample ID: **CWMP001W** Date Received: 4/15/2019 16:56

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Antimony, Total	ND		mg/L	0.0022	SW846 6020A	4/26/19 14:00	AHI	5/8/19 14:45	MO	J1
Arsenic, Total	ND		mg/L	0.0033	SW846 6020A	4/26/19 14:00	AHI	5/8/19 14:45	MO	J1
Arsenic, Dissolved	ND		mg/L	0.0030	SW846 6020A	4/26/19 14:05	AHI	5/7/19 11:18	MO	I1
Barium, Total	0.085		mg/L	0.0056	SW846 6020A	4/26/19 14:00	AHI	5/8/19 14:45	MO	J1
Barium, Dissolved	0.079		mg/L	0.0056	SW846 6020A	4/26/19 14:05	AHI	5/7/19 11:18	MO	I1
Beryllium, Total	ND		mg/L	0.0011	SW846 6020A	4/26/19 14:00	AHI	5/8/19 14:45	MO	J1
Cadmium, Total	ND		mg/L	0.0011	SW846 6020A	4/26/19 14:00	AHI	5/8/19 14:45	MO	J1
Cadmium, Dissolved	ND		mg/L	0.0011	SW846 6020A	4/26/19 14:05	AHI	5/7/19 11:18	MO	I1
Calcium, Total	12.9		mg/L	0.11	SW846 6020A	4/26/19 14:00	AHI	5/8/19 14:45	MO	J1
Calcium, Dissolved	14.5		mg/L	0.11	SW846 6020A	4/26/19 14:05	AHI	5/7/19 11:18	MO	I1
Chromium, Total	0.0023		mg/L	0.0022	SW846 6020A	4/26/19 14:00	AHI	5/8/19 14:45	MO	J1
Chromium, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/26/19 14:05	AHI	5/7/19 11:18	MO	I1
Cobalt, Total	ND		mg/L	0.0056	SW846 6020A	4/26/19 14:00	AHI	5/8/19 14:45	MO	J1
Copper, Total	ND		mg/L	0.0056	SW846 6020A	4/26/19 14:00	AHI	5/8/19 14:45	MO	J1
Copper, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/26/19 14:05	AHI	5/7/19 11:18	MO	I1
Iron, Total	3.0		mg/L	0.056	SW846 6020A	4/26/19 14:00	AHI	5/8/19 14:45	MO	J1
Iron, Dissolved	ND		mg/L	0.056	SW846 6020A	4/26/19 14:05	AHI	5/7/19 11:18	MO	I1
Lead, Total	0.0077		mg/L	0.0022	SW846 6020A	4/26/19 14:00	AHI	5/8/19 14:45	MO	J1
Lead, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/26/19 14:05	AHI	5/7/19 11:18	MO	I1
Magnesium, Total	10.4		mg/L	0.11	SW846 6020A	4/26/19 14:00	AHI	5/8/19 14:45	MO	J1
Magnesium, Dissolved	10.8		mg/L	0.11	SW846 6020A	4/26/19 14:05	AHI	5/7/19 11:18	MO	I1
Manganese, Total	0.067		mg/L	0.0056	SW846 6020A	4/26/19 14:00	AHI	5/8/19 14:45	MO	J1
Manganese, Dissolved	0.045		mg/L	0.0056	SW846 6020A	4/26/19 14:05	AHI	5/7/19 11:18	MO	I1
Mercury, Total	ND		mg/L	0.00050	SW846 7470A	4/21/19 23:35	MSA	4/22/19 03:35	MSA	J
Mercury, Dissolved	ND		mg/L	0.00050	SW846 7470A	4/21/19 23:35	MSA	4/22/19 03:19	MSA	I
Nickel, Total	0.0065		mg/L	0.0056	SW846 6020A	4/26/19 14:00	AHI	5/8/19 14:45	MO	J1
Potassium, Total	2.1		mg/L	0.11	SW846 6020A	4/26/19 14:00	AHI	5/8/19 14:45	MO	J1
Potassium, Dissolved	2.0		mg/L	0.11	SW846 6020A	4/26/19 14:05	AHI	5/7/19 11:18	MO	I1
Selenium, Total	ND		mg/L	0.0056	SW846 6020A	4/26/19 14:00	AHI	5/8/19 14:45	MO	J1
Selenium, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/26/19 14:05	AHI	5/7/19 11:18	MO	I1
Silver, Total	ND		mg/L	0.0022	SW846 6020A	4/26/19 14:00	AHI	5/8/19 14:45	MO	J1
Silver, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/26/19 14:05	AHI	5/7/19 11:18	MO	I1
Sodium, Total	12.7		mg/L	0.11	SW846 6020A	4/26/19 14:00	AHI	5/8/19 14:45	MO	J1
Sodium, Dissolved	13.7		mg/L	0.11	SW846 6020A	4/26/19 14:05	AHI	5/7/19 11:18	MO	I1
Thallium, Total	ND		mg/L	0.0011	SW846 6020A	4/26/19 14:00	AHI	5/8/19 14:45	MO	J1
Vanadium, Total	ND		mg/L	0.0022	SW846 6020A	4/26/19 14:00	AHI	5/8/19 14:45	MO	J1
Zinc, Total	0.021		mg/L	0.0056	SW846 6020A	4/26/19 14:00	AHI	5/8/19 14:45	MO	J1

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ANALYTICAL RESULTS

Workorder: 3028156 2ND QTR 2019 CWMP-FORM 19A

Lab ID: **3028156002** Date Collected: 4/15/2019 12:40 Matrix: Ground Water
Sample ID: **CWMP001W** Date Received: 4/15/2019 16:56

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
Zinc, Dissolved	0.019		mg/L	0.0056	SW846 6020A	4/26/19 14:05	AHI	5/7/19 11:18	MO	I1
FIELD PARAMETERS										
Depth to Water Level	22.21		Feet		Field			4/15/19 12:40	CLT	K
Elev Top MW Casing above MSL	515.13		Feet		Field			4/15/19 12:40	CLT	K
Flow Rate	2.09		gal/min		Field			4/15/19 12:40	CLT	K
Ground Water Elevation	492.92		ft/MSL		Field			4/15/19 12:40	CLT	K
pH, Field (SM4500B)	4.88		pH_Units		Field			4/15/19 12:40	CLT	K
Sample Depth	57.00		Feet		Field			4/15/19 12:40	CLT	K
Specific Conductance, Field	284		umhos/cm	1	Field			4/15/19 12:40	CLT	K
Temperature	11.03		Deg. C		Field			4/15/19 12:40	CLT	K
Total Well Depth	66.30		Feet		Field			4/15/19 12:40	CLT	K
Volume in Water Column	64.81		Gallons		Field			4/15/19 12:40	CLT	K
Water Level After Purge	44.81		Feet		Field			4/15/19 12:40	CLT	K
Well Volumes Purged	1.93		Vol		Field			4/15/19 12:40	CLT	K

Susan J. Scherer
Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 3028156 2ND QTR 2019 CWMP-FORM 19A

Lab ID: **3028156003** Date Collected: 4/15/2019 14:30 Matrix: Ground Water

Sample ID: **CWMP005W** Date Received: 4/15/2019 16:56

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	SW846 8260B			4/22/19 12:28	DD	D
Acrylonitrile	ND		ug/L	5.0	SW846 8260B			4/22/19 12:28	DD	D
Benzene	ND		ug/L	1.0	SW846 8260B			4/22/19 12:28	DD	D
Bromochloromethane	ND		ug/L	1.0	SW846 8260B			4/22/19 12:28	DD	D
Bromodichloromethane	ND		ug/L	1.0	SW846 8260B			4/22/19 12:28	DD	D
Bromoform	ND		ug/L	1.0	SW846 8260B			4/22/19 12:28	DD	D
Bromomethane	ND	1	ug/L	1.0	SW846 8260B			4/22/19 12:28	DD	D
2-Butanone	ND		ug/L	10.0	SW846 8260B			4/22/19 12:28	DD	D
Carbon Disulfide	ND		ug/L	1.0	SW846 8260B			4/22/19 12:28	DD	D
Carbon Tetrachloride	ND		ug/L	1.0	SW846 8260B			4/22/19 12:28	DD	D
Chlorobenzene	ND		ug/L	1.0	SW846 8260B			4/22/19 12:28	DD	D
Chlorodibromomethane	ND		ug/L	1.0	SW846 8260B			4/22/19 12:28	DD	D
Chloroethane	ND		ug/L	1.0	SW846 8260B			4/22/19 12:28	DD	D
Chloroform	ND		ug/L	1.0	SW846 8260B			4/22/19 12:28	DD	D
Chloromethane	ND		ug/L	1.0	SW846 8260B			4/22/19 12:28	DD	D
3-Chloro-1-propene	ND		ug/L	1.0	SW846 8260B			4/22/19 12:28	DD	D
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	SW846 8260B			4/22/19 12:28	DD	D
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			4/22/19 12:28	DD	D
Dibromomethane	ND		ug/L	1.0	SW846 8260B			4/22/19 12:28	DD	D
trans-1,4-Dichloro-2-butene	ND		ug/L	3.0	SW846 8260B			4/22/19 12:28	DD	D
1,2-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/22/19 12:28	DD	D
1,3-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/22/19 12:28	DD	D
1,4-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/22/19 12:28	DD	D
Dichlorodifluoromethane	ND		ug/L	1.0	SW846 8260B			4/22/19 12:28	DD	D
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/22/19 12:28	DD	D
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/22/19 12:28	DD	D
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/22/19 12:28	DD	D
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/22/19 12:28	DD	D
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/22/19 12:28	DD	D
1,2-Dichloropropane	ND		ug/L	1.0	SW846 8260B			4/22/19 12:28	DD	D
cis-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			4/22/19 12:28	DD	D
trans-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			4/22/19 12:28	DD	D
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			4/22/19 12:28	DD	D
2-Hexanone	ND		ug/L	5.0	SW846 8260B			4/22/19 12:28	DD	D
Iodomethane	ND		ug/L	1.0	SW846 8260B			4/22/19 12:28	DD	D
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	SW846 8260B			4/22/19 12:28	DD	D

ANALYTICAL RESULTS

Workorder: 3028156 2ND QTR 2019 CWMP-FORM 19A

Lab ID: **3028156003** Date Collected: 4/15/2019 14:30 Matrix: Ground Water

Sample ID: **CWMP005W** Date Received: 4/15/2019 16:56

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			4/22/19 12:28	DD	D
Styrene	ND		ug/L	1.0	SW846 8260B			4/22/19 12:28	DD	D
1,1,1,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/22/19 12:28	DD	D
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/22/19 12:28	DD	D
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			4/22/19 12:28	DD	D
Toluene	ND		ug/L	1.0	SW846 8260B			4/22/19 12:28	DD	D
Total Xylenes	ND		ug/L	3.0	SW846 8260B			4/22/19 12:28	DD	D
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/22/19 12:28	DD	D
1,1,2-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/22/19 12:28	DD	D
Trichloroethene	ND		ug/L	1.0	SW846 8260B			4/22/19 12:28	DD	D
Trichlorofluoromethane	ND		ug/L	1.0	SW846 8260B			4/22/19 12:28	DD	D
1,2,3-Trichloropropane	ND		ug/L	2.0	SW846 8260B			4/22/19 12:28	DD	D
Vinyl Acetate	ND		ug/L	5.0	SW846 8260B			4/22/19 12:28	DD	D
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			4/22/19 12:28	DD	D
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	114		%	62 - 133	SW846 8260B			4/22/19 12:28	DD	D
4-Bromofluorobenzene (S)	106		%	79 - 114	SW846 8260B			4/22/19 12:28	DD	D
Dibromofluoromethane (S)	101		%	78 - 116	SW846 8260B			4/22/19 12:28	DD	D
Toluene-d8 (S)	95.7		%	76 - 127	SW846 8260B			4/22/19 12:28	DD	D
LIBRARY SEARCH - VOLATILES										
No TIC's Detected	.				Lib Search VOC			4/22/19 12:28	CPK	D
WET CHEMISTRY										
Alkalinity, Bicarbonate	13		mg/L	5	SM2320B-2011			4/17/19 22:59	MLM	F
Alkalinity, Total	13	3	mg/L	5	SM2320B-2011			4/17/19 22:59	MLM	F
Ammonia-N, Low Level	ND		mg/L	0.10	SM 4500-NH3G	4/26/19 18:00	NJA	4/27/19 13:12	NJA	
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			4/24/19 15:15	AK	H
Chloride	55.5		mg/L	2.0	EPA 300.0			4/16/19 19:03	CHW	F
Fluoride	ND		mg/L	0.20	EPA 300.0			4/16/19 19:03	CHW	F
Nitrate-N	7.1		mg/L	0.20	EPA 300.0			4/16/19 19:03	CHW	F
pH	6.01	2	pH_Units		S4500HB-11			4/17/19 22:59	MLM	F
Phenolics	ND		mg/L	0.005	SW846 9066	4/22/19 09:08	C_D	4/24/19 16:24	RXB	C
Specific Conductance	266		umhos/cm	1	SM2510B-2011			4/17/19 22:59	MLM	F
Sulfate	4.4		mg/L	2.0	EPA 300.0			4/16/19 19:03	CHW	F
Total Dissolved Solids	216		mg/L	5	S2540C-11			4/22/19 12:20	EXS	F
Total Organic Carbon (TOC)	1.0		mg/L	0.50	SM5310B-2011			4/18/19 08:22	PAG	A
Turbidity	0.20		NTU	0.10	SM2130B-2011			4/17/19 00:25	MBW	F

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ANALYTICAL RESULTS

Workorder: 3028156 2ND QTR 2019 CWMP-FORM 19A

Lab ID: **3028156003** Date Collected: 4/15/2019 14:30 Matrix: Ground Water

Sample ID: **CWMP005W** Date Received: 4/15/2019 16:56

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Antimony, Total	ND		mg/L	0.0022	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:00	MO	J1
Arsenic, Total	ND		mg/L	0.0033	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:00	MO	J1
Arsenic, Dissolved	ND		mg/L	0.0030	SW846 6020A	4/26/19 14:05	AHI	5/7/19 11:21	MO	I1
Barium, Total	0.042		mg/L	0.0056	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:00	MO	J1
Barium, Dissolved	0.043		mg/L	0.0056	SW846 6020A	4/26/19 14:05	AHI	5/7/19 11:21	MO	I1
Beryllium, Total	ND		mg/L	0.0011	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:00	MO	J1
Cadmium, Total	ND		mg/L	0.0011	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:00	MO	J1
Cadmium, Dissolved	ND		mg/L	0.0011	SW846 6020A	4/26/19 14:05	AHI	5/7/19 11:21	MO	I1
Calcium, Total	10.0		mg/L	0.11	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:00	MO	J1
Calcium, Dissolved	12.7		mg/L	0.11	SW846 6020A	4/26/19 14:05	AHI	5/7/19 11:21	MO	I1
Chromium, Total	ND		mg/L	0.0022	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:00	MO	J1
Chromium, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/26/19 14:05	AHI	5/7/19 11:21	MO	I1
Cobalt, Total	ND		mg/L	0.0056	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:00	MO	J1
Copper, Total	ND		mg/L	0.0056	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:00	MO	J1
Copper, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/26/19 14:05	AHI	5/7/19 11:21	MO	I1
Iron, Total	ND		mg/L	0.056	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:00	MO	J1
Iron, Dissolved	ND		mg/L	0.056	SW846 6020A	4/26/19 14:05	AHI	5/7/19 11:21	MO	I1
Lead, Total	ND		mg/L	0.0022	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:00	MO	J1
Lead, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/26/19 14:05	AHI	5/7/19 11:21	MO	I1
Magnesium, Total	6.5		mg/L	0.11	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:00	MO	J1
Magnesium, Dissolved	7.6		mg/L	0.11	SW846 6020A	4/26/19 14:05	AHI	5/7/19 11:21	MO	I1
Manganese, Total	0.036		mg/L	0.0056	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:00	MO	J1
Manganese, Dissolved	0.042		mg/L	0.0056	SW846 6020A	4/26/19 14:05	AHI	5/7/19 11:21	MO	I1
Mercury, Total	ND		mg/L	0.00050	SW846 7470A	4/21/19 23:35	MSA	4/22/19 03:36	MSA	J
Mercury, Dissolved	ND		mg/L	0.00050	SW846 7470A	4/21/19 23:35	MSA	4/22/19 03:20	MSA	I
Nickel, Total	ND		mg/L	0.0056	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:00	MO	J1
Potassium, Total	1.8		mg/L	0.11	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:00	MO	J1
Potassium, Dissolved	1.9		mg/L	0.11	SW846 6020A	4/26/19 14:05	AHI	5/7/19 11:21	MO	I1
Selenium, Total	ND		mg/L	0.0056	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:00	MO	J1
Selenium, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/26/19 14:05	AHI	5/7/19 11:21	MO	I1
Silver, Total	ND		mg/L	0.0022	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:00	MO	J1
Silver, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/26/19 14:05	AHI	5/7/19 11:21	MO	I1
Sodium, Total	24.7		mg/L	0.11	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:00	MO	J1
Sodium, Dissolved	28.8		mg/L	0.11	SW846 6020A	4/26/19 14:05	AHI	5/7/19 11:21	MO	I1
Thallium, Total	ND		mg/L	0.0011	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:00	MO	J1
Vanadium, Total	ND		mg/L	0.0022	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:00	MO	J1
Zinc, Total	0.0068		mg/L	0.0056	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:00	MO	J1

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ANALYTICAL RESULTS

Workorder: 3028156 2ND QTR 2019 CWMP-FORM 19A

Lab ID: **3028156003** Date Collected: 4/15/2019 14:30 Matrix: Ground Water

Sample ID: **CWMP005W** Date Received: 4/15/2019 16:56

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
Zinc, Dissolved	0.0081		mg/L	0.0056	SW846 6020A	4/26/19 14:05	AHI	5/7/19 11:21	MO	I1
FIELD PARAMETERS										
Depth to Water Level	34.31		Feet		Field			4/15/19 14:30	CLT	K
Elev Top MW Casing above MSL	513.43		Feet		Field			4/15/19 14:30	CLT	K
Flow Rate	3.37		gal/min		Field			4/15/19 14:30	CLT	K
Ground Water Elevation	479.12		ft/MSL		Field			4/15/19 14:30	CLT	K
pH, Field (SM4500B)	5.24		pH_Units		Field			4/15/19 14:30	CLT	K
Sample Depth	130.00		Feet		Field			4/15/19 14:30	CLT	K
Specific Conductance, Field	308		umhos/cm	1	Field			4/15/19 14:30	CLT	K
Temperature	10.63		Deg. C		Field			4/15/19 14:30	CLT	K
Total Well Depth	138.92		Feet		Field			4/15/19 14:30	CLT	K
Volume in Water Column	153.78		Gallons		Field			4/15/19 14:30	CLT	K
Water Level After Purge	36.31		Feet		Field			4/15/19 14:30	CLT	K
Well Volumes Purged	1.53		Vol		Field			4/15/19 14:30	CLT	K

Susan J. Scherer

Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 3028156 2ND QTR 2019 CWMP-FORM 19A

Lab ID: **3028156004** Date Collected: 4/15/2019 15:01 Matrix: Water

Sample ID: **Field Blank** Date Received: 4/15/2019 16:56

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	SW846 8260B			4/22/19 12:51	DD	A
Acrylonitrile	ND		ug/L	5.0	SW846 8260B			4/22/19 12:51	DD	A
Benzene	ND		ug/L	1.0	SW846 8260B			4/22/19 12:51	DD	A
Bromochloromethane	ND		ug/L	1.0	SW846 8260B			4/22/19 12:51	DD	A
Bromodichloromethane	ND		ug/L	1.0	SW846 8260B			4/22/19 12:51	DD	A
Bromoform	ND		ug/L	1.0	SW846 8260B			4/22/19 12:51	DD	A
Bromomethane	ND	1	ug/L	1.0	SW846 8260B			4/22/19 12:51	DD	A
2-Butanone	ND		ug/L	10.0	SW846 8260B			4/22/19 12:51	DD	A
Carbon Disulfide	ND		ug/L	1.0	SW846 8260B			4/22/19 12:51	DD	A
Carbon Tetrachloride	ND		ug/L	1.0	SW846 8260B			4/22/19 12:51	DD	A
Chlorobenzene	ND		ug/L	1.0	SW846 8260B			4/22/19 12:51	DD	A
Chlorodibromomethane	ND		ug/L	1.0	SW846 8260B			4/22/19 12:51	DD	A
Chloroethane	ND		ug/L	1.0	SW846 8260B			4/22/19 12:51	DD	A
Chloroform	ND		ug/L	1.0	SW846 8260B			4/22/19 12:51	DD	A
Chloromethane	ND		ug/L	1.0	SW846 8260B			4/22/19 12:51	DD	A
3-Chloro-1-propene	ND		ug/L	1.0	SW846 8260B			4/22/19 12:51	DD	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	SW846 8260B			4/22/19 12:51	DD	A
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			4/22/19 12:51	DD	A
Dibromomethane	ND		ug/L	1.0	SW846 8260B			4/22/19 12:51	DD	A
trans-1,4-Dichloro-2-butene	ND		ug/L	3.0	SW846 8260B			4/22/19 12:51	DD	A
1,2-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/22/19 12:51	DD	A
1,3-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/22/19 12:51	DD	A
1,4-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/22/19 12:51	DD	A
Dichlorodifluoromethane	ND		ug/L	1.0	SW846 8260B			4/22/19 12:51	DD	A
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/22/19 12:51	DD	A
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/22/19 12:51	DD	A
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/22/19 12:51	DD	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/22/19 12:51	DD	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/22/19 12:51	DD	A
1,2-Dichloropropane	ND		ug/L	1.0	SW846 8260B			4/22/19 12:51	DD	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			4/22/19 12:51	DD	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			4/22/19 12:51	DD	A
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			4/22/19 12:51	DD	A
2-Hexanone	ND		ug/L	5.0	SW846 8260B			4/22/19 12:51	DD	A
Iodomethane	ND		ug/L	1.0	SW846 8260B			4/22/19 12:51	DD	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	SW846 8260B			4/22/19 12:51	DD	A

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ANALYTICAL RESULTS

Workorder: 3028156 2ND QTR 2019 CWMP-FORM 19A

Lab ID: **3028156004** Date Collected: 4/15/2019 15:01 Matrix: Water

Sample ID: **Field Blank** Date Received: 4/15/2019 16:56

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			4/22/19 12:51	DD	A
Styrene	ND		ug/L	1.0	SW846 8260B			4/22/19 12:51	DD	A
1,1,1,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/22/19 12:51	DD	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/22/19 12:51	DD	A
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			4/22/19 12:51	DD	A
Toluene	ND		ug/L	1.0	SW846 8260B			4/22/19 12:51	DD	A
Total Xylenes	ND		ug/L	3.0	SW846 8260B			4/22/19 12:51	DD	A
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/22/19 12:51	DD	A
1,1,2-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/22/19 12:51	DD	A
Trichloroethene	ND		ug/L	1.0	SW846 8260B			4/22/19 12:51	DD	A
Trichlorofluoromethane	ND		ug/L	1.0	SW846 8260B			4/22/19 12:51	DD	A
1,2,3-Trichloropropane	ND		ug/L	2.0	SW846 8260B			4/22/19 12:51	DD	A
Vinyl Acetate	ND		ug/L	5.0	SW846 8260B			4/22/19 12:51	DD	A
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			4/22/19 12:51	DD	A
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	113		%	62 - 133	SW846 8260B			4/22/19 12:51	DD	A
4-Bromofluorobenzene (S)	104		%	79 - 114	SW846 8260B			4/22/19 12:51	DD	A
Dibromofluoromethane (S)	104		%	78 - 116	SW846 8260B			4/22/19 12:51	DD	A
Toluene-d8 (S)	97.3		%	76 - 127	SW846 8260B			4/22/19 12:51	DD	A
LIBRARY SEARCH - VOLATILES										
No TIC's Detected	.				Lib Search VOC			4/22/19 12:51	CPK	A

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Project Coordinator

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ANALYTICAL RESULTS

Workorder: 3028156 2ND QTR 2019 CWMP-FORM 19A

Lab ID: **3028156005** Date Collected: 4/15/2019 16:56 Matrix: Water

Sample ID: **Trip Blank** Date Received: 4/15/2019 16:56

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	SW846 8260B			4/22/19 13:14	DD	A
Acrylonitrile	ND		ug/L	5.0	SW846 8260B			4/22/19 13:14	DD	A
Benzene	ND		ug/L	1.0	SW846 8260B			4/22/19 13:14	DD	A
Bromochloromethane	ND		ug/L	1.0	SW846 8260B			4/22/19 13:14	DD	A
Bromodichloromethane	ND		ug/L	1.0	SW846 8260B			4/22/19 13:14	DD	A
Bromoform	ND		ug/L	1.0	SW846 8260B			4/22/19 13:14	DD	A
Bromomethane	ND	1	ug/L	1.0	SW846 8260B			4/22/19 13:14	DD	A
2-Butanone	ND		ug/L	10.0	SW846 8260B			4/22/19 13:14	DD	A
Carbon Disulfide	ND		ug/L	1.0	SW846 8260B			4/22/19 13:14	DD	A
Carbon Tetrachloride	ND		ug/L	1.0	SW846 8260B			4/22/19 13:14	DD	A
Chlorobenzene	ND		ug/L	1.0	SW846 8260B			4/22/19 13:14	DD	A
Chlorodibromomethane	ND		ug/L	1.0	SW846 8260B			4/22/19 13:14	DD	A
Chloroethane	ND		ug/L	1.0	SW846 8260B			4/22/19 13:14	DD	A
Chloroform	ND		ug/L	1.0	SW846 8260B			4/22/19 13:14	DD	A
Chloromethane	ND		ug/L	1.0	SW846 8260B			4/22/19 13:14	DD	A
3-Chloro-1-propene	ND		ug/L	1.0	SW846 8260B			4/22/19 13:14	DD	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	SW846 8260B			4/22/19 13:14	DD	A
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			4/22/19 13:14	DD	A
Dibromomethane	ND		ug/L	1.0	SW846 8260B			4/22/19 13:14	DD	A
trans-1,4-Dichloro-2-butene	ND		ug/L	3.0	SW846 8260B			4/22/19 13:14	DD	A
1,2-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/22/19 13:14	DD	A
1,3-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/22/19 13:14	DD	A
1,4-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/22/19 13:14	DD	A
Dichlorodifluoromethane	ND		ug/L	1.0	SW846 8260B			4/22/19 13:14	DD	A
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/22/19 13:14	DD	A
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/22/19 13:14	DD	A
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/22/19 13:14	DD	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/22/19 13:14	DD	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/22/19 13:14	DD	A
1,2-Dichloropropane	ND		ug/L	1.0	SW846 8260B			4/22/19 13:14	DD	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			4/22/19 13:14	DD	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			4/22/19 13:14	DD	A
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			4/22/19 13:14	DD	A
2-Hexanone	ND		ug/L	5.0	SW846 8260B			4/22/19 13:14	DD	A
Iodomethane	ND		ug/L	1.0	SW846 8260B			4/22/19 13:14	DD	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	SW846 8260B			4/22/19 13:14	DD	A

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ANALYTICAL RESULTS

Workorder: 3028156 2ND QTR 2019 CWMP-FORM 19A

Lab ID: **3028156005** Date Collected: 4/15/2019 16:56 Matrix: Water

Sample ID: **Trip Blank** Date Received: 4/15/2019 16:56

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			4/22/19 13:14	DD	A
Styrene	ND		ug/L	1.0	SW846 8260B			4/22/19 13:14	DD	A
1,1,1,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/22/19 13:14	DD	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/22/19 13:14	DD	A
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			4/22/19 13:14	DD	A
Toluene	ND		ug/L	1.0	SW846 8260B			4/22/19 13:14	DD	A
Total Xylenes	ND		ug/L	3.0	SW846 8260B			4/22/19 13:14	DD	A
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/22/19 13:14	DD	A
1,1,2-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/22/19 13:14	DD	A
Trichloroethene	ND		ug/L	1.0	SW846 8260B			4/22/19 13:14	DD	A
Trichlorofluoromethane	ND		ug/L	1.0	SW846 8260B			4/22/19 13:14	DD	A
1,2,3-Trichloropropane	ND		ug/L	2.0	SW846 8260B			4/22/19 13:14	DD	A
Vinyl Acetate	ND		ug/L	5.0	SW846 8260B			4/22/19 13:14	DD	A
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			4/22/19 13:14	DD	A
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	123		%	62 - 133	SW846 8260B			4/22/19 13:14	DD	A
4-Bromofluorobenzene (S)	106		%	79 - 114	SW846 8260B			4/22/19 13:14	DD	A
Dibromofluoromethane (S)	124	2	%	78 - 116	SW846 8260B			4/22/19 13:14	DD	A
Toluene-d8 (S)	97.1		%	76 - 127	SW846 8260B			4/22/19 13:14	DD	A
LIBRARY SEARCH - VOLATILES										
No TIC's Detected	.				Lib Search VOC			4/22/19 13:14	CPK	A

Ms. Susan J Scherer
Project Coordinator

ANALYTICAL RESULTS

Workorder: 3028156 2ND QTR 2019 CWMP-FORM 19A

PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
3028156001	1	CWMP007W	SW846 9066	Phenolics
The recovery of the Matrix Spike (MS) associated to this analyte was outside of the established control limits.				
3028156001	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.				
3028156001	3	CWMP007W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
3028156002	1	CWMP001W	S4500HB-11	pH
The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.				
3028156002	2	CWMP001W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
3028156003	1	CWMP005W	SW846 8260B	Bromomethane
The QC sample type LCS for method SW846 8260B was outside the control limits for the analyte Bromomethane. The % Recovery was reported as 43 and the control limits were 45 to 148.				
3028156003	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.				
3028156003	3	CWMP005W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
3028156004	1	Field Blank	SW846 8260B	Bromomethane
The QC sample type LCS for method SW846 8260B was outside the control limits for the analyte Bromomethane. The % Recovery was reported as 43 and the control limits were 45 to 148.				
3028156005	1	Trip Blank	SW846 8260B	Bromomethane
The QC sample type LCS for method SW846 8260B was outside the control limits for the analyte Bromomethane. The % Recovery was reported as 43 and the control limits were 45 to 148.				
3028156005	2	Trip Blank	SW846 8260B	Dibromofluoromethane
The surrogate Dibromofluoromethane for method SW846 8260B was outside of control limits. The % Recovery was reported as 124 and the control limits were 78 to 116. This result was reported at a dilution of 1.				

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ANALYSIS - PREP METHOD CROSS REFERENCE TABLE

Workorder: 3028156 2ND QTR 2019 CWMP-FORM 19A

Lab ID	Sample ID	Analysis Method	Prep Method
3028156001	CWMP007W	EPA 300.0	
3028156001	CWMP007W	EPA 410.4	
3028156001	CWMP007W	Field	
3028156001	CWMP007W	Lib Search VOC	
3028156001	CWMP007W	S2540C-11	
3028156001	CWMP007W	S4500HB-11	
3028156001	CWMP007W	SM 4500-NH3G	S4500NH3B
3028156001	CWMP007W	SM2130B-2011	
3028156001	CWMP007W	SM2320B-2011	
3028156001	CWMP007W	SM2510B-2011	
3028156001	CWMP007W	SM5310B-2011	
3028156001	CWMP007W	SW846 6020A	SW846 3015
3028156001	CWMP007W	SW846 7470A	SW846 7470A
3028156001	CWMP007W	SW846 8260B	
3028156001	CWMP007W	SW846 9066	420.4/9066
3028156002	CWMP001W	EPA 300.0	
3028156002	CWMP001W	EPA 410.4	
3028156002	CWMP001W	Field	
3028156002	CWMP001W	Lib Search VOC	
3028156002	CWMP001W	S2540C-11	
3028156002	CWMP001W	S4500HB-11	
3028156002	CWMP001W	SM 4500-NH3G	S4500NH3B
3028156002	CWMP001W	SM2130B-2011	
3028156002	CWMP001W	SM2320B-2011	
3028156002	CWMP001W	SM2510B-2011	
3028156002	CWMP001W	SM5310B-2011	
3028156002	CWMP001W	SW846 6020A	SW846 3015
3028156002	CWMP001W	SW846 7470A	SW846 7470A
3028156002	CWMP001W	SW846 8260B	
3028156002	CWMP001W	SW846 9066	420.4/9066
3028156003	CWMP005W	EPA 300.0	
3028156003	CWMP005W	EPA 410.4	
3028156003	CWMP005W	Field	
3028156003	CWMP005W	Lib Search VOC	
3028156003	CWMP005W	S2540C-11	
3028156003	CWMP005W	S4500HB-11	
3028156003	CWMP005W	SM 4500-NH3G	S4500NH3B
3028156003	CWMP005W	SM2130B-2011	
3028156003	CWMP005W	SM2320B-2011	
3028156003	CWMP005W	SM2510B-2011	
3028156003	CWMP005W	SM5310B-2011	
3028156003	CWMP005W	SW846 6020A	SW846 3015
3028156003	CWMP005W	SW846 7470A	SW846 7470A
3028156003	CWMP005W	SW846 8260B	
3028156003	CWMP005W	SW846 9066	420.4/9066
3028156004	Field Blank	Lib Search VOC	

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ANALYSIS - PREP METHOD CROSS REFERENCE TABLE

Workorder: 3028156 2ND QTR 2019 CWMP-FORM 19A

Lab ID	Sample ID	Analysis Method	Prep Method
3028156004	Field Blank	SW846 8260B	
3028156005	Trip Blank	Lib Search VOC	
3028156005	Trip Blank	SW846 8260B	

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CHAIN OF CUSTODY/ REQUEST FOR ANALYSIS

Generated by ALS

CC AL

* 3 0 2 8 1 5 6 *

1 of 1

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

Client Name: Lancaster County Solid Waste MA

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

Contact: Mark Reider

Phone#: (717) 735-0193

Project Name/#: Creswell/GWMP Form 19A

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	125 ml	40 ml	1 L	500 ml	—	—	250 ml	125 ml	125 ml
Preservative	HCl	H2SO4	HCl	None	None	—	—	H2SO4	HNO3	HNO3

ANALYSES/METHOD REQUESTED

Sample Description/Location (as it will appear on the lab report)	Sample Date	Time	*G or C	**Matrix	TOC	O-OH	8260 VOCs - Form 19A + Subtitle D + TICs	pH, Cl, SpC, F, SO4, NO3, Tb, TDS	Alkalinity, HCO3	*FM	Sample Depth for AUX Data	NH3-N, COD	Diss Metals Form 19A (Field Filered)	Total Metals Form 19A + Subtitle D
					Enter Number of Containers Per Sample or Field Results Below.									
1. CWMP007W	04/15/19	1106	G	GW	2	1	2	X1	X1	x	x	1	1	1
2. CWMP001W	04/15/19	1240	G	GW	2	1	2	X1	X1	x	x	1	1	1
3. CWMP005W	04/15/19	1430	G	GW	2	1	2	X1	X1	x	x	1	1	1
4. Field Blank	04/15/19	1501	G	GW			2		DW 4/16					
5. Trip Blank	04/15/19	1659	G	GW			2							
6														
7														
8														
9														
10														

(Receipt information completed by Receiving Lab) 4/16 299

Cooler Temp: 3°C Therm ID: 401

No. of Coolers: _____

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

Courier/Tracking #:

Sample/COC Comments

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

Project Comments:

LOGGED BY(signature): Date: Time:

REVIEWED BY(signature): Date: Time:

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
1 DGoodhall ALS	4-15-19	1656	2 gw FED	4/15/19	1656
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

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

Condition of Sample Receipt Form

Client: LCSWMA | Work Order #: 3028156 | Initials: DN | Date: 4/16

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

Cooler #: _____

Temperature (°C): 3

Thermometer ID: 4C1

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

Rev. 1/10/2019

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May 17, 2019

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

Certificate of Analysis

Project Name:	**CRESWELL**	Workorder:	**3028580**
Purchase Order:	**PO1000127**	Workorder ID:	**2ND QTR 2019 CWMP-FORM 19A**

Dear Mr. Brown:

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

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

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

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

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

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

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

Susan J. Scherer

Ms. Susan J Scherer
Project Coordinator

ALS Environmental

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SAMPLE SUMMARY

Workorder: 3028580 2ND QTR 2019 CWMP-FORM 19A

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
3028580001	CWMP002W	Ground Water	4/17/2019 11:20	4/17/2019 16:16	Mr. Brian G Shade
3028580002	CWMP004W	Ground Water	4/17/2019 13:51	4/17/2019 16:16	Mr. Brian G Shade
3028580003	CWMP003W	Ground Water	4/17/2019 13:41	4/17/2019 16:16	Mr. Brian G Shade

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SAMPLE SUMMARY

Workorder: 3028580 2ND QTR 2019 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 incubator and the "Analyzed" value is the date/time out the incubator.
-- An Analysis-Prep Method Cross Reference Table is included after Analytical Results & Qualifiers section in this report.

Standard Acronyms/Flags

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

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ANALYTICAL RESULTS

Workorder: 3028580 2ND QTR 2019 CWMP-FORM 19A

Lab ID: **3028580001** Date Collected: 4/17/2019 11:20 Matrix: Ground Water

Sample ID: **CWMP002W** Date Received: 4/17/2019 16:16

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	SW846 8260B			4/23/19 23:41	PDK	J
Acrylonitrile	ND		ug/L	5.0	SW846 8260B			4/23/19 23:41	PDK	J
Benzene	ND		ug/L	1.0	SW846 8260B			4/23/19 23:41	PDK	J
Bromochloromethane	ND		ug/L	1.0	SW846 8260B			4/23/19 23:41	PDK	J
Bromodichloromethane	ND		ug/L	1.0	SW846 8260B			4/23/19 23:41	PDK	J
Bromoform	ND		ug/L	1.0	SW846 8260B			4/23/19 23:41	PDK	J
Bromomethane	ND		ug/L	1.0	SW846 8260B			4/23/19 23:41	PDK	J
2-Butanone	ND		ug/L	10.0	SW846 8260B			4/23/19 23:41	PDK	J
Carbon Disulfide	ND		ug/L	1.0	SW846 8260B			4/23/19 23:41	PDK	J
Carbon Tetrachloride	ND		ug/L	1.0	SW846 8260B			4/23/19 23:41	PDK	J
Chlorobenzene	ND		ug/L	1.0	SW846 8260B			4/23/19 23:41	PDK	J
Chlorodibromomethane	ND		ug/L	1.0	SW846 8260B			4/23/19 23:41	PDK	J
Chloroethane	26.2		ug/L	1.0	SW846 8260B			4/23/19 23:41	PDK	J
Chloroform	ND		ug/L	1.0	SW846 8260B			4/23/19 23:41	PDK	J
Chloromethane	ND		ug/L	1.0	SW846 8260B			4/23/19 23:41	PDK	J
3-Chloro-1-propene	ND		ug/L	1.0	SW846 8260B			4/23/19 23:41	PDK	J
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	SW846 8260B			4/23/19 23:41	PDK	J
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			4/23/19 23:41	PDK	J
Dibromomethane	ND		ug/L	1.0	SW846 8260B			4/23/19 23:41	PDK	J
trans-1,4-Dichloro-2-butene	ND		ug/L	3.0	SW846 8260B			4/23/19 23:41	PDK	J
1,2-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/23/19 23:41	PDK	J
1,3-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/23/19 23:41	PDK	J
1,4-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/23/19 23:41	PDK	J
Dichlorodifluoromethane	ND		ug/L	1.0	SW846 8260B			4/23/19 23:41	PDK	J
1,1-Dichloroethane	10.8		ug/L	1.0	SW846 8260B			4/23/19 23:41	PDK	J
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/23/19 23:41	PDK	J
1,1-Dichloroethene	ND	8	ug/L	1.0	SW846 8260B			4/23/19 23:41	PDK	J
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/23/19 23:41	PDK	J
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/23/19 23:41	PDK	J
1,2-Dichloropropane	ND		ug/L	1.0	SW846 8260B			4/23/19 23:41	PDK	J
cis-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			4/23/19 23:41	PDK	J
trans-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			4/23/19 23:41	PDK	J
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			4/23/19 23:41	PDK	J
2-Hexanone	ND		ug/L	5.0	SW846 8260B			4/23/19 23:41	PDK	J
Iodomethane	ND		ug/L	1.0	SW846 8260B			4/23/19 23:41	PDK	J
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	SW846 8260B			4/23/19 23:41	PDK	J

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

ANALYTICAL RESULTS

Workorder: 3028580 2ND QTR 2019 CWMP-FORM 19A

Lab ID: **3028580001** Date Collected: 4/17/2019 11:20 Matrix: Ground Water
Sample ID: **CWMP002W** Date Received: 4/17/2019 16:16

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			4/23/19 23:41	PDK	J
Styrene	ND		ug/L	1.0	SW846 8260B			4/23/19 23:41	PDK	J
1,1,1,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/23/19 23:41	PDK	J
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/23/19 23:41	PDK	J
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			4/23/19 23:41	PDK	J
Toluene	ND		ug/L	1.0	SW846 8260B			4/23/19 23:41	PDK	J
Total Xylenes	ND		ug/L	3.0	SW846 8260B			4/23/19 23:41	PDK	J
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/23/19 23:41	PDK	J
1,1,2-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/23/19 23:41	PDK	J
Trichloroethene	ND		ug/L	1.0	SW846 8260B			4/23/19 23:41	PDK	J
Trichlorofluoromethane	ND		ug/L	1.0	SW846 8260B			4/23/19 23:41	PDK	J
1,2,3-Trichloropropane	ND		ug/L	2.0	SW846 8260B			4/23/19 23:41	PDK	J
Vinyl Acetate	ND		ug/L	5.0	SW846 8260B			4/23/19 23:41	PDK	J
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			4/23/19 23:41	PDK	J
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	106		%	62 - 133	SW846 8260B			4/23/19 23:41	PDK	J
4-Bromofluorobenzene (S)	103		%	79 - 114	SW846 8260B			4/23/19 23:41	PDK	J
Dibromofluoromethane (S)	98.6		%	78 - 116	SW846 8260B			4/23/19 23:41	PDK	J
Toluene-d8 (S)	99.4		%	76 - 127	SW846 8260B			4/23/19 23:41	PDK	J
Library Search - Volatiles										
Unknown	6.0	J	ug/L		SW846 8260B			4/23/19 23:41	PDK	J
Unknown	27.6	J	ug/L		SW846 8260B			4/23/19 23:41	PDK	J
Isobutane	2.2	J N	ug/L		SW846 8260B			4/23/19 23:41	PDK	J
WET CHEMISTRY										
Alkalinity, Bicarbonate	78		mg/L	5	SM2320B-2011			4/20/19 09:18	MLM	B
Alkalinity, Total	78	1	mg/L	5	SM2320B-2011			4/20/19 09:18	MLM	A
Ammonia-N, Low Level	0.34		mg/L	0.10	SM 4500-NH3G	4/29/19 12:00	NJA	4/29/19 16:28	NJA	
Chemical Oxygen Demand (COD)	17		mg/L	15	EPA 410.4			4/25/19 13:19	AK	C
Chloride	96.8		mg/L	2.0	EPA 300.0			4/18/19 07:34	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			4/18/19 07:34	CHW	B
Nitrate-N	3.4		mg/L	0.20	EPA 300.0			4/18/19 07:34	CHW	B
pH	6.38	2	pH_Units		S4500HB-11			4/20/19 09:18	MLM	B
Phenolics	ND		mg/L	0.005	SW846 9066	4/22/19 09:08	C_D	4/24/19 16:24	RXB	I
Specific Conductance	582		umhos/cm	1	SM2510B-2011			4/20/19 09:18	MLM	B
Sulfate	15.0		mg/L	2.0	EPA 300.0			4/18/19 07:34	CHW	B
Total Dissolved Solids	285	3	mg/L	5	S2540C-11			4/23/19 17:00	EXS	B

ANALYTICAL RESULTS

Workorder: 3028580 2ND QTR 2019 CWMP-FORM 19A

Lab ID: **3028580001** Date Collected: 4/17/2019 11:20 Matrix: Ground Water

Sample ID: **CWMP002W** Date Received: 4/17/2019 16:16

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
Total Organic Carbon (TOC)	5.4		mg/L	0.50	SM5310B-2011			4/23/19 12:24	PAG	G
Turbidity	0.14		NTU	0.10	SM2130B-2011			4/18/19 05:37	CHW	B
METALS										
Antimony, Total	ND		mg/L	0.0040	SW846 6020A	4/27/19 16:05	AHI	5/10/19 14:38	MO	E1
Arsenic, Total	ND		mg/L	0.0059	SW846 6020A	4/27/19 16:05	AHI	5/10/19 14:38	MO	E1
Arsenic, Dissolved	ND		mg/L	0.0030	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:27	MO	D1
Barium, Total	0.065		mg/L	0.010	SW846 6020A	4/27/19 16:05	AHI	5/10/19 14:38	MO	E1
Barium, Dissolved	0.062		mg/L	0.0056	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:27	MO	D1
Beryllium, Total	ND	7	mg/L	0.0020	SW846 6020A	4/27/19 16:05	AHI	5/10/19 14:38	MO	E1
Cadmium, Total	ND		mg/L	0.0020	SW846 6020A	4/27/19 16:05	AHI	5/10/19 14:38	MO	E1
Cadmium, Dissolved	ND		mg/L	0.0011	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:27	MO	D1
Calcium, Total	43.4		mg/L	0.20	SW846 6020A	4/27/19 16:05	AHI	5/10/19 14:38	MO	E1
Calcium, Dissolved	38.6		mg/L	0.11	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:27	MO	D1
Chromium, Total	ND		mg/L	0.0040	SW846 6020A	4/27/19 16:05	AHI	5/10/19 14:38	MO	E1
Chromium, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:27	MO	D1
Cobalt, Total	0.023		mg/L	0.010	SW846 6020A	4/27/19 16:05	AHI	5/10/19 14:38	MO	E1
Copper, Total	ND		mg/L	0.010	SW846 6020A	4/27/19 16:05	AHI	5/10/19 14:38	MO	E1
Copper, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:27	MO	D1
Iron, Total	ND		mg/L	0.10	SW846 6020A	4/27/19 16:05	AHI	5/10/19 14:38	MO	E1
Iron, Dissolved	ND		mg/L	0.056	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:27	MO	D1
Lead, Total	ND		mg/L	0.0040	SW846 6020A	4/27/19 16:05	AHI	5/10/19 14:38	MO	E1
Lead, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:27	MO	D1
Magnesium, Total	16.4		mg/L	0.20	SW846 6020A	4/27/19 16:05	AHI	5/10/19 14:38	MO	E1
Magnesium, Dissolved	16.1		mg/L	0.11	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:27	MO	D1
Manganese, Total	0.89	4	mg/L	0.010	SW846 6020A	4/27/19 16:05	AHI	5/10/19 14:38	MO	E1
Manganese, Dissolved	0.82		mg/L	0.0056	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:27	MO	D1
Mercury, Total	ND		mg/L	0.00050	SW846 7470A	4/23/19 04:37	MSA	4/23/19 09:50	MSA	E
Mercury, Dissolved	ND		mg/L	0.00050	SW846 7470A	4/23/19 04:37	MSA	4/23/19 10:20	MSA	D
Nickel, Total	0.026		mg/L	0.010	SW846 6020A	4/27/19 16:05	AHI	5/10/19 14:38	MO	E1
Potassium, Total	2.3		mg/L	0.20	SW846 6020A	4/27/19 16:05	AHI	5/10/19 14:38	MO	E1
Potassium, Dissolved	2.3		mg/L	0.11	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:27	MO	D1
Selenium, Total	ND		mg/L	0.010	SW846 6020A	4/27/19 16:05	AHI	5/10/19 14:38	MO	E1
Selenium, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:27	MO	D1
Silver, Total	ND	5	mg/L	0.0040	SW846 6020A	4/27/19 16:05	AHI	5/10/19 14:38	MO	E1
Silver, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:27	MO	D1
Sodium, Total	22.9		mg/L	0.20	SW846 6020A	4/27/19 16:05	AHI	5/10/19 14:38	MO	E1
Sodium, Dissolved	21.8		mg/L	0.11	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:27	MO	D1
Thallium, Total	ND		mg/L	0.0020	SW846 6020A	4/27/19 16:05	AHI	5/10/19 14:38	MO	E1

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

ANALYTICAL RESULTS

Workorder: 3028580 2ND QTR 2019 CWMP-FORM 19A

Lab ID: **3028580001** Date Collected: 4/17/2019 11:20 Matrix: Ground Water

Sample ID: **CWMP002W** Date Received: 4/17/2019 16:16

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
Vanadium, Total	ND		mg/L	0.0040	SW846 6020A	4/27/19 16:05	AHI	5/10/19 14:38	MO	E1
Zinc, Total	ND	6	mg/L	0.010	SW846 6020A	4/27/19 16:05	AHI	5/10/19 14:38	MO	E1
Zinc, Dissolved	0.0097		mg/L	0.0056	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:27	MO	D1
FIELD PARAMETERS										
Depth to Water Level	68.28		Feet		Field			4/17/19 11:20	CLT	F
Elev Top MW Casing above MSL	525.81		Feet		Field			4/17/19 11:20	CLT	F
Ground Water Elevation	457.53		ft/MSL		Field			4/17/19 11:20	CLT	F
pH, Field (SM4500B)	5.57		pH_Units		Field			4/17/19 11:20	CLT	F
Sample Depth	85.00		Feet		Field			4/17/19 11:20	CLT	F
Specific Conductance, Field	608		umhos/cm	1	Field			4/17/19 11:20	CLT	F
Temperature	11.10		Deg. C		Field			4/17/19 11:20	CLT	F
Total Well Depth	100.00		Feet		Field			4/17/19 11:20	CLT	F

Ms. Susan J Scherer
Project Coordinator

ANALYTICAL RESULTS

Workorder: 3028580 2ND QTR 2019 CWMP-FORM 19A

Lab ID: **3028580002** Date Collected: 4/17/2019 13:51 Matrix: Ground Water

Sample ID: **CWMP004W** Date Received: 4/17/2019 16:16

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	SW846 8260B			4/24/19 00:04	PDK	J
Acrylonitrile	ND		ug/L	5.0	SW846 8260B			4/24/19 00:04	PDK	J
Benzene	ND		ug/L	1.0	SW846 8260B			4/24/19 00:04	PDK	J
Bromochloromethane	ND		ug/L	1.0	SW846 8260B			4/24/19 00:04	PDK	J
Bromodichloromethane	ND		ug/L	1.0	SW846 8260B			4/24/19 00:04	PDK	J
Bromoform	ND		ug/L	1.0	SW846 8260B			4/24/19 00:04	PDK	J
Bromomethane	ND		ug/L	1.0	SW846 8260B			4/24/19 00:04	PDK	J
2-Butanone	ND		ug/L	10.0	SW846 8260B			4/24/19 00:04	PDK	J
Carbon Disulfide	ND		ug/L	1.0	SW846 8260B			4/24/19 00:04	PDK	J
Carbon Tetrachloride	ND		ug/L	1.0	SW846 8260B			4/24/19 00:04	PDK	J
Chlorobenzene	ND		ug/L	1.0	SW846 8260B			4/24/19 00:04	PDK	J
Chlorodibromomethane	ND		ug/L	1.0	SW846 8260B			4/24/19 00:04	PDK	J
Chloroethane	ND		ug/L	1.0	SW846 8260B			4/24/19 00:04	PDK	J
Chloroform	ND		ug/L	1.0	SW846 8260B			4/24/19 00:04	PDK	J
Chloromethane	ND		ug/L	1.0	SW846 8260B			4/24/19 00:04	PDK	J
3-Chloro-1-propene	ND		ug/L	1.0	SW846 8260B			4/24/19 00:04	PDK	J
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	SW846 8260B			4/24/19 00:04	PDK	J
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			4/24/19 00:04	PDK	J
Dibromomethane	ND		ug/L	1.0	SW846 8260B			4/24/19 00:04	PDK	J
trans-1,4-Dichloro-2-butene	ND		ug/L	3.0	SW846 8260B			4/24/19 00:04	PDK	J
1,2-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/24/19 00:04	PDK	J
1,3-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/24/19 00:04	PDK	J
1,4-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/24/19 00:04	PDK	J
Dichlorodifluoromethane	ND		ug/L	1.0	SW846 8260B			4/24/19 00:04	PDK	J
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/24/19 00:04	PDK	J
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/24/19 00:04	PDK	J
1,1-Dichloroethene	ND	3	ug/L	1.0	SW846 8260B			4/24/19 00:04	PDK	J
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/24/19 00:04	PDK	J
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/24/19 00:04	PDK	J
1,2-Dichloropropane	ND		ug/L	1.0	SW846 8260B			4/24/19 00:04	PDK	J
cis-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			4/24/19 00:04	PDK	J
trans-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			4/24/19 00:04	PDK	J
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			4/24/19 00:04	PDK	J
2-Hexanone	ND		ug/L	5.0	SW846 8260B			4/24/19 00:04	PDK	J
Iodomethane	ND		ug/L	1.0	SW846 8260B			4/24/19 00:04	PDK	J
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	SW846 8260B			4/24/19 00:04	PDK	J

ANALYTICAL RESULTS

Workorder: 3028580 2ND QTR 2019 CWMP-FORM 19A

Lab ID: **3028580002** Date Collected: 4/17/2019 13:51 Matrix: Ground Water

Sample ID: **CWMP004W** Date Received: 4/17/2019 16:16

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			4/24/19 00:04	PDK	J
Styrene	ND		ug/L	1.0	SW846 8260B			4/24/19 00:04	PDK	J
1,1,1,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/24/19 00:04	PDK	J
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/24/19 00:04	PDK	J
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			4/24/19 00:04	PDK	J
Toluene	ND		ug/L	1.0	SW846 8260B			4/24/19 00:04	PDK	J
Total Xylenes	ND		ug/L	3.0	SW846 8260B			4/24/19 00:04	PDK	J
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/24/19 00:04	PDK	J
1,1,2-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/24/19 00:04	PDK	J
Trichloroethene	ND		ug/L	1.0	SW846 8260B			4/24/19 00:04	PDK	J
Trichlorofluoromethane	ND		ug/L	1.0	SW846 8260B			4/24/19 00:04	PDK	J
1,2,3-Trichloropropane	ND		ug/L	2.0	SW846 8260B			4/24/19 00:04	PDK	J
Vinyl Acetate	ND		ug/L	5.0	SW846 8260B			4/24/19 00:04	PDK	J
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			4/24/19 00:04	PDK	J
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	107		%	62 - 133	SW846 8260B			4/24/19 00:04	PDK	J
4-Bromofluorobenzene (S)	106		%	79 - 114	SW846 8260B			4/24/19 00:04	PDK	J
Dibromofluoromethane (S)	97.6		%	78 - 116	SW846 8260B			4/24/19 00:04	PDK	J
Toluene-d8 (S)	101		%	76 - 127	SW846 8260B			4/24/19 00:04	PDK	J
LIBRARY SEARCH - VOLATILES										
No TIC's Detected	.				Lib Search VOC			4/24/19 00:04	CPK	J
WET CHEMISTRY										
Alkalinity, Bicarbonate	16		mg/L	5	SM2320B-2011			4/20/19 09:26	MLM	B
Alkalinity, Total	16	1	mg/L	5	SM2320B-2011			4/20/19 09:26	MLM	A
Ammonia-N, Low Level	ND		mg/L	0.10	SM 4500-NH3G	4/29/19 12:00	NJA	4/29/19 16:28	NJA	
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			4/25/19 13:19	AK	C
Chloride	51.5		mg/L	2.0	EPA 300.0			4/18/19 07:49	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			4/18/19 07:49	CHW	B
Nitrate-N	6.2		mg/L	0.20	EPA 300.0			4/18/19 07:49	CHW	B
pH	6.49	2	pH_Units		S4500HB-11			4/20/19 09:26	MLM	B
Phenolics	ND		mg/L	0.005	SW846 9066	4/22/19 09:08	C_D	4/24/19 16:24	RXB	I
Specific Conductance	291		umhos/cm	1	SM2510B-2011			4/20/19 09:26	MLM	B
Sulfate	6.1		mg/L	2.0	EPA 300.0			4/18/19 07:49	CHW	B
Total Dissolved Solids	219		mg/L	5	S2540C-11			4/23/19 17:00	EXS	B
Total Organic Carbon (TOC)	1.5		mg/L	0.50	SM5310B-2011			4/23/19 12:24	PAG	G
Turbidity	ND		NTU	0.10	SM2130B-2011			4/18/19 05:37	CHW	B

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

ANALYTICAL RESULTS

Workorder: 3028580 2ND QTR 2019 CWMP-FORM 19A

Lab ID: **3028580002** Date Collected: 4/17/2019 13:51 Matrix: Ground Water

Sample ID: **CWMP004W** Date Received: 4/17/2019 16:16

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Antimony, Total	ND		mg/L	0.0022	SW846 6020A	4/27/19 16:05	AHI	5/10/19 15:20	MO	E1
Arsenic, Total	ND		mg/L	0.0033	SW846 6020A	4/27/19 16:05	AHI	5/10/19 15:20	MO	E1
Arsenic, Dissolved	ND		mg/L	0.0030	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:30	MO	D1
Barium, Total	0.041		mg/L	0.0056	SW846 6020A	4/27/19 16:05	AHI	5/10/19 15:20	MO	E1
Barium, Dissolved	0.039		mg/L	0.0056	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:30	MO	D1
Beryllium, Total	ND		mg/L	0.0011	SW846 6020A	4/27/19 16:05	AHI	5/10/19 15:20	MO	E1
Cadmium, Total	ND		mg/L	0.0011	SW846 6020A	4/27/19 16:05	AHI	5/10/19 15:20	MO	E1
Cadmium, Dissolved	ND		mg/L	0.0011	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:30	MO	D1
Calcium, Total	16.8		mg/L	0.11	SW846 6020A	4/27/19 16:05	AHI	5/10/19 15:20	MO	E1
Calcium, Dissolved	16.5		mg/L	0.11	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:30	MO	D1
Chromium, Total	ND		mg/L	0.0022	SW846 6020A	4/27/19 16:05	AHI	5/10/19 15:20	MO	E1
Chromium, Dissolved	0.0023		mg/L	0.0022	SW846 6020A	4/28/19 13:00	DXC	5/9/19 12:26	MO	D1
Cobalt, Total	ND		mg/L	0.0056	SW846 6020A	4/27/19 16:05	AHI	5/10/19 15:20	MO	E1
Copper, Total	ND		mg/L	0.0056	SW846 6020A	4/27/19 16:05	AHI	5/10/19 15:20	MO	E1
Copper, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:30	MO	D1
Iron, Total	ND		mg/L	0.056	SW846 6020A	4/27/19 16:05	AHI	5/10/19 15:20	MO	E1
Iron, Dissolved	ND		mg/L	0.056	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:30	MO	D1
Lead, Total	ND		mg/L	0.0022	SW846 6020A	4/27/19 16:05	AHI	5/10/19 15:20	MO	E1
Lead, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:30	MO	D1
Magnesium, Total	7.6		mg/L	0.11	SW846 6020A	4/27/19 16:05	AHI	5/10/19 15:20	MO	E1
Magnesium, Dissolved	8.0		mg/L	0.11	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:30	MO	D1
Manganese, Total	0.012		mg/L	0.0056	SW846 6020A	4/27/19 16:05	AHI	5/10/19 15:20	MO	E1
Manganese, Dissolved	0.014		mg/L	0.0056	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:30	MO	D1
Mercury, Total	ND		mg/L	0.00050	SW846 7470A	4/23/19 04:37	MSA	4/23/19 09:56	MSA	E
Mercury, Dissolved	ND		mg/L	0.00050	SW846 7470A	4/23/19 04:37	MSA	4/23/19 10:26	MSA	D
Nickel, Total	ND		mg/L	0.0056	SW846 6020A	4/27/19 16:05	AHI	5/10/19 15:20	MO	E1
Potassium, Total	1.3		mg/L	0.11	SW846 6020A	4/27/19 16:05	AHI	5/10/19 15:20	MO	E1
Potassium, Dissolved	1.3		mg/L	0.11	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:30	MO	D1
Selenium, Total	ND		mg/L	0.0056	SW846 6020A	4/27/19 16:05	AHI	5/10/19 15:20	MO	E1
Selenium, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:30	MO	D1
Silver, Total	ND		mg/L	0.0022	SW846 6020A	4/27/19 16:05	AHI	5/10/19 15:20	MO	E1
Silver, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:30	MO	D1
Sodium, Total	20.2		mg/L	0.11	SW846 6020A	4/27/19 16:05	AHI	5/10/19 15:20	MO	E1
Sodium, Dissolved	20.4		mg/L	0.11	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:30	MO	D1
Thallium, Total	ND		mg/L	0.0011	SW846 6020A	4/27/19 16:05	AHI	5/10/19 15:20	MO	E1
Vanadium, Total	ND		mg/L	0.0022	SW846 6020A	4/27/19 16:05	AHI	5/10/19 15:20	MO	E1
Zinc, Total	ND		mg/L	0.0056	SW846 6020A	4/27/19 16:05	AHI	5/13/19 12:57	MO	E1

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ANALYTICAL RESULTS

Workorder: 3028580 2ND QTR 2019 CWMP-FORM 19A

Lab ID: **3028580002** Date Collected: 4/17/2019 13:51 Matrix: Ground Water

Sample ID: **CWMP004W** Date Received: 4/17/2019 16:16

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
Zinc, Dissolved	0.0081		mg/L	0.0056	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:30	MO	D1
FIELD PARAMETERS										
Depth to Water Level	54.60		Feet		Field			4/17/19 13:50	CLT	F
Elev Top MW Casing above MSL	529.53		Feet		Field			4/17/19 13:50	CLT	F
Ground Water Elevation	474.93		ft/MSL		Field			4/17/19 13:50	CLT	F
pH, Field (SM4500B)	5.37		pH_Units		Field			4/17/19 13:50	CLT	F
Sample Depth	130.00		Feet		Field			4/17/19 13:50	CLT	F
Specific Conductance, Field	351		umhos/cm	1	Field			4/17/19 13:50	CLT	F
Temperature	11.70		Deg. C		Field			4/17/19 13:50	CLT	F
Total Well Depth	140.00		Feet		Field			4/17/19 13:50	CLT	F

Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 3028580 2ND QTR 2019 CWMP-FORM 19A

Lab ID: **3028580003** Date Collected: 4/17/2019 13:41 Matrix: Ground Water

Sample ID: **CWMP003W** Date Received: 4/17/2019 16:16

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	SW846 8260B			4/24/19 00:26	PDK	J
Acrylonitrile	ND		ug/L	5.0	SW846 8260B			4/24/19 00:26	PDK	J
Benzene	ND		ug/L	1.0	SW846 8260B			4/24/19 00:26	PDK	J
Bromochloromethane	ND		ug/L	1.0	SW846 8260B			4/24/19 00:26	PDK	J
Bromodichloromethane	ND		ug/L	1.0	SW846 8260B			4/24/19 00:26	PDK	J
Bromoform	ND		ug/L	1.0	SW846 8260B			4/24/19 00:26	PDK	J
Bromomethane	ND		ug/L	1.0	SW846 8260B			4/24/19 00:26	PDK	J
2-Butanone	ND		ug/L	10.0	SW846 8260B			4/24/19 00:26	PDK	J
Carbon Disulfide	ND		ug/L	1.0	SW846 8260B			4/24/19 00:26	PDK	J
Carbon Tetrachloride	ND		ug/L	1.0	SW846 8260B			4/24/19 00:26	PDK	J
Chlorobenzene	ND		ug/L	1.0	SW846 8260B			4/24/19 00:26	PDK	J
Chlorodibromomethane	ND		ug/L	1.0	SW846 8260B			4/24/19 00:26	PDK	J
Chloroethane	ND		ug/L	1.0	SW846 8260B			4/24/19 00:26	PDK	J
Chloroform	ND		ug/L	1.0	SW846 8260B			4/24/19 00:26	PDK	J
Chloromethane	ND		ug/L	1.0	SW846 8260B			4/24/19 00:26	PDK	J
3-Chloro-1-propene	ND		ug/L	1.0	SW846 8260B			4/24/19 00:26	PDK	J
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	SW846 8260B			4/24/19 00:26	PDK	J
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			4/24/19 00:26	PDK	J
Dibromomethane	ND		ug/L	1.0	SW846 8260B			4/24/19 00:26	PDK	J
trans-1,4-Dichloro-2-butene	ND		ug/L	3.0	SW846 8260B			4/24/19 00:26	PDK	J
1,2-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/24/19 00:26	PDK	J
1,3-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/24/19 00:26	PDK	J
1,4-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/24/19 00:26	PDK	J
Dichlorodifluoromethane	ND		ug/L	1.0	SW846 8260B			4/24/19 00:26	PDK	J
1,1-Dichloroethane	1.3		ug/L	1.0	SW846 8260B			4/24/19 00:26	PDK	J
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/24/19 00:26	PDK	J
1,1-Dichloroethene	ND	3	ug/L	1.0	SW846 8260B			4/24/19 00:26	PDK	J
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/24/19 00:26	PDK	J
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/24/19 00:26	PDK	J
1,2-Dichloropropane	ND		ug/L	1.0	SW846 8260B			4/24/19 00:26	PDK	J
cis-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			4/24/19 00:26	PDK	J
trans-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			4/24/19 00:26	PDK	J
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			4/24/19 00:26	PDK	J
2-Hexanone	ND		ug/L	5.0	SW846 8260B			4/24/19 00:26	PDK	J
Iodomethane	ND		ug/L	1.0	SW846 8260B			4/24/19 00:26	PDK	J
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	SW846 8260B			4/24/19 00:26	PDK	J

ANALYTICAL RESULTS

Workorder: 3028580 2ND QTR 2019 CWMP-FORM 19A

Lab ID: **3028580003** Date Collected: 4/17/2019 13:41 Matrix: Ground Water

Sample ID: **CWMP003W** Date Received: 4/17/2019 16:16

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			4/24/19 00:26	PDK	J
Styrene	ND		ug/L	1.0	SW846 8260B			4/24/19 00:26	PDK	J
1,1,1,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/24/19 00:26	PDK	J
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/24/19 00:26	PDK	J
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			4/24/19 00:26	PDK	J
Toluene	ND		ug/L	1.0	SW846 8260B			4/24/19 00:26	PDK	J
Total Xylenes	ND		ug/L	3.0	SW846 8260B			4/24/19 00:26	PDK	J
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/24/19 00:26	PDK	J
1,1,2-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/24/19 00:26	PDK	J
Trichloroethene	ND		ug/L	1.0	SW846 8260B			4/24/19 00:26	PDK	J
Trichlorofluoromethane	ND		ug/L	1.0	SW846 8260B			4/24/19 00:26	PDK	J
1,2,3-Trichloropropane	ND		ug/L	2.0	SW846 8260B			4/24/19 00:26	PDK	J
Vinyl Acetate	ND		ug/L	5.0	SW846 8260B			4/24/19 00:26	PDK	J
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			4/24/19 00:26	PDK	J
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	108		%	62 - 133	SW846 8260B			4/24/19 00:26	PDK	J
4-Bromofluorobenzene (S)	104		%	79 - 114	SW846 8260B			4/24/19 00:26	PDK	J
Dibromofluoromethane (S)	95.1		%	78 - 116	SW846 8260B			4/24/19 00:26	PDK	J
Toluene-d8 (S)	101		%	76 - 127	SW846 8260B			4/24/19 00:26	PDK	J
LIBRARY SEARCH - VOLATILES										
No TIC's Detected	.				Lib Search VOC			4/24/19 00:26	CPK	J
WET CHEMISTRY										
Alkalinity, Bicarbonate	32		mg/L	5	SM2320B-2011			4/20/19 15:30	MLM	B
Alkalinity, Total	32	1	mg/L	5	SM2320B-2011			4/20/19 15:30	MLM	B
Ammonia-N, Low Level	ND		mg/L	0.10	SM 4500-NH3G	4/29/19 12:00	NJA	4/29/19 16:28	NJA	
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			4/25/19 13:19	AK	C
Chloride	70.3		mg/L	2.0	EPA 300.0			4/18/19 08:05	CHW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			4/18/19 08:05	CHW	B
Nitrate-N	7.1		mg/L	0.20	EPA 300.0			4/18/19 08:05	CHW	B
pH	6.44	2	pH_Units		S4500HB-11			4/20/19 15:30	MLM	B
Phenolics	ND		mg/L	0.005	SW846 9066	4/22/19 09:08	C_D	4/24/19 16:24	RXB	I
Specific Conductance	421		umhos/cm	1	SM2510B-2011			4/20/19 15:30	MLM	B
Sulfate	5.1		mg/L	2.0	EPA 300.0			4/18/19 08:05	CHW	B
Total Dissolved Solids	227		mg/L	5	S2540C-11			4/23/19 17:00	EXS	B
Total Organic Carbon (TOC)	1.7		mg/L	0.50	SM5310B-2011			4/23/19 12:24	PAG	G
Turbidity	ND		NTU	0.10	SM2130B-2011			4/18/19 05:37	CHW	B

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ANALYTICAL RESULTS

Workorder: 3028580 2ND QTR 2019 CWMP-FORM 19A

Lab ID: **3028580003** Date Collected: 4/17/2019 13:41 Matrix: Ground Water
Sample ID: **CWMP003W** Date Received: 4/17/2019 16:16

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Antimony, Total	ND		mg/L	0.0022	SW846 6020A	4/27/19 16:05	AHI	5/10/19 15:23	MO	E1
Arsenic, Total	ND		mg/L	0.0033	SW846 6020A	4/27/19 16:05	AHI	5/10/19 15:23	MO	E1
Arsenic, Dissolved	ND		mg/L	0.0030	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:33	MO	D1
Barium, Total	0.025		mg/L	0.0056	SW846 6020A	4/27/19 16:05	AHI	5/10/19 15:23	MO	E1
Barium, Dissolved	0.025		mg/L	0.0056	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:33	MO	D1
Beryllium, Total	ND		mg/L	0.0011	SW846 6020A	4/27/19 16:05	AHI	5/10/19 15:23	MO	E1
Cadmium, Total	ND		mg/L	0.0011	SW846 6020A	4/27/19 16:05	AHI	5/10/19 15:23	MO	E1
Cadmium, Dissolved	ND		mg/L	0.0011	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:33	MO	D1
Calcium, Total	27.9		mg/L	0.11	SW846 6020A	4/27/19 16:05	AHI	5/10/19 15:23	MO	E1
Calcium, Dissolved	28.1		mg/L	0.11	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:33	MO	D1
Chromium, Total	ND		mg/L	0.0022	SW846 6020A	4/27/19 16:05	AHI	5/10/19 15:23	MO	E1
Chromium, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:33	MO	D1
Cobalt, Total	ND		mg/L	0.0056	SW846 6020A	4/27/19 16:05	AHI	5/10/19 15:23	MO	E1
Copper, Total	ND		mg/L	0.0056	SW846 6020A	4/27/19 16:05	AHI	5/10/19 15:23	MO	E1
Copper, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:33	MO	D1
Iron, Total	ND		mg/L	0.056	SW846 6020A	4/27/19 16:05	AHI	5/10/19 15:23	MO	E1
Iron, Dissolved	ND		mg/L	0.056	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:33	MO	D1
Lead, Total	ND		mg/L	0.0022	SW846 6020A	4/27/19 16:05	AHI	5/10/19 15:23	MO	E1
Lead, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:33	MO	D1
Magnesium, Total	9.8		mg/L	0.11	SW846 6020A	4/27/19 16:05	AHI	5/10/19 15:23	MO	E1
Magnesium, Dissolved	10.5		mg/L	0.11	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:33	MO	D1
Manganese, Total	ND		mg/L	0.0056	SW846 6020A	4/27/19 16:05	AHI	5/10/19 15:23	MO	E1
Manganese, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:33	MO	D1
Mercury, Total	ND		mg/L	0.00050	SW846 7470A	4/23/19 04:37	MSA	4/23/19 09:57	MSA	E
Mercury, Dissolved	ND		mg/L	0.00050	SW846 7470A	4/23/19 04:37	MSA	4/23/19 10:28	MSA	D
Nickel, Total	0.0085		mg/L	0.0056	SW846 6020A	4/27/19 16:05	AHI	5/10/19 15:23	MO	E1
Potassium, Total	1.5		mg/L	0.11	SW846 6020A	4/27/19 16:05	AHI	5/10/19 15:23	MO	E1
Potassium, Dissolved	1.6		mg/L	0.11	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:33	MO	D1
Selenium, Total	ND		mg/L	0.0056	SW846 6020A	4/27/19 16:05	AHI	5/10/19 15:23	MO	E1
Selenium, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:33	MO	D1
Silver, Total	ND		mg/L	0.0022	SW846 6020A	4/27/19 16:05	AHI	5/10/19 15:23	MO	E1
Silver, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:33	MO	D1
Sodium, Total	23.3		mg/L	0.11	SW846 6020A	4/27/19 16:05	AHI	5/10/19 15:23	MO	E1
Sodium, Dissolved	23.7		mg/L	0.11	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:33	MO	D1
Thallium, Total	ND		mg/L	0.0011	SW846 6020A	4/27/19 16:05	AHI	5/10/19 15:23	MO	E1
Vanadium, Total	ND		mg/L	0.0022	SW846 6020A	4/27/19 16:05	AHI	5/10/19 15:23	MO	E1
Zinc, Total	0.0060		mg/L	0.0056	SW846 6020A	4/27/19 16:05	AHI	5/13/19 13:00	MO	E1

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ANALYTICAL RESULTS

Workorder: 3028580 2ND QTR 2019 CWMP-FORM 19A

Lab ID: **3028580003** Date Collected: 4/17/2019 13:41 Matrix: Ground Water

Sample ID: **CWMP003W** Date Received: 4/17/2019 16:16

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
Zinc, Dissolved	0.0092		mg/L	0.0056	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:33	MO	D1
FIELD PARAMETERS										
Depth to Water Level	100.51		Feet		Field			4/17/19 13:41	CLT	F
Elev Top MW Casing above MSL	524.21		Feet		Field			4/17/19 13:41	CLT	F
Ground Water Elevation	423.70		ft/MSL		Field			4/17/19 13:41	CLT	F
pH, Field (SM4500B)	5.77		pH_Units		Field			4/17/19 13:41	CLT	F
Sample Depth	100.00		Feet		Field			4/17/19 13:41	CLT	F
Specific Conductance, Field	455		umhos/cm	1	Field			4/17/19 13:41	CLT	F
Temperature	11.21		Deg. C		Field			4/17/19 13:41	CLT	F
Total Well Depth	140.00		Feet		Field			4/17/19 13:41	CLT	F

Susan J. Scherer

Ms. Susan J Scherer
Project Coordinator

ANALYTICAL RESULTS

Workorder: 3028580 2ND QTR 2019 CWMP-FORM 19A

PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
3028580001	1	CWMP002W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
3028580001	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.				
3028580001	3	CWMP002W	S2540C-11	Total Dissolved Solids
The RPD associated with this sample was recovered at 13%. The RPD is outside method acceptance limits of 0-5%. The results used to calculate the RPD were 285 mg/L and 324 mg/L.				
3028580001	4	CWMP002W	SW846 6020A	Manganese, Total
One of the two matrix spike analyses performed on this sample failed to meet acceptable recovery limits. The other matrix spike was within acceptable recovery limits. Matrix interferences are the possible cause for the failure.				
3028580001	5	CWMP002W	SW846 6020A	Silver, Total
The recovery of the Matrix Spike (MS) associated to this analyte was outside of the established control limits. The sample was post-digestion spiked, and this matrix spike was within acceptable recovery limits.				
3028580001	6	CWMP002W	SW846 6020A	Zinc, Total
The recovery of the Matrix Spike (MS) associated to this analyte was outside of the established control limits. The sample was post-digestion spiked, and this matrix spike was within acceptable recovery limits.				
3028580001	7	CWMP002W	SW846 6020A	Beryllium, Total
The recovery of the Matrix Spike (MS) associated to this analyte was outside of the established control limits. The sample was post-digestion spiked, and this matrix spike was within acceptable recovery limits.				
3028580001	8	CWMP002W	SW846 8260B	1,1-Dichloroethene
The QC sample type LCS for method SW846 8260B was outside the control limits for the analyte 1,1-Dichloroethene. The % Recovery was reported as 131 and the control limits were 63 to 128.				
3028580002	1	CWMP004W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
3028580002	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.				
3028580002	3	CWMP004W	SW846 8260B	1,1-Dichloroethene
The QC sample type LCS for method SW846 8260B was outside the control limits for the analyte 1,1-Dichloroethene. The % Recovery was reported as 131 and the control limits were 63 to 128.				
3028580003	1	CWMP003W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
3028580003	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.				
3028580003	3	CWMP003W	SW846 8260B	1,1-Dichloroethene
The QC sample type LCS for method SW846 8260B was outside the control limits for the analyte 1,1-Dichloroethene. The % Recovery was reported as 131 and the control limits were 63 to 128.				

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ANALYSIS - PREP METHOD CROSS REFERENCE TABLE

Workorder: 3028580 2ND QTR 2019 CWMP-FORM 19A

Lab ID	Sample ID	Analysis Method	Prep Method
3028580001	CWMP002W	EPA 300.0	
3028580001	CWMP002W	EPA 410.4	
3028580001	CWMP002W	Field	
3028580001	CWMP002W	Lib Search VOC	
3028580001	CWMP002W	S2540C-11	
3028580001	CWMP002W	S4500HB-11	
3028580001	CWMP002W	SM 4500-NH3G	S4500NH3B
3028580001	CWMP002W	SM2130B-2011	
3028580001	CWMP002W	SM2320B-2011	
3028580001	CWMP002W	SM2510B-2011	
3028580001	CWMP002W	SM5310B-2011	
3028580001	CWMP002W	SW846 6020A	SW846 3015
3028580001	CWMP002W	SW846 7470A	SW846 7470A
3028580001	CWMP002W	SW846 8260B	
3028580001	CWMP002W	SW846 9066	420.4/9066
3028580002	CWMP004W	EPA 300.0	
3028580002	CWMP004W	EPA 410.4	
3028580002	CWMP004W	Field	
3028580002	CWMP004W	Lib Search VOC	
3028580002	CWMP004W	S2540C-11	
3028580002	CWMP004W	S4500HB-11	
3028580002	CWMP004W	SM 4500-NH3G	S4500NH3B
3028580002	CWMP004W	SM2130B-2011	
3028580002	CWMP004W	SM2320B-2011	
3028580002	CWMP004W	SM2510B-2011	
3028580002	CWMP004W	SM5310B-2011	
3028580002	CWMP004W	SW846 6020A	SW846 3015
3028580002	CWMP004W	SW846 7470A	SW846 7470A
3028580002	CWMP004W	SW846 8260B	
3028580002	CWMP004W	SW846 9066	420.4/9066
3028580003	CWMP003W	EPA 300.0	
3028580003	CWMP003W	EPA 410.4	
3028580003	CWMP003W	Field	
3028580003	CWMP003W	Lib Search VOC	
3028580003	CWMP003W	S2540C-11	
3028580003	CWMP003W	S4500HB-11	
3028580003	CWMP003W	SM 4500-NH3G	S4500NH3B
3028580003	CWMP003W	SM2130B-2011	
3028580003	CWMP003W	SM2320B-2011	
3028580003	CWMP003W	SM2510B-2011	
3028580003	CWMP003W	SM5310B-2011	
3028580003	CWMP003W	SW846 6020A	SW846 3015
3028580003	CWMP003W	SW846 7470A	SW846 7470A
3028580003	CWMP003W	SW846 8260B	
3028580003	CWMP003W	SW846 9066	420.4/9066

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CHAIN OF CUSTODY/ REQUEST FOR ANALYSIS

Generated by ALS

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

* 3 0 2 8 5 8 0 *

2 | 1 of 1

Client Name: Lancaster County Solid Waste MA	Container Type	AG	AN	CG	PL	PL	—	—	PL	P		ted by Receiving Lab)	
Address: 1299 Harrisburg Pike, P.O. Box 4424	Container Size	40 ml	125 ml	40 ml	1 L	500 ml	—	—	250 ml	125 ml	125 ml	Cooler Temp: 2	Therm ID: 401
Lancaster, PA 17604	Preservative	HCl	H2SO4	HCl	None	None	—	—	H2SO4	HNO3	HNO3	No. of Coolers:	
Contact: Mark Reider	ANALYSES/METHOD REQUESTED												Y N Initial
Phone#: (717) 735-0193												Custody Seals Present?	
Project Name/#: Creswell/GWMP Form 19A												(If present) Seals Intact?	
Bill To: Lancaster County Solid Waste MA												Received on Ice?	
TAT [X] Normal-Standard TAT is 10-12 business days. [ ] Rush-Subject to ALS approval and surcharges.												COC/Labels Complete/Accurate?	
Date Required: _____ Approved By: _____												Cont. In Good Cond.?	
Email? [X]-Y mreider@LCSWMA.org												Correct Containers?	
Fax? [X]-Y No.: (717) 397-9973												Correct Sample Volumes?	
												Correct Preservation?	
												Headspace/Volatiles?	
												Courier/Tracking #:	

Sample Description/Location (as it will appear on the lab report)	Sample Date	Time	*G or C	**Matrix	TOC	O-OH	8260 VOCs - Form 19A + Subtitle D + TICs	pH, Cl, SpC, F, SO4, NO3, Tb, TDS	Alkalinity, HCO3	*FM	Sample Depth for AUX Data	NH3-N, COD	Diss Metals Form 19A (Field Filered)	Total Metals Form 19A + Subtitle D	Sample/COC Comments
					Enter Number of Containers Per Sample or Field Results Below.										
1. CWMP002W	04/17/19	1120	G	GW	2	1	2	2	2	X	X	1	1	1	
2. CWMP004W	04/17/19	1351	G	GW	2	1	2	2	2	X	X	1	1	1	
3. CWMP003W	04/17/19	1341	G	GW	2	1	2	2	2	X	X	1	1	1	
4									DN						
5									4/18						
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 KSC Wood ALS	4-17-19	1616	2	4/17/19	1616
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-

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

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

Condition of Sample Receipt Form

Client: LC SUMA | Work Order #: 302858 | Initials: DN | Date: 4/8

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

Cooler #: ____

Temperature (°C): 2

Thermometer ID: 401

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

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May 17, 2019

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

Certificate of Analysis

Project Name:	**CRESWELL**	Workorder:	**3028184**
Purchase Order:	**PO1000127**	Workorder ID:	**2ND QTR 2019 CWMP-FORM 19A**

Dear Mr. Brown:

Enclosed are the analytical results for samples received by the laboratory on Tuesday, April 16, 2019.

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

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

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

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

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

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

Susan J. Scherer

Ms. Susan J Scherer
Project Coordinator

ALS Environmental

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SAMPLE SUMMARY

Workorder: 3028184 2ND QTR 2019 CWMP-FORM 19A

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
3028184001	CWMP016W	Ground Water	4/16/2019 11:19	4/16/2019 16:30	Mr. Brian G Shade
3028184002	CWMP010W	Ground Water	4/16/2019 12:26	4/16/2019 16:30	Mr. Brian G Shade
3028184003	CWMP009W	Ground Water	4/16/2019 13:27	4/16/2019 16:30	Mr. Brian G Shade
3028184004	CWMP008W	Ground Water	4/16/2019 14:08	4/16/2019 16:30	Mr. Brian G Shade

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SAMPLE SUMMARY

Workorder: 3028184 2ND QTR 2019 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 incubator and the "Analyzed" value is the date/time out the incubator.
-- An Analysis-Prep Method Cross Reference Table is included after Analytical Results & Qualifiers section in this report.

Standard Acronyms/Flags

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

ANALYTICAL RESULTS

Workorder: 3028184 2ND QTR 2019 CWMP-FORM 19A

Lab ID: **3028184001** Date Collected: 4/16/2019 11:19 Matrix: Ground Water

Sample ID: **CWMP016W** Date Received: 4/16/2019 16:30

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	SW846 8260B			4/23/19 00:38	PDK	K
Acrylonitrile	ND		ug/L	5.0	SW846 8260B			4/23/19 00:38	PDK	K
Benzene	ND		ug/L	1.0	SW846 8260B			4/23/19 00:38	PDK	K
Bromochloromethane	ND		ug/L	1.0	SW846 8260B			4/23/19 00:38	PDK	K
Bromodichloromethane	ND		ug/L	1.0	SW846 8260B			4/23/19 00:38	PDK	K
Bromoform	ND		ug/L	1.0	SW846 8260B			4/23/19 00:38	PDK	K
Bromomethane	ND		ug/L	1.0	SW846 8260B			4/23/19 00:38	PDK	K
2-Butanone	ND		ug/L	10.0	SW846 8260B			4/23/19 00:38	PDK	K
Carbon Disulfide	ND		ug/L	1.0	SW846 8260B			4/23/19 00:38	PDK	K
Carbon Tetrachloride	ND		ug/L	1.0	SW846 8260B			4/23/19 00:38	PDK	K
Chlorobenzene	ND		ug/L	1.0	SW846 8260B			4/23/19 00:38	PDK	K
Chlorodibromomethane	ND		ug/L	1.0	SW846 8260B			4/23/19 00:38	PDK	K
Chloroethane	ND		ug/L	1.0	SW846 8260B			4/23/19 00:38	PDK	K
Chloroform	ND		ug/L	1.0	SW846 8260B			4/23/19 00:38	PDK	K
Chloromethane	ND		ug/L	1.0	SW846 8260B			4/23/19 00:38	PDK	K
3-Chloro-1-propene	ND		ug/L	1.0	SW846 8260B			4/23/19 00:38	PDK	K
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	SW846 8260B			4/23/19 00:38	PDK	K
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			4/23/19 00:38	PDK	K
Dibromomethane	ND		ug/L	1.0	SW846 8260B			4/23/19 00:38	PDK	K
trans-1,4-Dichloro-2-butene	ND		ug/L	3.0	SW846 8260B			4/23/19 00:38	PDK	K
1,2-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/23/19 00:38	PDK	K
1,3-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/23/19 00:38	PDK	K
1,4-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/23/19 00:38	PDK	K
Dichlorodifluoromethane	ND		ug/L	1.0	SW846 8260B			4/23/19 00:38	PDK	K
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/23/19 00:38	PDK	K
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/23/19 00:38	PDK	K
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/23/19 00:38	PDK	K
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/23/19 00:38	PDK	K
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/23/19 00:38	PDK	K
1,2-Dichloropropane	ND		ug/L	1.0	SW846 8260B			4/23/19 00:38	PDK	K
cis-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			4/23/19 00:38	PDK	K
trans-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			4/23/19 00:38	PDK	K
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			4/23/19 00:38	PDK	K
2-Hexanone	ND		ug/L	5.0	SW846 8260B			4/23/19 00:38	PDK	K
Iodomethane	ND		ug/L	1.0	SW846 8260B			4/23/19 00:38	PDK	K
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	SW846 8260B			4/23/19 00:38	PDK	K

ANALYTICAL RESULTS

Workorder: 3028184 2ND QTR 2019 CWMP-FORM 19A

Lab ID: **3028184001** Date Collected: 4/16/2019 11:19 Matrix: Ground Water

Sample ID: **CWMP016W** Date Received: 4/16/2019 16:30

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			4/23/19 00:38	PDK	K
Styrene	ND		ug/L	1.0	SW846 8260B			4/23/19 00:38	PDK	K
1,1,1,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/23/19 00:38	PDK	K
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/23/19 00:38	PDK	K
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			4/23/19 00:38	PDK	K
Toluene	ND		ug/L	1.0	SW846 8260B			4/23/19 00:38	PDK	K
Total Xylenes	ND		ug/L	3.0	SW846 8260B			4/23/19 00:38	PDK	K
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/23/19 00:38	PDK	K
1,1,2-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/23/19 00:38	PDK	K
Trichloroethene	ND		ug/L	1.0	SW846 8260B			4/23/19 00:38	PDK	K
Trichlorofluoromethane	ND		ug/L	1.0	SW846 8260B			4/23/19 00:38	PDK	K
1,2,3-Trichloropropane	ND		ug/L	2.0	SW846 8260B			4/23/19 00:38	PDK	K
Vinyl Acetate	ND		ug/L	5.0	SW846 8260B			4/23/19 00:38	PDK	K
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			4/23/19 00:38	PDK	K
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	116		%	62 - 133	SW846 8260B			4/23/19 00:38	PDK	K
4-Bromofluorobenzene (S)	103		%	79 - 114	SW846 8260B			4/23/19 00:38	PDK	K
Dibromofluoromethane (S)	108		%	78 - 116	SW846 8260B			4/23/19 00:38	PDK	K
Toluene-d8 (S)	97.8		%	76 - 127	SW846 8260B			4/23/19 00:38	PDK	K
LIBRARY SEARCH - VOLATILES										
No TIC's Detected	.				Lib Search VOC			4/23/19 00:38	CPK	K
WET CHEMISTRY										
Alkalinity, Bicarbonate	6		mg/L	5	SM2320B-2011			4/18/19 00:28	MLM	C
Alkalinity, Total	6	1	mg/L	5	SM2320B-2011			4/18/19 00:28	MLM	C
Ammonia-N, Low Level	ND		mg/L	0.10	SM 4500-NH3G	4/26/19 18:00	NJA	4/27/19 13:12	NJA	
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			4/24/19 15:15	AK	D
Chloride	2.1		mg/L	2.0	EPA 300.0			4/17/19 05:59	CHW	C
Fluoride	ND		mg/L	0.20	EPA 300.0			4/17/19 05:59	CHW	C
Nitrate-N	0.78		mg/L	0.20	EPA 300.0			4/17/19 05:59	CHW	C
pH	6.32	2	pH_Units		S4500HB-11			4/18/19 00:28	MLM	C
Phenolics	-0.003		mg/L		SW846 9066	4/17/19 14:31	C_D	4/18/49 07:46	C_D	J
Specific Conductance	48		umhos/cm	1	SM2510B-2011			4/18/19 00:28	MLM	C
Sulfate	12.0		mg/L	2.0	EPA 300.0			4/17/19 05:59	CHW	C
Total Dissolved Solids	242		mg/L	5	S2540C-11			4/22/19 14:25	EXS	C
Total Organic Carbon (TOC)	1.4		mg/L	0.50	SM5310B-2011			4/19/19 00:36	PAG	H
Turbidity	0.87		NTU	0.10	SM2130B-2011			4/17/19 00:35	MBW	C

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

ANALYTICAL RESULTS

Workorder: 3028184 2ND QTR 2019 CWMP-FORM 19A

Lab ID: **3028184001** Date Collected: 4/16/2019 11:19 Matrix: Ground Water

Sample ID: **CWMP016W** Date Received: 4/16/2019 16:30

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Antimony, Total	ND		mg/L	0.0022	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:21	MO	F1
Arsenic, Total	ND		mg/L	0.0033	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:21	MO	F1
Arsenic, Dissolved	ND		mg/L	0.0030	SW846 6020A	4/28/19 13:00	DXC	5/8/19 17:51	MO	E1
Barium, Total	0.0097		mg/L	0.0056	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:21	MO	F1
Barium, Dissolved	0.0095		mg/L	0.0056	SW846 6020A	4/28/19 13:00	DXC	5/8/19 17:51	MO	E1
Beryllium, Total	ND		mg/L	0.0011	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:21	MO	F1
Cadmium, Total	ND		mg/L	0.0011	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:21	MO	F1
Cadmium, Dissolved	ND		mg/L	0.0011	SW846 6020A	4/28/19 13:00	DXC	5/8/19 17:51	MO	E1
Calcium, Total	3.8		mg/L	0.11	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:21	MO	F1
Calcium, Dissolved	3.6		mg/L	0.11	SW846 6020A	4/28/19 13:00	DXC	5/8/19 17:51	MO	E1
Chromium, Total	ND		mg/L	0.0022	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:21	MO	F1
Chromium, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/28/19 13:00	DXC	5/8/19 17:51	MO	E1
Cobalt, Total	0.0071		mg/L	0.0056	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:21	MO	F1
Copper, Total	ND		mg/L	0.0056	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:21	MO	F1
Copper, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/28/19 13:00	DXC	5/8/19 17:51	MO	E1
Iron, Total	0.21		mg/L	0.056	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:21	MO	F1
Iron, Dissolved	ND		mg/L	0.056	SW846 6020A	4/28/19 13:00	DXC	5/8/19 17:51	MO	E1
Lead, Total	ND		mg/L	0.0022	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:21	MO	F1
Lead, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/28/19 13:00	DXC	5/8/19 17:51	MO	E1
Magnesium, Total	1.1		mg/L	0.11	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:21	MO	F1
Magnesium, Dissolved	1.0		mg/L	0.11	SW846 6020A	4/28/19 13:00	DXC	5/8/19 17:51	MO	E1
Manganese, Total	0.012		mg/L	0.0056	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:21	MO	F1
Manganese, Dissolved	0.0095		mg/L	0.0056	SW846 6020A	4/28/19 13:00	DXC	5/8/19 17:51	MO	E1
Mercury, Total	ND		mg/L	0.00050	SW846 7470A	4/21/19 23:35	MSA	4/22/19 03:52	MSA	F
Mercury, Dissolved	ND		mg/L	0.00050	SW846 7470A	4/21/19 23:35	MSA	4/22/19 03:21	MSA	E
Nickel, Total	ND		mg/L	0.0056	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:21	MO	F1
Potassium, Total	0.42		mg/L	0.11	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:21	MO	F1
Potassium, Dissolved	0.39		mg/L	0.11	SW846 6020A	4/28/19 13:00	DXC	5/8/19 17:51	MO	E1
Selenium, Total	ND		mg/L	0.0056	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:21	MO	F1
Selenium, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/28/19 13:00	DXC	5/8/19 17:51	MO	E1
Silver, Total	ND		mg/L	0.0022	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:21	MO	F1
Silver, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/28/19 13:00	DXC	5/8/19 17:51	MO	E1
Sodium, Total	2.3		mg/L	0.11	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:21	MO	F1
Sodium, Dissolved	2.1		mg/L	0.11	SW846 6020A	4/28/19 13:00	DXC	5/8/19 17:51	MO	E1
Thallium, Total	ND		mg/L	0.0011	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:21	MO	F1
Vanadium, Total	ND		mg/L	0.0022	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:21	MO	F1
Zinc, Total	ND		mg/L	0.0056	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:21	MO	F1

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

ANALYTICAL RESULTS

Workorder: 3028184 2ND QTR 2019 CWMP-FORM 19A

Lab ID: **3028184001** Date Collected: 4/16/2019 11:19 Matrix: Ground Water

Sample ID: **CWMP016W** Date Received: 4/16/2019 16:30

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
Zinc, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/28/19 13:00	DXC	5/8/19 17:51	MO	E1
FIELD PARAMETERS										
Depth to Water Level	7.91		Feet		Field			4/16/19 11:19	CLT	G
Elev Top MW Casing above MSL	311.97		Feet		Field			4/16/19 11:19	CLT	G
Flow Rate	2.50		gal/min		Field			4/16/19 11:19	CLT	G
Ground Water Elevation	304.06		ft/MSL		Field			4/16/19 11:19	CLT	G
pH, Field (SM4500B)	4.45		pH_Units		Field			4/16/19 11:19	CLT	G
Sample Depth	71.00		Feet		Field			4/16/19 11:19	CLT	G
Specific Conductance, Field	59		umhos/cm	1	Field			4/16/19 11:19	CLT	G
Temperature	9.79		Deg. C		Field			4/16/19 11:19	CLT	G
Total Well Depth	73.52		Feet		Field			4/16/19 11:19	CLT	G
Volume in Water Column	96.45		Gallons		Field			4/16/19 11:19	CLT	G
Water Level After Purge	18.31		Feet		Field			4/16/19 11:19	CLT	G
Well Volumes Purged	1.82		Vol		Field			4/16/19 11:19	CLT	G

Susan J. Scherer

Ms. Susan J Scherer
Project Coordinator

ANALYTICAL RESULTS

Workorder: 3028184 2ND QTR 2019 CWMP-FORM 19A

Lab ID: **3028184002** Date Collected: 4/16/2019 12:26 Matrix: Ground Water

Sample ID: **CWMP010W** Date Received: 4/16/2019 16:30

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	SW846 8260B			4/23/19 01:02	PDK	K
Acrylonitrile	ND		ug/L	5.0	SW846 8260B			4/23/19 01:02	PDK	K
Benzene	ND		ug/L	1.0	SW846 8260B			4/23/19 01:02	PDK	K
Bromochloromethane	ND		ug/L	1.0	SW846 8260B			4/23/19 01:02	PDK	K
Bromodichloromethane	ND		ug/L	1.0	SW846 8260B			4/23/19 01:02	PDK	K
Bromoform	ND		ug/L	1.0	SW846 8260B			4/23/19 01:02	PDK	K
Bromomethane	ND		ug/L	1.0	SW846 8260B			4/23/19 01:02	PDK	K
2-Butanone	ND		ug/L	10.0	SW846 8260B			4/23/19 01:02	PDK	K
Carbon Disulfide	ND		ug/L	1.0	SW846 8260B			4/23/19 01:02	PDK	K
Carbon Tetrachloride	ND		ug/L	1.0	SW846 8260B			4/23/19 01:02	PDK	K
Chlorobenzene	ND		ug/L	1.0	SW846 8260B			4/23/19 01:02	PDK	K
Chlorodibromomethane	ND		ug/L	1.0	SW846 8260B			4/23/19 01:02	PDK	K
Chloroethane	ND		ug/L	1.0	SW846 8260B			4/23/19 01:02	PDK	K
Chloroform	ND		ug/L	1.0	SW846 8260B			4/23/19 01:02	PDK	K
Chloromethane	ND		ug/L	1.0	SW846 8260B			4/23/19 01:02	PDK	K
3-Chloro-1-propene	ND		ug/L	1.0	SW846 8260B			4/23/19 01:02	PDK	K
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	SW846 8260B			4/23/19 01:02	PDK	K
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			4/23/19 01:02	PDK	K
Dibromomethane	ND		ug/L	1.0	SW846 8260B			4/23/19 01:02	PDK	K
trans-1,4-Dichloro-2-butene	ND		ug/L	3.0	SW846 8260B			4/23/19 01:02	PDK	K
1,2-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/23/19 01:02	PDK	K
1,3-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/23/19 01:02	PDK	K
1,4-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/23/19 01:02	PDK	K
Dichlorodifluoromethane	ND		ug/L	1.0	SW846 8260B			4/23/19 01:02	PDK	K
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/23/19 01:02	PDK	K
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/23/19 01:02	PDK	K
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/23/19 01:02	PDK	K
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/23/19 01:02	PDK	K
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/23/19 01:02	PDK	K
1,2-Dichloropropane	ND		ug/L	1.0	SW846 8260B			4/23/19 01:02	PDK	K
cis-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			4/23/19 01:02	PDK	K
trans-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			4/23/19 01:02	PDK	K
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			4/23/19 01:02	PDK	K
2-Hexanone	ND		ug/L	5.0	SW846 8260B			4/23/19 01:02	PDK	K
Iodomethane	ND		ug/L	1.0	SW846 8260B			4/23/19 01:02	PDK	K
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	SW846 8260B			4/23/19 01:02	PDK	K

ANALYTICAL RESULTS

Workorder: 3028184 2ND QTR 2019 CWMP-FORM 19A

Lab ID: **3028184002** Date Collected: 4/16/2019 12:26 Matrix: Ground Water

Sample ID: **CWMP010W** Date Received: 4/16/2019 16:30

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			4/23/19 01:02	PDK	K
Styrene	ND		ug/L	1.0	SW846 8260B			4/23/19 01:02	PDK	K
1,1,1,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/23/19 01:02	PDK	K
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/23/19 01:02	PDK	K
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			4/23/19 01:02	PDK	K
Toluene	ND		ug/L	1.0	SW846 8260B			4/23/19 01:02	PDK	K
Total Xylenes	ND		ug/L	3.0	SW846 8260B			4/23/19 01:02	PDK	K
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/23/19 01:02	PDK	K
1,1,2-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/23/19 01:02	PDK	K
Trichloroethene	ND		ug/L	1.0	SW846 8260B			4/23/19 01:02	PDK	K
Trichlorofluoromethane	ND		ug/L	1.0	SW846 8260B			4/23/19 01:02	PDK	K
1,2,3-Trichloropropane	ND		ug/L	2.0	SW846 8260B			4/23/19 01:02	PDK	K
Vinyl Acetate	ND		ug/L	5.0	SW846 8260B			4/23/19 01:02	PDK	K
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			4/23/19 01:02	PDK	K
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	116		%	62 - 133	SW846 8260B			4/23/19 01:02	PDK	K
4-Bromofluorobenzene (S)	105		%	79 - 114	SW846 8260B			4/23/19 01:02	PDK	K
Dibromofluoromethane (S)	104		%	78 - 116	SW846 8260B			4/23/19 01:02	PDK	K
Toluene-d8 (S)	101		%	76 - 127	SW846 8260B			4/23/19 01:02	PDK	K
LIBRARY SEARCH - VOLATILES										
No TIC's Detected	.				Lib Search VOC			4/23/19 01:02	CPK	K
WET CHEMISTRY										
Alkalinity, Bicarbonate	85		mg/L	5	SM2320B-2011			4/18/19 00:37	MLM	C
Alkalinity, Total	85	1	mg/L	5	SM2320B-2011			4/18/19 00:37	MLM	C
Ammonia-N, Low Level	ND		mg/L	0.10	SM 4500-NH3G	4/26/19 18:00	NJA	4/27/19 13:12	NJA	
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			4/24/19 15:15	AK	D
Chloride	75.5		mg/L	2.0	EPA 300.0			4/17/19 06:11	CHW	C
Fluoride	ND		mg/L	0.20	EPA 300.0			4/17/19 06:11	CHW	C
Nitrate-N	3.5		mg/L	0.20	EPA 300.0			4/17/19 06:11	CHW	C
pH	6.99	2	pH_Units		S4500HB-11			4/18/19 00:37	MLM	C
Phenolics	-0.002		mg/L		SW846 9066	4/17/19 14:31	C_D	4/18/49 07:46	C_D	J
Specific Conductance	445		umhos/cm	1	SM2510B-2011			4/18/19 00:37	MLM	C
Sulfate	23.2		mg/L	2.0	EPA 300.0			4/17/19 06:11	CHW	C
Total Dissolved Solids	262		mg/L	5	S2540C-11			4/22/19 14:25	EXS	C
Total Organic Carbon (TOC)	2.5		mg/L	0.50	SM5310B-2011			4/19/19 00:36	PAG	H
Turbidity	4.12		NTU	0.10	SM2130B-2011			4/17/19 00:35	MBW	C

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ANALYTICAL RESULTS

Workorder: 3028184 2ND QTR 2019 CWMP-FORM 19A

Lab ID: **3028184002** Date Collected: 4/16/2019 12:26 Matrix: Ground Water
Sample ID: **CWMP010W** Date Received: 4/16/2019 16:30

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Antimony, Total	ND		mg/L	0.0022	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:24	MO	F1
Arsenic, Total	ND		mg/L	0.0033	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:24	MO	F1
Arsenic, Dissolved	ND		mg/L	0.0030	SW846 6020A	4/28/19 13:00	DXC	5/8/19 17:54	MO	E1
Barium, Total	0.021		mg/L	0.0056	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:24	MO	F1
Barium, Dissolved	0.020		mg/L	0.0056	SW846 6020A	4/28/19 13:00	DXC	5/8/19 17:54	MO	E1
Beryllium, Total	ND		mg/L	0.0011	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:24	MO	F1
Cadmium, Total	ND		mg/L	0.0011	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:24	MO	F1
Cadmium, Dissolved	ND		mg/L	0.0011	SW846 6020A	4/28/19 13:00	DXC	5/8/19 17:54	MO	E1
Calcium, Total	16.1		mg/L	0.11	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:24	MO	F1
Calcium, Dissolved	16.7		mg/L	0.11	SW846 6020A	4/28/19 13:00	DXC	5/8/19 17:54	MO	E1
Chromium, Total	0.0023		mg/L	0.0022	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:24	MO	F1
Chromium, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/28/19 13:00	DXC	5/8/19 17:54	MO	E1
Cobalt, Total	ND		mg/L	0.0056	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:24	MO	F1
Copper, Total	0.0064		mg/L	0.0056	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:24	MO	F1
Copper, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/28/19 13:00	DXC	5/8/19 17:54	MO	E1
Iron, Total	0.32		mg/L	0.056	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:24	MO	F1
Iron, Dissolved	ND		mg/L	0.056	SW846 6020A	4/28/19 13:00	DXC	5/8/19 17:54	MO	E1
Lead, Total	ND		mg/L	0.0022	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:24	MO	F1
Lead, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/28/19 13:00	DXC	5/8/19 17:54	MO	E1
Magnesium, Total	14.7		mg/L	0.11	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:24	MO	F1
Magnesium, Dissolved	15.4		mg/L	0.11	SW846 6020A	4/28/19 13:00	DXC	5/8/19 17:54	MO	E1
Manganese, Total	0.073		mg/L	0.0056	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:24	MO	F1
Manganese, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/28/19 13:00	DXC	5/8/19 17:54	MO	E1
Mercury, Total	ND		mg/L	0.00050	SW846 7470A	4/21/19 23:35	MSA	4/22/19 03:53	MSA	F
Mercury, Dissolved	ND		mg/L	0.00050	SW846 7470A	4/21/19 23:35	MSA	4/22/19 03:23	MSA	E
Nickel, Total	0.0069		mg/L	0.0056	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:24	MO	F1
Potassium, Total	3.0		mg/L	0.11	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:24	MO	F1
Potassium, Dissolved	3.0		mg/L	0.11	SW846 6020A	4/28/19 13:00	DXC	5/8/19 17:54	MO	E1
Selenium, Total	ND		mg/L	0.0056	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:24	MO	F1
Selenium, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/28/19 13:00	DXC	5/8/19 17:54	MO	E1
Silver, Total	ND		mg/L	0.0022	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:24	MO	F1
Silver, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/28/19 13:00	DXC	5/8/19 17:54	MO	E1
Sodium, Total	36.9		mg/L	0.11	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:24	MO	F1
Sodium, Dissolved	38.8		mg/L	0.11	SW846 6020A	4/28/19 13:00	DXC	5/8/19 17:54	MO	E1
Thallium, Total	ND		mg/L	0.0011	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:24	MO	F1
Vanadium, Total	ND		mg/L	0.0022	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:24	MO	F1
Zinc, Total	ND		mg/L	0.0056	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:24	MO	F1

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

ANALYTICAL RESULTS

Workorder: 3028184 2ND QTR 2019 CWMP-FORM 19A

Lab ID: **3028184002** Date Collected: 4/16/2019 12:26 Matrix: Ground Water

Sample ID: **CWMP010W** Date Received: 4/16/2019 16:30

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
Zinc, Dissolved	0.0056		mg/L	0.0056	SW846 6020A	4/28/19 13:00	DXC	5/8/19 17:54	MO	E1
FIELD PARAMETERS										
Depth to Water Level	8.46		Feet		Field			4/16/19 12:26	CLT	G
Elev Top MW Casing above MSL	360.90		Feet		Field			4/16/19 12:26	CLT	G
Flow Rate	1.07		gal/min		Field			4/16/19 12:26	CLT	G
Ground Water Elevation	352.44		ft/MSL		Field			4/16/19 12:26	CLT	G
pH, Field (SM4500B)	5.77		pH_Units		Field			4/16/19 12:26	CLT	G
Sample Depth	17.00		Feet		Field			4/16/19 12:26	CLT	G
Specific Conductance, Field	713		umhos/cm	1	Field			4/16/19 12:26	CLT	G
Temperature	7.95		Deg. C		Field			4/16/19 12:26	CLT	G
Total Well Depth	19.60		Feet		Field			4/16/19 12:26	CLT	G
Volume in Water Column	7.24		Gallons		Field			4/16/19 12:26	CLT	G
Water Level After Purge	16.98		Feet		Field			4/16/19 12:26	CLT	G
Well Volumes Purged	1.63		Vol		Field			4/16/19 12:26	CLT	G

Susan J. Scherer

Ms. Susan J Scherer
Project Coordinator

ANALYTICAL RESULTS

Workorder: 3028184 2ND QTR 2019 CWMP-FORM 19A

Lab ID: **3028184003** Date Collected: 4/16/2019 13:27 Matrix: Ground Water

Sample ID: **CWMP009W** Date Received: 4/16/2019 16:30

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	SW846 8260B			4/23/19 01:25	PDK	K
Acrylonitrile	ND		ug/L	5.0	SW846 8260B			4/23/19 01:25	PDK	K
Benzene	4.2		ug/L	1.0	SW846 8260B			4/23/19 01:25	PDK	K
Bromochloromethane	ND		ug/L	1.0	SW846 8260B			4/23/19 01:25	PDK	K
Bromodichloromethane	ND		ug/L	1.0	SW846 8260B			4/23/19 01:25	PDK	K
Bromoform	ND		ug/L	1.0	SW846 8260B			4/23/19 01:25	PDK	K
Bromomethane	ND		ug/L	1.0	SW846 8260B			4/23/19 01:25	PDK	K
2-Butanone	ND		ug/L	10.0	SW846 8260B			4/23/19 01:25	PDK	K
Carbon Disulfide	ND		ug/L	1.0	SW846 8260B			4/23/19 01:25	PDK	K
Carbon Tetrachloride	ND		ug/L	1.0	SW846 8260B			4/23/19 01:25	PDK	K
Chlorobenzene	46.9		ug/L	1.0	SW846 8260B			4/23/19 01:25	PDK	K
Chlorodibromomethane	ND		ug/L	1.0	SW846 8260B			4/23/19 01:25	PDK	K
Chloroethane	15.7		ug/L	1.0	SW846 8260B			4/23/19 01:25	PDK	K
Chloroform	ND		ug/L	1.0	SW846 8260B			4/23/19 01:25	PDK	K
Chloromethane	ND		ug/L	1.0	SW846 8260B			4/23/19 01:25	PDK	K
3-Chloro-1-propene	ND		ug/L	1.0	SW846 8260B			4/23/19 01:25	PDK	K
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	SW846 8260B			4/23/19 01:25	PDK	K
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			4/23/19 01:25	PDK	K
Dibromomethane	ND		ug/L	1.0	SW846 8260B			4/23/19 01:25	PDK	K
trans-1,4-Dichloro-2-butene	ND		ug/L	3.0	SW846 8260B			4/23/19 01:25	PDK	K
1,2-Dichlorobenzene	3.8		ug/L	1.0	SW846 8260B			4/23/19 01:25	PDK	K
1,3-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/23/19 01:25	PDK	K
1,4-Dichlorobenzene	10.0		ug/L	1.0	SW846 8260B			4/23/19 01:25	PDK	K
Dichlorodifluoromethane	ND		ug/L	1.0	SW846 8260B			4/23/19 01:25	PDK	K
1,1-Dichloroethane	1.3		ug/L	1.0	SW846 8260B			4/23/19 01:25	PDK	K
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/23/19 01:25	PDK	K
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/23/19 01:25	PDK	K
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/23/19 01:25	PDK	K
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/23/19 01:25	PDK	K
1,2-Dichloropropane	ND		ug/L	1.0	SW846 8260B			4/23/19 01:25	PDK	K
cis-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			4/23/19 01:25	PDK	K
trans-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			4/23/19 01:25	PDK	K
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			4/23/19 01:25	PDK	K
2-Hexanone	ND		ug/L	5.0	SW846 8260B			4/23/19 01:25	PDK	K
Iodomethane	ND		ug/L	1.0	SW846 8260B			4/23/19 01:25	PDK	K
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	SW846 8260B			4/23/19 01:25	PDK	K

ANALYTICAL RESULTS

Workorder: 3028184 2ND QTR 2019 CWMP-FORM 19A

Lab ID: **3028184003** Date Collected: 4/16/2019 13:27 Matrix: Ground Water

Sample ID: **CWMP009W** Date Received: 4/16/2019 16:30

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			4/23/19 01:25	PDK	K
Styrene	ND		ug/L	1.0	SW846 8260B			4/23/19 01:25	PDK	K
1,1,1,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/23/19 01:25	PDK	K
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/23/19 01:25	PDK	K
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			4/23/19 01:25	PDK	K
Toluene	ND		ug/L	1.0	SW846 8260B			4/23/19 01:25	PDK	K
Total Xylenes	ND		ug/L	3.0	SW846 8260B			4/23/19 01:25	PDK	K
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/23/19 01:25	PDK	K
1,1,2-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/23/19 01:25	PDK	K
Trichloroethene	ND		ug/L	1.0	SW846 8260B			4/23/19 01:25	PDK	K
Trichlorofluoromethane	ND		ug/L	1.0	SW846 8260B			4/23/19 01:25	PDK	K
1,2,3-Trichloropropane	ND		ug/L	2.0	SW846 8260B			4/23/19 01:25	PDK	K
Vinyl Acetate	ND		ug/L	5.0	SW846 8260B			4/23/19 01:25	PDK	K
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			4/23/19 01:25	PDK	K
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	123		%	62 - 133	SW846 8260B			4/23/19 01:25	PDK	K
4-Bromofluorobenzene (S)	109		%	79 - 114	SW846 8260B			4/23/19 01:25	PDK	K
Dibromofluoromethane (S)	111		%	78 - 116	SW846 8260B			4/23/19 01:25	PDK	K
Toluene-d8 (S)	102		%	76 - 127	SW846 8260B			4/23/19 01:25	PDK	K
Library Search - Volatiles										
Isobutane	16.0	J N	ug/L		SW846 8260B			4/23/19 01:25	PDK	K
Ether	4.8	J N	ug/L		SW846 8260B			4/23/19 01:25	PDK	K
2-Propanol, 2-methyl-	8.5	J N	ug/L		SW846 8260B			4/23/19 01:25	PDK	K
Silanol, trimethyl-	20.7	J N	ug/L		SW846 8260B			4/23/19 01:25	PDK	K
WET CHEMISTRY										
Alkalinity, Bicarbonate	545		mg/L	5	SM2320B-2011			4/18/19 00:50	MLM	C
Alkalinity, Total	545	1	mg/L	5	SM2320B-2011			4/18/19 00:50	MLM	C
Ammonia-N, Low Level	22.2		mg/L	1.00	SM 4500-NH3G	4/26/19 18:00	NJA	4/27/19 13:12	NJA	
Chemical Oxygen Demand (COD)	90		mg/L	15	EPA 410.4			4/24/19 15:15	AK	D
Chloride	357		mg/L	10.0	EPA 300.0			4/24/19 05:32	CHW	C
Fluoride	ND		mg/L	0.20	EPA 300.0			4/17/19 06:24	CHW	C
Nitrate-N	ND		mg/L	0.20	EPA 300.0			4/17/19 06:24	CHW	C
pH	6.74	2	pH_Units		S4500HB-11			4/18/19 00:50	MLM	C
Phenolics	0.0001		mg/L		SW846 9066	4/17/19 14:31	C_D	4/18/49 07:46	C_D	J
Specific Conductance	2080		umhos/cm	1	SM2510B-2011			4/18/19 00:50	MLM	C
Sulfate	7.2		mg/L	2.0	EPA 300.0			4/17/19 06:24	CHW	C

ANALYTICAL RESULTS

Workorder: 3028184 2ND QTR 2019 CWMP-FORM 19A

Lab ID: **3028184003** Date Collected: 4/16/2019 13:27 Matrix: Ground Water

Sample ID: **CWMP009W** Date Received: 4/16/2019 16:30

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
Total Dissolved Solids	1100		mg/L	5	S2540C-11			4/22/19 14:25	EXS	C
Total Organic Carbon (TOC)	30.9		mg/L	2.5	SM5310B-2011			4/23/19 01:15	PAG	H
Turbidity	49.8		NTU	0.10	SM2130B-2011			4/17/19 00:35	MBW	C
METALS										
Antimony, Total	ND		mg/L	0.0022	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:40	MO	F1
Arsenic, Total	ND		mg/L	0.0033	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:40	MO	F1
Arsenic, Dissolved	0.0034		mg/L	0.0030	SW846 6020A	4/28/19 13:00	DXC	5/8/19 17:57	MO	E1
Barium, Total	0.54		mg/L	0.0056	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:40	MO	F1
Barium, Dissolved	0.55		mg/L	0.0056	SW846 6020A	4/28/19 13:00	DXC	5/8/19 17:57	MO	E1
Beryllium, Total	ND		mg/L	0.0011	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:40	MO	F1
Cadmium, Total	ND		mg/L	0.0011	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:40	MO	F1
Cadmium, Dissolved	ND		mg/L	0.0011	SW846 6020A	4/28/19 13:00	DXC	5/8/19 17:57	MO	E1
Calcium, Total	88.9		mg/L	0.11	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:40	MO	F1
Calcium, Dissolved	97.9		mg/L	0.11	SW846 6020A	4/28/19 13:00	DXC	5/8/19 17:57	MO	E1
Chromium, Total	ND		mg/L	0.0022	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:40	MO	F1
Chromium, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/28/19 13:00	DXC	5/8/19 17:57	MO	E1
Cobalt, Total	0.034		mg/L	0.0056	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:40	MO	F1
Copper, Total	ND		mg/L	0.0056	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:40	MO	F1
Copper, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/28/19 13:00	DXC	5/8/19 17:57	MO	E1
Iron, Total	27.8		mg/L	0.056	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:40	MO	F1
Iron, Dissolved	28.2		mg/L	0.056	SW846 6020A	4/28/19 13:00	DXC	5/8/19 17:57	MO	E1
Lead, Total	ND		mg/L	0.0022	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:40	MO	F1
Lead, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/28/19 13:00	DXC	5/8/19 17:57	MO	E1
Magnesium, Total	55.0		mg/L	0.11	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:40	MO	F1
Magnesium, Dissolved	56.4		mg/L	0.11	SW846 6020A	4/28/19 13:00	DXC	5/8/19 17:57	MO	E1
Manganese, Total	7.1		mg/L	0.0056	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:40	MO	F1
Manganese, Dissolved	7.8		mg/L	0.0056	SW846 6020A	4/28/19 13:00	DXC	5/8/19 17:57	MO	E1
Mercury, Total	ND		mg/L	0.00050	SW846 7470A	4/21/19 23:35	MSA	4/22/19 03:54	MSA	F
Mercury, Dissolved	ND		mg/L	0.00050	SW846 7470A	4/21/19 23:35	MSA	4/22/19 03:24	MSA	E
Nickel, Total	0.042		mg/L	0.0056	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:40	MO	F1
Potassium, Total	24.7		mg/L	0.11	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:40	MO	F1
Potassium, Dissolved	25.2		mg/L	0.11	SW846 6020A	4/28/19 13:00	DXC	5/8/19 17:57	MO	E1
Selenium, Total	ND		mg/L	0.0056	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:40	MO	F1
Selenium, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/28/19 13:00	DXC	5/8/19 17:57	MO	E1
Silver, Total	ND		mg/L	0.0022	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:40	MO	F1
Silver, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/28/19 13:00	DXC	5/8/19 17:57	MO	E1
Sodium, Total	122		mg/L	0.11	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:40	MO	F1
Sodium, Dissolved	125		mg/L	0.11	SW846 6020A	4/28/19 13:00	DXC	5/8/19 17:57	MO	E1

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

ANALYTICAL RESULTS

Workorder: 3028184 2ND QTR 2019 CWMP-FORM 19A

Lab ID: **3028184003** Date Collected: 4/16/2019 13:27 Matrix: Ground Water

Sample ID: **CWMP009W** Date Received: 4/16/2019 16:30

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
Thallium, Total	ND		mg/L	0.0011	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:40	MO	F1
Vanadium, Total	ND		mg/L	0.0022	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:40	MO	F1
Zinc, Total	ND		mg/L	0.0056	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:40	MO	F1
Zinc, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/28/19 13:00	DXC	5/8/19 17:57	MO	E1
FIELD PARAMETERS										
Depth to Water Level	8.89		Feet		Field			4/16/19 13:29	CLT	G
Elev Top MW Casing above MSL	404.20		Feet		Field			4/16/19 13:29	CLT	G
Flow Rate	4.29		gal/min		Field			4/16/19 13:29	CLT	G
Ground Water Elevation	395.31		ft/MSL		Field			4/16/19 13:29	CLT	G
pH, Field (SM4500B)	6.11		pH_Units		Field			4/16/19 13:29	CLT	G
Sample Depth	16.00		Feet		Field			4/16/19 13:29	CLT	G
Specific Conductance, Field	2180		umhos/cm	1	Field			4/16/19 13:29	CLT	G
Temperature	8.41		Deg. C		Field			4/16/19 13:29	CLT	G
Total Well Depth	19.70		Feet		Field			4/16/19 13:29	CLT	G
Volume in Water Column	7.03		Gallons		Field			4/16/19 13:29	CLT	G
Water Level After Purge	10.88		Feet		Field			4/16/19 13:29	CLT	G
Well Volumes Purged	12.21		Vol		Field			4/16/19 13:29	CLT	G

Susan J. Scherer

Ms. Susan J Scherer
Project Coordinator

ANALYTICAL RESULTS

Workorder: 3028184 2ND QTR 2019 CWMP-FORM 19A

Lab ID: **3028184004** Date Collected: 4/16/2019 14:08 Matrix: Ground Water

Sample ID: **CWMP008W** Date Received: 4/16/2019 16:30

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	SW846 8260B			4/23/19 01:49	PDK	K
Acrylonitrile	ND		ug/L	5.0	SW846 8260B			4/23/19 01:49	PDK	K
Benzene	3.6		ug/L	1.0	SW846 8260B			4/23/19 01:49	PDK	K
Bromochloromethane	ND		ug/L	1.0	SW846 8260B			4/23/19 01:49	PDK	K
Bromodichloromethane	ND		ug/L	1.0	SW846 8260B			4/23/19 01:49	PDK	K
Bromoform	ND		ug/L	1.0	SW846 8260B			4/23/19 01:49	PDK	K
Bromomethane	ND		ug/L	1.0	SW846 8260B			4/23/19 01:49	PDK	K
2-Butanone	ND		ug/L	10.0	SW846 8260B			4/23/19 01:49	PDK	K
Carbon Disulfide	ND		ug/L	1.0	SW846 8260B			4/23/19 01:49	PDK	K
Carbon Tetrachloride	ND		ug/L	1.0	SW846 8260B			4/23/19 01:49	PDK	K
Chlorobenzene	12.2		ug/L	1.0	SW846 8260B			4/23/19 01:49	PDK	K
Chlorodibromomethane	ND		ug/L	1.0	SW846 8260B			4/23/19 01:49	PDK	K
Chloroethane	8.8		ug/L	1.0	SW846 8260B			4/23/19 01:49	PDK	K
Chloroform	ND		ug/L	1.0	SW846 8260B			4/23/19 01:49	PDK	K
Chloromethane	ND		ug/L	1.0	SW846 8260B			4/23/19 01:49	PDK	K
3-Chloro-1-propene	ND		ug/L	1.0	SW846 8260B			4/23/19 01:49	PDK	K
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	SW846 8260B			4/23/19 01:49	PDK	K
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			4/23/19 01:49	PDK	K
Dibromomethane	ND		ug/L	1.0	SW846 8260B			4/23/19 01:49	PDK	K
trans-1,4-Dichloro-2-butene	ND		ug/L	3.0	SW846 8260B			4/23/19 01:49	PDK	K
1,2-Dichlorobenzene	2.0		ug/L	1.0	SW846 8260B			4/23/19 01:49	PDK	K
1,3-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/23/19 01:49	PDK	K
1,4-Dichlorobenzene	14.2		ug/L	1.0	SW846 8260B			4/23/19 01:49	PDK	K
Dichlorodifluoromethane	1.4		ug/L	1.0	SW846 8260B			4/23/19 01:49	PDK	K
1,1-Dichloroethane	3.5		ug/L	1.0	SW846 8260B			4/23/19 01:49	PDK	K
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/23/19 01:49	PDK	K
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/23/19 01:49	PDK	K
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/23/19 01:49	PDK	K
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/23/19 01:49	PDK	K
1,2-Dichloropropane	ND		ug/L	1.0	SW846 8260B			4/23/19 01:49	PDK	K
cis-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			4/23/19 01:49	PDK	K
trans-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			4/23/19 01:49	PDK	K
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			4/23/19 01:49	PDK	K
2-Hexanone	ND		ug/L	5.0	SW846 8260B			4/23/19 01:49	PDK	K
Iodomethane	ND		ug/L	1.0	SW846 8260B			4/23/19 01:49	PDK	K
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	SW846 8260B			4/23/19 01:49	PDK	K

ANALYTICAL RESULTS

Workorder: 3028184 2ND QTR 2019 CWMP-FORM 19A

Lab ID: **3028184004** Date Collected: 4/16/2019 14:08 Matrix: Ground Water

Sample ID: **CWMP008W** Date Received: 4/16/2019 16:30

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			4/23/19 01:49	PDK	K
Styrene	ND		ug/L	1.0	SW846 8260B			4/23/19 01:49	PDK	K
1,1,1,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/23/19 01:49	PDK	K
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/23/19 01:49	PDK	K
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			4/23/19 01:49	PDK	K
Toluene	ND		ug/L	1.0	SW846 8260B			4/23/19 01:49	PDK	K
Total Xylenes	ND		ug/L	3.0	SW846 8260B			4/23/19 01:49	PDK	K
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/23/19 01:49	PDK	K
1,1,2-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/23/19 01:49	PDK	K
Trichloroethene	ND		ug/L	1.0	SW846 8260B			4/23/19 01:49	PDK	K
Trichlorofluoromethane	ND		ug/L	1.0	SW846 8260B			4/23/19 01:49	PDK	K
1,2,3-Trichloropropane	ND		ug/L	2.0	SW846 8260B			4/23/19 01:49	PDK	K
Vinyl Acetate	ND		ug/L	5.0	SW846 8260B			4/23/19 01:49	PDK	K
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			4/23/19 01:49	PDK	K
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	121		%	62 - 133	SW846 8260B			4/23/19 01:49	PDK	K
4-Bromofluorobenzene (S)	106		%	79 - 114	SW846 8260B			4/23/19 01:49	PDK	K
Dibromofluoromethane (S)	109		%	78 - 116	SW846 8260B			4/23/19 01:49	PDK	K
Toluene-d8 (S)	105		%	76 - 127	SW846 8260B			4/23/19 01:49	PDK	K
Library Search - Volatiles										
Methane, chlorodifluoro-	3.7	J N	ug/L		SW846 8260B			4/23/19 01:49	PDK	K
Ether	4.5	J N	ug/L		SW846 8260B			4/23/19 01:49	PDK	K
Silanol, trimethyl-	7.4	J N	ug/L		SW846 8260B			4/23/19 01:49	PDK	K
Diethyl sulfide	6.9	J N	ug/L		SW846 8260B			4/23/19 01:49	PDK	K
WET CHEMISTRY										
Alkalinity, Bicarbonate	487		mg/L	5	SM2320B-2011			4/18/19 01:02	MLM	C
Alkalinity, Total	487	1	mg/L	5	SM2320B-2011			4/18/19 01:02	MLM	C
Ammonia-N, Low Level	6.23		mg/L	1.00	SM 4500-NH3G	4/26/19 18:00	NJA	4/27/19 13:12	NJA	
Chemical Oxygen Demand (COD)	39		mg/L	15	EPA 410.4			4/24/19 15:15	AK	D
Chloride	42.1		mg/L	2.0	EPA 300.0			4/17/19 06:37	CHW	C
Fluoride	ND		mg/L	0.20	EPA 300.0			4/17/19 06:37	CHW	C
Nitrate-N	ND		mg/L	0.20	EPA 300.0			4/17/19 06:37	CHW	C
pH	6.63	2	pH_Units		S4500HB-11			4/18/19 01:02	MLM	C
Phenolics	-0.001		mg/L		SW846 9066	4/17/19 14:31	C_D	4/18/49 07:46	C_D	J
Specific Conductance	939		umhos/cm	1	SM2510B-2011			4/18/19 01:02	MLM	C
Sulfate	5.6		mg/L	2.0	EPA 300.0			4/17/19 06:37	CHW	C

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

ANALYTICAL RESULTS

Workorder: 3028184 2ND QTR 2019 CWMP-FORM 19A

Lab ID: **3028184004** Date Collected: 4/16/2019 14:08 Matrix: Ground Water
Sample ID: **CWMP008W** Date Received: 4/16/2019 16:30

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
Total Dissolved Solids	600	3	mg/L	5	S2540C-11			4/22/19 14:25	EXS	C
Total Organic Carbon (TOC)	11.6		mg/L	1.0	SM5310B-2011			4/23/19 01:15	PAG	H
Turbidity	30.7		NTU	0.10	SM2130B-2011			4/17/19 00:35	MBW	C
METALS										
Antimony, Total	ND		mg/L	0.0022	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:43	MO	F1
Arsenic, Total	ND		mg/L	0.0033	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:43	MO	F1
Arsenic, Dissolved	ND		mg/L	0.0030	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:00	MO	E1
Barium, Total	0.17		mg/L	0.0056	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:43	MO	F1
Barium, Dissolved	0.17		mg/L	0.0056	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:00	MO	E1
Beryllium, Total	ND		mg/L	0.0011	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:43	MO	F1
Cadmium, Total	ND		mg/L	0.0011	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:43	MO	F1
Cadmium, Dissolved	ND		mg/L	0.0011	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:00	MO	E1
Calcium, Total	57.1		mg/L	0.11	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:43	MO	F1
Calcium, Dissolved	58.3		mg/L	0.11	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:00	MO	E1
Chromium, Total	ND		mg/L	0.0022	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:43	MO	F1
Chromium, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:00	MO	E1
Cobalt, Total	0.032		mg/L	0.0056	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:43	MO	F1
Copper, Total	ND		mg/L	0.0056	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:43	MO	F1
Copper, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:00	MO	E1
Iron, Total	32.7		mg/L	0.056	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:43	MO	F1
Iron, Dissolved	32.5		mg/L	0.056	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:00	MO	E1
Lead, Total	ND		mg/L	0.0022	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:43	MO	F1
Lead, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:00	MO	E1
Magnesium, Total	31.7		mg/L	0.11	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:43	MO	F1
Magnesium, Dissolved	32.5		mg/L	0.11	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:00	MO	E1
Manganese, Total	13.6		mg/L	0.0056	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:43	MO	F1
Manganese, Dissolved	14.0		mg/L	0.0056	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:00	MO	E1
Mercury, Total	ND		mg/L	0.00050	SW846 7470A	4/21/19 23:35	MSA	4/22/19 03:55	MSA	F
Mercury, Dissolved	ND		mg/L	0.00050	SW846 7470A	4/21/19 23:35	MSA	4/22/19 03:25	MSA	E
Nickel, Total	0.020		mg/L	0.0056	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:43	MO	F1
Potassium, Total	8.0		mg/L	0.11	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:43	MO	F1
Potassium, Dissolved	8.3		mg/L	0.11	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:00	MO	E1
Selenium, Total	ND		mg/L	0.0056	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:43	MO	F1
Selenium, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:00	MO	E1
Silver, Total	ND		mg/L	0.0022	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:43	MO	F1
Silver, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:00	MO	E1
Sodium, Total	35.7		mg/L	0.11	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:43	MO	F1
Sodium, Dissolved	36.6		mg/L	0.11	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:00	MO	E1

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ANALYTICAL RESULTS

Workorder: 3028184 2ND QTR 2019 CWMP-FORM 19A

Lab ID: **3028184004** Date Collected: 4/16/2019 14:08 Matrix: Ground Water

Sample ID: **CWMP008W** Date Received: 4/16/2019 16:30

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
Thallium, Total	ND		mg/L	0.0011	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:43	MO	F1
Vanadium, Total	ND		mg/L	0.0022	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:43	MO	F1
Zinc, Total	ND		mg/L	0.0056	SW846 6020A	4/26/19 14:00	AHI	5/8/19 15:43	MO	F1
Zinc, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:00	MO	E1
FIELD PARAMETERS										
Depth to Water Level	2.64		Feet		Field			4/16/19 14:08	CLT	G
Elev Top MW Casing above MSL	422.30		Feet		Field			4/16/19 14:08	CLT	G
Flow Rate	1.06		gal/min		Field			4/16/19 14:08	CLT	G
Ground Water Elevation	419.66		ft/MSL		Field			4/16/19 14:08	CLT	G
pH, Field (SM4500B)	6.14		pH_Units		Field			4/16/19 14:08	CLT	G
Sample Depth	19.00		Feet		Field			4/16/19 14:08	CLT	G
Specific Conductance, Field	996		umhos/cm	1	Field			4/16/19 14:08	CLT	G
Temperature	10.01		Deg. C		Field			4/16/19 14:08	CLT	G
Total Well Depth	22.80		Feet		Field			4/16/19 14:08	CLT	G
Volume in Water Column	3.23		Gallons		Field			4/16/19 14:08	CLT	G
Water Level After Purge	7.20		Feet		Field			4/16/19 14:08	CLT	G
Well Volumes Purged	10.15		Vol		Field			4/16/19 14:08	CLT	G

Susan J. Scherer

Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 3028184 2ND QTR 2019 CWMP-FORM 19A

PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
3028184001	1	CWMP016W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
3028184001	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.				
3028184002	1	CWMP010W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
3028184002	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.				
3028184003	1	CWMP009W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
3028184003	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.				
3028184004	1	CWMP008W	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
3028184004	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.				
3028184004	3	CWMP008W	S2540C-11	Total Dissolved Solids
The RPD associated with this sample was recovered at 11%. The RPD is outside method acceptance limits of .0-5% The results used to calculate the RPD were 600 mg/L and 670 mg/L.				

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ANALYSIS - PREP METHOD CROSS REFERENCE TABLE

Workorder: 3028184 2ND QTR 2019 CWMP-FORM 19A

Lab ID	Sample ID	Analysis Method	Prep Method
3028184001	CWMP016W	EPA 300.0	
3028184001	CWMP016W	EPA 410.4	
3028184001	CWMP016W	Field	
3028184001	CWMP016W	Lib Search VOC	
3028184001	CWMP016W	S2540C-11	
3028184001	CWMP016W	S4500HB-11	
3028184001	CWMP016W	SM 4500-NH3G	S4500NH3B
3028184001	CWMP016W	SM2130B-2011	
3028184001	CWMP016W	SM2320B-2011	
3028184001	CWMP016W	SM2510B-2011	
3028184001	CWMP016W	SM5310B-2011	
3028184001	CWMP016W	SW846 6020A	SW846 3015
3028184001	CWMP016W	SW846 7470A	SW846 7470A
3028184001	CWMP016W	SW846 8260B	
3028184001	CWMP016W	SW846 9066	420.4/9066
3028184002	CWMP010W	EPA 300.0	
3028184002	CWMP010W	EPA 410.4	
3028184002	CWMP010W	Field	
3028184002	CWMP010W	Lib Search VOC	
3028184002	CWMP010W	S2540C-11	
3028184002	CWMP010W	S4500HB-11	
3028184002	CWMP010W	SM 4500-NH3G	S4500NH3B
3028184002	CWMP010W	SM2130B-2011	
3028184002	CWMP010W	SM2320B-2011	
3028184002	CWMP010W	SM2510B-2011	
3028184002	CWMP010W	SM5310B-2011	
3028184002	CWMP010W	SW846 6020A	SW846 3015
3028184002	CWMP010W	SW846 7470A	SW846 7470A
3028184002	CWMP010W	SW846 8260B	
3028184002	CWMP010W	SW846 9066	420.4/9066
3028184003	CWMP009W	EPA 300.0	
3028184003	CWMP009W	EPA 410.4	
3028184003	CWMP009W	Field	
3028184003	CWMP009W	Lib Search VOC	
3028184003	CWMP009W	S2540C-11	
3028184003	CWMP009W	S4500HB-11	
3028184003	CWMP009W	SM 4500-NH3G	S4500NH3B
3028184003	CWMP009W	SM2130B-2011	
3028184003	CWMP009W	SM2320B-2011	
3028184003	CWMP009W	SM2510B-2011	
3028184003	CWMP009W	SM5310B-2011	
3028184003	CWMP009W	SW846 6020A	SW846 3015
3028184003	CWMP009W	SW846 7470A	SW846 7470A
3028184003	CWMP009W	SW846 8260B	
3028184003	CWMP009W	SW846 9066	420.4/9066
3028184004	CWMP008W	EPA 300.0	

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ANALYSIS - PREP METHOD CROSS REFERENCE TABLE

Workorder: 3028184 2ND QTR 2019 CWMP-FORM 19A

Lab ID	Sample ID	Analysis Method	Prep Method
3028184004	CWMP008W	EPA 410.4	
3028184004	CWMP008W	Field	
3028184004	CWMP008W	Lib Search VOC	
3028184004	CWMP008W	S2540C-11	
3028184004	CWMP008W	S4500HB-11	
3028184004	CWMP008W	SM 4500-NH3G	S4500NH3B
3028184004	CWMP008W	SM2130B-2011	
3028184004	CWMP008W	SM2320B-2011	
3028184004	CWMP008W	SM2510B-2011	
3028184004	CWMP008W	SM5310B-2011	
3028184004	CWMP008W	SW846 6020A	SW846 3015
3028184004	CWMP008W	SW846 7470A	SW846 7470A
3028184004	CWMP008W	SW846 8260B	
3028184004	CWMP008W	SW846 9066	420.4/9066

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1 of 2

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

* 3 0 2 8 1 8 4 *

(Lab Use Only) by Receiving Lab)

Client Name: Lancaster County Solid Waste MA

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

Contact: Mark Reider

Phone#: (717) 735-0193

Project Name/#: Creswell/GWMP Form 19A

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: 5.8 Therm ID: 401

No. of Coolers: _____

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

Courier/Tracking #:

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

ANALYSES/METHOD REQUESTED

Sample Description/Location (as it will appear on the lab report)	Sample Date	Time	*G or C	**Matrix	TOC	O-OH	8260 VOCs - Form 19A + Subtitle D + TICs	pH, Cl, SpC, F, SO4, NO3, Tb, TDS	Alkalinity, HCO3	*FM	Sample Depth for AUX Data	NH3-N, COD	Diss Metals Form 19A (Field Filered)	Total Metals Form 19A + Subtitle D	Sample/COC Comments
					Enter Number of Containers Per Sample or Field Results Below.										
1. CWMP016W	04/16/19	1119	G	GW	2	1	2	1/2	2	x	x	1	1	1	
2. CWMP010W	04/16/19	1226	G	GW	2	1	2	1/2	2	x	x	1	1	1	
3. CWMP009W	04/16/19	1327	G	GW	2	1	2	1/2	2	x	x	1	1	1	
4. CWMP008W	04/16/19	1408	G	GW	2	1	2	1/2	2	x	x	1	1	1	
								CD							
6								4/16/19							
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	[signature] DLB/ ALS	4/16/19	1630	2	[signature]	4/16/19	1635
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-

* 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

ALS

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

Condition of Sample Receipt Form

Client: Lancaster County Solid Waste Work Order #: 300184 Initials: CA Date: 4/16/19

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

Cooler #: ____ ____ ____ ____ ____ ____ ____ ____

Temperature (°C): 5.8°C ____ ____ ____ ____ ____ ____ ____

Thermometer ID: #7490

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

Rev. 1/10/2019

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

May 17, 2019

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

Certificate of Analysis

Project Name:	**CRESWELL**	Workorder:	**3029259**
Purchase Order:	**PO1000127**	Workorder ID:	**2ND QTR 2019 CWMP-FORM 19A**

Dear Mr. Brown:

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

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

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

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

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

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

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

Susan J. Scherer

Ms. Susan J Scherer
Project Coordinator

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SAMPLE SUMMARY

Workorder: 3029259 2ND QTR 2019 CWMP-FORM 19A

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
3029259001	CWMP012W	Ground Water	4/19/2019 08:50	4/19/2019 11:47	Mr. Brian G Shade
3029259002	Field Blank	Ground Water	4/19/2019 09:05	4/19/2019 11:47	Mr. Brian G Shade
3029259003	Trip Blank	Water	4/19/2019 11:47	4/19/2019 11:47	Mr. Brian G Shade

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SAMPLE SUMMARY

Workorder: 3029259 2ND QTR 2019 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 incubator and the "Analyzed" value is the date/time out the incubator.
-- An Analysis-Prep Method Cross Reference Table is included after Analytical Results & Qualifiers section in this report.

Standard Acronyms/Flags

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

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ANALYTICAL RESULTS

Workorder: 3029259 2ND QTR 2019 CWMP-FORM 19A

Lab ID: **3029259001** Date Collected: 4/19/2019 08:50 Matrix: Ground Water

Sample ID: **CWMP012W** Date Received: 4/19/2019 11:47

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	SW846 8260B			4/26/19 02:43	PDK	D
Acrylonitrile	ND		ug/L	5.0	SW846 8260B			4/26/19 02:43	PDK	D
Benzene	ND		ug/L	1.0	SW846 8260B			4/26/19 02:43	PDK	D
Bromochloromethane	ND		ug/L	1.0	SW846 8260B			4/26/19 02:43	PDK	D
Bromodichloromethane	ND		ug/L	1.0	SW846 8260B			4/26/19 02:43	PDK	D
Bromoform	ND		ug/L	1.0	SW846 8260B			4/26/19 02:43	PDK	D
Bromomethane	ND		ug/L	1.0	SW846 8260B			4/26/19 02:43	PDK	D
2-Butanone	ND		ug/L	10.0	SW846 8260B			4/26/19 02:43	PDK	D
Carbon Disulfide	ND	8	ug/L	1.0	SW846 8260B			4/26/19 02:43	PDK	D
Carbon Tetrachloride	ND		ug/L	1.0	SW846 8260B			4/26/19 02:43	PDK	D
Chlorobenzene	ND		ug/L	1.0	SW846 8260B			4/26/19 02:43	PDK	D
Chlorodibromomethane	ND		ug/L	1.0	SW846 8260B			4/26/19 02:43	PDK	D
Chloroethane	ND		ug/L	1.0	SW846 8260B			4/26/19 02:43	PDK	D
Chloroform	ND		ug/L	1.0	SW846 8260B			4/26/19 02:43	PDK	D
Chloromethane	ND		ug/L	1.0	SW846 8260B			4/26/19 02:43	PDK	D
3-Chloro-1-propene	ND	7	ug/L	1.0	SW846 8260B			4/26/19 02:43	PDK	D
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	SW846 8260B			4/26/19 02:43	PDK	D
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			4/26/19 02:43	PDK	D
Dibromomethane	ND		ug/L	1.0	SW846 8260B			4/26/19 02:43	PDK	D
trans-1,4-Dichloro-2-butene	ND		ug/L	3.0	SW846 8260B			4/26/19 02:43	PDK	D
1,2-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/26/19 02:43	PDK	D
1,3-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/26/19 02:43	PDK	D
1,4-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/26/19 02:43	PDK	D
Dichlorodifluoromethane	ND		ug/L	1.0	SW846 8260B			4/26/19 02:43	PDK	D
1,1-Dichloroethane	ND	11	ug/L	1.0	SW846 8260B			4/26/19 02:43	PDK	D
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/26/19 02:43	PDK	D
1,1-Dichloroethene	ND	1,2	ug/L	1.0	SW846 8260B			4/26/19 02:43	PDK	D
cis-1,2-Dichloroethene	ND	12,13	ug/L	1.0	SW846 8260B			4/26/19 02:43	PDK	D
trans-1,2-Dichloroethene	ND	10,9	ug/L	1.0	SW846 8260B			4/26/19 02:43	PDK	D
1,2-Dichloropropane	ND		ug/L	1.0	SW846 8260B			4/26/19 02:43	PDK	D
cis-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			4/26/19 02:43	PDK	D
trans-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			4/26/19 02:43	PDK	D
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			4/26/19 02:43	PDK	D
2-Hexanone	ND		ug/L	5.0	SW846 8260B			4/26/19 02:43	PDK	D
Iodomethane	ND	3,4	ug/L	1.0	SW846 8260B			4/26/19 02:43	PDK	D

ANALYTICAL RESULTS

Workorder: 3029259 2ND QTR 2019 CWMP-FORM 19A

Lab ID: **3029259001** Date Collected: 4/19/2019 08:50 Matrix: Ground Water

Sample ID: **CWMP012W** Date Received: 4/19/2019 11:47

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	SW846 8260B			4/26/19 02:43	PDK	D
Methylene Chloride	ND	5,6	ug/L	1.0	SW846 8260B			4/26/19 02:43	PDK	D
Styrene	ND		ug/L	1.0	SW846 8260B			4/26/19 02:43	PDK	D
1,1,1,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/26/19 02:43	PDK	D
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/26/19 02:43	PDK	D
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			4/26/19 02:43	PDK	D
Toluene	ND		ug/L	1.0	SW846 8260B			4/26/19 02:43	PDK	D
Total Xylenes	ND		ug/L	3.0	SW846 8260B			4/26/19 02:43	PDK	D
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/26/19 02:43	PDK	D
1,1,2-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/26/19 02:43	PDK	D
Trichloroethene	ND	14,15	ug/L	1.0	SW846 8260B			4/26/19 02:43	PDK	D
Trichlorofluoromethane	ND		ug/L	1.0	SW846 8260B			4/26/19 02:43	PDK	D
1,2,3-Trichloropropane	ND		ug/L	2.0	SW846 8260B			4/26/19 02:43	PDK	D
Vinyl Acetate	ND		ug/L	5.0	SW846 8260B			4/26/19 02:43	PDK	D
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			4/26/19 02:43	PDK	D
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	107		%	62 - 133	SW846 8260B			4/26/19 02:43	PDK	D
4-Bromofluorobenzene (S)	105		%	79 - 114	SW846 8260B			4/26/19 02:43	PDK	D
Dibromofluoromethane (S)	96.9		%	78 - 116	SW846 8260B			4/26/19 02:43	PDK	D
Toluene-d8 (S)	98.5		%	76 - 127	SW846 8260B			4/26/19 02:43	PDK	D
LIBRARY SEARCH - VOLATILES										
No TIC's Detected	.				Lib Search VOC			4/26/19 02:43	CPK	D
WET CHEMISTRY										
Alkalinity, Bicarbonate	73		mg/L	5	SM2320B-2011			4/25/19 04:13	MLM	F
Alkalinity, Total	73	17	mg/L	5	SM2320B-2011			4/25/19 04:13	MLM	G
Ammonia-N, Low Level	ND		mg/L	0.10	SM 4500-NH3G	5/2/19 13:00	NJA	5/2/19 17:21	NJA	
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			4/27/19 17:16	AK	H
Chloride	29.8		mg/L	2.0	EPA 300.0			4/20/19 06:16	CHW	F
Fluoride	ND		mg/L	0.20	EPA 300.0			4/20/19 06:16	CHW	F
Nitrate-N	6.8		mg/L	0.20	EPA 300.0			4/20/19 06:16	CHW	F
pH	6.44	16	pH_Units		S4500HB-11			4/25/19 04:13	MLM	F
Phenolics	ND		mg/L	0.005	SW846 9066	4/23/19 12:34	C_D	4/24/19 16:24	RXB	C
Specific Conductance	288		umhos/cm	1	SM2510B-2011			4/25/19 04:13	MLM	F
Sulfate	5.1		mg/L	2.0	EPA 300.0			4/20/19 06:16	CHW	F
Total Dissolved Solids	170		mg/L	5	S2540C-11			4/25/19 15:50	EXS	F

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ANALYTICAL RESULTS

Workorder: 3029259 2ND QTR 2019 CWMP-FORM 19A

Lab ID: **3029259001** Date Collected: 4/19/2019 08:50 Matrix: Ground Water

Sample ID: **CWMP012W** Date Received: 4/19/2019 11:47

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
Total Organic Carbon (TOC)	3.3		mg/L	0.50	SM5310B-2011			4/29/19 19:47	PAG	A
Turbidity	399		NTU	0.10	SM2130B-2011			4/20/19 06:40	MBW	F
METALS										
Antimony, Total	ND		mg/L	0.0022	SW846 6020A	4/28/19 13:00	DXC	5/16/19 11:51	MO	J1
Arsenic, Total	ND		mg/L	0.0033	SW846 6020A	4/28/19 13:00	DXC	5/15/19 14:18	MO	J1
Arsenic, Dissolved	ND		mg/L	0.0030	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:36	MO	I1
Barium, Total	0.090		mg/L	0.0056	SW846 6020A	4/28/19 13:00	DXC	5/16/19 11:51	MO	J1
Barium, Dissolved	0.084		mg/L	0.0056	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:36	MO	I1
Beryllium, Total	ND		mg/L	0.0011	SW846 6020A	4/28/19 13:00	DXC	5/15/19 14:18	MO	J1
Cadmium, Total	ND		mg/L	0.0011	SW846 6020A	4/28/19 13:00	DXC	5/15/19 14:18	MO	J1
Cadmium, Dissolved	ND		mg/L	0.0011	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:36	MO	I1
Calcium, Total	26.7		mg/L	0.11	SW846 6020A	4/28/19 13:00	DXC	5/15/19 14:18	MO	J1
Calcium, Dissolved	25.5		mg/L	0.11	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:36	MO	I1
Chromium, Total	ND		mg/L	0.0022	SW846 6020A	4/28/19 13:00	DXC	5/15/19 14:18	MO	J1
Chromium, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:36	MO	I1
Cobalt, Total	ND		mg/L	0.0056	SW846 6020A	4/28/19 13:00	DXC	5/15/19 14:18	MO	J1
Copper, Total	ND		mg/L	0.0056	SW846 6020A	4/28/19 13:00	DXC	5/15/19 14:18	MO	J1
Copper, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:36	MO	I1
Iron, Total	12.9		mg/L	0.056	SW846 6020A	4/28/19 13:00	DXC	5/15/19 14:18	MO	J1
Iron, Dissolved	ND		mg/L	0.056	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:36	MO	I1
Lead, Total	ND		mg/L	0.0022	SW846 6020A	4/28/19 13:00	DXC	5/15/19 14:18	MO	J1
Lead, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:36	MO	I1
Magnesium, Total	7.6		mg/L	0.11	SW846 6020A	4/28/19 13:00	DXC	5/15/19 14:18	MO	J1
Magnesium, Dissolved	8.4		mg/L	0.11	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:36	MO	I1
Manganese, Total	0.25		mg/L	0.0056	SW846 6020A	4/28/19 13:00	DXC	5/15/19 14:18	MO	J1
Manganese, Dissolved	0.065		mg/L	0.0056	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:36	MO	I1
Mercury, Total	ND		mg/L	0.00050	SW846 7470A	4/24/19 00:44	MSA	4/24/19 04:15	MSA	J
Mercury, Dissolved	ND		mg/L	0.00050	SW846 7470A	4/24/19 00:44	MSA	4/24/19 03:55	MSA	I
Nickel, Total	0.0092		mg/L	0.0056	SW846 6020A	4/28/19 13:00	DXC	5/15/19 14:18	MO	J1
Potassium, Total	1.2		mg/L	0.11	SW846 6020A	4/28/19 13:00	DXC	5/15/19 14:18	MO	J1
Potassium, Dissolved	1.2		mg/L	0.11	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:36	MO	I1
Selenium, Total	ND		mg/L	0.0056	SW846 6020A	4/28/19 13:00	DXC	5/15/19 14:18	MO	J1
Selenium, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:36	MO	I1
Silver, Total	ND		mg/L	0.0022	SW846 6020A	4/28/19 13:00	DXC	5/15/19 14:18	MO	J1
Silver, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:36	MO	I1
Sodium, Total	11.9		mg/L	0.11	SW846 6020A	4/28/19 13:00	DXC	5/15/19 14:18	MO	J1
Sodium, Dissolved	11.6		mg/L	0.11	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:36	MO	I1
Thallium, Total	ND		mg/L	0.0011	SW846 6020A	4/28/19 13:00	DXC	5/16/19 11:51	MO	J1

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ANALYTICAL RESULTS

Workorder: 3029259 2ND QTR 2019 CWMP-FORM 19A

Lab ID: **3029259001** Date Collected: 4/19/2019 08:50 Matrix: Ground Water
Sample ID: **CWMP012W** Date Received: 4/19/2019 11:47

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
Vanadium, Total	ND		mg/L	0.0022	SW846 6020A	4/28/19 13:00	DXC	5/15/19 14:18	MO	J1
Zinc, Total	0.0098		mg/L	0.0056	SW846 6020A	4/28/19 13:00	DXC	5/15/19 14:18	MO	J1
Zinc, Dissolved	0.017		mg/L	0.0056	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:36	MO	I1
FIELD PARAMETERS										
pH, Field (SM4500B)	5.68		pH_Units		Field			4/19/19 08:50	BGS	K
Specific Conductance, Field	305		umhos/cm	1	Field			4/19/19 08:50	BGS	K
Temperature	17.20		Deg. C		Field			4/19/19 08:50	BGS	K

Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 3029259 2ND QTR 2019 CWMP-FORM 19A

Lab ID: **3029259002** Date Collected: 4/19/2019 09:05 Matrix: Ground Water

Sample ID: **Field Blank** Date Received: 4/19/2019 11:47

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
VOLATILE ORGANICS										
Acetone	84.9		ug/L	10.0	SW846 8260B			4/26/19 00:50	PDK	D
Acrylonitrile	ND		ug/L	5.0	SW846 8260B			4/26/19 00:50	PDK	D
Benzene	ND		ug/L	1.0	SW846 8260B			4/26/19 00:50	PDK	D
Bromochloromethane	ND		ug/L	1.0	SW846 8260B			4/26/19 00:50	PDK	D
Bromodichloromethane	ND		ug/L	1.0	SW846 8260B			4/26/19 00:50	PDK	D
Bromoform	ND		ug/L	1.0	SW846 8260B			4/26/19 00:50	PDK	D
Bromomethane	ND		ug/L	1.0	SW846 8260B			4/26/19 00:50	PDK	D
2-Butanone	ND		ug/L	10.0	SW846 8260B			4/26/19 00:50	PDK	D
Carbon Disulfide	ND		ug/L	1.0	SW846 8260B			4/26/19 00:50	PDK	D
Carbon Tetrachloride	ND		ug/L	1.0	SW846 8260B			4/26/19 00:50	PDK	D
Chlorobenzene	ND		ug/L	1.0	SW846 8260B			4/26/19 00:50	PDK	D
Chlorodibromomethane	ND		ug/L	1.0	SW846 8260B			4/26/19 00:50	PDK	D
Chloroethane	ND		ug/L	1.0	SW846 8260B			4/26/19 00:50	PDK	D
Chloroform	ND		ug/L	1.0	SW846 8260B			4/26/19 00:50	PDK	D
Chloromethane	ND		ug/L	1.0	SW846 8260B			4/26/19 00:50	PDK	D
3-Chloro-1-propene	ND		ug/L	1.0	SW846 8260B			4/26/19 00:50	PDK	D
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	SW846 8260B			4/26/19 00:50	PDK	D
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			4/26/19 00:50	PDK	D
Dibromomethane	ND		ug/L	1.0	SW846 8260B			4/26/19 00:50	PDK	D
trans-1,4-Dichloro-2-butene	ND		ug/L	3.0	SW846 8260B			4/26/19 00:50	PDK	D
1,2-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/26/19 00:50	PDK	D
1,3-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/26/19 00:50	PDK	D
1,4-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/26/19 00:50	PDK	D
Dichlorodifluoromethane	ND		ug/L	1.0	SW846 8260B			4/26/19 00:50	PDK	D
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/26/19 00:50	PDK	D
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/26/19 00:50	PDK	D
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/26/19 00:50	PDK	D
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/26/19 00:50	PDK	D
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/26/19 00:50	PDK	D
1,2-Dichloropropane	ND		ug/L	1.0	SW846 8260B			4/26/19 00:50	PDK	D
cis-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			4/26/19 00:50	PDK	D
trans-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			4/26/19 00:50	PDK	D
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			4/26/19 00:50	PDK	D
2-Hexanone	ND		ug/L	5.0	SW846 8260B			4/26/19 00:50	PDK	D
Iodomethane	ND		ug/L	1.0	SW846 8260B			4/26/19 00:50	PDK	D
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	SW846 8260B			4/26/19 00:50	PDK	D

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ANALYTICAL RESULTS

Workorder: 3029259 2ND QTR 2019 CWMP-FORM 19A

Lab ID: **3029259002** Date Collected: 4/19/2019 09:05 Matrix: Ground Water

Sample ID: **Field Blank** Date Received: 4/19/2019 11:47

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Methylene Chloride	5.3	1	ug/L	1.0	SW846 8260B			4/26/19 00:50	PDK	D
Styrene	ND		ug/L	1.0	SW846 8260B			4/26/19 00:50	PDK	D
1,1,1,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/26/19 00:50	PDK	D
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/26/19 00:50	PDK	D
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			4/26/19 00:50	PDK	D
Toluene	ND		ug/L	1.0	SW846 8260B			4/26/19 00:50	PDK	D
Total Xylenes	ND		ug/L	3.0	SW846 8260B			4/26/19 00:50	PDK	D
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/26/19 00:50	PDK	D
1,1,2-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/26/19 00:50	PDK	D
Trichloroethene	ND		ug/L	1.0	SW846 8260B			4/26/19 00:50	PDK	D
Trichlorofluoromethane	ND		ug/L	1.0	SW846 8260B			4/26/19 00:50	PDK	D
1,2,3-Trichloropropane	ND		ug/L	2.0	SW846 8260B			4/26/19 00:50	PDK	D
Vinyl Acetate	ND		ug/L	5.0	SW846 8260B			4/26/19 00:50	PDK	D
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			4/26/19 00:50	PDK	D
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	109		%	62 - 133	SW846 8260B			4/26/19 00:50	PDK	D
4-Bromofluorobenzene (S)	104		%	79 - 114	SW846 8260B			4/26/19 00:50	PDK	D
Dibromofluoromethane (S)	97.7		%	78 - 116	SW846 8260B			4/26/19 00:50	PDK	D
Toluene-d8 (S)	98.7		%	76 - 127	SW846 8260B			4/26/19 00:50	PDK	D
Library Search - Volatiles										
Silanol, trimethyl-	1.7	J N	ug/L		SW846 8260B			4/26/19 00:50	PDK	D
WET CHEMISTRY										
Alkalinity, Bicarbonate	ND		mg/L	5	SM2320B-2011			4/25/19 04:23	MLM	F
Alkalinity, Total	ND	4	mg/L	5	SM2320B-2011			4/25/19 04:23	MLM	G
Ammonia-N, Low Level	ND		mg/L	0.10	SM 4500-NH3G	5/2/19 13:00	NJA	5/2/19 17:21	NJA	
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			4/27/19 17:16	AK	H
Chloride	ND		mg/L	1.0	EPA 300.0			4/20/19 06:46	CHW	F
Fluoride	ND		mg/L	0.10	EPA 300.0			4/20/19 06:46	CHW	F
Nitrate-N	ND		mg/L	0.10	EPA 300.0			4/20/19 06:46	CHW	F
pH	6.04	2	pH_Units		S4500HB-11			4/25/19 04:23	MLM	F
Phenolics	ND		mg/L	0.005	SW846 9066	4/23/19 12:34	C_D	4/24/19 16:24	RXB	C
Specific Conductance	ND		umhos/cm	1	SM2510B-2011			4/25/19 04:23	MLM	F
Sulfate	ND		mg/L	1.0	EPA 300.0			4/20/19 06:46	CHW	F
Total Dissolved Solids	24	3	mg/L	5	S2540C-11			4/25/19 15:50	EXS	F
Total Organic Carbon (TOC)	ND		mg/L	0.50	SM5310B-2011			5/1/19 22:21	PAG	A
Turbidity	ND		NTU	0.10	SM2130B-2011			4/20/19 06:40	MBW	F

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ANALYTICAL RESULTS

Workorder: 3029259 2ND QTR 2019 CWMP-FORM 19A

Lab ID: **3029259002** Date Collected: 4/19/2019 09:05 Matrix: Ground Water

Sample ID: **Field Blank** Date Received: 4/19/2019 11:47

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Antimony, Total	ND		mg/L	0.0022	SW846 6020A	4/28/19 13:00	DXC	5/16/19 11:54	MO	J1
Arsenic, Total	ND		mg/L	0.0033	SW846 6020A	4/28/19 13:00	DXC	5/15/19 14:21	MO	J1
Arsenic, Dissolved	ND		mg/L	0.0030	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:39	MO	I1
Barium, Total	ND		mg/L	0.0056	SW846 6020A	4/28/19 13:00	DXC	5/16/19 11:54	MO	J1
Barium, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:39	MO	I1
Beryllium, Total	ND		mg/L	0.0011	SW846 6020A	4/28/19 13:00	DXC	5/15/19 14:21	MO	J1
Cadmium, Total	ND		mg/L	0.0011	SW846 6020A	4/28/19 13:00	DXC	5/15/19 14:21	MO	J1
Cadmium, Dissolved	ND		mg/L	0.0011	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:39	MO	I1
Calcium, Total	ND		mg/L	0.11	SW846 6020A	4/28/19 13:00	DXC	5/15/19 14:21	MO	J1
Calcium, Dissolved	ND		mg/L	0.11	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:39	MO	I1
Chromium, Total	ND		mg/L	0.0022	SW846 6020A	4/28/19 13:00	DXC	5/15/19 14:21	MO	J1
Chromium, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:39	MO	I1
Cobalt, Total	ND		mg/L	0.0056	SW846 6020A	4/28/19 13:00	DXC	5/15/19 14:21	MO	J1
Copper, Total	ND		mg/L	0.0056	SW846 6020A	4/28/19 13:00	DXC	5/15/19 14:21	MO	J1
Copper, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:39	MO	I1
Iron, Total	ND		mg/L	0.056	SW846 6020A	4/28/19 13:00	DXC	5/15/19 14:21	MO	J1
Iron, Dissolved	ND		mg/L	0.056	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:39	MO	I1
Lead, Total	ND		mg/L	0.0022	SW846 6020A	4/28/19 13:00	DXC	5/15/19 14:21	MO	J1
Lead, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:39	MO	I1
Magnesium, Total	ND		mg/L	0.11	SW846 6020A	4/28/19 13:00	DXC	5/15/19 14:21	MO	J1
Magnesium, Dissolved	ND		mg/L	0.11	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:39	MO	I1
Manganese, Total	ND		mg/L	0.0056	SW846 6020A	4/28/19 13:00	DXC	5/15/19 14:21	MO	J1
Manganese, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:39	MO	I1
Mercury, Total	ND		mg/L	0.00050	SW846 7470A	4/24/19 00:44	MSA	4/24/19 04:16	MSA	J
Mercury, Dissolved	ND		mg/L	0.00050	SW846 7470A	4/24/19 00:44	MSA	4/24/19 03:56	MSA	I
Nickel, Total	ND		mg/L	0.0056	SW846 6020A	4/28/19 13:00	DXC	5/15/19 14:21	MO	J1
Potassium, Total	ND		mg/L	0.11	SW846 6020A	4/28/19 13:00	DXC	5/15/19 14:21	MO	J1
Potassium, Dissolved	ND		mg/L	0.11	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:39	MO	I1
Selenium, Total	ND		mg/L	0.0056	SW846 6020A	4/28/19 13:00	DXC	5/15/19 14:21	MO	J1
Selenium, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:39	MO	I1
Silver, Total	ND		mg/L	0.0022	SW846 6020A	4/28/19 13:00	DXC	5/15/19 14:21	MO	J1
Silver, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:39	MO	I1
Sodium, Total	ND		mg/L	0.11	SW846 6020A	4/28/19 13:00	DXC	5/15/19 14:21	MO	J1
Sodium, Dissolved	ND		mg/L	0.11	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:39	MO	I1
Thallium, Total	ND		mg/L	0.0011	SW846 6020A	4/28/19 13:00	DXC	5/16/19 11:54	MO	J1
Vanadium, Total	ND		mg/L	0.0022	SW846 6020A	4/28/19 13:00	DXC	5/15/19 14:21	MO	J1
Zinc, Total	ND		mg/L	0.0056	SW846 6020A	4/28/19 13:00	DXC	5/15/19 14:21	MO	J1

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ANALYTICAL RESULTS

Workorder: 3029259 2ND QTR 2019 CWMP-FORM 19A

Lab ID: **3029259002** Date Collected: 4/19/2019 09:05 Matrix: Ground Water

Sample ID: **Field Blank** Date Received: 4/19/2019 11:47

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
Zinc, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/28/19 13:00	DXC	5/8/19 18:39	MO	I1

Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 3029259 2ND QTR 2019 CWMP-FORM 19A

Lab ID: **3029259003** Date Collected: 4/19/2019 11:47 Matrix: Water

Sample ID: **Trip Blank** Date Received: 4/19/2019 11:47

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	SW846 8260B			4/26/19 00:28	PDK	A
Acrylonitrile	ND		ug/L	5.0	SW846 8260B			4/26/19 00:28	PDK	A
Benzene	ND		ug/L	1.0	SW846 8260B			4/26/19 00:28	PDK	A
Bromochloromethane	ND		ug/L	1.0	SW846 8260B			4/26/19 00:28	PDK	A
Bromodichloromethane	ND		ug/L	1.0	SW846 8260B			4/26/19 00:28	PDK	A
Bromoform	ND		ug/L	1.0	SW846 8260B			4/26/19 00:28	PDK	A
Bromomethane	ND		ug/L	1.0	SW846 8260B			4/26/19 00:28	PDK	A
2-Butanone	ND		ug/L	10.0	SW846 8260B			4/26/19 00:28	PDK	A
Carbon Disulfide	ND		ug/L	1.0	SW846 8260B			4/26/19 00:28	PDK	A
Carbon Tetrachloride	ND		ug/L	1.0	SW846 8260B			4/26/19 00:28	PDK	A
Chlorobenzene	ND		ug/L	1.0	SW846 8260B			4/26/19 00:28	PDK	A
Chlorodibromomethane	ND		ug/L	1.0	SW846 8260B			4/26/19 00:28	PDK	A
Chloroethane	ND		ug/L	1.0	SW846 8260B			4/26/19 00:28	PDK	A
Chloroform	ND		ug/L	1.0	SW846 8260B			4/26/19 00:28	PDK	A
Chloromethane	ND		ug/L	1.0	SW846 8260B			4/26/19 00:28	PDK	A
3-Chloro-1-propene	ND		ug/L	1.0	SW846 8260B			4/26/19 00:28	PDK	A
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	SW846 8260B			4/26/19 00:28	PDK	A
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			4/26/19 00:28	PDK	A
Dibromomethane	ND		ug/L	1.0	SW846 8260B			4/26/19 00:28	PDK	A
trans-1,4-Dichloro-2-butene	ND		ug/L	3.0	SW846 8260B			4/26/19 00:28	PDK	A
1,2-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/26/19 00:28	PDK	A
1,3-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/26/19 00:28	PDK	A
1,4-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/26/19 00:28	PDK	A
Dichlorodifluoromethane	ND		ug/L	1.0	SW846 8260B			4/26/19 00:28	PDK	A
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/26/19 00:28	PDK	A
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/26/19 00:28	PDK	A
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/26/19 00:28	PDK	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/26/19 00:28	PDK	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/26/19 00:28	PDK	A
1,2-Dichloropropane	ND		ug/L	1.0	SW846 8260B			4/26/19 00:28	PDK	A
cis-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			4/26/19 00:28	PDK	A
trans-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			4/26/19 00:28	PDK	A
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			4/26/19 00:28	PDK	A
2-Hexanone	ND		ug/L	5.0	SW846 8260B			4/26/19 00:28	PDK	A
Iodomethane	ND		ug/L	1.0	SW846 8260B			4/26/19 00:28	PDK	A
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	SW846 8260B			4/26/19 00:28	PDK	A

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ANALYTICAL RESULTS

Workorder: 3029259 2ND QTR 2019 CWMP-FORM 19A

Lab ID: **3029259003** Date Collected: 4/19/2019 11:47 Matrix: Water

Sample ID: **Trip Blank** Date Received: 4/19/2019 11:47

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			4/26/19 00:28	PDK	A
Styrene	ND		ug/L	1.0	SW846 8260B			4/26/19 00:28	PDK	A
1,1,1,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/26/19 00:28	PDK	A
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/26/19 00:28	PDK	A
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			4/26/19 00:28	PDK	A
Toluene	ND		ug/L	1.0	SW846 8260B			4/26/19 00:28	PDK	A
Total Xylenes	ND		ug/L	3.0	SW846 8260B			4/26/19 00:28	PDK	A
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/26/19 00:28	PDK	A
1,1,2-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/26/19 00:28	PDK	A
Trichloroethene	ND		ug/L	1.0	SW846 8260B			4/26/19 00:28	PDK	A
Trichlorofluoromethane	ND		ug/L	1.0	SW846 8260B			4/26/19 00:28	PDK	A
1,2,3-Trichloropropane	ND		ug/L	2.0	SW846 8260B			4/26/19 00:28	PDK	A
Vinyl Acetate	ND		ug/L	5.0	SW846 8260B			4/26/19 00:28	PDK	A
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			4/26/19 00:28	PDK	A
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	108		%	62 - 133	SW846 8260B			4/26/19 00:28	PDK	A
4-Bromofluorobenzene (S)	105		%	79 - 114	SW846 8260B			4/26/19 00:28	PDK	A
Dibromofluoromethane (S)	97.5		%	78 - 116	SW846 8260B			4/26/19 00:28	PDK	A
Toluene-d8 (S)	99		%	76 - 127	SW846 8260B			4/26/19 00:28	PDK	A
LIBRARY SEARCH - VOLATILES										
No TIC's Detected	.				Lib Search VOC			4/26/19 00:28	CPK	A

Ms. Susan J Scherer
Project Coordinator

ANALYTICAL RESULTS

Workorder: 3029259 2ND QTR 2019 CWMP-FORM 19A

PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
3029259001	1	CWMP012W	SW846 8260B	1,1-Dichloroethene
The QC sample type MS for method SW846 8260B was outside the control limits for the analyte 1,1-Dichloroethene. The % Recovery was reported as 142 and the control limits were 63 to 128.				
3029259001	2	CWMP012W	SW846 8260B	1,1-Dichloroethene
The QC sample type MSD for method SW846 8260B was outside the control limits for the analyte 1,1-Dichloroethene. The % Recovery was reported as 137 and the control limits were 63 to 128.				
3029259001	3	CWMP012W	SW846 8260B	Iodomethane
The QC sample type MS for method SW846 8260B was outside the control limits for the analyte Iodomethane. The % Recovery was reported as 32.1 and the control limits were 37 to 128.				
3029259001	4	CWMP012W	SW846 8260B	Iodomethane
The QC sample type MSD for method SW846 8260B was outside the control limits for the analyte Iodomethane. The RPD was reported as 55.5 and the upper control limit is 27.				
3029259001	5	CWMP012W	SW846 8260B	Methylene Chloride
The QC sample type MS for method SW846 8260B was outside the control limits for the analyte Methylene Chloride. The % Recovery was reported as 129 and the control limits were 76 to 121.				
3029259001	6	CWMP012W	SW846 8260B	Methylene Chloride
The QC sample type MSD for method SW846 8260B was outside the control limits for the analyte Methylene Chloride. The % Recovery was reported as 124 and the control limits were 76 to 121.				
3029259001	7	CWMP012W	SW846 8260B	3-Chloro-1-propene
The QC sample type MS for method SW846 8260B was outside the control limits for the analyte 3-Chloro-1-propene. The % Recovery was reported as 143 and the control limits were 59 to 135.				
3029259001	8	CWMP012W	SW846 8260B	Carbon Disulfide
The QC sample type MS for method SW846 8260B was outside the control limits for the analyte Carbon Disulfide. The % Recovery was reported as 138 and the control limits were 57 to 131.				
3029259001	9	CWMP012W	SW846 8260B	trans-1,2-Dichloroethene
The QC sample type MS for method SW846 8260B was outside the control limits for the analyte trans-1,2-Dichloroethene. The % Recovery was reported as 134 and the control limits were 71 to 122.				
3029259001	10	CWMP012W	SW846 8260B	trans-1,2-Dichloroethene
The QC sample type MSD for method SW846 8260B was outside the control limits for the analyte trans-1,2-Dichloroethene. The % Recovery was reported as 125 and the control limits were 71 to 122.				
3029259001	11	CWMP012W	SW846 8260B	1,1-Dichloroethane
The QC sample type MS for method SW846 8260B was outside the control limits for the analyte 1,1-Dichloroethane. The % Recovery was reported as 128 and the control limits were 78 to 124.				
3029259001	12	CWMP012W	SW846 8260B	cis-1,2-Dichloroethene
The QC sample type MS for method SW846 8260B was outside the control limits for the analyte cis-1,2-Dichloroethene. The % Recovery was reported as 133 and the control limits were 78 to 125.				
3029259001	13	CWMP012W	SW846 8260B	cis-1,2-Dichloroethene
The QC sample type MSD for method SW846 8260B was outside the control limits for the analyte cis-1,2-Dichloroethene. The % Recovery was reported as 130 and the control limits were 78 to 125.				
3029259001	14	CWMP012W	SW846 8260B	Trichloroethene
The QC sample type MS for method SW846 8260B was outside the control limits for the analyte Trichloroethene. The % Recovery was reported as 163 and the control limits were 77 to 124.				

ANALYTICAL RESULTS

Workorder: 3029259 2ND QTR 2019 CWMP-FORM 19A

3029259001	15	CWMP012W	SW846 8260B	Trichloroethene

The QC sample type MSD for method SW846 8260B was outside the control limits for the analyte Trichloroethene. The % Recovery was reported as 153 and the control limits were 77 to 124.

3029259001	16	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.

3029259001	17	CWMP012W	SM2320B-2011	Alkalinity, Total

The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.

3029259002	1	Field Blank	SW846 8260B	Methylene Chloride

The QC sample type LCS for method SW846 8260B was outside the control limits for the analyte Methylene Chloride. The % Recovery was reported as 123 and the control limits were 76 to 121.

3029259002	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.

3029259002	3	Field Blank	S2540C-11	Total Dissolved Solids

The method blank associated with this analyte had a result of 7 mg/L. Criteria states that the method blank should be less than 5 mg/L.

3029259002	4	Field Blank	SM2320B-2011	Alkalinity, Total

The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.

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ANALYSIS - PREP METHOD CROSS REFERENCE TABLE

Workorder: 3029259 2ND QTR 2019 CWMP-FORM 19A

Lab ID	Sample ID	Analysis Method	Prep Method
3029259001	CWMP012W	EPA 300.0	
3029259001	CWMP012W	EPA 410.4	
3029259001	CWMP012W	Field	
3029259001	CWMP012W	Lib Search VOC	
3029259001	CWMP012W	S2540C-11	
3029259001	CWMP012W	S4500HB-11	
3029259001	CWMP012W	SM 4500-NH3G	S4500NH3B
3029259001	CWMP012W	SM2130B-2011	
3029259001	CWMP012W	SM2320B-2011	
3029259001	CWMP012W	SM2510B-2011	
3029259001	CWMP012W	SM5310B-2011	
3029259001	CWMP012W	SW846 6020A	SW846 3015
3029259001	CWMP012W	SW846 7470A	SW846 7470A
3029259001	CWMP012W	SW846 8260B	
3029259001	CWMP012W	SW846 9066	420.4/9066
3029259002	Field Blank	EPA 300.0	
3029259002	Field Blank	EPA 410.4	
3029259002	Field Blank	Lib Search VOC	
3029259002	Field Blank	S2540C-11	
3029259002	Field Blank	S4500HB-11	
3029259002	Field Blank	SM 4500-NH3G	S4500NH3B
3029259002	Field Blank	SM2130B-2011	
3029259002	Field Blank	SM2320B-2011	
3029259002	Field Blank	SM2510B-2011	
3029259002	Field Blank	SM5310B-2011	
3029259002	Field Blank	SW846 6020A	SW846 3015
3029259002	Field Blank	SW846 7470A	SW846 7470A
3029259002	Field Blank	SW846 8260B	
3029259002	Field Blank	SW846 9066	420.4/9066
3029259003	Trip Blank	Lib Search VOC	
3029259003	Trip Blank	SW846 8260B	

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CHAIN OF CUSTODY/ REQUEST FOR ANALYSIS

Generated by ALS

COC #:

ALS Q

1 of 1

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

30292595

Client Name: Lancaster County Solid Waste MA

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

Contact: Mark Reider

Phone#: (717) 735-0193

Project Name/#: Creswell/GWMP Form 19A

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

Sample Description/Location (as it will appear on the lab report)	Sample Date	Time	*G or C	**Matrix	Container Type	AG	AN	CG	PL	PL	—	—	PL	PL	PL
					Container Size	40 ml	125 ml	40 ml	1 L	500 ml	—	—	250 ml	125 ml	125 ml
					Preservative	HCl	H2SO4	HCl	None	None	—	—	H2SO4	HNO3	HNO3
					ANALYSES/METHOD REQUESTED										
						TOC	O-OH	8260 VOCs - Form 19A + Subtitle D + TICs	pH, Cl, SpC, F, SO4, NO3, Tb, TDS	Alkalinity, HCO3	*FM	Sample Depth for AUX Data	NH3-N, COD	Diss Metals Form 19A (Field Filered)	Total Metals Form 19A + Subtitle D
					Enter Number of Containers Per Sample or Field Results Below.										
1. CWMP012W	04/19/19	0850	G	GW		2	1	2	1	1	X	X	1	1	1
2. Field Blank	04/19/19	0905	G	GW		2	1	2	1	1			1	1	1
3. Trip Blank	04/19/19	1147	G	GW				2							
4											JAS/ALS		4/23/19		
6															
7															
8															
9															
10															

Cooler Temp: -0.1 Therm ID: 401

No. of Coolers: _____

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

Courier/Tracking #:

Sample/COC Comments

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

Project Comments:

LOGGED BY(signature): DATE TIME

REVIEWED BY(signature): DATE TIME

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
1 [signature] ALS	4-19-19	1147	2 Carley Sergeant ALS	4/19/19	1147
3			4		
5			6		
7			8		
9			10		

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

Special Processing: USACE ☐ Navy ☐ ☐

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

Reportable to PADEP? Yes ☐

PWSID # _____

Sample Disposal: Lab [X] Special ☐

EDDS: Format Type- _____

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

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

Rev 8/04

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

Condition of Sample Receipt Form

Client:	Work Order #:	Initials:	Date:
Lancaster Co SWMA	30292S9	LW	4-23-19

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

Cooler #:	1							
Temperature (°C):	0.1							
Thermometer ID:	401							

COMMENTS (Required for all NO responses above and any sample non-conformance):
<0°c - not frozen. GW. 4-23-19

Rev. 1/10/2019

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May 17, 2019

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

Certificate of Analysis

Project Name:	**CRESWELL**	Workorder:	**3028887**
Purchase Order:	**PO1000127**	Workorder ID:	**2ND QTR 2019 CWMP-FORM 19A**

Dear Mr. Brown:

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

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

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

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

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

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

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

Susan J. Scherer

Ms. Susan J Scherer
Project Coordinator

ALS Environmental

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SAMPLE SUMMARY

Workorder: 3028887 2ND QTR 2019 CWMP-FORM 19A

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
3028887001	CWMP018S	Ground Water	4/18/2019 09:20	4/18/2019 15:13	Mr. Brian G Shade
3028887002	CWMP017S	Ground Water	4/18/2019 10:21	4/18/2019 15:13	Mr. Brian G Shade

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SAMPLE SUMMARY

Workorder: 3028887 2ND QTR 2019 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 incubator and the "Analyzed" value is the date/time out the incubator.
-- An Analysis-Prep Method Cross Reference Table is included after Analytical Results & Qualifiers section in this report.

Standard Acronyms/Flags

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

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ANALYTICAL RESULTS

Workorder: 3028887 2ND QTR 2019 CWMP-FORM 19A

Lab ID: **3028887001** Date Collected: 4/18/2019 09:20 Matrix: Ground Water

Sample ID: **CWMP018S** Date Received: 4/18/2019 15:13

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	SW846 8260B			4/24/19 00:49	PDK	L
Acrylonitrile	ND		ug/L	5.0	SW846 8260B			4/24/19 00:49	PDK	L
Benzene	ND		ug/L	1.0	SW846 8260B			4/24/19 00:49	PDK	L
Bromochloromethane	ND		ug/L	1.0	SW846 8260B			4/24/19 00:49	PDK	L
Bromodichloromethane	ND		ug/L	1.0	SW846 8260B			4/24/19 00:49	PDK	L
Bromoform	ND		ug/L	1.0	SW846 8260B			4/24/19 00:49	PDK	L
Bromomethane	ND		ug/L	1.0	SW846 8260B			4/24/19 00:49	PDK	L
2-Butanone	ND		ug/L	10.0	SW846 8260B			4/24/19 00:49	PDK	L
Carbon Disulfide	ND		ug/L	1.0	SW846 8260B			4/24/19 00:49	PDK	L
Carbon Tetrachloride	ND		ug/L	1.0	SW846 8260B			4/24/19 00:49	PDK	L
Chlorobenzene	ND		ug/L	1.0	SW846 8260B			4/24/19 00:49	PDK	L
Chlorodibromomethane	ND		ug/L	1.0	SW846 8260B			4/24/19 00:49	PDK	L
Chloroethane	ND		ug/L	1.0	SW846 8260B			4/24/19 00:49	PDK	L
Chloroform	ND		ug/L	1.0	SW846 8260B			4/24/19 00:49	PDK	L
Chloromethane	ND		ug/L	1.0	SW846 8260B			4/24/19 00:49	PDK	L
3-Chloro-1-propene	ND		ug/L	1.0	SW846 8260B			4/24/19 00:49	PDK	L
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	SW846 8260B			4/24/19 00:49	PDK	L
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			4/24/19 00:49	PDK	L
Dibromomethane	ND		ug/L	1.0	SW846 8260B			4/24/19 00:49	PDK	L
trans-1,4-Dichloro-2-butene	ND		ug/L	3.0	SW846 8260B			4/24/19 00:49	PDK	L
1,2-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/24/19 00:49	PDK	L
1,3-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/24/19 00:49	PDK	L
1,4-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/24/19 00:49	PDK	L
Dichlorodifluoromethane	ND		ug/L	1.0	SW846 8260B			4/24/19 00:49	PDK	L
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/24/19 00:49	PDK	L
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/24/19 00:49	PDK	L
1,1-Dichloroethene	ND	3	ug/L	1.0	SW846 8260B			4/24/19 00:49	PDK	L
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/24/19 00:49	PDK	L
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/24/19 00:49	PDK	L
1,2-Dichloropropane	ND		ug/L	1.0	SW846 8260B			4/24/19 00:49	PDK	L
cis-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			4/24/19 00:49	PDK	L
trans-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			4/24/19 00:49	PDK	L
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			4/24/19 00:49	PDK	L
2-Hexanone	ND		ug/L	5.0	SW846 8260B			4/24/19 00:49	PDK	L
Iodomethane	ND		ug/L	1.0	SW846 8260B			4/24/19 00:49	PDK	L
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	SW846 8260B			4/24/19 00:49	PDK	L

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ANALYTICAL RESULTS

Workorder: 3028887 2ND QTR 2019 CWMP-FORM 19A

Lab ID: **3028887001** Date Collected: 4/18/2019 09:20 Matrix: Ground Water
Sample ID: **CWMP018S** Date Received: 4/18/2019 15:13

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			4/24/19 00:49	PDK	L
Styrene	ND		ug/L	1.0	SW846 8260B			4/24/19 00:49	PDK	L
1,1,1,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/24/19 00:49	PDK	L
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/24/19 00:49	PDK	L
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			4/24/19 00:49	PDK	L
Toluene	ND		ug/L	1.0	SW846 8260B			4/24/19 00:49	PDK	L
Total Xylenes	ND		ug/L	3.0	SW846 8260B			4/24/19 00:49	PDK	L
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/24/19 00:49	PDK	L
1,1,2-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/24/19 00:49	PDK	L
Trichloroethene	ND		ug/L	1.0	SW846 8260B			4/24/19 00:49	PDK	L
Trichlorofluoromethane	ND		ug/L	1.0	SW846 8260B			4/24/19 00:49	PDK	L
1,2,3-Trichloropropane	ND		ug/L	2.0	SW846 8260B			4/24/19 00:49	PDK	L
Vinyl Acetate	ND		ug/L	5.0	SW846 8260B			4/24/19 00:49	PDK	L
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			4/24/19 00:49	PDK	L
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	110		%	62 - 133	SW846 8260B			4/24/19 00:49	PDK	L
4-Bromofluorobenzene (S)	106		%	79 - 114	SW846 8260B			4/24/19 00:49	PDK	L
Dibromofluoromethane (S)	100		%	78 - 116	SW846 8260B			4/24/19 00:49	PDK	L
Toluene-d8 (S)	100		%	76 - 127	SW846 8260B			4/24/19 00:49	PDK	L
LIBRARY SEARCH - VOLATILES										
No TIC's Detected	.				Lib Search VOC			4/24/19 00:49	CPK	L
WET CHEMISTRY										
Alkalinity, Bicarbonate	255		mg/L	5	SM2320B-2011			4/23/19 04:26	MLM	C
Alkalinity, Total	262	1	mg/L	5	SM2320B-2011			4/23/19 04:26	MLM	C
Ammonia-N, Low Level	ND		mg/L	0.10	SM 4500-NH3G	4/27/19 12:00	NJA	4/29/19 16:28	NJA	
Chemical Oxygen Demand (COD)	19		mg/L	15	EPA 410.4			4/26/19 13:23	AK	E
Chloride	284		mg/L	5.0	EPA 300.0			4/19/19 13:54	CHW	C
Fluoride	ND		mg/L	0.50	EPA 300.0			4/19/19 13:54	CHW	C
Nitrate-N	16.4		mg/L	0.50	EPA 300.0			4/19/19 13:54	CHW	C
pH	8.36	2	pH_Units		S4500HB-11			4/23/19 04:26	MLM	C
Phenolics	ND		mg/L	0.005	SW846 9066	4/22/19 09:09	C_D	4/24/19 16:24	RXB	K
Specific Conductance	1720		umhos/cm	1	SM2510B-2011			4/23/19 04:26	MLM	C
Sulfate	25.1		mg/L	5.0	EPA 300.0			4/19/19 13:54	CHW	C
Total Dissolved Solids	930	4	mg/L	5	S2540C-11			4/29/19 12:35	EXS	C
Total Organic Carbon (TOC)	8.2		mg/L	0.50	SM5310B-2011			4/26/19 21:50	PAG	I
Turbidity	7.21		NTU	0.10	SM2130B-2011			4/19/19 09:00	CHW	C

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ANALYTICAL RESULTS

Workorder: 3028887 2ND QTR 2019 CWMP-FORM 19A

Lab ID: **3028887001** Date Collected: 4/18/2019 09:20 Matrix: Ground Water

Sample ID: **CWMP018S** Date Received: 4/18/2019 15:13

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Antimony, Total	ND		mg/L	0.0022	SW846 6020A	4/28/19 13:00	DXC	5/16/19 11:45	MO	G1
Arsenic, Total	ND		mg/L	0.0033	SW846 6020A	4/28/19 13:00	DXC	5/15/19 14:12	MO	G1
Arsenic, Dissolved	ND		mg/L	0.0030	SW846 6020A	4/25/19 18:10	AHI	5/3/19 15:32	MO	F1
Barium, Total	0.038		mg/L	0.0056	SW846 6020A	4/28/19 13:00	DXC	5/16/19 11:45	MO	G1
Barium, Dissolved	0.036		mg/L	0.0056	SW846 6020A	4/25/19 18:10	AHI	5/3/19 15:32	MO	F1
Beryllium, Total	ND		mg/L	0.0011	SW846 6020A	4/28/19 13:00	DXC	5/15/19 14:12	MO	G1
Cadmium, Total	ND		mg/L	0.0011	SW846 6020A	4/28/19 13:00	DXC	5/15/19 14:12	MO	G1
Cadmium, Dissolved	ND		mg/L	0.0011	SW846 6020A	4/25/19 18:10	AHI	5/3/19 15:32	MO	F1
Calcium, Total	46.8		mg/L	0.11	SW846 6020A	4/28/19 13:00	DXC	5/15/19 14:12	MO	G1
Calcium, Dissolved	50.2		mg/L	0.11	SW846 6020A	4/25/19 18:10	AHI	5/3/19 15:32	MO	F1
Chromium, Total	0.0025		mg/L	0.0022	SW846 6020A	4/28/19 13:00	DXC	5/15/19 14:12	MO	G1
Chromium, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/25/19 18:10	AHI	5/3/19 15:32	MO	F1
Cobalt, Total	ND		mg/L	0.0056	SW846 6020A	4/28/19 13:00	DXC	5/15/19 14:12	MO	G1
Copper, Total	0.012		mg/L	0.0056	SW846 6020A	4/28/19 13:00	DXC	5/15/19 14:12	MO	G1
Copper, Dissolved	0.011		mg/L	0.0056	SW846 6020A	4/25/19 18:10	AHI	5/3/19 15:32	MO	F1
Iron, Total	0.099		mg/L	0.056	SW846 6020A	4/28/19 13:00	DXC	5/15/19 14:12	MO	G1
Iron, Dissolved	0.088		mg/L	0.056	SW846 6020A	4/25/19 18:10	AHI	5/3/19 15:32	MO	F1
Lead, Total	ND		mg/L	0.0022	SW846 6020A	4/28/19 13:00	DXC	5/15/19 14:12	MO	G1
Lead, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/25/19 18:10	AHI	5/3/19 15:32	MO	F1
Magnesium, Total	51.0		mg/L	0.11	SW846 6020A	4/28/19 13:00	DXC	5/15/19 14:12	MO	G1
Magnesium, Dissolved	59.1		mg/L	0.11	SW846 6020A	4/25/19 18:10	AHI	5/3/19 15:32	MO	F1
Manganese, Total	0.11		mg/L	0.0056	SW846 6020A	4/28/19 13:00	DXC	5/15/19 14:12	MO	G1
Manganese, Dissolved	0.12		mg/L	0.0056	SW846 6020A	4/25/19 18:10	AHI	5/3/19 15:32	MO	F1
Mercury, Total	ND		mg/L	0.00050	SW846 7470A	4/23/19 04:37	MSA	4/23/19 09:58	MSA	G
Mercury, Dissolved	ND		mg/L	0.00050	SW846 7470A	4/23/19 04:37	MSA	4/23/19 10:29	MSA	F
Nickel, Total	0.012		mg/L	0.0056	SW846 6020A	4/28/19 13:00	DXC	5/15/19 14:12	MO	G1
Potassium, Total	13.3		mg/L	0.11	SW846 6020A	4/28/19 13:00	DXC	5/15/19 14:12	MO	G1
Potassium, Dissolved	13.2		mg/L	0.11	SW846 6020A	4/25/19 18:10	AHI	5/3/19 15:32	MO	F1
Selenium, Total	ND		mg/L	0.0056	SW846 6020A	4/28/19 13:00	DXC	5/15/19 14:12	MO	G1
Selenium, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/25/19 18:10	AHI	5/3/19 15:32	MO	F1
Silver, Total	ND		mg/L	0.0022	SW846 6020A	4/28/19 13:00	DXC	5/15/19 14:12	MO	G1
Silver, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/25/19 18:10	AHI	5/3/19 15:32	MO	F1
Sodium, Total	182		mg/L	0.11	SW846 6020A	4/28/19 13:00	DXC	5/15/19 14:12	MO	G1
Sodium, Dissolved	197		mg/L	0.11	SW846 6020A	4/25/19 18:10	AHI	5/3/19 15:32	MO	F1
Thallium, Total	ND		mg/L	0.0011	SW846 6020A	4/28/19 13:00	DXC	5/16/19 11:45	MO	G1
Vanadium, Total	ND		mg/L	0.0022	SW846 6020A	4/28/19 13:00	DXC	5/15/19 14:12	MO	G1
Zinc, Total	0.032		mg/L	0.0056	SW846 6020A	4/28/19 13:00	DXC	5/15/19 14:12	MO	G1

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ANALYTICAL RESULTS

Workorder: 3028887 2ND QTR 2019 CWMP-FORM 19A

Lab ID: **3028887001** Date Collected: 4/18/2019 09:20 Matrix: Ground Water
Sample ID: **CWMP018S** Date Received: 4/18/2019 15:13

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
Zinc, Dissolved	0.035		mg/L	0.0056	SW846 6020A	4/25/19 18:10	AHI	5/3/19 15:32	MO	F1
FIELD PARAMETERS										
Dissolved Oxygen	11.45		mg/L	0.01	Field			4/18/19 09:20	BGS	H
pH, Field (SM4500B)	7.52		pH_Units		Field			4/18/19 09:20	BGS	H
Specific Conductance, Field	1720		umhos/cm	1	Field			4/18/19 09:20	BGS	H
Temperature	11.29		Deg. C		Field			4/18/19 09:20	BGS	H

Susan J. Scherer

Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 3028887 2ND QTR 2019 CWMP-FORM 19A

Lab ID: **3028887002** Date Collected: 4/18/2019 10:21 Matrix: Ground Water

Sample ID: **CWMP017S** Date Received: 4/18/2019 15:13

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
VOLATILE ORGANICS										
Acetone	ND		ug/L	10.0	SW846 8260B			4/24/19 01:12	PDK	L
Acrylonitrile	ND		ug/L	5.0	SW846 8260B			4/24/19 01:12	PDK	L
Benzene	ND		ug/L	1.0	SW846 8260B			4/24/19 01:12	PDK	L
Bromochloromethane	ND		ug/L	1.0	SW846 8260B			4/24/19 01:12	PDK	L
Bromodichloromethane	ND		ug/L	1.0	SW846 8260B			4/24/19 01:12	PDK	L
Bromoform	ND		ug/L	1.0	SW846 8260B			4/24/19 01:12	PDK	L
Bromomethane	ND		ug/L	1.0	SW846 8260B			4/24/19 01:12	PDK	L
2-Butanone	ND		ug/L	10.0	SW846 8260B			4/24/19 01:12	PDK	L
Carbon Disulfide	ND		ug/L	1.0	SW846 8260B			4/24/19 01:12	PDK	L
Carbon Tetrachloride	ND		ug/L	1.0	SW846 8260B			4/24/19 01:12	PDK	L
Chlorobenzene	ND		ug/L	1.0	SW846 8260B			4/24/19 01:12	PDK	L
Chlorodibromomethane	ND		ug/L	1.0	SW846 8260B			4/24/19 01:12	PDK	L
Chloroethane	ND		ug/L	1.0	SW846 8260B			4/24/19 01:12	PDK	L
Chloroform	ND		ug/L	1.0	SW846 8260B			4/24/19 01:12	PDK	L
Chloromethane	ND		ug/L	1.0	SW846 8260B			4/24/19 01:12	PDK	L
3-Chloro-1-propene	ND		ug/L	1.0	SW846 8260B			4/24/19 01:12	PDK	L
1,2-Dibromo-3-chloropropane	ND		ug/L	7.0	SW846 8260B			4/24/19 01:12	PDK	L
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			4/24/19 01:12	PDK	L
Dibromomethane	ND		ug/L	1.0	SW846 8260B			4/24/19 01:12	PDK	L
trans-1,4-Dichloro-2-butene	ND		ug/L	3.0	SW846 8260B			4/24/19 01:12	PDK	L
1,2-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/24/19 01:12	PDK	L
1,3-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/24/19 01:12	PDK	L
1,4-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/24/19 01:12	PDK	L
Dichlorodifluoromethane	ND		ug/L	1.0	SW846 8260B			4/24/19 01:12	PDK	L
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/24/19 01:12	PDK	L
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/24/19 01:12	PDK	L
1,1-Dichloroethene	ND	3	ug/L	1.0	SW846 8260B			4/24/19 01:12	PDK	L
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/24/19 01:12	PDK	L
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/24/19 01:12	PDK	L
1,2-Dichloropropane	ND		ug/L	1.0	SW846 8260B			4/24/19 01:12	PDK	L
cis-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			4/24/19 01:12	PDK	L
trans-1,3-Dichloropropene	ND		ug/L	1.0	SW846 8260B			4/24/19 01:12	PDK	L
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			4/24/19 01:12	PDK	L
2-Hexanone	ND		ug/L	5.0	SW846 8260B			4/24/19 01:12	PDK	L
Iodomethane	ND		ug/L	1.0	SW846 8260B			4/24/19 01:12	PDK	L
4-Methyl-2-Pentanone(MIBK)	ND		ug/L	5.0	SW846 8260B			4/24/19 01:12	PDK	L

ANALYTICAL RESULTS

Workorder: 3028887 2ND QTR 2019 CWMP-FORM 19A

Lab ID: **3028887002** Date Collected: 4/18/2019 10:21 Matrix: Ground Water

Sample ID: **CWMP017S** Date Received: 4/18/2019 15:13

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			4/24/19 01:12	PDK	L
Styrene	ND		ug/L	1.0	SW846 8260B			4/24/19 01:12	PDK	L
1,1,1,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/24/19 01:12	PDK	L
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/24/19 01:12	PDK	L
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			4/24/19 01:12	PDK	L
Toluene	ND		ug/L	1.0	SW846 8260B			4/24/19 01:12	PDK	L
Total Xylenes	ND		ug/L	3.0	SW846 8260B			4/24/19 01:12	PDK	L
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/24/19 01:12	PDK	L
1,1,2-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/24/19 01:12	PDK	L
Trichloroethene	ND		ug/L	1.0	SW846 8260B			4/24/19 01:12	PDK	L
Trichlorofluoromethane	ND		ug/L	1.0	SW846 8260B			4/24/19 01:12	PDK	L
1,2,3-Trichloropropane	ND		ug/L	2.0	SW846 8260B			4/24/19 01:12	PDK	L
Vinyl Acetate	ND		ug/L	5.0	SW846 8260B			4/24/19 01:12	PDK	L
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			4/24/19 01:12	PDK	L
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	108		%	62 - 133	SW846 8260B			4/24/19 01:12	PDK	L
4-Bromofluorobenzene (S)	104		%	79 - 114	SW846 8260B			4/24/19 01:12	PDK	L
Dibromofluoromethane (S)	97.5		%	78 - 116	SW846 8260B			4/24/19 01:12	PDK	L
Toluene-d8 (S)	101		%	76 - 127	SW846 8260B			4/24/19 01:12	PDK	L
LIBRARY SEARCH - VOLATILES										
No TIC's Detected	.				Lib Search VOC			4/24/19 01:12	CPK	L
WET CHEMISTRY										
Alkalinity, Bicarbonate	236		mg/L	5	SM2320B-2011			4/23/19 06:35	MLM	C
Alkalinity, Total	236	1	mg/L	5	SM2320B-2011			4/23/19 06:35	MLM	C
Ammonia-N, Low Level	ND		mg/L	0.10	SM 4500-NH3G	4/27/19 12:00	NJA	4/29/19 16:28	NJA	
Chemical Oxygen Demand (COD)	ND		mg/L	15	EPA 410.4			4/26/19 13:23	AK	E
Chloride	305		mg/L	5.0	EPA 300.0			4/30/19 06:16	CHW	C
Fluoride	ND		mg/L	0.20	EPA 300.0			4/19/19 14:09	CHW	C
Nitrate-N	13.1		mg/L	0.20	EPA 300.0			4/19/19 14:09	CHW	C
pH	8.16	2	pH_Units		S4500HB-11			4/23/19 06:35	MLM	C
Phenolics	ND		mg/L	0.005	SW846 9066	4/22/19 09:09	C_D	4/24/19 16:24	RXB	K
Specific Conductance	1690		umhos/cm	1	SM2510B-2011			4/23/19 06:35	MLM	C
Sulfate	42.5		mg/L	2.0	EPA 300.0			4/19/19 14:09	CHW	C
Total Dissolved Solids	1460		mg/L	5	S2540C-11			4/24/19 14:15	EXS	C
Total Organic Carbon (TOC)	4.3		mg/L	0.50	SM5310B-2011			4/26/19 21:50	PAG	I
Turbidity	4.09		NTU	0.10	SM2130B-2011			4/19/19 09:00	CHW	C

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

ANALYTICAL RESULTS

Workorder: 3028887 2ND QTR 2019 CWMP-FORM 19A

Lab ID: **3028887002** Date Collected: 4/18/2019 10:21 Matrix: Ground Water

Sample ID: **CWMP017S** Date Received: 4/18/2019 15:13

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Antimony, Total	ND		mg/L	0.0022	SW846 6020A	4/28/19 13:00	DXC	5/16/19 11:48	MO	G1
Arsenic, Total	ND		mg/L	0.0033	SW846 6020A	4/28/19 13:00	DXC	5/15/19 14:15	MO	G1
Arsenic, Dissolved	ND		mg/L	0.0030	SW846 6020A	4/25/19 18:10	AHI	5/3/19 15:38	MO	F1
Barium, Total	0.042		mg/L	0.0056	SW846 6020A	4/28/19 13:00	DXC	5/16/19 11:48	MO	G1
Barium, Dissolved	0.039		mg/L	0.0056	SW846 6020A	4/25/19 18:10	AHI	5/3/19 15:38	MO	F1
Beryllium, Total	ND		mg/L	0.0011	SW846 6020A	4/28/19 13:00	DXC	5/15/19 14:15	MO	G1
Cadmium, Total	ND		mg/L	0.0011	SW846 6020A	4/28/19 13:00	DXC	5/15/19 14:15	MO	G1
Cadmium, Dissolved	ND		mg/L	0.0011	SW846 6020A	4/25/19 18:10	AHI	5/3/19 15:38	MO	F1
Calcium, Total	40.5		mg/L	0.11	SW846 6020A	4/28/19 13:00	DXC	5/15/19 14:15	MO	G1
Calcium, Dissolved	41.0		mg/L	0.11	SW846 6020A	4/25/19 18:10	AHI	5/3/19 15:38	MO	F1
Chromium, Total	ND		mg/L	0.0022	SW846 6020A	4/28/19 13:00	DXC	5/15/19 14:15	MO	G1
Chromium, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/25/19 18:10	AHI	5/3/19 15:38	MO	F1
Cobalt, Total	ND		mg/L	0.0056	SW846 6020A	4/28/19 13:00	DXC	5/15/19 14:15	MO	G1
Copper, Total	0.0074		mg/L	0.0056	SW846 6020A	4/28/19 13:00	DXC	5/15/19 14:15	MO	G1
Copper, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/25/19 18:10	AHI	5/3/19 15:38	MO	F1
Iron, Total	0.26		mg/L	0.056	SW846 6020A	4/28/19 13:00	DXC	5/15/19 14:15	MO	G1
Iron, Dissolved	0.14		mg/L	0.056	SW846 6020A	4/25/19 18:10	AHI	5/3/19 15:38	MO	F1
Lead, Total	ND		mg/L	0.0022	SW846 6020A	4/28/19 13:00	DXC	5/15/19 14:15	MO	G1
Lead, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/25/19 18:10	AHI	5/3/19 15:38	MO	F1
Magnesium, Total	48.8		mg/L	0.11	SW846 6020A	4/28/19 13:00	DXC	5/15/19 14:15	MO	G1
Magnesium, Dissolved	53.5		mg/L	0.11	SW846 6020A	4/25/19 18:10	AHI	5/3/19 15:38	MO	F1
Manganese, Total	0.090		mg/L	0.0056	SW846 6020A	4/28/19 13:00	DXC	5/15/19 14:15	MO	G1
Manganese, Dissolved	0.097		mg/L	0.0056	SW846 6020A	4/25/19 18:10	AHI	5/3/19 15:38	MO	F1
Mercury, Total	ND		mg/L	0.00050	SW846 7470A	4/23/19 04:37	MSA	4/23/19 10:00	MSA	G
Mercury, Dissolved	ND		mg/L	0.00050	SW846 7470A	4/23/19 04:37	MSA	4/23/19 10:30	MSA	F
Nickel, Total	ND		mg/L	0.0056	SW846 6020A	4/28/19 13:00	DXC	5/15/19 14:15	MO	G1
Potassium, Total	8.2		mg/L	0.11	SW846 6020A	4/28/19 13:00	DXC	5/15/19 14:15	MO	G1
Potassium, Dissolved	8.1		mg/L	0.11	SW846 6020A	4/25/19 18:10	AHI	5/3/19 15:38	MO	F1
Selenium, Total	ND		mg/L	0.0056	SW846 6020A	4/28/19 13:00	DXC	5/15/19 14:15	MO	G1
Selenium, Dissolved	ND		mg/L	0.0056	SW846 6020A	4/25/19 18:10	AHI	5/3/19 15:38	MO	F1
Silver, Total	ND		mg/L	0.0022	SW846 6020A	4/28/19 13:00	DXC	5/15/19 14:15	MO	G1
Silver, Dissolved	ND		mg/L	0.0022	SW846 6020A	4/25/19 18:10	AHI	5/3/19 15:38	MO	F1
Sodium, Total	194		mg/L	0.11	SW846 6020A	4/28/19 13:00	DXC	5/15/19 14:15	MO	G1
Sodium, Dissolved	201		mg/L	0.11	SW846 6020A	4/25/19 18:10	AHI	5/3/19 15:38	MO	F1
Thallium, Total	ND		mg/L	0.0011	SW846 6020A	4/28/19 13:00	DXC	5/16/19 11:48	MO	G1
Vanadium, Total	ND		mg/L	0.0022	SW846 6020A	4/28/19 13:00	DXC	5/15/19 14:15	MO	G1
Zinc, Total	0.047		mg/L	0.0056	SW846 6020A	4/28/19 13:00	DXC	5/15/19 14:15	MO	G1

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ANALYTICAL RESULTS

Workorder: 3028887 2ND QTR 2019 CWMP-FORM 19A

Lab ID: **3028887002** Date Collected: 4/18/2019 10:21 Matrix: Ground Water
Sample ID: **CWMP017S** Date Received: 4/18/2019 15:13

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
Zinc, Dissolved	0.043		mg/L	0.0056	SW846 6020A	4/25/19 18:10	AHI	5/3/19 15:38	MO	F1
FIELD PARAMETERS										
Dissolved Oxygen	11.27		mg/L	0.01	Field			4/18/19 10:21	BGS	H
pH, Field (SM4500B)	7.54		pH_Units		Field			4/18/19 10:21	BGS	H
Specific Conductance, Field	1757		umhos/cm	1	Field			4/18/19 10:21	BGS	H
Temperature	12.59		Deg. C		Field			4/18/19 10:21	BGS	H

Ms. Susan J Scherer
Project Coordinator

ANALYTICAL RESULTS

Workorder: 3028887 2ND QTR 2019 CWMP-FORM 19A

PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
3028887001	1	CWMP018S	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
3028887001	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.				
3028887001	3	CWMP018S	SW846 8260B	1,1-Dichloroethene
The QC sample type LCS for method SW846 8260B was outside the control limits for the analyte 1,1-Dichloroethene. The % Recovery was reported as 131 and the control limits were 63 to 128.				
3028887001	4	CWMP018S	S2540C-11	Total Dissolved Solids
The sample was originally run within hold time, but required further analysis that exceeded hold time.				
3028887002	1	CWMP017S	SM2320B-2011	Alkalinity, Total
The Total Alkalinity is titrated to a pH of 4.5 and reported as mg CaCO3/L.				
3028887002	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.				
3028887002	3	CWMP017S	SW846 8260B	1,1-Dichloroethene
The QC sample type LCS for method SW846 8260B was outside the control limits for the analyte 1,1-Dichloroethene. The % Recovery was reported as 131 and the control limits were 63 to 128.				

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ANALYSIS - PREP METHOD CROSS REFERENCE TABLE

Workorder: 3028887 2ND QTR 2019 CWMP-FORM 19A

Lab ID	Sample ID	Analysis Method	Prep Method
3028887001	CWMP018S	EPA 300.0	
3028887001	CWMP018S	EPA 410.4	
3028887001	CWMP018S	Field	
3028887001	CWMP018S	Lib Search VOC	
3028887001	CWMP018S	S2540C-11	
3028887001	CWMP018S	S4500HB-11	
3028887001	CWMP018S	SM 4500-NH3G	S4500NH3B
3028887001	CWMP018S	SM2130B-2011	
3028887001	CWMP018S	SM2320B-2011	
3028887001	CWMP018S	SM2510B-2011	
3028887001	CWMP018S	SM5310B-2011	
3028887001	CWMP018S	SW846 6020A	SW846 3015
3028887001	CWMP018S	SW846 7470A	SW846 7470A
3028887001	CWMP018S	SW846 8260B	
3028887001	CWMP018S	SW846 9066	420.4/9066
3028887002	CWMP017S	EPA 300.0	
3028887002	CWMP017S	EPA 410.4	
3028887002	CWMP017S	Field	
3028887002	CWMP017S	Lib Search VOC	
3028887002	CWMP017S	S2540C-11	
3028887002	CWMP017S	S4500HB-11	
3028887002	CWMP017S	SM 4500-NH3G	S4500NH3B
3028887002	CWMP017S	SM2130B-2011	
3028887002	CWMP017S	SM2320B-2011	
3028887002	CWMP017S	SM2510B-2011	
3028887002	CWMP017S	SM5310B-2011	
3028887002	CWMP017S	SW846 6020A	SW846 3015
3028887002	CWMP017S	SW846 7470A	SW846 7470A
3028887002	CWMP017S	SW846 8260B	
3028887002	CWMP017S	SW846 9066	420.4/9066

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CHAIN OF CUSTODY/ REQUEST FOR ANALYSIS

Generated by ALS

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

* 3 0 2 8 8 8 7 *

1 of 1

Client Name: Lancaster County Solid Waste MA

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

Contact: Mark Reider

Phone#: (717) 735-0193

Project Name/#: Creswell/GWMP Form 19A

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	125 ml	40 ml	1 L	500 ml	—	—	250 ml	125 ml	125 ml
	Preservative	HCl	H2SO4	HCl	None	None	—	—	H2SO4	HNO3	HNO3

ANALYSES/METHOD REQUESTED

Sample Description/Location (as it will appear on the lab report)	Sample Date	Time	*G or C	**Matrix	TOC	O-OH	8260 VOCs - Form 19A + Subtitle D + TICs	pH, Cl, SpC, F, SO4, NO3, Tb, TDS	Alkalinity, HCO3	*FM	Sample Depth for AUX Data	NH3-N, COD	Diss Metals Form 19A (Field Filered)	Total Metals Form 19A + Subtitle D
					Enter Number of Containers Per Sample or Field Results Below.									
1. CWMP018S	04/18/19	0920	G	GW	2	1	2	2	2	X	X	1	1	1
2. CWMP017S	04/18/19	1021	G	GW	2	1	2	2	2	X	X	1	1	1
3														
4														
6														
7														
8														
9														
10														

(Receiving Lab)

Cooler Temp: 2.3 Therm ID: _____

No. of Coolers: _____

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

Courier/Tracking #:

Sample/COC Comments

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

Project Comments:

LOGGED BY(signature): DATE TIME

REVIEWED BY(signature): DATE TIME

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
1 [signature] ALS	4.18.19	1572	2 [signature]	4.18.19	1513
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

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

Condition of Sample Receipt Form

Client: Lancaster County Solid Waste Work Order #: 3028887 Initials: CD Date: 4/19/19

1. Were airbills / tracking numbers present and recorded?	(NONE)	YES	NO
Tracking number: _____			
2. Are Custody Seals on shipping containers intact?	(NONE)	YES	NO
3. Are Custody Seals on sample containers intact?	(NONE)	YES	NO
4. Is there a COC (Chain-of-Custody) present?		(YES)	NO
5. Are the COC and bottle labels complete, legible and in agreement?		(YES)	NO
5a. Does the COC contain sample locations?		(YES)	NO
5b. Does the COC contain date and time of sample collection for all samples?		(YES)	NO
5c. Does the COC contain sample collectors name?		(YES)	NO
5d. Does the COC note the type(s) of preservation for all bottles?		(YES)	NO
5e. Does the COC note the number of bottles submitted for each sample?		(YES)	NO
5f. Does the COC note the type of sample, composite or grab?		(YES)	NO
5g. Does the COC note the matrix of the sample(s)?		(YES)	NO
6. Are all aqueous samples requiring preservation preserved correctly?	N/A	(YES)	NO
7. Were all samples placed in the proper containers for the requested analyses, with sufficient volume?		(YES)	NO
8. Are all samples within holding times for the requested analyses?	CD 4/19	(YES)	(NO)
9. Were all sample containers received intact and headspace free when required? (not broken, leaking, frozen, etc.)		(YES)	NO
10. Did we receive trip blanks (applies only for methods EPA 504, EPA 524.2 and 1631E (LL Hg)?	(N/A)	YES	NO
11. Were the samples received on ice?		(YES)	NO
12. Were sample temperatures measured at 0.0-6.0°C		(YES)	NO
13. Are the samples DW matrix ? If YES, fill out Reportable Drinking Water questions below		YES	(NO)
13a. Are the samples required for SDWA compliance reporting?	(N/A)	YES	NO
13b. Did the client provide a SDWA PWS ID#?	(N/A)	YES	NO
13c. Are all aqueous unpreserved SDWA samples pH 5-9?	(N/A)	YES	NO
13d. Did the client provide the SDWA sample location ID/Description?	(N/A)	YES	NO
13e. Did the client provide the SDWA sample type (D, E, R, C, P, S)?	(N/A)	YES	NO

Cooler #: _____

Temperature (°C): 2.3°C

Thermometer ID: TH401

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

Ph is expired, but will be analyzed with a qualifier

-CD 4/19/19

Rev. 1/10/2019

Lancaster County Solid Waste Management Authority

Creswell Landfill

Exceedence Report

Parameter Name	Units	Concentration	Criteria Conc	Qualifiers	Criteria
Location ID	**Sample Number**	**Sample Date**	**Sample Type**	**Sample Depth**	
CWMP001W	*3028156002*	*04/15/2019*	*GW*		
NITRATE-NITROGEN	mg/l	18.10	10.00		EPA-MCL
Location ID	**Sample Number**	**Sample Date**	**Sample Type**	**Sample Depth**	
CWMP017S	*3028887002*	*04/18/2019*	*GW*		
NITRATE-NITROGEN	mg/l	13.10	10.00		EPA-MCL
Location ID	**Sample Number**	**Sample Date**	**Sample Type**	**Sample Depth**	
CWMP018S	*3028887001*	*04/18/2019*	*GW*		
NITRATE-NITROGEN	mg/l	16.40	10.00		EPA-MCL

Lancaster County Solid Waste Management Authority

Creswell Landfill

Exceedence Report

Parameter Name	Units	Concentration	Criteria Conc	Qualifiers	Criteria
Location ID	**Sample Number**	**Sample Date**	**Sample Type**	**Sample Depth**	
CWMP001W	*3028156002*	*04/15/2019*	*GW*		
IRON, TOTAL	mg/l	3.00	0.30		EPA-SMCL
MANGANESE, TOTAL	mg/l	0.07	0.05		EPA-SMCL
Location ID	**Sample Number**	**Sample Date**	**Sample Type**	**Sample Depth**	
CWMP002W	*3028580001*	*04/17/2019*	*GW*		
MANGANESE, DISSOLVED	mg/l	0.82	0.05		EPA-SMCL
MANGANESE, TOTAL	mg/l	0.89	0.05		EPA-SMCL
Location ID	**Sample Number**	**Sample Date**	**Sample Type**	**Sample Depth**	
CWMP008W	*3028184004*	*04/16/2019*	*GW*		
IRON, DISSOLVED	mg/l	32.50	0.30		EPA-SMCL
IRON, TOTAL	mg/l	32.70	0.30		EPA-SMCL
MANGANESE, DISSOLVED	mg/l	14.00	0.05		EPA-SMCL
MANGANESE, TOTAL	mg/l	13.60	0.05		EPA-SMCL
TDS (TOTAL DISSOLVED SOLIDS)	mg/l	600.00	500.00		EPA-SMCL
Location ID	**Sample Number**	**Sample Date**	**Sample Type**	**Sample Depth**	
CWMP009W	*3028184003*	*04/16/2019*	*GW*		
CHLORIDE	mg/l	357.00	250.00		EPA-SMCL
IRON, DISSOLVED	mg/l	28.20	0.30		EPA-SMCL
IRON, TOTAL	mg/l	27.80	0.30		EPA-SMCL
MANGANESE, DISSOLVED	mg/l	7.80	0.05		EPA-SMCL
MANGANESE, TOTAL	mg/l	7.10	0.05		EPA-SMCL
TDS (TOTAL DISSOLVED SOLIDS)	mg/l	1,100.00	500.00		EPA-SMCL
Location ID	**Sample Number**	**Sample Date**	**Sample Type**	**Sample Depth**	
CWMP010W	*3028184002*	*04/16/2019*	*GW*		
IRON, TOTAL	mg/l	0.32	0.30		EPA-SMCL
MANGANESE, TOTAL	mg/l	0.07	0.05		EPA-SMCL
Location ID	**Sample Number**	**Sample Date**	**Sample Type**	**Sample Depth**	
CWMP012W	*3029259001*	*04/19/2019*	*GW*		
IRON, TOTAL	mg/l	12.90	0.30		EPA-SMCL
MANGANESE, DISSOLVED	mg/l	0.06	0.05		EPA-SMCL
MANGANESE, TOTAL	mg/l	0.25	0.05		EPA-SMCL

Parameter Name	Units	Concentration	Criteria Conc	Qualifiers	Criteria
Location ID	**Sample Number**	**Sample Date**	**Sample Type**	**Sample Depth**	
CWMP017S	*3028887002*	*04/18/2019*	*GW*		
CHLORIDE	mg/l	305.00	250.00		EPA-SMCL
MANGANESE, DISSOLVED	mg/l	0.10	0.05		EPA-SMCL
MANGANESE, TOTAL	mg/l	0.09	0.05		EPA-SMCL
TDS (TOTAL DISSOLVED SOLIDS)	mg/l	1,460.00	500.00		EPA-SMCL
Location ID	**Sample Number**	**Sample Date**	**Sample Type**	**Sample Depth**	
CWMP018S	*3028887001*	*04/18/2019*	*GW*		
CHLORIDE	mg/l	284.00	250.00		EPA-SMCL
MANGANESE, DISSOLVED	mg/l	0.12	0.05		EPA-SMCL
MANGANESE, TOTAL	mg/l	0.11	0.05		EPA-SMCL
TDS (TOTAL DISSOLVED SOLIDS)	mg/l	930.00	500.00		EPA-SMCL