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

May 20, 2016

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

REF: Creswell Landfill (BWM Permit #100008)
Groundwater Monitoring; 2nd Quarter 2016

Dear Ms. Sauls:

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

- This sampling event was for the "Quarterly" Form 19 parameters, all of 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 wells 1 & 5 samples where bellow MCL and SMCL with the exception of Iron, Manganese and Nitrate-Nitrogen.
- Down gradient wells had similar results with wells 17 &18 (surface Mann's Run) showing highest concentration of chlorides and nitrate-nitrogen. Wells 9 and 10 had elevated TDS and chlorides which shows surface influence of Mann's Run. Wells 8 thru 12 show iron and manganese above the SMCL which is attributable to natural geologic parent material.
- Wells 2,3,4,8,9 and 12 with historic VOCs concentrations detected continue to decrease.

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

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

Respectfully Submitted,

Mark D Reider
Environmental Manager

Enclosures

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

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF LAND RECYCLING AND WASTE

Date Prepared/Revised
05/18/2016
DEP USE ONLY
Date Received

FORM 19
MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

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

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facitlity ID (as issued by DEP): 100008

SECTION B. FACILITY INFORMATION

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

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

___ Upgradient/Upstream X Downgradient/Downstream

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

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

Depth to Water Level: 6.48 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: 1.50 ft — Elevation of Water Level: 446.92 ft./MSL

Sampling Depth: 33 ft — Volume of Water Column: 44.09 gal

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

Well Purged: X Yes ___ No — Well Volumes Purged: 3.1

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

Spring Flow Rate: ___ gpm

Sample Date (mm/dd/yy): 4/19/2016 — Sample Collection Time: 9:44

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS Environmental

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 2137486001 — Final Lab Analysis CompletionDate: 5/2/2016

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

Comments:

I.D. No	100008
Monitoring Point No.	CWMP007W
Sample Date	4/19/2016

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	EPA 350.3
BICARBONATE	13	SM18-2321
CALCIUM, TOTAL	19	SW846 6010B
CALCIUM, DISSOLVED		SW 8466010B
COD (CHEMICAL OXYGEN DEMAND)	5 ND	EPA 410.4
CHLORIDE	67.6	EPA 300.0
FLUORIDE	0.2 ND	EPA 300.0
IRON, TOTAL (ug/l)	67 ND	SW846 6010B
IRON, DISSOLVED (ug/l)		SW846 6010B
MAGNESIUM, TOTAL	9.4	SW846 6010B
MAGNESIUM, DISSOLVED		SW846 6010B
MANGANESE, TOTAL (ug/l)	7.3	SW846 6010B
MANGANESE, DISSOLVED (ug/l)		SW846 6010B
NITRATE-NITROGEN	11.2	EPA 300.0
pH-FIELD (SU)	5.1	FIELD
pH-LAB (SU)	6.37	EPA 150.1
POTASSIUM, TOTAL	2.3	SW846 6010B
POTASSIUM, DISSOLVED		SW846 6010B
SODIUM, TOTAL	31.4	SW846 6010B
SODIUM, DISSOLVED		SW846 6010B
SPEC. COND., FIELD (umhos/cm)	401	FIELD
SPEC. COND., LAB (umhos/cm)	345	EPA 120.1
SULFATE	14.9	EPA 300.0
ALKALINITY	13	SM18-2320B
TDS (TOTAL DISSOLVED SOLIDS)	226	SM18-2540C
TOC (TOTAL ORGANIC CARBON)	1 ND	SM18-5310B
TOTAL PHENOLICS (ug/l)	10 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	4/19/2016

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

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

T Please indicate detection limit if analyte is not detected.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF LAND RECYCLING AND WASTE

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SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facitlity ID (as issued by DEP): 100008

SECTION B. FACILITY INFORMATION

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

Monitoring Point Number: 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: 27.97 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: 1.23 ft — Elevation of Water Level: 487.16 ft./MSL

Sampling Depth: 57 ft — Volume of Water Column: 56.29 gal

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

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

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

Spring Flow Rate: ___ gpm

Sample Date (mm/dd/yy): 4/19/2016 — Sample Collection Time: 10:58

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS Environmental

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 2137486002 — Final Lab Analysis CompletionDate: 5/2/2016

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

Comments:

I.D. No	100008
Monitoring Point No.	CWMP001W
Sample Date	4/19/2016

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	EPA 350.3
BICARBONATE	7	SM18-2321
CALCIUM, TOTAL	18.4	SW846 6010B
CALCIUM, DISSOLVED		SW 8466010B
COD (CHEMICAL OXYGEN DEMAND)	5 ND	EPA 410.4
CHLORIDE	29.9	EPA 300.0
FLUORIDE	0.5 ND	EPA 300.0
IRON, TOTAL (ug/l)	1700	SW846 6010B
IRON, DISSOLVED (ug/l)		SW846 6010B
MAGNESIUM, TOTAL	12.1	SW846 6010B
MAGNESIUM, DISSOLVED		SW846 6010B
MANGANESE, TOTAL (ug/l)	110	SW846 6010B
MANGANESE, DISSOLVED (ug/l)		SW846 6010B
NITRATE-NITROGEN	21.2	EPA 300.0
pH-FIELD (SU)	5.3	FIELD
pH-LAB (SU)	5.93	EPA 150.1
POTASSIUM, TOTAL	2.6	SW846 6010B
POTASSIUM, DISSOLVED		SW846 6010B
SODIUM, TOTAL	14.3	SW846 6010B
SODIUM, DISSOLVED		SW846 6010B
SPEC. COND., FIELD (umhos/cm)	316	FIELD
SPEC. COND., LAB (umhos/cm)	270	EPA 120.1
SULFATE	5 ND	EPA 300.0
ALKALINITY	7	SM18-2320B
TDS (TOTAL DISSOLVED SOLIDS)	188	SM18-2540C
TOC (TOTAL ORGANIC CARBON)	1 ND	SM18-5310B
TOTAL PHENOLICS (ug/l)	10 ND	SW846 9066
TURBIDITY (N.T.U.)	113	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	4/19/2016

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

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

T Please indicate detection limit if analyte is not detected.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF LAND RECYCLING AND WASTE

Date Prepared/Revised
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QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facitlity ID (as issued by DEP): 100008

SECTION B. FACILITY INFORMATION

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

Monitoring Point Number: 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: 40.63 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: -0.37 ft — Elevation of Water Level: 472.8 ft./MSL

Sampling Depth: 130 ft — Volume of Water Column: 145.94 gal

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

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

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

Spring Flow Rate: ___ gpm

Sample Date (mm/dd/yy): 4/20/2016 — Sample Collection Time: 9:47

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS Environmental

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 2137856001 — Final Lab Analysis CompletionDate: 5/2/2016

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

Comments:

I.D. No	100008
Monitoring Point No.	CWMP005W
Sample Date	4/20/2016

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	EPA 350.3
BICARBONATE	17	SM18-2321
CALCIUM, TOTAL	18	SW846 6010B
CALCIUM, DISSOLVED		SW 8466010B
COD (CHEMICAL OXYGEN DEMAND)	12	EPA 410.4
CHLORIDE	72.5	EPA 300.0
FLUORIDE	0.2 ND	EPA 300.0
IRON, TOTAL (ug/l)	81	SW846 6010B
IRON, DISSOLVED (ug/l)		SW846 6010B
MAGNESIUM, TOTAL	9.7	SW846 6010B
MAGNESIUM, DISSOLVED		SW846 6010B
MANGANESE, TOTAL (ug/l)	66	SW846 6010B
MANGANESE, DISSOLVED (ug/l)		SW846 6010B
NITRATE-NITROGEN	12.6	EPA 300.0
pH-FIELD (SU)	4.94	FIELD
pH-LAB (SU)	5.88	EPA 150.1
POTASSIUM, TOTAL	2.7	SW846 6010B
POTASSIUM, DISSOLVED		SW846 6010B
SODIUM, TOTAL	33.9	SW846 6010B
SODIUM, DISSOLVED		SW846 6010B
SPEC. COND., FIELD (umhos/cm)	413	FIELD
SPEC. COND., LAB (umhos/cm)	353	EPA 120.1
SULFATE	2.2	EPA 300.0
ALKALINITY	17	SM18-2320B
TDS (TOTAL DISSOLVED SOLIDS)	212	SM18-2540C
TOC (TOTAL ORGANIC CARBON)	1 ND	SM18-5310B
TOTAL PHENOLICS (ug/l)	10 ND	SW846 9066
TURBIDITY (N.T.U.)	0.3	SM 2130B

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

I.D. No	100008
Monitoring Point No.	CWMP005W
Sample Date	4/20/2016

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

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

T Please indicate detection limit if analyte is not detected.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF LAND RECYCLING AND WASTE

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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

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

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

___ Upgradient/Upstream X Downgradient/Downstream

Location (County): Lancaster County — Municipality: Manor

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

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

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

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

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

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

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

Spring Flow Rate: ___ gpm

Sample Date (mm/dd/yy): 4/20/2016 — Sample Collection Time: 14:06

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS Environmental

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 2137856002 — Final Lab Analysis CompletionDate: 5/2/2016

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

Comments:

I.D. No	100008
Monitoring Point No.	CWMP018S
Sample Date	4/20/2016

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	EPA 350.3
BICARBONATE	218	SM18-2321
CALCIUM, TOTAL	65.7	SW846 6010B
CALCIUM, DISSOLVED		SW 8466010B
COD (CHEMICAL OXYGEN DEMAND)	14	EPA 410.4
CHLORIDE	544	EPA 300.0
FLUORIDE	0.2 ND	EPA 300.0
IRON, TOTAL (ug/l)	110	SW846 6010B
IRON, DISSOLVED (ug/l)		SW846 6010B
MAGNESIUM, TOTAL	65.5	SW846 6010B
MAGNESIUM, DISSOLVED		SW846 6010B
MANGANESE, TOTAL (ug/l)	10	SW846 6010B
MANGANESE, DISSOLVED (ug/l)		SW846 6010B
NITRATE-NITROGEN	21.7	EPA 300.0
pH-FIELD (SU)	8.74	FIELD
pH-LAB (SU)	8.69	EPA 150.1
POTASSIUM, TOTAL	17.4	SW846 6010B
POTASSIUM, DISSOLVED		SW846 6010B
SODIUM, TOTAL	277	SW846 6010B
SODIUM, DISSOLVED		SW846 6010B
SPEC. COND., FIELD (umhos/cm)	2501	FIELD
SPEC. COND., LAB (umhos/cm)	2260	EPA 120.1
SULFATE	37.8	EPA 300.0
ALKALINITY	259	SM18-2320B
TDS (TOTAL DISSOLVED SOLIDS)	1180	SM18-2540C
TOC (TOTAL ORGANIC CARBON)	7.8	SM18-5310B
TOTAL PHENOLICS (ug/l)	10 ND	SW846 9066
TURBIDITY (N.T.U.)	0.65	SM 2130B

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I.D. No	100008
Monitoring Point No.	CWMP018S
Sample Date	4/20/2016

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

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

T Please indicate detection limit if analyte is not detected.

2540-PM-LRWM0041 Rev. 3/2006

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

___ Upgradient/Upstream X Downgradient/Downstream

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

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

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

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

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

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

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

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

Spring Flow Rate: ___ gpm

Sample Date (mm/dd/yy): 4/20/2016 — Sample Collection Time: 14:25

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS Environmental

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 2137856003 — Final Lab Analysis CompletionDate: 5/2/2016

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

Comments:

I.D. No	100008
Monitoring Point No.	CWMP017S
Sample Date	4/20/2016

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	EPA 350.3
BICARBONATE	329	SM18-2321
CALCIUM, TOTAL	63.5	SW846 6010B
CALCIUM, DISSOLVED		SW 8466010B
COD (CHEMICAL OXYGEN DEMAND)	13	EPA 410.4
CHLORIDE	629	EPA 300.0
FLUORIDE	0.2 ND	EPA 300.0
IRON, TOTAL (ug/l)	250	SW846 6010B
IRON, DISSOLVED (ug/l)		SW846 6010B
MAGNESIUM, TOTAL	74.7	SW846 6010B
MAGNESIUM, DISSOLVED		SW846 6010B
MANGANESE, TOTAL (ug/l)	75	SW846 6010B
MANGANESE, DISSOLVED (ug/l)		SW846 6010B
NITRATE-NITROGEN	21.9	EPA 300.0
pH-FIELD (SU)	7.88	FIELD
pH-LAB (SU)	8.21	EPA 150.1
POTASSIUM, TOTAL	14.6	SW846 6010B
POTASSIUM, DISSOLVED		SW846 6010B
SODIUM, TOTAL	341	SW846 6010B
SODIUM, DISSOLVED		SW846 6010B
SPEC. COND., FIELD (umhos/cm)	2893	FIELD
SPEC. COND., LAB (umhos/cm)	2600	EPA 120.1
SULFATE	56.2	EPA 300.0
ALKALINITY	329	SM18-2320B
TDS (TOTAL DISSOLVED SOLIDS)	1340	SM18-2540C
TOC (TOTAL ORGANIC CARBON)	4.1	SM18-5310B
TOTAL PHENOLICS (ug/l)	10 ND	SW846 9066
TURBIDITY (N.T.U.)	1.83	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	4/20/2016

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

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

T Please indicate detection limit if analyte is not detected.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF LAND RECYCLING AND WASTE

Date Prepared/Revised
05/18/2016
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: 8.6 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: 2.53 ft — Elevation of Water Level: 303.37 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: 1.4

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

Spring Flow Rate: ___ gpm

Sample Date (mm/dd/yy): 4/21/2016 — Sample Collection Time: 9:37

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS Environmental

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 2138237001 — Final Lab Analysis CompletionDate: 5/3/2016

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

Comments:

I.D. No	100008
Monitoring Point No.	CWMP016W
Sample Date	4/21/2016

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	EPA 350.3
BICARBONATE	9	SM18-2321
CALCIUM, TOTAL	4.9	SW846 6010B
CALCIUM, DISSOLVED		SW 8466010B
COD (CHEMICAL OXYGEN DEMAND)	5 ND	EPA 410.4
CHLORIDE	2.2	EPA 300.0
FLUORIDE	0.2 ND	EPA 300.0
IRON, TOTAL (ug/l)	190	SW846 6010B
IRON, DISSOLVED (ug/l)		SW846 6010B
MAGNESIUM, TOTAL	1.2	SW846 6010B
MAGNESIUM, DISSOLVED		SW846 6010B
MANGANESE, TOTAL (ug/l)	11	SW846 6010B
MANGANESE, DISSOLVED (ug/l)		SW846 6010B
NITRATE-NITROGEN	0.64	EPA 300.0
pH-FIELD (SU)	4.65	FIELD
pH-LAB (SU)	6.55	EPA 150.1
POTASSIUM, TOTAL	0.56 ND	SW846 6010B
POTASSIUM, DISSOLVED		SW846 6010B
SODIUM, TOTAL	3.1	SW846 6010B
SODIUM, DISSOLVED		SW846 6010B
SPEC. COND., FIELD (umhos/cm)	60	FIELD
SPEC. COND., LAB (umhos/cm)	55	EPA 120.1
SULFATE	11.8	EPA 300.0
ALKALINITY	9	SM18-2320B
TDS (TOTAL DISSOLVED SOLIDS)	35	SM18-2540C
TOC (TOTAL ORGANIC CARBON)	1.1	SM18-5310B
TOTAL PHENOLICS (ug/l)	10 ND	SW846 9066
TURBIDITY (N.T.U.)	1.52	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	4/21/2016

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

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

T Please indicate detection limit if analyte is not detected.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF LAND RECYCLING AND WASTE

Date Prepared/Revised
05/18/2016
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: 8.87 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: 2.10 ft — Elevation of Water Level: 352.03 ft./MSL

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

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

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

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

Spring Flow Rate: ___ gpm

Sample Date (mm/dd/yy): 4/21/2016 — Sample Collection Time: 13:03

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS Environmental

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 2138237002 — Final Lab Analysis CompletionDate: 5/3/2016

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

Comments:

I.D. No	100008
Monitoring Point No.	CWMP010W
Sample Date	4/21/2016

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	EPA 350.3
BICARBONATE	159	SM18-2321
CALCIUM, TOTAL	38.8	SW846 6010B
CALCIUM, DISSOLVED		SW 8466010B
COD (CHEMICAL OXYGEN DEMAND)	6	EPA 410.4
CHLORIDE	220	EPA 300.0
FLUORIDE	0.5 ND	EPA 300.0
IRON, TOTAL (ug/l)	260	SW846 6010B
IRON, DISSOLVED (ug/l)		SW846 6010B
MAGNESIUM, TOTAL	27.1	SW846 6010B
MAGNESIUM, DISSOLVED		SW846 6010B
MANGANESE, TOTAL (ug/l)	65	SW846 6010B
MANGANESE, DISSOLVED (ug/l)		SW846 6010B
NITRATE-NITROGEN	5.8	EPA 300.0
pH-FIELD (SU)	5.87	FIELD
pH-LAB (SU)	7.26	EPA 150.1
POTASSIUM, TOTAL	9.4	SW846 6010B
POTASSIUM, DISSOLVED		SW846 6010B
SODIUM, TOTAL	134	SW846 6010B
SODIUM, DISSOLVED		SW846 6010B
SPEC. COND., FIELD (umhos/cm)	1351	FIELD
SPEC. COND., LAB (umhos/cm)	1130	EPA 120.1
SULFATE	26.7	EPA 300.0
ALKALINITY	159	SM18-2320B
TDS (TOTAL DISSOLVED SOLIDS)	560	SM18-2540C
TOC (TOTAL ORGANIC CARBON)	4.1	SM18-5310B
TOTAL PHENOLICS (ug/l)	10 ND	SW846 9066
TURBIDITY (N.T.U.)	2.92	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	4/21/2016

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

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

T Please indicate detection limit if analyte is not detected.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF LAND RECYCLING AND WASTE

Date Prepared/Revised
05/18/2016
DEP USE ONLY
Date Received

FORM 19
MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facitlity ID (as issued by DEP): 100008

SECTION B. FACILITY INFORMATION

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

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

___ Upgradient/Upstream X Downgradient/Downstream

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

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

Depth to Water Level: 9.27 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: 2.70 ft — Elevation of Water Level: 394.93 ft./MSL

Sampling Depth: 16 ft — Volume of Water Column: 6.81 gal

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

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

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

Spring Flow Rate: ___ gpm

Sample Date (mm/dd/yy): 4/21/2016 — Sample Collection Time: 13:30

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS Environmental

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 2138237003 — Final Lab Analysis CompletionDate: 5/4/2016

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

Comments:

I.D. No	100008
Monitoring Point No.	CWMP009W
Sample Date	4/21/2016

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	32.7	EPA 350.3
BICARBONATE	537	SM18-2321
CALCIUM, TOTAL	146	SW846 6010B
CALCIUM, DISSOLVED		SW 8466010B
COD (CHEMICAL OXYGEN DEMAND)	97	EPA 410.4
CHLORIDE	446	EPA 300.0
FLUORIDE	0.2 ND	EPA 300.0
IRON, TOTAL (ug/l)	33700	SW846 6010B
IRON, DISSOLVED (ug/l)		SW846 6010B
MAGNESIUM, TOTAL	72.2	SW846 6010B
MAGNESIUM, DISSOLVED		SW846 6010B
MANGANESE, TOTAL (ug/l)	11600	SW846 6010B
MANGANESE, DISSOLVED (ug/l)		SW846 6010B
NITRATE-NITROGEN	0.2 ND	EPA 300.0
pH-FIELD (SU)	6.1	FIELD
pH-LAB (SU)	6.51	EPA 150.1
POTASSIUM, TOTAL	36.6	SW846 6010B
POTASSIUM, DISSOLVED		SW846 6010B
SODIUM, TOTAL	144	SW846 6010B
SODIUM, DISSOLVED		SW846 6010B
SPEC. COND., FIELD (umhos/cm)	2672	FIELD
SPEC. COND., LAB (umhos/cm)	2460	EPA 120.1
SULFATE	4.9	EPA 300.0
ALKALINITY	537	SM18-2320B
TDS (TOTAL DISSOLVED SOLIDS)	1120	SM18-2540C
TOC (TOTAL ORGANIC CARBON)	32.2	SM18-5310B
TOTAL PHENOLICS (ug/l)	10 ND	SW846 9066
TURBIDITY (N.T.U.)	138	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	4/21/2016

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
BENZENE	2.3	SW846 8260B
1,2-DIBROMOETHANE (EDB) (ETHYLENE D	1 ND	SW846 8260B
1,1-DICHLOROETHANE	2.4	SW846 8260B
1,1-DICHLOROETHENE	1 ND	SW846 8260B
1,2-DICHLOROETHANE	1 ND	SW846 8260B
cis 1,2-DICHLOROETHENE	1 ND	SW846 8260B
trans 1,2-DICHLOROETHENE	1 ND	SW846 8260B
ETHYLBENZENE	1 ND	SW846 8260B
METHYLENE CHLORIDE	1 ND	SW846 8260B
TETRACHLOROETHENE	1 ND	SW846 8260B
TOLUENE	1 ND	SW846 8260B
1,1,1-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROETHENE	1 ND	SW846 8260B
VINYL CHLORIDE	1 ND	SW846 8260B
XYLENES (TOTAL)	3 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

2540-PM-LRWM0041 Rev. 3/2006

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF LAND RECYCLING AND WASTE

Date Prepared/Revised
05/18/2016
DEP USE ONLY
Date Received

FORM 19
MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facitlity ID (as issued by DEP): 100008

SECTION B. FACILITY INFORMATION

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

Monitoring Point Number: 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: 2.44 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: 2.80 ft — Elevation of Water Level: 419.86 ft./MSL

Sampling Depth: 19 ft — Volume of Water Column: 3.32 gal

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

Well Purged: X Yes ___ No — Well Volumes Purged: 5.1

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

Spring Flow Rate: ___ gpm

Sample Date (mm/dd/yy): 4/21/2016 — Sample Collection Time: 14:16

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS Environmental

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 2138237004 — Final Lab Analysis CompletionDate: 5/4/2016

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

Comments:

I.D. No	100008
Monitoring Point No.	CWMP008W
Sample Date	4/21/2016

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	6.53	EPA 350.3
BICARBONATE	457	SM18-2321
CALCIUM, TOTAL	73.4	SW846 6010B
CALCIUM, DISSOLVED		SW 8466010B
COD (CHEMICAL OXYGEN DEMAND)	32	EPA 410.4
CHLORIDE	37.1	EPA 300.0
FLUORIDE	0.2 ND	EPA 300.0
IRON, TOTAL (ug/l)	29400	SW846 6010B
IRON, DISSOLVED (ug/l)		SW846 6010B
MAGNESIUM, TOTAL	33.1	SW846 6010B
MAGNESIUM, DISSOLVED		SW846 6010B
MANGANESE, TOTAL (ug/l)	17400	SW846 6010B
MANGANESE, DISSOLVED (ug/l)		SW846 6010B
NITRATE-NITROGEN	0.2 ND	EPA 300.0
pH-FIELD (SU)	6.06	FIELD
pH-LAB (SU)	6.45	EPA 150.1
POTASSIUM, TOTAL	9.1	SW846 6010B
POTASSIUM, DISSOLVED		SW846 6010B
SODIUM, TOTAL	40.7	SW846 6010B
SODIUM, DISSOLVED		SW846 6010B
SPEC. COND., FIELD (umhos/cm)	997	FIELD
SPEC. COND., LAB (umhos/cm)	921	EPA 120.1
SULFATE	6.3	EPA 300.0
ALKALINITY	457	SM18-2320B
TDS (TOTAL DISSOLVED SOLIDS)	448	SM18-2540C
TOC (TOTAL ORGANIC CARBON)	9.8	SM18-5310B
TOTAL PHENOLICS (ug/l)	10 ND	SW846 9066
TURBIDITY (N.T.U.)	56.1	SM 2130B

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

I.D. No	100008
Monitoring Point No.	CWMP008W
Sample Date	4/21/2016

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
BENZENE	2.6	SW846 8260B
1,2-DIBROMOETHANE (EDB) (ETHYLENE D	1 ND	SW846 8260B
1,1-DICHLOROETHANE	3.7	SW846 8260B
1,1-DICHLOROETHENE	1 ND	SW846 8260B
1,2-DICHLOROETHANE	1 ND	SW846 8260B
cis 1,2-DICHLOROETHENE	1 ND	SW846 8260B
trans 1,2-DICHLOROETHENE	1 ND	SW846 8260B
ETHYLBENZENE	1 ND	SW846 8260B
METHYLENE CHLORIDE	1 ND	SW846 8260B
TETRACHLOROETHENE	1 ND	SW846 8260B
TOLUENE	1 ND	SW846 8260B
1,1,1-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROETHENE	1 ND	SW846 8260B
VINYL CHLORIDE	1 ND	SW846 8260B
XYLENES (TOTAL)	3 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF LAND RECYCLING AND WASTE

Date Prepared/Revised
05/18/2016
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: 72.48 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: -1.19 ft — Elevation of Water Level: 453.33 ft./MSL

Sampling Depth: 85 ft — Volume of Water Column: 40.42 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): 4/21/2016 — Sample Collection Time: 11:02

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS Environmental

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 2138238001 — Final Lab Analysis CompletionDate: 5/3/2016

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

Comments: ___

I.D. No	100008
Monitoring Point No.	CWMP002W
Sample Date	4/21/2016

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	EPA 350.3
BICARBONATE	60	SM18-2321
CALCIUM, TOTAL	50.7	SW846 6010B
CALCIUM, DISSOLVED		SW 8466010B
COD (CHEMICAL OXYGEN DEMAND)	18	EPA 410.4
CHLORIDE	102	EPA 300.0
FLUORIDE	0.2 ND	EPA 300.0
IRON, TOTAL (ug/l)	67 ND	SW846 6010B
IRON, DISSOLVED (ug/l)		SW846 6010B
MAGNESIUM, TOTAL	15.4	SW846 6010B
MAGNESIUM, DISSOLVED		SW846 6010B
MANGANESE, TOTAL (ug/l)	920	SW846 6010B
MANGANESE, DISSOLVED (ug/l)		SW846 6010B
NITRATE-NITROGEN	3.4	EPA 300.0
pH-FIELD (SU)	5.51	FIELD
pH-LAB (SU)	6.11	EPA 150.1
POTASSIUM, TOTAL	2.9	SW846 6010B
POTASSIUM, DISSOLVED		SW846 6010B
SODIUM, TOTAL	20.8	SW846 6010B
SODIUM, DISSOLVED		SW846 6010B
SPEC. COND., FIELD (umhos/cm)	587	FIELD
SPEC. COND., LAB (umhos/cm)	559	EPA 120.1
SULFATE	23.4	EPA 300.0
ALKALINITY	60	SM18-2320B
TDS (TOTAL DISSOLVED SOLIDS)	303	SM18-2540C
TOC (TOTAL ORGANIC CARBON)	3.1	SM18-5310B
TOTAL PHENOLICS (ug/l)	10 ND	SW846 9066
TURBIDITY (N.T.U.)	1.94	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	4/21/2016

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	10.4	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	1.6	SW846 8260B
TRICHLOROETHENE	1 ND	SW846 8260B
VINYL CHLORIDE	1 ND	SW846 8260B
XYLENES (TOTAL)	3 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF LAND RECYCLING AND WASTE

Date Prepared/Revised
05/18/2016
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: 100.42 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: -1.29 ft — Elevation of Water Level: 423.79 ft./MSL

Sampling Depth: 100 ft — Volume of Water Column: -37.33 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): 4/21/2016 — Sample Collection Time: 11:14

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS Environmental

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 2138238002 — Final Lab Analysis CompletionDate: 5/3/2016

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

Comments:

I.D. No	100008
Monitoring Point No.	CWMP003W
Sample Date	4/21/2016

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	EPA 350.3
BICARBONATE	23	SM18-2321
CALCIUM, TOTAL	29.6	SW846 6010B
CALCIUM, DISSOLVED		SW 8466010B
COD (CHEMICAL OXYGEN DEMAND)	6	EPA 410.4
CHLORIDE	69.9	EPA 300.0
FLUORIDE	0.2 ND	EPA 300.0
IRON, TOTAL (ug/l)	94	SW846 6010B
IRON, DISSOLVED (ug/l)		SW846 6010B
MAGNESIUM, TOTAL	9.8	SW846 6010B
MAGNESIUM, DISSOLVED		SW846 6010B
MANGANESE, TOTAL (ug/l)	69	SW846 6010B
MANGANESE, DISSOLVED (ug/l)		SW846 6010B
NITRATE-NITROGEN	8.5	EPA 300.0
pH-FIELD (SU)	5.45	FIELD
pH-LAB (SU)	6.03	EPA 150.1
POTASSIUM, TOTAL	1.8	SW846 6010B
POTASSIUM, DISSOLVED		SW846 6010B
SODIUM, TOTAL	17.9	SW846 6010B
SODIUM, DISSOLVED		SW846 6010B
SPEC. COND., FIELD (umhos/cm)	404	FIELD
SPEC. COND., LAB (umhos/cm)	340	EPA 120.1
SULFATE	5	EPA 300.0
ALKALINITY	23	SM18-2320B
TDS (TOTAL DISSOLVED SOLIDS)	277	SM18-2540C
TOC (TOTAL ORGANIC CARBON)	1 ND	SM18-5310B
TOTAL PHENOLICS (ug/l)	10 ND	SW846 9066
TURBIDITY (N.T.U.)	1.06	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	4/21/2016

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
BENZENE	1 ND	SW846 8260B
1,2-DIBROMOETHANE (EDB) (ETHYLENE D	1 ND	SW846 8260B
1,1-DICHLOROETHANE	2.7	SW846 8260B
1,1-DICHLOROETHENE	1 ND	SW846 8260B
1,2-DICHLOROETHANE	1 ND	SW846 8260B
cis 1,2-DICHLOROETHENE	1 ND	SW846 8260B
trans 1,2-DICHLOROETHENE	1 ND	SW846 8260B
ETHYLBENZENE	1 ND	SW846 8260B
METHYLENE CHLORIDE	1 ND	SW846 8260B
TETRACHLOROETHENE	1 ND	SW846 8260B
TOLUENE	1 ND	SW846 8260B
1,1,1-TRICHLOROETHANE	1 ND	SW846 8260B
TRICHLOROETHENE	1 ND	SW846 8260B
VINYL CHLORIDE	1 ND	SW846 8260B
XYLENES (TOTAL)	3 ND	SW846 8260B

T Please indicate detection limit if analyte is not detected.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF LAND RECYCLING AND WASTE

Date Prepared/Revised
05/18/2016
DEP USE ONLY
Date Received

FORM 19
MUNICIPAL WASTE LANDFILL
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

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

SECTION A. APPLICANT IDENTIFIER

Applicant/permittee: Lancaster County Solid Waste Mana

Site Name: Creswell Landfill

Facitlity ID (as issued by DEP): 100008

SECTION B. FACILITY INFORMATION

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

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

___ Upgradient/Upstream X Downgradient/Downstream

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

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

Depth to Water Level: 133.11 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: -1.37 ft — Elevation of Water Level: 396.42 ft./MSL

Sampling Depth: 130 ft — Volume of Water Column: 10.12 gal

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

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

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

Spring Flow Rate: ___ gpm

Sample Date (mm/dd/yy): 4/21/2016 — Sample Collection Time: 11:30

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS Environmental

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 2138238003 — Final Lab Analysis CompletionDate: 5/3/2016

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

Comments: ___

I.D. No	100008
Monitoring Point No.	CWMP004W
Sample Date	4/21/2016

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	EPA 350.3
BICARBONATE	24	SM18-2321
CALCIUM, TOTAL	21.8	SW846 6010B
CALCIUM, DISSOLVED		SW 8466010B
COD (CHEMICAL OXYGEN DEMAND)	5 ND	EPA 410.4
CHLORIDE	42.1	EPA 300.0
FLUORIDE	0.2 ND	EPA 300.0
IRON, TOTAL (ug/l)	67 ND	SW846 6010B
IRON, DISSOLVED (ug/l)		SW846 6010B
MAGNESIUM, TOTAL	6.5	SW846 6010B
MAGNESIUM, DISSOLVED		SW846 6010B
MANGANESE, TOTAL (ug/l)	9.2	SW846 6010B
MANGANESE, DISSOLVED (ug/l)		SW846 6010B
NITRATE-NITROGEN	7	EPA 300.0
pH-FIELD (SU)	5.6	FIELD
pH-LAB (SU)	6.4	EPA 150.1
POTASSIUM, TOTAL	1.4	SW846 6010B
POTASSIUM, DISSOLVED		SW846 6010B
SODIUM, TOTAL	14.4	SW846 6010B
SODIUM, DISSOLVED		SW846 6010B
SPEC. COND., FIELD (umhos/cm)	286	FIELD
SPEC. COND., LAB (umhos/cm)	245	EPA 120.1
SULFATE	5.4	EPA 300.0
ALKALINITY	24	SM18-2320B
TDS (TOTAL DISSOLVED SOLIDS)	178	SM18-2540C
TOC (TOTAL ORGANIC CARBON)	1 ND	SM18-5310B
TOTAL PHENOLICS (ug/l)	10 ND	SW846 9066
TURBIDITY (N.T.U.)	0.12	SM 2130B

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

I.D. No	100008
Monitoring Point No.	CWMP004W
Sample Date	4/21/2016

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

T Please indicate detection limit if analyte is not detected.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF LAND RECYCLING AND WASTE

Date Prepared/Revised
05/18/2016
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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: 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: 53.41 ft — Measured from: ___ Land Surface X TOC

Casing Stickup: 1.90 ft — Elevation of Water Level: 329.29 ft./MSL

Sampling Depth: 0 ft — Volume of Water Column: 71.21 gal

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

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

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

Spring Flow Rate: ___ gpm

Sample Date (mm/dd/yy): 4/22/2016 — Sample Collection Time: 10:07

Sample Collector's Name: Mr. Brian G Shade

Sample Collector's Affiliation: ALS Environmental

Laboratory(ies) Performing Analysis: ALS Environmental

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

Lab Accreditation Number(s): 22-293

Lab Sample Number(s): 2138583001 — Final Lab Analysis CompletionDate: 5/4/2016

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

Comments:

I.D. No	100008
Monitoring Point No.	CWMP012W
Sample Date	4/22/2016

FORM 19

QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

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

ANALYTE	VALUE[T]	ANALYSIS METHOD NUMBER
AMMONIA-NITROGEN	0.1 ND	EPA 350.3
BICARBONATE	74	SM18-2321
CALCIUM, TOTAL	35.3	SW846 6010B
CALCIUM, DISSOLVED		SW 8466010B
COD (CHEMICAL OXYGEN DEMAND)	5 ND	EPA 410.4
CHLORIDE	37.8	EPA 300.0
FLUORIDE	0.2 ND	EPA 300.0
IRON, TOTAL (ug/l)	168000	SW846 6010B
IRON, DISSOLVED (ug/l)		SW846 6010B
MAGNESIUM, TOTAL	9.6	SW846 6010B
MAGNESIUM, DISSOLVED		SW846 6010B
MANGANESE, TOTAL (ug/l)	520	SW846 6010B
MANGANESE, DISSOLVED (ug/l)		SW846 6010B
NITRATE-NITROGEN	10.7	EPA 300.0
pH-FIELD (SU)	5.5	FIELD
pH-LAB (SU)	6.45	EPA 150.1
POTASSIUM, TOTAL	1.5	SW846 6010B
POTASSIUM, DISSOLVED		SW846 6010B
SODIUM, TOTAL	13.2	SW846 6010B
SODIUM, DISSOLVED		SW846 6010B
SPEC. COND., FIELD (umhos/cm)	353	FIELD
SPEC. COND., LAB (umhos/cm)	323	EPA 120.1
SULFATE	5.1	EPA 300.0
ALKALINITY	74	SM18-2320B
TDS (TOTAL DISSOLVED SOLIDS)	230	SM18-2540C
TOC (TOTAL ORGANIC CARBON)	1.4	SM18-5310B
TOTAL PHENOLICS (ug/l)	10 ND	SW846 9066
TURBIDITY (N.T.U.)	68.4	SM 2130B

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

I.D. No	100008
Monitoring Point No.	CWMP012W
Sample Date	4/22/2016

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	1.5	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.

ALS Environmental

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

NELAP Certifications: NJ AR010 , NY11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: DE ID11, MAPA0102 , MD 128 , VA 460157 , WV 343

May 5, 2016

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

Certificate of Analysis

Project Name:	**2016-CRESWELL**	Workorder:	**2137486**
Purchase Order:		Workorder ID:	**QUARTERLY CWMP-FORM 19Q**

Dear Mr. Brown:

Enclosed are the analytical results for samples received by the laboratory on Tuesday, April 19, 2016.

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

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

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

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

CC: Mr. Mark Reider , Mr. Jeff Musser

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

Susan J. Scherer

Ms. Susan J Scherer
Project Coordinator

ALS Environmental

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

NELAP Certifications: NJ R010 , NY11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: DE ID11, MAPA0102 , MD 128 , VA 460157 , WV 343

SAMPLE SUMMARY

Workorder: 2137486 QUARTERLY CWMP-FORM 19Q

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
2137486001	CWMP007W	Ground Water	4/19/2016 09:44	4/19/2016 16:14	Mr. Brian G Shade
2137486002	CWMP001W	Ground Water	4/19/2016 10:58	4/19/2016 16:14	Mr. Brian G Shade

Notes

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

Standard Acronyms/Flags

J	Indicates an estimated value between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL) for the analyte
U	Indicates that the analyte was Not Detected (ND)
N	Indicates presumptive evidence of the presence of a compound
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
RDL	Reporting Detection Limit
ND	Not Detected - indicates that the analyte was Not Detected at the RDL
Cntr	Analysis was performed using this container
RegLmt	Regulatory Limit
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
%Rec	Percent Recovery
RPD	Relative Percent Difference
LOD	DoD Limit of Detection
LOQ	DoD Limit of Quantitation
DL	DoD Detection Limit

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PROJECT SUMMARY

Workorder: 2137486 QUARTERLY CWMP-FORM 19Q

Sample Comments

Lab ID: 2137486001 **Sample ID:** CWMP007W **Sample Type:** SAMPLE

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

Lab ID: 2137486002 **Sample ID:** CWMP001W **Sample Type:** SAMPLE

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

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ANALYTICAL RESULTS

Workorder: 2137486 QUARTERLY CWMP-FORM 19Q

Lab ID: **2137486001** Date Collected: 4/19/2016 09:44 Matrix: Ground Water

Sample ID: **CWMP007W** Date Received: 4/19/2016 16:14

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			4/22/16 12:53	TMP	H
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			4/22/16 12:53	TMP	H
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/22/16 12:53	TMP	H
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/22/16 12:53	TMP	H
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/22/16 12:53	TMP	H
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/22/16 12:53	TMP	H
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/22/16 12:53	TMP	H
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			4/22/16 12:53	TMP	H
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			4/22/16 12:53	TMP	H
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			4/22/16 12:53	TMP	H
Toluene	ND		ug/L	1.0	SW846 8260B			4/22/16 12:53	TMP	H
Total Xylenes	ND		ug/L	3.0	SW846 8260B			4/22/16 12:53	TMP	H
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/22/16 12:53	TMP	H
Trichloroethene	ND		ug/L	1.0	SW846 8260B			4/22/16 12:53	TMP	H
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			4/22/16 12:53	TMP	H
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	95.4		%	62 - 133	SW846 8260B			4/22/16 12:53	TMP	H
4-Bromofluorobenzene (S)	104		%	79 - 114	SW846 8260B			4/22/16 12:53	TMP	H
Dibromofluoromethane (S)	89.6		%	78 - 116	SW846 8260B			4/22/16 12:53	TMP	H
Toluene-d8 (S)	102		%	76 - 127	SW846 8260B			4/22/16 12:53	TMP	H
METALS										
Calcium, Total	19.0		mg/L	0.11	SW846 6010C	4/24/16 13:30	JPS	4/26/16 11:39	SRT	C1
Iron, Total	ND		mg/L	0.067	SW846 6010C	4/24/16 13:30	JPS	4/26/16 11:39	SRT	C1
Magnesium, Total	9.4		mg/L	0.11	SW846 6010C	4/24/16 13:30	JPS	4/26/16 11:39	SRT	C1
Manganese, Total	0.0073		mg/L	0.0056	SW846 6010C	4/24/16 13:30	JPS	4/26/16 11:39	SRT	C1
Potassium, Total	2.3		mg/L	0.56	SW846 6010C	4/24/16 13:30	JPS	4/26/16 11:39	SRT	C1
Sodium, Total	31.4		mg/L	0.56	SW846 6010C	4/24/16 13:30	JPS	4/26/16 11:39	SRT	C1
WET CHEMISTRY										
Alkalinity, Bicarbonate	13		mg/L	5	S2320B-97			4/20/16 11:11	MSA	B
Alkalinity, Total	13		mg/L	5	S2320B-97			4/20/16 11:11	MSA	B
Ammonia-N	ND		mg/L	0.100	D6919-09			4/26/16 23:35	JAM	A
Chemical Oxygen Demand (COD)	ND		mg/L	5	EPA 410.4			4/29/16 05:30	JAM	A
Chloride	67.6		mg/L	2.0	EPA 300.0			4/20/16 10:19	JP	B
Fluoride	ND		mg/L	0.20	EPA 300.0			4/20/16 10:19	JP	B
Nitrate-N	11.2		mg/L	0.20	EPA 300.0			4/20/16 10:19	JP	B

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State Certifications: DE ID11, MAPA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2137486 QUARTERLY CWMP-FORM 19Q

Lab ID: **2137486001** Date Collected: 4/19/2016 09:44 Matrix: Ground Water

Sample ID: **CWMP007W** Date Received: 4/19/2016 16:14

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
pH	6.37		pH_Units		SM4500B			4/20/16 11:11	MSA	B
Phenolics	ND		mg/L	0.01	SW846 9066	4/21/16 09:40	NK	4/25/16 12:12	JLG	G
Specific Conductance	345		umhos/cm	1	SW846 9050A			4/20/16 11:11	MSA	B
Sulfate	14.9		mg/L	2.0	EPA 300.0			4/20/16 10:19	JP	B
Total Dissolved Solids	226		mg/L	5	S2540C-11			4/25/16 10:16	ML	B
Total Organic Carbon (TOC)	ND		mg/L	1.0	SW846 9060A			5/2/16 10:34	PAG	E
Turbidity	ND		NTU	0.10	S2130B-01			4/21/16 04:46	MSA	B
FIELD PARAMETERS										
Depth to Water Level	6.480		Feet		Field			4/19/16 09:44	CLT	D
Elev Top MW Casing above MSL	453.40		Feet		Field			4/19/16 09:44	CLT	D
Flow Rate	1.97		gal/min		Field			4/19/16 09:44	CLT	D
Ground Water Elevation	446.920		ft/MSL		Field			4/19/16 09:44	CLT	D
pH, Field (SM4500B)	5.100		pH_Units		Field			4/19/16 09:44	CLT	D
Sample Depth	33.000		Feet		Field			4/19/16 09:44	CLT	D
Specific Conductance, Field	401		umhos/cm	1	Field			4/19/16 09:44	CLT	D
Temperature	11.33		Deg. C		Field			4/19/16 09:44	CLT	D
Total Well Depth	36.500		Feet		Field			4/19/16 09:44	CLT	D
Volume in Water Column	44.129		Gallons		Field			4/19/16 09:44	CLT	D
Water Level After Purge	7.300		Feet		Field			4/19/16 09:44	CLT	D
Well Volumes Purged	3.12		Vol		Field			4/19/16 09:44	CLT	D

Susan J. Scherer

Ms. Susan J Scherer
Project Coordinator

ALS Environmental

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ANALYTICAL RESULTS

Workorder: 2137486 QUARTERLY CWMP-FORM 19Q

Lab ID: **2137486002** Date Collected: 4/19/2016 10:58 Matrix: Ground Water

Sample ID: **CWMP001W** Date Received: 4/19/2016 16:14

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			4/22/16 13:10	TMP	H
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			4/22/16 13:10	TMP	H
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/22/16 13:10	TMP	H
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/22/16 13:10	TMP	H
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/22/16 13:10	TMP	H
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/22/16 13:10	TMP	H
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/22/16 13:10	TMP	H
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			4/22/16 13:10	TMP	H
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			4/22/16 13:10	TMP	H
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			4/22/16 13:10	TMP	H
Toluene	ND		ug/L	1.0	SW846 8260B			4/22/16 13:10	TMP	H
Total Xylenes	ND		ug/L	3.0	SW846 8260B			4/22/16 13:10	TMP	H
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/22/16 13:10	TMP	H
Trichloroethene	ND		ug/L	1.0	SW846 8260B			4/22/16 13:10	TMP	H
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			4/22/16 13:10	TMP	H
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	96.5		%	62 - 133	SW846 8260B			4/22/16 13:10	TMP	H
4-Bromofluorobenzene (S)	106		%	79 - 114	SW846 8260B			4/22/16 13:10	TMP	H
Dibromofluoromethane (S)	91.5		%	78 - 116	SW846 8260B			4/22/16 13:10	TMP	H
Toluene-d8 (S)	105		%	76 - 127	SW846 8260B			4/22/16 13:10	TMP	H
METALS										
Calcium, Total	18.4		mg/L	0.11	SW846 6010C	4/24/16 13:30	JPS	4/26/16 11:42	SRT	C1
Iron, Total	1.7		mg/L	0.067	SW846 6010C	4/24/16 13:30	JPS	4/26/16 11:42	SRT	C1
Magnesium, Total	12.1		mg/L	0.11	SW846 6010C	4/24/16 13:30	JPS	4/26/16 11:42	SRT	C1
Manganese, Total	0.11		mg/L	0.0056	SW846 6010C	4/24/16 13:30	JPS	4/26/16 11:42	SRT	C1
Potassium, Total	2.6		mg/L	0.56	SW846 6010C	4/24/16 13:30	JPS	4/26/16 11:42	SRT	C1
Sodium, Total	14.3		mg/L	0.56	SW846 6010C	4/24/16 13:30	JPS	4/26/16 11:42	SRT	C1
WET CHEMISTRY										
Alkalinity, Bicarbonate	7		mg/L	5	S2320B-97			4/20/16 11:20	MSA	B
Alkalinity, Total	7		mg/L	5	S2320B-97			4/20/16 11:20	MSA	B
Ammonia-N	ND		mg/L	0.100	D6919-09			4/26/16 23:54	JAM	A
Chemical Oxygen Demand (COD)	ND		mg/L	5	EPA 410.4			4/29/16 05:30	JAM	A
Chloride	29.9		mg/L	5.0	EPA 300.0			4/20/16 14:15	JP	B
Fluoride	ND		mg/L	0.50	EPA 300.0			4/20/16 14:15	JP	B
Nitrate-N	21.2		mg/L	0.50	EPA 300.0			4/20/16 14:15	JP	B

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State Certifications: DE ID11, MAPA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2137486 QUARTERLY CWMP-FORM 19Q

Lab ID: **2137486002** Date Collected: 4/19/2016 10:58 Matrix: Ground Water

Sample ID: **CWMP001W** Date Received: 4/19/2016 16:14

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
pH	5.93		pH_Units		SM4500B			4/20/16 11:20	MSA	B
Phenolics	ND		mg/L	0.01	SW846 9066	4/21/16 09:40	NK	4/25/16 12:13	JLG	G
Specific Conductance	270		umhos/cm	1	SW846 9050A			4/20/16 11:20	MSA	B
Sulfate	ND		mg/L	5.0	EPA 300.0			4/20/16 14:15	JP	B
Total Dissolved Solids	188		mg/L	5	S2540C-11			4/25/16 10:16	ML	B
Total Organic Carbon (TOC)	ND		mg/L	1.0	SW846 9060A			5/2/16 10:34	PAG	E
Turbidity	113		NTU	0.10	S2130B-01			4/21/16 04:46	MSA	B
FIELD PARAMETERS										
Depth to Water Level	27.970		Feet		Field			4/19/16 10:58	CLT	D
Elev Top MW Casing above MSL	515.13		Feet		Field			4/19/16 10:58	CLT	D
Flow Rate	2.18		gal/min		Field			4/19/16 10:58	CLT	D
Ground Water Elevation	487.160		ft/MSL		Field			4/19/16 10:58	CLT	D
pH, Field (SM4500B)	5.300		pH_Units		Field			4/19/16 10:58	CLT	D
Sample Depth	57.000		Feet		Field			4/19/16 10:58	CLT	D
Specific Conductance, Field	316		umhos/cm	1	Field			4/19/16 10:58	CLT	D
Temperature	12.30		Deg. C		Field			4/19/16 10:58	CLT	D
Total Well Depth	66.300		Feet		Field			4/19/16 10:58	CLT	D
Volume in Water Column	56.345		Gallons		Field			4/19/16 10:58	CLT	D
Water Level After Purge	53.810		Feet		Field			4/19/16 10:58	CLT	D
Well Volumes Purged	2.32		Vol		Field			4/19/16 10:58	CLT	D

Ms. Susan J Scherer
Project Coordinator

ALS Environmental
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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.

* 2 1 3 7 4 8 6 *

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 Quarterly Wells
Bill To: Lancaster County Solid Waste MA

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

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

ANALYSES/METHOD REQUESTED

Sample Description/Location (as it will appear on the lab report)	Sample Date	Time	*G or C	**Matrix	TOC	O-OH	VOC - Form 19Q	Field Measurements	Sample Depth for AUX Data	NH3-N, COD	Total Metals: Ca, Fe, Mn, Mg, K, Na	pH, NO3, Cl, F, SpC, SO4, Turb, TDS	Alkalinity, HCO3	
			Enter Number of Containers Per Sample or Field Results Below.											
1 CWMP007W	4-19-16	0944	G	GW	2	1	2	X	X	1	1	1	1	
2 CWMP001W	1	1058	1	1	1	1	1	1	1	1	1	1	1	
3														
4														
5														
6														
7														
8														
9														
10														

Receiving Lab)
Cooler Temp: 3°C Therm ID: 352
No. of Coolers: _____

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

Courier/Tracking #:

Sample/COC Comments

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

Project Comments:

LOGGED BY(signature): _____ DATE 4-19-16 TIME 1942
REVIEWED BY(signature): _____ DATE _____ TIME _____

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
1 [illegible] ALS	4-19-16	1614	2 [illegible]	4/19	1614
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

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

Rev 8/04

ALS Environmental

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May 6, 2016

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

Certificate of Analysis

Project Name:	**2016-CRESWELL**	Workorder:	**2137856**
Purchase Order:		Workorder ID:	**QUARTERLY CWMP-FORM 19Q**

Dear Mr. Brown:

Enclosed are the analytical results for samples received by the laboratory on Wednesday, April 20, 2016.

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

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

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

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

CC: Mr. Mark Reider , Mr. Jeff Musser

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

Susan J. Scherer

Ms. Susan J Scherer
Project Coordinator

ALS Environmental

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State Certifications: DE ID11, MAPA0102 , MD 128 , VA 460157 , WV 343

SAMPLE SUMMARY

Workorder: 2137856 QUARTERLY CWMP-FORM 19Q

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
2137856001	CWMP005W	Ground Water	4/20/2016 09:47	4/20/2016 16:15	Mr. Brian G Shade
2137856002	CWMP018S	Ground Water	4/20/2016 14:06	4/20/2016 16:15	Mr. Brian G Shade
2137856003	CWMP017S	Ground Water	4/20/2016 14:25	4/20/2016 16:15	Mr. Brian G Shade

Notes

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

Standard Acronyms/Flags

J	Indicates an estimated value between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL) for the analyte
U	Indicates that the analyte was Not Detected (ND)
N	Indicates presumptive evidence of the presence of a compound
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
RDL	Reporting Detection Limit
ND	Not Detected - indicates that the analyte was Not Detected at the RDL
Cntr	Analysis was performed using this container
RegLmt	Regulatory Limit
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
%Rec	Percent Recovery
RPD	Relative Percent Difference
LOD	DoD Limit of Detection
LOQ	DoD Limit of Quantitation
DL	DoD Detection Limit

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PROJECT SUMMARY

Workorder: 2137856 QUARTERLY CWMP-FORM 19Q

Sample Comments

Lab ID: 2137856001 **Sample ID:** CWMP005W **Sample Type:** SAMPLE

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

This sample was selected to be Matrix Spiked and Matrix Spike Duplicated for Phenol analysis. The Matrix Spike samples failed to meet quality control parameters on two seperate analyses.

Lab ID: 2137856002 **Sample ID:** CWMP018S **Sample Type:** SAMPLE

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

Lab ID: 2137856003 **Sample ID:** CWMP017S **Sample Type:** SAMPLE

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

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ANALYTICAL RESULTS

Workorder: 2137856 QUARTERLY CWMP-FORM 19Q

Lab ID: **2137856001** Date Collected: 4/20/2016 09:47 Matrix: Ground Water

Sample ID: **CWMP005W** Date Received: 4/20/2016 16:15

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			4/25/16 08:43	SYB	H
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			4/25/16 08:43	SYB	H
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/25/16 08:43	SYB	H
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/25/16 08:43	SYB	H
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/25/16 08:43	SYB	H
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/25/16 08:43	SYB	H
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/25/16 08:43	SYB	H
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			4/25/16 08:43	SYB	H
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			4/25/16 08:43	SYB	H
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			4/25/16 08:43	SYB	H
Toluene	ND		ug/L	1.0	SW846 8260B			4/25/16 08:43	SYB	H
Total Xylenes	ND		ug/L	3.0	SW846 8260B			4/25/16 08:43	SYB	H
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/25/16 08:43	SYB	H
Trichloroethene	ND		ug/L	1.0	SW846 8260B			4/25/16 08:43	SYB	H
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			4/25/16 08:43	SYB	H
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	97.2		%	62 - 133	SW846 8260B			4/25/16 08:43	SYB	H
4-Bromofluorobenzene (S)	105		%	79 - 114	SW846 8260B			4/25/16 08:43	SYB	H
Dibromofluoromethane (S)	92.6		%	78 - 116	SW846 8260B			4/25/16 08:43	SYB	H
Toluene-d8 (S)	102		%	76 - 127	SW846 8260B			4/25/16 08:43	SYB	H
WET CHEMISTRY										
Alkalinity, Bicarbonate	17		mg/L	5	S2320B-97			4/21/16 15:23	MSA	B
Alkalinity, Total	17		mg/L	5	S2320B-97			4/21/16 15:23	MSA	B
Ammonia-N	ND		mg/L	0.100	D6919-09			4/28/16 14:18	JAM	A
Chemical Oxygen Demand (COD)	12		mg/L	5	EPA 410.4			4/28/16 22:00	JAM	A
Chloride	72.5		mg/L	2.0	EPA 300.0			4/21/16 09:51	JP	B
Fluoride	ND		mg/L	0.20	EPA 300.0			4/21/16 09:51	JP	B
Nitrate-N	12.6		mg/L	0.20	EPA 300.0			4/21/16 09:51	JP	B
pH	5.88		pH_Units		SM4500B			4/21/16 15:23	MSA	B
Phenolics	ND	1	mg/L	0.01	SW846 9066	4/22/16 09:00	AK	4/25/16 14:55	JLG	G
Specific Conductance	353		umhos/cm	1	SW846 9050A			4/21/16 15:23	MSA	B
Sulfate	2.2		mg/L	2.0	EPA 300.0			4/21/16 09:51	JP	B
Total Dissolved Solids	212		mg/L	5	S2540C-11			4/27/16 10:19	ML	B
Total Organic Carbon (TOC)	ND		mg/L	1.0	SW846 9060A			5/2/16 10:34	PAG	E
Turbidity	0.30		NTU	0.10	S2130B-01			4/22/16 03:32	MSA	B

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ANALYTICAL RESULTS

Workorder: 2137856 QUARTERLY CWMP-FORM 19Q

Lab ID: **2137856001** Date Collected: 4/20/2016 09:47 Matrix: Ground Water

Sample ID: **CWMP005W** Date Received: 4/20/2016 16:15

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Calcium, Total	18.0		mg/L	0.11	SW846 6010C	4/25/16 11:30	JPS	4/26/16 14:35	SRT	C1
Iron, Total	0.081		mg/L	0.067	SW846 6010C	4/25/16 11:30	JPS	4/26/16 14:35	SRT	C1
Magnesium, Total	9.7		mg/L	0.11	SW846 6010C	4/25/16 11:30	JPS	4/26/16 14:35	SRT	C1
Manganese, Total	0.066		mg/L	0.0056	SW846 6010C	4/25/16 11:30	JPS	4/26/16 14:35	SRT	C1
Potassium, Total	2.7		mg/L	0.56	SW846 6010C	4/25/16 11:30	JPS	4/26/16 14:35	SRT	C1
Sodium, Total	33.9		mg/L	0.56	SW846 6010C	4/25/16 11:30	JPS	4/26/16 14:35	SRT	C1
FIELD PARAMETERS										
Depth to Water Level	40.630		Feet		Field			4/20/16 09:47	CLT	D
Elev Top MW Casing above MSL	513.43		Feet		Field			4/20/16 09:47	CLT	D
Flow Rate	4.16		gal/min		Field			4/20/16 09:47	CLT	D
Ground Water Elevation	472.800		ft/MSL		Field			4/20/16 09:47	CLT	D
pH, Field (SM4500B)	4.940		pH_Units		Field			4/20/16 09:47	CLT	D
Sample Depth	130.000		Feet		Field			4/20/16 09:47	CLT	D
Specific Conductance, Field	413		umhos/cm	1	Field			4/20/16 09:47	CLT	D
Temperature	11.58		Deg. C		Field			4/20/16 09:47	CLT	D
Total Well Depth	138.920		Feet		Field			4/20/16 09:47	CLT	D
Volume in Water Column	144.486		Gallons		Field			4/20/16 09:47	CLT	D
Water Level After Purge	43.510		Feet		Field			4/20/16 09:47	CLT	D
Well Volumes Purged	2.02		Vol		Field			4/20/16 09:47	CLT	D

Susan J. Scherer

Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2137856 QUARTERLY CWMP-FORM 19Q

Lab ID: **2137856002** Date Collected: 4/20/2016 14:06 Matrix: Ground Water

Sample ID: **CWMP018S** Date Received: 4/20/2016 16:15

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			4/25/16 09:00	SYB	H
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			4/25/16 09:00	SYB	H
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/25/16 09:00	SYB	H
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/25/16 09:00	SYB	H
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/25/16 09:00	SYB	H
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/25/16 09:00	SYB	H
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/25/16 09:00	SYB	H
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			4/25/16 09:00	SYB	H
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			4/25/16 09:00	SYB	H
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			4/25/16 09:00	SYB	H
Toluene	ND		ug/L	1.0	SW846 8260B			4/25/16 09:00	SYB	H
Total Xylenes	ND		ug/L	3.0	SW846 8260B			4/25/16 09:00	SYB	H
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/25/16 09:00	SYB	H
Trichloroethene	ND		ug/L	1.0	SW846 8260B			4/25/16 09:00	SYB	H
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			4/25/16 09:00	SYB	H
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	97.1		%	62 - 133	SW846 8260B			4/25/16 09:00	SYB	H
4-Bromofluorobenzene (S)	106		%	79 - 114	SW846 8260B			4/25/16 09:00	SYB	H
Dibromofluoromethane (S)	92.8		%	78 - 116	SW846 8260B			4/25/16 09:00	SYB	H
Toluene-d8 (S)	104		%	76 - 127	SW846 8260B			4/25/16 09:00	SYB	H
WET CHEMISTRY										
Alkalinity, Bicarbonate	218		mg/L	5	S2320B-97			4/21/16 15:33	MSA	B
Alkalinity, Total	259		mg/L	5	S2320B-97			4/21/16 15:33	MSA	B
Ammonia-N	ND		mg/L	0.100	D6919-09			4/28/16 15:15	JAM	A
Chemical Oxygen Demand (COD)	14		mg/L	5	EPA 410.4			4/28/16 22:00	JAM	A
Chloride	544		mg/L	10.0	EPA 300.0			4/21/16 06:59	JP	B
Fluoride	ND		mg/L	0.20	EPA 300.0			4/21/16 06:48	JP	B
Nitrate-N	21.7		mg/L	1.0	EPA 300.0			4/21/16 06:59	JP	B
pH	8.69		pH_Units		SM4500B			4/21/16 15:33	MSA	B
Phenolics	ND		mg/L	0.01	SW846 9066	4/22/16 09:00	AK	4/25/16 13:33	JLG	G
Specific Conductance	2260		umhos/cm	1	SW846 9050A			4/21/16 15:33	MSA	B
Sulfate	37.8		mg/L	2.0	EPA 300.0			4/21/16 06:48	JP	B
Total Dissolved Solids	1180		mg/L	5	S2540C-11			4/27/16 10:19	ML	B
Total Organic Carbon (TOC)	7.8		mg/L	1.0	SW846 9060A			5/2/16 10:34	PAG	E
Turbidity	0.65		NTU	0.10	S2130B-01			4/22/16 03:32	MSA	B

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ANALYTICAL RESULTS

Workorder: 2137856 QUARTERLY CWMP-FORM 19Q

Lab ID: **2137856002** Date Collected: 4/20/2016 14:06 Matrix: Ground Water

Sample ID: **CWMP018S** Date Received: 4/20/2016 16:15

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Calcium, Total	65.7		mg/L	0.11	SW846 6010C	4/25/16 11:30	JPS	4/26/16 14:39	SRT	C1
Iron, Total	0.11		mg/L	0.067	SW846 6010C	4/25/16 11:30	JPS	4/26/16 14:39	SRT	C1
Magnesium, Total	65.5		mg/L	0.11	SW846 6010C	4/25/16 11:30	JPS	4/26/16 14:39	SRT	C1
Manganese, Total	0.010		mg/L	0.0056	SW846 6010C	4/25/16 11:30	JPS	4/26/16 14:39	SRT	C1
Potassium, Total	17.4		mg/L	0.56	SW846 6010C	4/25/16 11:30	JPS	4/26/16 14:39	SRT	C1
Sodium, Total	277		mg/L	0.56	SW846 6010C	4/25/16 11:30	JPS	4/26/16 14:39	SRT	C1
FIELD PARAMETERS										
Dissolved Oxygen	14.260		mg/L	0.010	Field			4/20/16 14:06	BGS	D
Flow Rate	346.60		gal/min		Field			4/20/16 14:06	BGS	D
pH, Field (SM4500B)	8.740		pH_Units		Field			4/20/16 14:06	BGS	D
Specific Conductance, Field	2501		umhos/cm	1	Field			4/20/16 14:06	BGS	D
Temperature	16.24		Deg. C		Field			4/20/16 14:06	BGS	D

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ANALYTICAL RESULTS

Workorder: 2137856 QUARTERLY CWMP-FORM 19Q

Lab ID: **2137856003** Date Collected: 4/20/2016 14:25 Matrix: Ground Water

Sample ID: **CWMP017S** Date Received: 4/20/2016 16:15

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			4/25/16 09:17	SYB	H
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			4/25/16 09:17	SYB	H
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/25/16 09:17	SYB	H
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/25/16 09:17	SYB	H
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/25/16 09:17	SYB	H
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/25/16 09:17	SYB	H
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/25/16 09:17	SYB	H
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			4/25/16 09:17	SYB	H
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			4/25/16 09:17	SYB	H
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			4/25/16 09:17	SYB	H
Toluene	ND		ug/L	1.0	SW846 8260B			4/25/16 09:17	SYB	H
Total Xylenes	ND		ug/L	3.0	SW846 8260B			4/25/16 09:17	SYB	H
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/25/16 09:17	SYB	H
Trichloroethene	ND		ug/L	1.0	SW846 8260B			4/25/16 09:17	SYB	H
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			4/25/16 09:17	SYB	H
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	97.6		%	62 - 133	SW846 8260B			4/25/16 09:17	SYB	H
4-Bromofluorobenzene (S)	104		%	79 - 114	SW846 8260B			4/25/16 09:17	SYB	H
Dibromofluoromethane (S)	91.7		%	78 - 116	SW846 8260B			4/25/16 09:17	SYB	H
Toluene-d8 (S)	104		%	76 - 127	SW846 8260B			4/25/16 09:17	SYB	H
WET CHEMISTRY										
Alkalinity, Bicarbonate	329		mg/L	5	S2320B-97			4/21/16 15:45	MSA	B
Alkalinity, Total	329		mg/L	5	S2320B-97			4/21/16 15:45	MSA	B
Ammonia-N	ND		mg/L	0.100	D6919-09			4/28/16 15:34	JAM	A
Chemical Oxygen Demand (COD)	13		mg/L	5	EPA 410.4			4/28/16 22:00	JAM	A
Chloride	629		mg/L	10.0	EPA 300.0			4/21/16 07:22	JP	B
Fluoride	ND		mg/L	0.20	EPA 300.0			4/21/16 07:11	JP	B
Nitrate-N	21.9		mg/L	1.0	EPA 300.0			4/21/16 07:22	JP	B
pH	8.21		pH_Units		SM4500B			4/21/16 15:45	MSA	B
Phenolics	ND		mg/L	0.01	SW846 9066	4/22/16 09:00	AK	4/25/16 13:34	JLG	G
Specific Conductance	2600		umhos/cm	1	SW846 9050A			4/21/16 15:45	MSA	B
Sulfate	56.2		mg/L	2.0	EPA 300.0			4/21/16 07:11	JP	B
Total Dissolved Solids	1340		mg/L	5	S2540C-11			4/27/16 10:19	ML	B
Total Organic Carbon (TOC)	4.1		mg/L	1.0	SW846 9060A			5/2/16 10:34	PAG	E
Turbidity	1.83		NTU	0.10	S2130B-01			4/22/16 03:32	MSA	B

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ANALYTICAL RESULTS

Workorder: 2137856 QUARTERLY CWMP-FORM 19Q

Lab ID: **2137856003** Date Collected: 4/20/2016 14:25 Matrix: Ground Water

Sample ID: **CWMP017S** Date Received: 4/20/2016 16:15

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Calcium, Total	63.5		mg/L	0.11	SW846 6010C	4/25/16 11:30	JPS	4/26/16 14:42	SRT	C1
Iron, Total	0.25		mg/L	0.067	SW846 6010C	4/25/16 11:30	JPS	4/26/16 14:42	SRT	C1
Magnesium, Total	74.7		mg/L	0.11	SW846 6010C	4/25/16 11:30	JPS	4/26/16 14:42	SRT	C1
Manganese, Total	0.075		mg/L	0.0056	SW846 6010C	4/25/16 11:30	JPS	4/26/16 14:42	SRT	C1
Potassium, Total	14.6		mg/L	0.56	SW846 6010C	4/25/16 11:30	JPS	4/26/16 14:42	SRT	C1
Sodium, Total	341		mg/L	0.56	SW846 6010C	4/25/16 11:30	JPS	4/26/16 14:42	SRT	C1
FIELD PARAMETERS										
Dissolved Oxygen	14.520		mg/L	0.010	Field			4/20/16 14:25	BGS	D
Flow Rate	168.80		gal/min		Field			4/20/16 14:25	BGS	D
pH, Field (SM4500B)	7.880		pH_Units		Field			4/20/16 14:25	BGS	D
Specific Conductance, Field	2893		umhos/cm	1	Field			4/20/16 14:25	BGS	D
Temperature	19.18		Deg. C		Field			4/20/16 14:25	BGS	D

Ms. Susan J Scherer
Project Coordinator

PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
2137856001	1	CWMP005W	SW846 9066	Phenolics

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

ALS Environmental

CHAIN OF CUSTODY/ REQUEST FOR ANALYSIS

Generated by ALS

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

* 2 1 3 7 8 5 6 *

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 Quarterly Wells

Bill To: Lancaster County Solid Waste MA

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

Date Required: _____ Approved By: _____

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

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

Sample Description/Location (as it will appear on the lab report)	Sample Date	Time	*G or C	**Matrix	TOC	O-OH	VOC - Form 19Q	Field Measurements	Sample Depth for AUX Data	NH3-N, COD	Total Metals: Ca, Fe, Mn, Mg, K, Na	pH, NO3, Cl, F, SpC, SO4, Turb, TDS	Alkalinity, HCO3	
Container Type			AG	AN	CG	—	—	PL	PL	PL	PL			
Container Size			40 ml	500 ml	40 ml	—	—	500 ml	500 ml	1 L	500 ml			
Preservative			HCl	H2SO4	HCl	—	—	H2SO4	HNO3	None	None			
			ANALYSES/METHOD REQUESTED											
			Enter Number of Containers Per Sample or Field Results Below.											
1 CWMP005W	4-20-16	0947	G	GW	2	1	2	x	x	1	1	1	1	
2 CWMP018S	1	1406	1	1	1	1	1	1	1	1	1	1	1	
3 CWMP027S	1	1425	1	1	1	1	1	1	1	1	1	1	1	
4														
5														
6														
7														
8														
9														
10														

Cooler Temp: 4° Therm ID: 352 (by Receiving Lab)

No. of Coolers: _____

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

Courier/Tracking #:

Sample/COC Comments

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

Project Comments:

LOGGED BY(signature): _____ Date: 4-20-16 Time: 2150

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

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
1 [illegible] ALS	4-20-16	1605	2 [illegible]	4/20	1605
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

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State Certifications: DE ID11, MAPA0102 , MD 128 , VA 460157 , WV 343

May 5, 2016

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

Certificate of Analysis

Project Name:	**2016-CRESWELL**	Workorder:	**2138238**
Purchase Order:		Workorder ID:	**QUARTERLY CWMP-FORM 19Q-RR**

Dear Mr. Brown:

Enclosed are the analytical results for samples received by the laboratory on Thursday, April 21, 2016.

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

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

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

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

CC: Mr. Mark Reider , Mr. Jeff Musser

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

Susan J. Scherer

Ms. Susan J Scherer
Project Coordinator

ALS Environmental

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SAMPLE SUMMARY

Workorder: 2138238 QUARTERLY CWMP-FORM 19Q-RR VOC

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
2138238001	CWMP002W	Ground Water	4/21/2016 11:02	4/21/2016 16:23	Mr. Brian G Shade
2138238002	CWMP003W	Ground Water	4/21/2016 11:14	4/21/2016 16:23	Mr. Brian G Shade
2138238003	CWMP004W	Ground Water	4/21/2016 11:30	4/21/2016 16:23	Mr. Brian G Shade

Notes

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

Standard Acronyms/Flags

J	Indicates an estimated value between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL) for the analyte
U	Indicates that the analyte was Not Detected (ND)
N	Indicates presumptive evidence of the presence of a compound
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
RDL	Reporting Detection Limit
ND	Not Detected - indicates that the analyte was Not Detected at the RDL
Cntr	Analysis was performed using this container
RegLmt	Regulatory Limit
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
%Rec	Percent Recovery
RPD	Relative Percent Difference
LOD	DoD Limit of Detection
LOQ	DoD Limit of Quantitation
DL	DoD Detection Limit

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PROJECT SUMMARY

Workorder: 2138238 QUARTERLY CWMP-FORM 19Q-RR VOC

Sample Comments

Lab ID: 2138238001 **Sample ID:** CWMP002W **Sample Type:** SAMPLE

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

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.

Lab ID: 2138238002 **Sample ID:** CWMP003W **Sample Type:** SAMPLE

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

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.

Lab ID: 2138238003 **Sample ID:** CWMP004W **Sample Type:** SAMPLE

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

The pH analysis is an "analyze immediately" analysis. Parameters identified as "analyze immediately" require analysis within 15 minutes of collection, and are therefore analyzed outside of the method holding time when analyzed in the laboratory.

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ANALYTICAL RESULTS

Workorder: 2138238 QUARTERLY CWMP-FORM 19Q-RR VOC

Lab ID: **2138238001** Date Collected: 4/21/2016 11:02 Matrix: Ground Water

Sample ID: **CWMP002W** Date Received: 4/21/2016 16:23

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			4/25/16 12:54	DD	E
Bromodichloromethane	ND		ug/L	1.0	SW846 8260B			4/25/16 12:54	DD	E
Bromoform	ND		ug/L	1.0	SW846 8260B			4/25/16 12:54	DD	E
Bromomethane	ND		ug/L	1.0	SW846 8260B			4/25/16 12:54	DD	E
Carbon Tetrachloride	ND		ug/L	1.0	SW846 8260B			4/25/16 12:54	DD	E
Chlorobenzene	ND		ug/L	1.0	SW846 8260B			4/25/16 12:54	DD	E
Chlorodibromomethane	ND		ug/L	1.0	SW846 8260B			4/25/16 12:54	DD	E
Chloroethane	4.4		ug/L	1.0	SW846 8260B			4/25/16 12:54	DD	E
Chloroform	ND		ug/L	1.0	SW846 8260B			4/25/16 12:54	DD	E
Chloromethane	ND		ug/L	1.0	SW846 8260B			4/25/16 12:54	DD	E
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			4/25/16 12:54	DD	E
1,2-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/25/16 12:54	DD	E
1,3-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/25/16 12:54	DD	E
1,4-Dichlorobenzene	1.1		ug/L	1.0	SW846 8260B			4/25/16 12:54	DD	E
1,1-Dichloroethane	10.4		ug/L	1.0	SW846 8260B			4/25/16 12:54	DD	E
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/25/16 12:54	DD	E
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/25/16 12:54	DD	E
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/25/16 12:54	DD	E
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/25/16 12:54	DD	E
1,2-Dichloropropane	ND		ug/L	1.0	SW846 8260B			4/25/16 12:54	DD	E
1,3-Dichloropropene, Total	ND		ug/L	2.0	SW846 8260B			4/25/16 12:54	DD	E
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			4/25/16 12:54	DD	E
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			4/25/16 12:54	DD	E
Styrene	ND		ug/L	1.0	SW846 8260B			4/25/16 12:54	DD	E
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/25/16 12:54	DD	E
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			4/25/16 12:54	DD	E
Toluene	ND		ug/L	1.0	SW846 8260B			4/25/16 12:54	DD	E
Total Xylenes	ND		ug/L	3.0	SW846 8260B			4/25/16 12:54	DD	E
1,2,4-Trichlorobenzene	ND		ug/L	2.0	SW846 8260B			4/25/16 12:54	DD	E
1,1,1-Trichloroethane	1.6		ug/L	1.0	SW846 8260B			4/25/16 12:54	DD	E
1,1,2-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/25/16 12:54	DD	E
Trichloroethene	ND		ug/L	1.0	SW846 8260B			4/25/16 12:54	DD	E
Trichlorofluoromethane	ND		ug/L	1.0	SW846 8260B			4/25/16 12:54	DD	E
1,2,3-Trichloropropane	ND		ug/L	2.0	SW846 8260B			4/25/16 12:54	DD	E
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			4/25/16 12:54	DD	E

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

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ANALYTICAL RESULTS

Workorder: 2138238 QUARTERLY CWMP-FORM 19Q-RR VOC

Lab ID: **2138238001** Date Collected: 4/21/2016 11:02 Matrix: Ground Water

Sample ID: **CWMP002W** Date Received: 4/21/2016 16:23

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
1,2-Dichloroethane-d4 (S)	104		%	62 - 133	SW846 8260B			4/25/16 12:54	DD	E
4-Bromofluorobenzene (S)	107		%	79 - 114	SW846 8260B			4/25/16 12:54	DD	E
Dibromofluoromethane (S)	95		%	78 - 116	SW846 8260B			4/25/16 12:54	DD	E
Toluene-d8 (S)	90.9		%	76 - 127	SW846 8260B			4/25/16 12:54	DD	E
WET CHEMISTRY										
Alkalinity, Bicarbonate	60		mg/L	5	S2320B-97			4/22/16 11:51	MSA	C
Alkalinity, Total	60		mg/L	5	S2320B-97			4/22/16 11:51	MSA	C
Ammonia-N	ND		mg/L	0.100	D6919-09			5/3/16 11:07	JAM	I
Chemical Oxygen Demand (COD)	18		mg/L	5	EPA 410.4			4/29/16 05:30	JAM	I
Chloride	102		mg/L	2.0	EPA 300.0			4/22/16 23:47	JP	C
Fluoride	ND		mg/L	0.20	EPA 300.0			4/22/16 23:47	JP	C
Nitrate-N	3.4		mg/L	0.20	EPA 300.0			4/22/16 23:47	JP	C
pH	6.11		pH_Units		S4500HB-00			4/22/16 11:51	MSA	C
Phenolics	ND		mg/L	0.01	SW846 9066	4/23/16 10:29	NK	4/25/16 14:04	JLG	I
Specific Conductance	559		umhos/cm	1	S2510B-97			4/22/16 11:51	MSA	C
Sulfate	23.4		mg/L	2.0	EPA 300.0			4/22/16 23:47	JP	C
Total Dissolved Solids	303		mg/L	5	S2540C-11			4/27/16 22:00	NV	I
Total Organic Carbon (TOC)	3.1		mg/L	1.0	SW846 9060A			5/3/16 15:45	PAG	I
Turbidity	1.94		NTU	0.10	S2130B-01			4/22/16 23:27	MSA	I
METALS										
Calcium, Total	50.7		mg/L	0.11	SW846 6010C	4/26/16 11:40	JPS	4/26/16 17:18	SRT	I1
Iron, Total	ND		mg/L	0.067	SW846 6010C	4/26/16 11:40	JPS	4/26/16 17:18	SRT	I1
Magnesium, Total	15.4		mg/L	0.11	SW846 6010C	4/26/16 11:40	JPS	4/26/16 17:18	SRT	I1
Manganese, Total	0.92		mg/L	0.0056	SW846 6010C	4/26/16 11:40	JPS	4/26/16 17:18	SRT	I1
Potassium, Total	2.9		mg/L	0.56	SW846 6010C	4/26/16 11:40	JPS	4/26/16 17:18	SRT	I1
Sodium, Total	20.8		mg/L	0.56	SW846 6010C	4/26/16 11:40	JPS	4/26/16 17:18	SRT	I1
FIELD PARAMETERS										
Depth to Water Level	72.480		Feet		Field			4/21/16 11:02	CLT	I
Elev Top MW Casing above MSL	525.81		Feet		Field			4/21/16 11:02	CLT	I
Ground Water Elevation	453.330		ft/MSL		Field			4/21/16 11:02	CLT	I
pH, Field (SM4500B)	5.510		pH_Units		Field			4/21/16 11:02	CLT	I
Sample Depth	85.000		Feet		Field			4/21/16 11:02	CLT	I
Specific Conductance, Field	587		umhos/cm	1	Field			4/21/16 11:02	CLT	I
Temperature	12.53		Deg. C		Field			4/21/16 11:02	CLT	I
Total Well Depth	100.000		Feet		Field			4/21/16 11:02	CLT	I

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ANALYTICAL RESULTS

Workorder: 2138238 QUARTERLY CWMP-FORM 19Q-RR VOC

Lab ID:	**2138238001**	Date Collected:	4/21/2016 11:02	Matrix:	Ground Water
Sample ID:	**CWMP002W**	Date Received:	4/21/2016 16:23		

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

Ms. Susan J Scherer
Project Coordinator

ALS Environmental

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ANALYTICAL RESULTS

Workorder: 2138238 QUARTERLY CWMP-FORM 19Q-RR VOC

Lab ID: **2138238002** Date Collected: 4/21/2016 11:14 Matrix: Ground Water

Sample ID: **CWMP003W** Date Received: 4/21/2016 16:23

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			4/25/16 13:16	DD	E
Bromodichloromethane	ND		ug/L	1.0	SW846 8260B			4/25/16 13:16	DD	E
Bromoform	ND		ug/L	1.0	SW846 8260B			4/25/16 13:16	DD	E
Bromomethane	ND		ug/L	1.0	SW846 8260B			4/25/16 13:16	DD	E
Carbon Tetrachloride	ND		ug/L	1.0	SW846 8260B			4/25/16 13:16	DD	E
Chlorobenzene	ND		ug/L	1.0	SW846 8260B			4/25/16 13:16	DD	E
Chlorodibromomethane	ND		ug/L	1.0	SW846 8260B			4/25/16 13:16	DD	E
Chloroethane	ND		ug/L	1.0	SW846 8260B			4/25/16 13:16	DD	E
Chloroform	ND		ug/L	1.0	SW846 8260B			4/25/16 13:16	DD	E
Chloromethane	ND		ug/L	1.0	SW846 8260B			4/25/16 13:16	DD	E
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			4/25/16 13:16	DD	E
1,2-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/25/16 13:16	DD	E
1,3-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/25/16 13:16	DD	E
1,4-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/25/16 13:16	DD	E
1,1-Dichloroethane	2.7		ug/L	1.0	SW846 8260B			4/25/16 13:16	DD	E
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/25/16 13:16	DD	E
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/25/16 13:16	DD	E
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/25/16 13:16	DD	E
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/25/16 13:16	DD	E
1,2-Dichloropropane	ND		ug/L	1.0	SW846 8260B			4/25/16 13:16	DD	E
1,3-Dichloropropene, Total	ND		ug/L	2.0	SW846 8260B			4/25/16 13:16	DD	E
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			4/25/16 13:16	DD	E
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			4/25/16 13:16	DD	E
Styrene	ND		ug/L	1.0	SW846 8260B			4/25/16 13:16	DD	E
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/25/16 13:16	DD	E
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			4/25/16 13:16	DD	E
Toluene	ND		ug/L	1.0	SW846 8260B			4/25/16 13:16	DD	E
Total Xylenes	ND		ug/L	3.0	SW846 8260B			4/25/16 13:16	DD	E
1,2,4-Trichlorobenzene	ND		ug/L	2.0	SW846 8260B			4/25/16 13:16	DD	E
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/25/16 13:16	DD	E
1,1,2-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/25/16 13:16	DD	E
Trichloroethene	ND		ug/L	1.0	SW846 8260B			4/25/16 13:16	DD	E
Trichlorofluoromethane	ND		ug/L	1.0	SW846 8260B			4/25/16 13:16	DD	E
1,2,3-Trichloropropane	ND		ug/L	2.0	SW846 8260B			4/25/16 13:16	DD	E
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			4/25/16 13:16	DD	E

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

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State Certifications: DE ID11, MAPA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2138238 QUARTERLY CWMP-FORM 19Q-RR VOC

Lab ID: **2138238002** Date Collected: 4/21/2016 11:14 Matrix: Ground Water

Sample ID: **CWMP003W** Date Received: 4/21/2016 16:23

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
1,2-Dichloroethane-d4 (S)	105		%	62 - 133	SW846 8260B			4/25/16 13:16	DD	E
4-Bromofluorobenzene (S)	111		%	79 - 114	SW846 8260B			4/25/16 13:16	DD	E
Dibromofluoromethane (S)	95.5		%	78 - 116	SW846 8260B			4/25/16 13:16	DD	E
Toluene-d8 (S)	92.3		%	76 - 127	SW846 8260B			4/25/16 13:16	DD	E
WET CHEMISTRY										
Alkalinity, Bicarbonate	23		mg/L	5	S2320B-97			4/22/16 11:59	MSA	C
Alkalinity, Total	23		mg/L	5	S2320B-97			4/22/16 11:59	MSA	C
Ammonia-N	ND		mg/L	0.100	D6919-09			5/3/16 11:26	JAM	I
Chemical Oxygen Demand (COD)	6		mg/L	5	EPA 410.4			4/29/16 05:30	JAM	I
Chloride	69.9		mg/L	2.0	EPA 300.0			4/23/16 00:01	JP	C
Fluoride	ND		mg/L	0.20	EPA 300.0			4/23/16 00:01	JP	C
Nitrate-N	8.5		mg/L	0.20	EPA 300.0			4/23/16 00:01	JP	C
pH	6.03		pH_Units		S4500HB-00			4/22/16 11:59	MSA	C
Phenolics	ND		mg/L	0.01	SW846 9066	4/23/16 10:29	NK	4/25/16 14:35	JLG	I
Specific Conductance	340		umhos/cm	1	S2510B-97			4/22/16 11:59	MSA	C
Sulfate	5.0		mg/L	2.0	EPA 300.0			4/23/16 00:01	JP	C
Total Dissolved Solids	277		mg/L	5	S2540C-11			4/27/16 22:00	NV	I
Total Organic Carbon (TOC)	ND		mg/L	1.0	SW846 9060A			5/3/16 15:45	PAG	I
Turbidity	1.06		NTU	0.10	S2130B-01			4/22/16 23:27	MSA	I
METALS										
Calcium, Total	29.6		mg/L	0.11	SW846 6010C	4/26/16 11:40	JPS	4/26/16 17:22	SRT	I1
Iron, Total	0.094		mg/L	0.067	SW846 6010C	4/26/16 11:40	JPS	4/26/16 17:22	SRT	I1
Magnesium, Total	9.8		mg/L	0.11	SW846 6010C	4/26/16 11:40	JPS	4/26/16 17:22	SRT	I1
Manganese, Total	0.069		mg/L	0.0056	SW846 6010C	4/26/16 11:40	JPS	4/26/16 17:22	SRT	I1
Potassium, Total	1.8		mg/L	0.56	SW846 6010C	4/26/16 11:40	JPS	4/26/16 17:22	SRT	I1
Sodium, Total	17.9		mg/L	0.56	SW846 6010C	4/26/16 11:40	JPS	4/26/16 17:22	SRT	I1
FIELD PARAMETERS										
Depth to Water Level	100.420		Feet		Field			4/21/16 11:14	CLT	I
Elev Top MW Casing above MSL	524.21		Feet		Field			4/21/16 11:14	CLT	I
Ground Water Elevation	423.790		ft/MSL		Field			4/21/16 11:14	CLT	I
pH, Field (SM4500B)	5.450		pH_Units		Field			4/21/16 11:14	CLT	I
Sample Depth	100.000		Feet		Field			4/21/16 11:14	CLT	I
Specific Conductance, Field	404		umhos/cm	1	Field			4/21/16 11:14	CLT	I
Temperature	13.17		Deg. C		Field			4/21/16 11:14	CLT	I
Total Well Depth	140.000		Feet		Field			4/21/16 11:14	CLT	I

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ANALYTICAL RESULTS

Workorder: 2138238 QUARTERLY CWMP-FORM 19Q-RR VOC

Lab ID: **2138238002** Date Collected: 4/21/2016 11:14 Matrix: Ground Water

Sample ID: **CWMP003W** Date Received: 4/21/2016 16:23

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

Ms. Susan J Scherer
Project Coordinator

ALS Environmental

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ANALYTICAL RESULTS

Workorder: 2138238 QUARTERLY CWMP-FORM 19Q-RR VOC

Lab ID: **2138238003** Date Collected: 4/21/2016 11:30 Matrix: Ground Water

Sample ID: **CWMP004W** Date Received: 4/21/2016 16:23

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			4/25/16 13:38	DD	E
Bromodichloromethane	ND		ug/L	1.0	SW846 8260B			4/25/16 13:38	DD	E
Bromoform	ND		ug/L	1.0	SW846 8260B			4/25/16 13:38	DD	E
Bromomethane	ND		ug/L	1.0	SW846 8260B			4/25/16 13:38	DD	E
Carbon Tetrachloride	ND		ug/L	1.0	SW846 8260B			4/25/16 13:38	DD	E
Chlorobenzene	ND		ug/L	1.0	SW846 8260B			4/25/16 13:38	DD	E
Chlorodibromomethane	ND		ug/L	1.0	SW846 8260B			4/25/16 13:38	DD	E
Chloroethane	ND		ug/L	1.0	SW846 8260B			4/25/16 13:38	DD	E
Chloroform	ND		ug/L	1.0	SW846 8260B			4/25/16 13:38	DD	E
Chloromethane	ND		ug/L	1.0	SW846 8260B			4/25/16 13:38	DD	E
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			4/25/16 13:38	DD	E
1,2-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/25/16 13:38	DD	E
1,3-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/25/16 13:38	DD	E
1,4-Dichlorobenzene	ND		ug/L	1.0	SW846 8260B			4/25/16 13:38	DD	E
1,1-Dichloroethane	1.0		ug/L	1.0	SW846 8260B			4/25/16 13:38	DD	E
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/25/16 13:38	DD	E
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/25/16 13:38	DD	E
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/25/16 13:38	DD	E
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/25/16 13:38	DD	E
1,2-Dichloropropane	ND		ug/L	1.0	SW846 8260B			4/25/16 13:38	DD	E
1,3-Dichloropropene, Total	ND		ug/L	2.0	SW846 8260B			4/25/16 13:38	DD	E
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			4/25/16 13:38	DD	E
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			4/25/16 13:38	DD	E
Styrene	ND		ug/L	1.0	SW846 8260B			4/25/16 13:38	DD	E
1,1,2,2-Tetrachloroethane	ND		ug/L	1.0	SW846 8260B			4/25/16 13:38	DD	E
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			4/25/16 13:38	DD	E
Toluene	ND		ug/L	1.0	SW846 8260B			4/25/16 13:38	DD	E
Total Xylenes	ND		ug/L	3.0	SW846 8260B			4/25/16 13:38	DD	E
1,2,4-Trichlorobenzene	ND		ug/L	2.0	SW846 8260B			4/25/16 13:38	DD	E
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/25/16 13:38	DD	E
1,1,2-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/25/16 13:38	DD	E
Trichloroethene	ND		ug/L	1.0	SW846 8260B			4/25/16 13:38	DD	E
Trichlorofluoromethane	ND		ug/L	1.0	SW846 8260B			4/25/16 13:38	DD	E
1,2,3-Trichloropropane	ND		ug/L	2.0	SW846 8260B			4/25/16 13:38	DD	E
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			4/25/16 13:38	DD	E

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

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ANALYTICAL RESULTS

Workorder: 2138238 QUARTERLY CWMP-FORM 19Q-RR VOC

Lab ID: **2138238003** Date Collected: 4/21/2016 11:30 Matrix: Ground Water

Sample ID: **CWMP004W** Date Received: 4/21/2016 16:23

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
1,2-Dichloroethane-d4 (S)	106		%	62 - 133	SW846 8260B			4/25/16 13:38	DD	E
4-Bromofluorobenzene (S)	109		%	79 - 114	SW846 8260B			4/25/16 13:38	DD	E
Dibromofluoromethane (S)	94.9		%	78 - 116	SW846 8260B			4/25/16 13:38	DD	E
Toluene-d8 (S)	91		%	76 - 127	SW846 8260B			4/25/16 13:38	DD	E
WET CHEMISTRY										
Alkalinity, Bicarbonate	24		mg/L	5	S2320B-97			4/22/16 12:08	MSA	C
Alkalinity, Total	24		mg/L	5	S2320B-97			4/22/16 12:08	MSA	C
Ammonia-N	ND		mg/L	0.100	D6919-09			5/3/16 11:45	JAM	I
Chemical Oxygen Demand (COD)	ND		mg/L	5	EPA 410.4			4/29/16 05:30	JAM	I
Chloride	42.1		mg/L	2.0	EPA 300.0			4/23/16 00:14	JP	C
Fluoride	ND		mg/L	0.20	EPA 300.0			4/23/16 00:14	JP	C
Nitrate-N	7.0		mg/L	0.20	EPA 300.0			4/23/16 00:14	JP	C
pH	6.40		pH_Units		S4500HB-00			4/22/16 12:08	MSA	C
Phenolics	ND		mg/L	0.01	SW846 9066	4/23/16 10:29	NK	4/25/16 13:56	JLG	I
Specific Conductance	245		umhos/cm	1	S2510B-97			4/22/16 12:08	MSA	C
Sulfate	5.4		mg/L	2.0	EPA 300.0			4/23/16 00:14	JP	C
Total Dissolved Solids	178		mg/L	5	S2540C-11			4/27/16 22:00	NV	I
Total Organic Carbon (TOC)	ND		mg/L	1.0	SW846 9060A			5/3/16 15:45	PAG	I
Turbidity	0.12		NTU	0.10	S2130B-01			4/22/16 23:27	MSA	I
METALS										
Calcium, Total	21.8		mg/L	0.11	SW846 6010C	4/26/16 11:40	JPS	4/26/16 17:26	SRT	I1
Iron, Total	ND		mg/L	0.067	SW846 6010C	4/26/16 11:40	JPS	4/26/16 17:26	SRT	I1
Magnesium, Total	6.5		mg/L	0.11	SW846 6010C	4/26/16 11:40	JPS	4/26/16 17:26	SRT	I1
Manganese, Total	0.0092		mg/L	0.0056	SW846 6010C	4/26/16 11:40	JPS	4/26/16 17:26	SRT	I1
Potassium, Total	1.4		mg/L	0.56	SW846 6010C	4/26/16 11:40	JPS	4/26/16 17:26	SRT	I1
Sodium, Total	14.4		mg/L	0.56	SW846 6010C	4/26/16 11:40	JPS	4/26/16 17:26	SRT	I1
FIELD PARAMETERS										
Depth to Water Level	133.110		Feet		Field			4/21/16 11:30	CLT	I
Elev Top MW Casing above MSL	529.53		Feet		Field			4/21/16 11:30	CLT	I
Ground Water Elevation	396.420		ft/MSL		Field			4/21/16 11:30	CLT	I
pH, Field (SM4500B)	5.600		pH_Units		Field			4/21/16 11:30	CLT	I
Sample Depth	130.000		Feet		Field			4/21/16 11:30	CLT	I
Specific Conductance, Field	286		umhos/cm	1	Field			4/21/16 11:30	CLT	I
Temperature	12.75		Deg. C		Field			4/21/16 11:30	CLT	I
Total Well Depth	140.000		Feet		Field			4/21/16 11:30	CLT	I

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State Certifications: DE ID11, MAPA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2138238 QUARTERLY CWMP-FORM 19Q-RR VOC

Lab ID:	**2138238003**	Date Collected:	4/21/2016 11:30	Matrix:	Ground Water
Sample ID:	**CWMP004W**	Date Received:	4/21/2016 16:23		

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

Ms. Susan J Scherer
Project Coordinator

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CHAIN OF CUSTODY/ REQUEST FOR ANALYSIS

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21382238

1 of 1

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

49

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 Quarterly Wells
Bill To: Lancaster County Solid Waste MA

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

Sample Description/Location (as it will appear on the lab report)	Sample Date	Time	*G or C	**Matrix	Container Type	Container Size	Preservative	TOC	O-OH	River Road VOC ~~VOC Form 10C~~	Field Measurements	Sample Depth for AUX Data	NH3-N, COD	Total Metals: Ca, Fe, Mn, Mg, K, Na	pH; NO3, Cl; F, SpC; SO4, Turb, TDS	Alkalinity; HCO3
					AG	AN	CG	—	—	PL	PL	PL	PL			
					40 ml	500 ml	40 ml	—	—	500 ml	500 ml	1 L	500 ml			
					HCl	H2SO4	HCl	—	—	H2SO4	HNO3	None	None			
					ANALYSES/METHOD REQUESTED											
					Enter Number of Containers Per Sample or Field Results Below.											
1 CWMP002W	4-21-16	1102	G	GW	2	1	2	x	x	1	1	1	1			
2 CWMP003W	1	1114	1	1	1	1	1	1	1	1	1	1	1			
3 CWMP004W	1	1130	1	1	1	1	1	1	1	1	1	1	1			
4																
5																
6																
7																
8																
9																
10																

Receipt Information (completed by Receiving Lab)
Cooler Temp 6°C Therm ID: 352
No. of Coolers: _____

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

Courier/Tracking #:

Sample/COC Comments

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

Project Comments:

LOGGED BY(signature): [signature] DATE 4/21 TIME 2257
REVIEWED BY(signature): DATE TIME

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
1 [signature] ALS	4-21-16	1623	2 [signature]	4/21	1623
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

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May 10, 2016

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

Certificate of Analysis

Project Name:	**2016-CRESWELL**	Workorder:	**2138237**
Purchase Order:		Workorder ID:	**QUARTERLY CWMP-FORM 19Q**

Dear Mr. Brown:

Enclosed are the analytical results for samples received by the laboratory on Thursday, April 21, 2016.

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

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

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

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

CC: Mr. Mark Reider , Mr. Jeff Musser

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

Susan J. Scherer

Ms. Susan J Scherer
Project Coordinator

ALS Environmental

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SAMPLE SUMMARY

Workorder: 2138237 QUARTERLY CWMP-FORM 19Q

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
2138237001	CWMP016W	Ground Water	4/21/2016 09:37	4/21/2016 16:23	Mr. Brian G Shade
2138237002	CWMP010W	Ground Water	4/21/2016 13:03	4/21/2016 16:23	Mr. Brian G Shade
2138237003	CWMP009W	Ground Water	4/21/2016 13:30	4/21/2016 16:23	Mr. Brian G Shade
2138237004	CWMP008W	Ground Water	4/21/2016 14:16	4/21/2016 16:23	Mr. Brian G Shade

Notes

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

Standard Acronyms/Flags

J	Indicates an estimated value between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL) for the analyte
U	Indicates that the analyte was Not Detected (ND)
N	Indicates presumptive evidence of the presence of a compound
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
RDL	Reporting Detection Limit
ND	Not Detected - indicates that the analyte was Not Detected at the RDL
Cntr	Analysis was performed using this container
RegLmt	Regulatory Limit
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
%Rec	Percent Recovery
RPD	Relative Percent Difference
LOD	DoD Limit of Detection
LOQ	DoD Limit of Quantitation
DL	DoD Detection Limit

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State Certifications: DE ID11, MAPA0102 , MD 128 , VA 460157 , WV 343

PROJECT SUMMARY

Workorder: 2138237 QUARTERLY CWMP-FORM 19Q

Sample Comments

Lab ID: 2138237001 **Sample ID:** CWMP016W **Sample Type:** SAMPLE

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

Lab ID: 2138237002 **Sample ID:** CWMP010W **Sample Type:** SAMPLE

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

Lab ID: 2138237003 **Sample ID:** CWMP009W **Sample Type:** SAMPLE

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

Lab ID: 2138237004 **Sample ID:** CWMP008W **Sample Type:** SAMPLE

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

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ANALYTICAL RESULTS

Workorder: 2138237 QUARTERLY CWMP-FORM 19Q

Lab ID: **2138237001** Date Collected: 4/21/2016 09:37 Matrix: Ground Water

Sample ID: **CWMP016W** Date Received: 4/21/2016 16:23

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			4/25/16 11:26	DD	H
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			4/25/16 11:26	DD	H
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/25/16 11:26	DD	H
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/25/16 11:26	DD	H
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/25/16 11:26	DD	H
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/25/16 11:26	DD	H
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/25/16 11:26	DD	H
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			4/25/16 11:26	DD	H
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			4/25/16 11:26	DD	H
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			4/25/16 11:26	DD	H
Toluene	ND		ug/L	1.0	SW846 8260B			4/25/16 11:26	DD	H
Total Xylenes	ND		ug/L	3.0	SW846 8260B			4/25/16 11:26	DD	H
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/25/16 11:26	DD	H
Trichloroethene	ND		ug/L	1.0	SW846 8260B			4/25/16 11:26	DD	H
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			4/25/16 11:26	DD	H
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	102		%	62 - 133	SW846 8260B			4/25/16 11:26	DD	H
4-Bromofluorobenzene (S)	107		%	79 - 114	SW846 8260B			4/25/16 11:26	DD	H
Dibromofluoromethane (S)	94.5		%	78 - 116	SW846 8260B			4/25/16 11:26	DD	H
Toluene-d8 (S)	90.9		%	76 - 127	SW846 8260B			4/25/16 11:26	DD	H
WET CHEMISTRY										
Alkalinity, Bicarbonate	9		mg/L	5	S2320B-97			4/22/16 11:08	MSA	B
Alkalinity, Total	9		mg/L	5	S2320B-97			4/22/16 11:08	MSA	B
Ammonia-N	ND		mg/L	0.100	D6919-09			5/3/16 09:14	JAM	A
Chemical Oxygen Demand (COD)	ND		mg/L	5	EPA 410.4			4/29/16 05:30	JAM	A
Chloride	2.2		mg/L	2.0	EPA 300.0			4/22/16 11:17	JP	B
Fluoride	ND		mg/L	0.20	EPA 300.0			4/22/16 11:17	JP	B
Nitrate-N	0.64		mg/L	0.20	EPA 300.0			4/22/16 11:17	JP	B
pH	6.55		pH_Units		SM4500B			4/22/16 11:08	MSA	B
Phenolics	ND		mg/L	0.01	SW846 9066	4/23/16 10:29	NK	4/25/16 14:36	JLG	G
Specific Conductance	55		umhos/cm	1	SW846 9050A			4/22/16 11:08	MSA	B
Sulfate	11.8		mg/L	2.0	EPA 300.0			4/22/16 11:17	JP	B
Total Dissolved Solids	35		mg/L	5	S2540C-11			4/27/16 22:00	NV	B
Total Organic Carbon (TOC)	1.1		mg/L	1.0	SW846 9060A			5/3/16 15:45	PAG	E
Turbidity	1.52		NTU	0.10	S2130B-01			4/22/16 23:27	MSA	B

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ANALYTICAL RESULTS

Workorder: 2138237 QUARTERLY CWMP-FORM 19Q

Lab ID: **2138237001** Date Collected: 4/21/2016 09:37 Matrix: Ground Water

Sample ID: **CWMP016W** Date Received: 4/21/2016 16:23

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Calcium, Total	4.9		mg/L	0.11	SW846 6010C	4/25/16 11:30	JPS	4/26/16 16:23	SRT	C1
Iron, Total	0.19		mg/L	0.067	SW846 6010C	4/25/16 11:30	JPS	4/26/16 16:23	SRT	C1
Magnesium, Total	1.2		mg/L	0.11	SW846 6010C	4/25/16 11:30	JPS	4/26/16 16:23	SRT	C1
Manganese, Total	0.011		mg/L	0.0056	SW846 6010C	4/25/16 11:30	JPS	4/26/16 16:23	SRT	C1
Potassium, Total	ND		mg/L	0.56	SW846 6010C	4/25/16 11:30	JPS	4/26/16 16:23	SRT	C1
Sodium, Total	3.1		mg/L	0.56	SW846 6010C	4/25/16 11:30	JPS	4/28/16 13:25	SRT	C1
FIELD PARAMETERS										
Depth to Water Level	8.600		Feet		Field			4/21/16 09:37	CLT	D
Elev Top MW Casing above MSL	311.97		Feet		Field			4/21/16 09:37	CLT	D
Flow Rate	2.66		gal/min		Field			4/21/16 09:37	CLT	D
Ground Water Elevation	303.370		ft/MSL		Field			4/21/16 09:37	CLT	D
pH, Field (SM4500B)	4.650		pH_Units		Field			4/21/16 09:37	CLT	D
Sample Depth	71.000		Feet		Field			4/21/16 09:37	CLT	D
Specific Conductance, Field	60		umhos/cm	1	Field			4/21/16 09:37	CLT	D
Temperature	10.75		Deg. C		Field			4/21/16 09:37	CLT	D
Total Well Depth	73.520		Feet		Field			4/21/16 09:37	CLT	D
Volume in Water Column	95.432		Gallons		Field			4/21/16 09:37	CLT	D
Water Level After Purge	19.360		Feet		Field			4/21/16 09:37	CLT	D
Well Volumes Purged	1.39		Vol		Field			4/21/16 09:37	CLT	D

Susan J. Scherer

Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2138237 QUARTERLY CWMP-FORM 19Q

Lab ID: **2138237002** Date Collected: 4/21/2016 13:03 Matrix: Ground Water

Sample ID: **CWMP010W** Date Received: 4/21/2016 16:23

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			4/25/16 11:48	DD	H
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			4/25/16 11:48	DD	H
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/25/16 11:48	DD	H
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/25/16 11:48	DD	H
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/25/16 11:48	DD	H
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/25/16 11:48	DD	H
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/25/16 11:48	DD	H
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			4/25/16 11:48	DD	H
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			4/25/16 11:48	DD	H
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			4/25/16 11:48	DD	H
Toluene	ND		ug/L	1.0	SW846 8260B			4/25/16 11:48	DD	H
Total Xylenes	ND		ug/L	3.0	SW846 8260B			4/25/16 11:48	DD	H
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/25/16 11:48	DD	H
Trichloroethene	ND		ug/L	1.0	SW846 8260B			4/25/16 11:48	DD	H
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			4/25/16 11:48	DD	H
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	101		%	62 - 133	SW846 8260B			4/25/16 11:48	DD	H
4-Bromofluorobenzene (S)	106		%	79 - 114	SW846 8260B			4/25/16 11:48	DD	H
Dibromofluoromethane (S)	91.8		%	78 - 116	SW846 8260B			4/25/16 11:48	DD	H
Toluene-d8 (S)	90.5		%	76 - 127	SW846 8260B			4/25/16 11:48	DD	H
WET CHEMISTRY										
Alkalinity, Bicarbonate	159		mg/L	5	S2320B-97			4/22/16 11:19	MSA	B
Alkalinity, Total	159		mg/L	5	S2320B-97			4/22/16 11:19	MSA	B
Ammonia-N	ND		mg/L	0.100	D6919-09			5/3/16 10:10	JAM	A
Chemical Oxygen Demand (COD)	6		mg/L	5	EPA 410.4			4/29/16 05:30	JAM	A
Chloride	220		mg/L	5.0	EPA 300.0			4/22/16 12:53	JP	B
Fluoride	ND		mg/L	0.50	EPA 300.0			4/22/16 12:53	JP	B
Nitrate-N	5.8		mg/L	0.50	EPA 300.0			4/22/16 12:53	JP	B
pH	7.26		pH_Units		SM4500B			4/22/16 11:19	MSA	B
Phenolics	ND		mg/L	0.01	SW846 9066	4/23/16 10:29	NK	4/25/16 14:05	JLG	G
Specific Conductance	1130		umhos/cm	1	SW846 9050A			4/22/16 11:19	MSA	B
Sulfate	26.7		mg/L	5.0	EPA 300.0			4/22/16 12:53	JP	B
Total Dissolved Solids	560		mg/L	5	S2540C-11			4/27/16 22:00	NV	B
Total Organic Carbon (TOC)	4.1		mg/L	1.0	SW846 9060A			5/3/16 15:45	PAG	E
Turbidity	2.92		NTU	0.10	S2130B-01			4/22/16 23:27	MSA	B

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ANALYTICAL RESULTS

Workorder: 2138237 QUARTERLY CWMP-FORM 19Q

Lab ID: **2138237002** Date Collected: 4/21/2016 13:03 Matrix: Ground Water

Sample ID: **CWMP010W** Date Received: 4/21/2016 16:23

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Calcium, Total	38.8		mg/L	0.11	SW846 6010C	4/25/16 11:30	JPS	4/26/16 16:27	SRT	C1
Iron, Total	0.26		mg/L	0.067	SW846 6010C	4/25/16 11:30	JPS	4/26/16 16:27	SRT	C1
Magnesium, Total	27.1		mg/L	0.11	SW846 6010C	4/25/16 11:30	JPS	4/26/16 16:27	SRT	C1
Manganese, Total	0.065		mg/L	0.0056	SW846 6010C	4/25/16 11:30	JPS	4/26/16 16:27	SRT	C1
Potassium, Total	9.4		mg/L	0.56	SW846 6010C	4/25/16 11:30	JPS	4/26/16 16:27	SRT	C1
Sodium, Total	134		mg/L	0.56	SW846 6010C	4/25/16 11:30	JPS	4/26/16 16:27	SRT	C1
FIELD PARAMETERS										
Depth to Water Level	8.870		Feet		Field			4/21/16 13:03	BGS	D
Elev Top MW Casing above MSL	360.90		Feet		Field			4/21/16 13:03	BGS	D
Flow Rate	1.14		gal/min		Field			4/21/16 13:03	BGS	D
Ground Water Elevation	352.030		ft/MSL		Field			4/21/16 13:03	BGS	D
pH, Field (SM4500B)	5.870		pH_Units		Field			4/21/16 13:03	BGS	D
Sample Depth	17.000		Feet		Field			4/21/16 13:03	BGS	D
Specific Conductance, Field	1351		umhos/cm	1	Field			4/21/16 13:03	BGS	D
Temperature	9.72		Deg. C		Field			4/21/16 13:03	BGS	D
Total Well Depth	19.600		Feet		Field			4/21/16 13:03	BGS	D
Volume in Water Column	6.970		Gallons		Field			4/21/16 13:03	BGS	D
Water Level After Purge	16.480		Feet		Field			4/21/16 13:03	BGS	D
Well Volumes Purged	1.60		Vol		Field			4/21/16 13:03	BGS	D

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ANALYTICAL RESULTS

Workorder: 2138237 QUARTERLY CWMP-FORM 19Q

Lab ID: **2138237003** Date Collected: 4/21/2016 13:30 Matrix: Ground Water

Sample ID: **CWMP009W** Date Received: 4/21/2016 16:23

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	2.3		ug/L	1.0	SW846 8260B			4/25/16 12:10	DD	H
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			4/25/16 12:10	DD	H
1,1-Dichloroethane	2.4		ug/L	1.0	SW846 8260B			4/25/16 12:10	DD	H
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/25/16 12:10	DD	H
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/25/16 12:10	DD	H
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/25/16 12:10	DD	H
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/25/16 12:10	DD	H
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			4/25/16 12:10	DD	H
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			4/25/16 12:10	DD	H
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			4/25/16 12:10	DD	H
Toluene	ND		ug/L	1.0	SW846 8260B			4/25/16 12:10	DD	H
Total Xylenes	ND		ug/L	3.0	SW846 8260B			4/25/16 12:10	DD	H
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/25/16 12:10	DD	H
Trichloroethene	ND		ug/L	1.0	SW846 8260B			4/25/16 12:10	DD	H
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			4/25/16 12:10	DD	H
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	104		%	62 - 133	SW846 8260B			4/25/16 12:10	DD	H
4-Bromofluorobenzene (S)	110		%	79 - 114	SW846 8260B			4/25/16 12:10	DD	H
Dibromofluoromethane (S)	94.9		%	78 - 116	SW846 8260B			4/25/16 12:10	DD	H
Toluene-d8 (S)	92.7		%	76 - 127	SW846 8260B			4/25/16 12:10	DD	H
WET CHEMISTRY										
Alkalinity, Bicarbonate	537		mg/L	5	S2320B-97			4/22/16 11:31	MSA	B
Alkalinity, Total	537		mg/L	5	S2320B-97			4/22/16 11:31	MSA	B
Ammonia-N	32.7		mg/L	0.100	D6919-09			5/3/16 10:29	JAM	A
Chemical Oxygen Demand (COD)	97		mg/L	5	EPA 410.4			4/29/16 05:30	JAM	A
Chloride	446		mg/L	10.0	EPA 300.0			4/22/16 23:20	JP	B
Fluoride	ND		mg/L	0.20	EPA 300.0			4/22/16 13:07	JP	B
Nitrate-N	ND		mg/L	0.20	EPA 300.0			4/22/16 13:07	JP	B
pH	6.51		pH_Units		SM4500B			4/22/16 11:31	MSA	B
Phenolics	ND		mg/L	0.01	SW846 9066	4/23/16 10:29	NK	4/25/16 13:58	JLG	G
Specific Conductance	2460		umhos/cm	1	SW846 9050A			4/22/16 11:31	MSA	B
Sulfate	4.9		mg/L	2.0	EPA 300.0			4/23/16 09:37	MBW	B
Total Dissolved Solids	1120		mg/L	5	S2540C-11			4/27/16 22:00	NV	B
Total Organic Carbon (TOC)	32.2		mg/L	10.0	SW846 9060A			5/4/16 15:46	PAG	E
Turbidity	138		NTU	0.10	S2130B-01			4/22/16 23:27	MSA	B

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ANALYTICAL RESULTS

Workorder: 2138237 QUARTERLY CWMP-FORM 19Q

Lab ID: **2138237003** Date Collected: 4/21/2016 13:30 Matrix: Ground Water

Sample ID: **CWMP009W** Date Received: 4/21/2016 16:23

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Calcium, Total	146		mg/L	0.11	SW846 6010C	4/25/16 11:30	JPS	4/26/16 16:30	SRT	C1
Iron, Total	33.7		mg/L	0.067	SW846 6010C	4/25/16 11:30	JPS	4/26/16 16:30	SRT	C1
Magnesium, Total	72.2		mg/L	0.11	SW846 6010C	4/25/16 11:30	JPS	4/26/16 16:30	SRT	C1
Manganese, Total	11.6		mg/L	0.0056	SW846 6010C	4/25/16 11:30	JPS	4/26/16 16:30	SRT	C1
Potassium, Total	36.6		mg/L	0.56	SW846 6010C	4/25/16 11:30	JPS	4/26/16 16:30	SRT	C1
Sodium, Total	144		mg/L	0.56	SW846 6010C	4/25/16 11:30	JPS	4/26/16 16:30	SRT	C1
FIELD PARAMETERS										
Depth to Water Level	9.270		Feet		Field			4/21/16 13:30	CLT	D
Elev Top MW Casing above MSL	404.20		Feet		Field			4/21/16 13:30	CLT	D
Flow Rate	1.67		gal/min		Field			4/21/16 13:30	CLT	D
Ground Water Elevation	394.930		ft/MSL		Field			4/21/16 13:30	CLT	D
pH, Field (SM4500B)	6.100		pH_Units		Field			4/21/16 13:30	CLT	D
Sample Depth	16.000		Feet		Field			4/21/16 13:30	CLT	D
Specific Conductance, Field	2672		umhos/cm	1	Field			4/21/16 13:30	CLT	D
Temperature	10.17		Deg. C		Field			4/21/16 13:30	CLT	D
Total Well Depth	19.700		Feet		Field			4/21/16 13:30	CLT	D
Volume in Water Column	6.780		Gallons		Field			4/21/16 13:30	CLT	D
Water Level After Purge	11.660		Feet		Field			4/21/16 13:30	CLT	D
Well Volumes Purged	3.95		Vol		Field			4/21/16 13:30	CLT	D

Susan J. Scherer

Ms. Susan J Scherer
Project Coordinator

ALS Environmental

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State Certifications: DE ID11, MAPA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2138237 QUARTERLY CWMP-FORM 19Q

Lab ID: **2138237004** Date Collected: 4/21/2016 14:16 Matrix: Ground Water

Sample ID: **CWMP008W** Date Received: 4/21/2016 16:23

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	2.6		ug/L	1.0	SW846 8260B			4/25/16 12:32	DD	H
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			4/25/16 12:32	DD	H
1,1-Dichloroethane	3.7		ug/L	1.0	SW846 8260B			4/25/16 12:32	DD	H
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/25/16 12:32	DD	H
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/25/16 12:32	DD	H
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/25/16 12:32	DD	H
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/25/16 12:32	DD	H
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			4/25/16 12:32	DD	H
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			4/25/16 12:32	DD	H
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			4/25/16 12:32	DD	H
Toluene	ND		ug/L	1.0	SW846 8260B			4/25/16 12:32	DD	H
Total Xylenes	ND		ug/L	3.0	SW846 8260B			4/25/16 12:32	DD	H
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/25/16 12:32	DD	H
Trichloroethene	ND		ug/L	1.0	SW846 8260B			4/25/16 12:32	DD	H
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			4/25/16 12:32	DD	H
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	104		%	62 - 133	SW846 8260B			4/25/16 12:32	DD	H
4-Bromofluorobenzene (S)	110		%	79 - 114	SW846 8260B			4/25/16 12:32	DD	H
Dibromofluoromethane (S)	97.4		%	78 - 116	SW846 8260B			4/25/16 12:32	DD	H
Toluene-d8 (S)	92.6		%	76 - 127	SW846 8260B			4/25/16 12:32	DD	H
WET CHEMISTRY										
Alkalinity, Bicarbonate	457		mg/L	5	S2320B-97			4/22/16 11:42	MSA	B
Alkalinity, Total	457		mg/L	5	S2320B-97			4/22/16 11:42	MSA	B
Ammonia-N	6.53		mg/L	0.100	D6919-09			5/3/16 10:48	JAM	A
Chemical Oxygen Demand (COD)	32		mg/L	5	EPA 410.4			4/29/16 05:30	JAM	A
Chloride	37.1		mg/L	2.0	EPA 300.0			4/22/16 23:33	JP	B
Fluoride	ND		mg/L	0.20	EPA 300.0			4/22/16 23:33	JP	B
Nitrate-N	ND		mg/L	0.20	EPA 300.0			4/22/16 23:33	JP	B
pH	6.45		pH_Units		SM4500B			4/22/16 11:42	MSA	B
Phenolics	ND		mg/L	0.01	SW846 9066	4/23/16 10:29	NK	4/25/16 14:03	JLG	G
Specific Conductance	921		umhos/cm	1	SW846 9050A			4/22/16 11:42	MSA	B
Sulfate	6.3		mg/L	2.0	EPA 300.0			4/22/16 23:33	JP	B
Total Dissolved Solids	448		mg/L	5	S2540C-11			4/27/16 22:00	NV	B
Total Organic Carbon (TOC)	9.8		mg/L	2.0	SW846 9060A			5/4/16 15:46	PAG	E
Turbidity	56.1		NTU	0.10	S2130B-01			4/22/16 23:27	MSA	B

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ANALYTICAL RESULTS

Workorder: 2138237 QUARTERLY CWMP-FORM 19Q

Lab ID: **2138237004** Date Collected: 4/21/2016 14:16 Matrix: Ground Water

Sample ID: **CWMP008W** Date Received: 4/21/2016 16:23

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Calcium, Total	73.4		mg/L	0.11	SW846 6010C	4/25/16 11:30	JPS	4/26/16 16:34	SRT	C1
Iron, Total	29.4		mg/L	0.067	SW846 6010C	4/25/16 11:30	JPS	4/26/16 16:34	SRT	C1
Magnesium, Total	33.1		mg/L	0.11	SW846 6010C	4/25/16 11:30	JPS	4/26/16 16:34	SRT	C1
Manganese, Total	17.4		mg/L	0.0056	SW846 6010C	4/25/16 11:30	JPS	4/26/16 16:34	SRT	C1
Potassium, Total	9.1		mg/L	0.56	SW846 6010C	4/25/16 11:30	JPS	4/26/16 16:34	SRT	C1
Sodium, Total	40.7		mg/L	0.56	SW846 6010C	4/25/16 11:30	JPS	4/26/16 16:34	SRT	C1
FIELD PARAMETERS										
Depth to Water Level	2.440		Feet		Field			4/21/16 14:16	CLT	D
Elev Top MW Casing above MSL	422.30		Feet		Field			4/21/16 14:16	CLT	D
Flow Rate	0.83		gal/min		Field			4/21/16 14:16	CLT	D
Ground Water Elevation	419.860		ft/MSL		Field			4/21/16 14:16	CLT	D
pH, Field (SM4500B)	6.060		pH_Units		Field			4/21/16 14:16	CLT	D
Sample Depth	19.000		Feet		Field			4/21/16 14:16	CLT	D
Specific Conductance, Field	997		umhos/cm	1	Field			4/21/16 14:16	CLT	D
Temperature	11.47		Deg. C		Field			4/21/16 14:16	CLT	D
Total Well Depth	22.800		Feet		Field			4/21/16 14:16	CLT	D
Volume in Water Column	3.258		Gallons		Field			4/21/16 14:16	CLT	D
Water Level After Purge	15.980		Feet		Field			4/21/16 14:16	CLT	D
Well Volumes Purged	5.12		Vol		Field			4/21/16 14:16	CLT	D

Ms. Susan J Scherer
Project Coordinator

ALS Environmental
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CHAIN OF CUSTODY/ REQUEST FOR ANALYSIS

Generated by ALS

COC ALS# 55

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 Quarterly Wells
Bill To: Lancaster County Solid Waste MA

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

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

ANALYSES/METHOD REQUESTED

Sample Description/Location (as it will appear on the lab report)	Sample Date	Time	*G or C	**Matrix	TOC	O-OH	VOC - Form 19Q	Field Measurements	Sample Depth for AUX Data	NH3-N, COD	Total Metals: Ca, Fe, Mn, Mg, K, Na	pH, NO3, Cl, F, SpC, SO4, Turb, TDS	Alkalinity, HCO3
					Enter Number of Containers Per Sample or Field Results Below.								
1 CWMP016W	4-21-16	0737	G	GW	2	1	2	x	x	1	1	1	1
2 CWMP010W	"	1303	"	"	"	"	"	"	"	"	"	"	"
3 CWMP009W	"	1330	"	"	"	"	"	"	"	"	"	"	"
4 CWMP008W	"	1416	"	"	"	"	"	"	"	"	"	"	"
5													
6													
7													
8													
9													
10													

Cooler Temp: 6°C Therm ID: 352
No. of Coolers: _____

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

Courier/Tracking #:

Sample/COC Comments

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

Project Comments:

LOGGED BY(signature): [signature] DATE 4/21 TIME 2257
REVIEWED BY(signature): DATE TIME

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:

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
1 [signature] AS	4-21-16	1625	2 [signature]	4/21	1625
3			4		
5			6		
7			8		
9			10		

* 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

ALS Environmental

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May 10, 2016

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

Certificate of Analysis

Project Name:	**2016-CRESWELL**	Workorder:	**2138583**
Purchase Order:		Workorder ID:	**QUARTERLY CWMP-FORM 19Q**

Dear Mr. Brown:

Enclosed are the analytical results for samples received by the laboratory on Friday, April 22, 2016.

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

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

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

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

CC: Mr. Mark Reider , Mr. Jeff Musser

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

Susan J. Scherer

Ms. Susan J Scherer
Project Coordinator

ALS Environmental

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SAMPLE SUMMARY

Workorder: 2138583 QUARTERLY CWMP-FORM 19Q

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
2138583001	CWMP012W	Ground Water	4/22/2016 10:07	4/22/2016 15:13	Mr. Brian G Shade
2138583002	Field Blank	Ground Water	4/22/2016 14:22	4/22/2016 15:13	Mr. Brian G Shade
2138583003	Trip Blank	Water	4/22/2016 15:13	4/22/2016 15:13	Mr. Brian G Shade

Notes

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

Standard Acronyms/Flags

J	Indicates an estimated value between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL) for the analyte
U	Indicates that the analyte was Not Detected (ND)
N	Indicates presumptive evidence of the presence of a compound
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
RDL	Reporting Detection Limit
ND	Not Detected - indicates that the analyte was Not Detected at the RDL
Cntr	Analysis was performed using this container
RegLmt	Regulatory Limit
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
%Rec	Percent Recovery
RPD	Relative Percent Difference
LOD	DoD Limit of Detection
LOQ	DoD Limit of Quantitation
DL	DoD Detection Limit

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PROJECT SUMMARY

Workorder: 2138583 QUARTERLY CWMP-FORM 19Q

Sample Comments

Lab ID: 2138583001 **Sample ID:** CWMP012W **Sample Type:** SAMPLE

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

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

Lab ID: 2138583002 **Sample ID:** Field Blank **Sample Type:** FLDQC

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

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

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ANALYTICAL RESULTS

Workorder: 2138583 QUARTERLY CWMP-FORM 19Q

Lab ID: **2138583001** Date Collected: 4/22/2016 10:07 Matrix: Ground Water

Sample ID: **CWMP012W** Date Received: 4/22/2016 15:13

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			4/25/16 19:05	TMP	H
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			4/25/16 19:05	TMP	H
1,1-Dichloroethane	1.5		ug/L	1.0	SW846 8260B			4/25/16 19:05	TMP	H
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/25/16 19:05	TMP	H
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/25/16 19:05	TMP	H
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/25/16 19:05	TMP	H
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/25/16 19:05	TMP	H
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			4/25/16 19:05	TMP	H
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			4/25/16 19:05	TMP	H
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			4/25/16 19:05	TMP	H
Toluene	ND		ug/L	1.0	SW846 8260B			4/25/16 19:05	TMP	H
Total Xylenes	ND		ug/L	3.0	SW846 8260B			4/25/16 19:05	TMP	H
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/25/16 19:05	TMP	H
Trichloroethene	ND		ug/L	1.0	SW846 8260B			4/25/16 19:05	TMP	H
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			4/25/16 19:05	TMP	H
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	86.6		%	62 - 133	SW846 8260B			4/25/16 19:05	TMP	H
4-Bromofluorobenzene (S)	107		%	79 - 114	SW846 8260B			4/25/16 19:05	TMP	H
Dibromofluoromethane (S)	88.7		%	78 - 116	SW846 8260B			4/25/16 19:05	TMP	H
Toluene-d8 (S)	106		%	76 - 127	SW846 8260B			4/25/16 19:05	TMP	H
WET CHEMISTRY										
Alkalinity, Bicarbonate	74		mg/L	5	S2320B-97			4/23/16 14:39	MSA	B
Alkalinity, Total	74		mg/L	5	S2320B-97			4/23/16 14:39	MSA	B
Ammonia-N	ND		mg/L	0.100	D6919-09			5/4/16 14:24	JAM	A
Chemical Oxygen Demand (COD)	ND		mg/L	5	EPA 410.4			5/4/16 06:00	JAM	A
Chloride	37.8		mg/L	2.0	EPA 300.0			4/23/16 16:14	MBW	B
Fluoride	ND		mg/L	0.20	EPA 300.0			4/23/16 16:14	MBW	B
Nitrate-N	10.7		mg/L	0.20	EPA 300.0			4/23/16 16:14	MBW	B
pH	6.45		pH_Units		SM4500B			4/23/16 14:39	MSA	B
Phenolics	ND		mg/L	0.01	SW846 9066	4/25/16 09:05	NK	4/28/16 11:18	JLG	G
Specific Conductance	323		umhos/cm	1	SW846 9050A			4/23/16 14:39	MSA	B
Sulfate	5.1		mg/L	2.0	EPA 300.0			4/23/16 16:14	MBW	B
Total Dissolved Solids	230		mg/L	5	S2540C-11			4/28/16 10:25	ML	B
Total Organic Carbon (TOC)	1.4		mg/L	1.0	SW846 9060A			5/4/16 15:46	PAG	E
Turbidity	68.4		NTU	0.10	S2130B-01			4/22/16 23:52	MSA	B

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ANALYTICAL RESULTS

Workorder: 2138583 QUARTERLY CWMP-FORM 19Q

Lab ID: **2138583001** Date Collected: 4/22/2016 10:07 Matrix: Ground Water

Sample ID: **CWMP012W** Date Received: 4/22/2016 15:13

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Calcium, Total	35.3		mg/L	0.11	SW846 6010C	4/26/16 11:40	JPS	4/26/16 17:40	SRT	C1
Iron, Total	168		mg/L	0.067	SW846 6010C	4/26/16 11:40	JPS	4/26/16 17:40	SRT	C1
Magnesium, Total	9.6		mg/L	0.11	SW846 6010C	4/26/16 11:40	JPS	4/26/16 17:40	SRT	C1
Manganese, Total	0.52		mg/L	0.0056	SW846 6010C	4/26/16 11:40	JPS	4/26/16 17:40	SRT	C1
Potassium, Total	1.5		mg/L	0.56	SW846 6010C	4/26/16 11:40	JPS	4/26/16 17:40	SRT	C1
Sodium, Total	13.2		mg/L	0.56	SW846 6010C	4/26/16 11:40	JPS	4/26/16 17:40	SRT	C1
FIELD PARAMETERS										
Depth to Water Level	53.410		Feet		Field			4/22/16 10:07	CLT	D
pH, Field (SM4500B)	5.500		pH_Units		Field			4/22/16 10:07	CLT	D
Specific Conductance, Field	353		umhos/cm	1	Field			4/22/16 10:07	CLT	D
Temperature	15.70		Deg. C		Field			4/22/16 10:07	CLT	D

Ms. Susan J Scherer
Project Coordinator

ALS Environmental

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ANALYTICAL RESULTS

Workorder: 2138583 QUARTERLY CWMP-FORM 19Q

Lab ID: **2138583002** Date Collected: 4/22/2016 14:22 Matrix: Ground Water

Sample ID: **Field Blank** Date Received: 4/22/2016 15:13

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			4/25/16 16:32	TMP	H
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			4/25/16 16:32	TMP	H
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/25/16 16:32	TMP	H
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/25/16 16:32	TMP	H
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/25/16 16:32	TMP	H
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/25/16 16:32	TMP	H
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/25/16 16:32	TMP	H
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			4/25/16 16:32	TMP	H
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			4/25/16 16:32	TMP	H
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			4/25/16 16:32	TMP	H
Toluene	ND		ug/L	1.0	SW846 8260B			4/25/16 16:32	TMP	H
Total Xylenes	ND		ug/L	3.0	SW846 8260B			4/25/16 16:32	TMP	H
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/25/16 16:32	TMP	H
Trichloroethene	ND		ug/L	1.0	SW846 8260B			4/25/16 16:32	TMP	H
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			4/25/16 16:32	TMP	H
Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	95.1		%	62 - 133	SW846 8260B			4/25/16 16:32	TMP	H
4-Bromofluorobenzene (S)	106		%	79 - 114	SW846 8260B			4/25/16 16:32	TMP	H
Dibromofluoromethane (S)	89.8		%	78 - 116	SW846 8260B			4/25/16 16:32	TMP	H
Toluene-d8 (S)	104		%	76 - 127	SW846 8260B			4/25/16 16:32	TMP	H
WET CHEMISTRY										
Alkalinity, Bicarbonate	ND		mg/L	5	S2320B-97			4/23/16 14:48	MSA	B
Alkalinity, Total	ND		mg/L	5	S2320B-97			4/23/16 14:48	MSA	B
Ammonia-N	ND		mg/L	0.010	D6919-09			5/4/16 14:43	JAM	A
Chemical Oxygen Demand (COD)	ND		mg/L	5	EPA 410.4			5/4/16 06:00	JAM	A
Chloride	ND		mg/L	1.0	EPA 300.0			4/23/16 17:37	MBW	B
Fluoride	ND		mg/L	0.10	EPA 300.0			4/23/16 17:37	MBW	B
Nitrate-N	ND		mg/L	0.10	EPA 300.0			4/23/16 17:37	MBW	B
pH	6.05		pH_Units		SM4500B			4/23/16 14:48	MSA	B
Phenolics	ND		mg/L	0.01	SW846 9066	4/25/16 09:05	NK	4/28/16 11:19	JLG	G
Specific Conductance	ND		umhos/cm	1	SW846 9050A			4/23/16 14:48	MSA	B
Sulfate	ND		mg/L	1.0	EPA 300.0			4/23/16 17:37	MBW	B
Total Dissolved Solids	5		mg/L	5	S2540C-11			4/28/16 10:19	ML	B
Total Organic Carbon (TOC)	ND		mg/L	1.0	SW846 9060A			5/4/16 15:46	PAG	E
Turbidity	0.17		NTU	0.10	S2130B-01			4/22/16 23:52	MSA	B

ALS Environmental

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NELAP Certifications: NJ R010 , NY11759 , PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: DE ID11, MAPA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2138583 QUARTERLY CWMP-FORM 19Q

Lab ID: **2138583002** Date Collected: 4/22/2016 14:22 Matrix: Ground Water

Sample ID: **Field Blank** Date Received: 4/22/2016 15:13

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	*Cntr*
METALS										
Calcium, Total	ND		mg/L	0.11	SW846 6010C	4/26/16 11:40	JPS	4/26/16 17:51	SRT	C1
Iron, Total	ND		mg/L	0.067	SW846 6010C	4/26/16 11:40	JPS	4/26/16 17:51	SRT	C1
Magnesium, Total	ND		mg/L	0.11	SW846 6010C	4/26/16 11:40	JPS	4/26/16 17:51	SRT	C1
Manganese, Total	ND		mg/L	0.0056	SW846 6010C	4/26/16 11:40	JPS	4/26/16 17:51	SRT	C1
Potassium, Total	ND		mg/L	0.56	SW846 6010C	4/26/16 11:40	JPS	4/26/16 17:51	SRT	C1
Sodium, Total	ND		mg/L	0.56	SW846 6010C	4/26/16 11:40	JPS	4/26/16 17:51	SRT	C1

Susan J. Scherer

Ms. Susan J Scherer
Project Coordinator

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ANALYTICAL RESULTS

Workorder: 2138583 QUARTERLY CWMP-FORM 19Q

Lab ID: **2138583003** Date Collected: 4/22/2016 15:13 Matrix: Water

Sample ID: **Trip Blank** Date Received: 4/22/2016 15:13

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
VOLATILE ORGANICS										
Benzene	ND		ug/L	1.0	SW846 8260B			4/25/16 16:49	TMP	A
1,2-Dibromoethane	ND		ug/L	1.0	SW846 8260B			4/25/16 16:49	TMP	A
1,1-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/25/16 16:49	TMP	A
1,2-Dichloroethane	ND		ug/L	1.0	SW846 8260B			4/25/16 16:49	TMP	A
1,1-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/25/16 16:49	TMP	A
cis-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/25/16 16:49	TMP	A
trans-1,2-Dichloroethene	ND		ug/L	1.0	SW846 8260B			4/25/16 16:49	TMP	A
Ethylbenzene	ND		ug/L	1.0	SW846 8260B			4/25/16 16:49	TMP	A
Methylene Chloride	ND		ug/L	1.0	SW846 8260B			4/25/16 16:49	TMP	A
Tetrachloroethene	ND		ug/L	1.0	SW846 8260B			4/25/16 16:49	TMP	A
Toluene	ND		ug/L	1.0	SW846 8260B			4/25/16 16:49	TMP	A
Total Xylenes	ND		ug/L	3.0	SW846 8260B			4/25/16 16:49	TMP	A
1,1,1-Trichloroethane	ND		ug/L	1.0	SW846 8260B			4/25/16 16:49	TMP	A
Trichloroethene	ND		ug/L	1.0	SW846 8260B			4/25/16 16:49	TMP	A
Vinyl Chloride	ND		ug/L	1.0	SW846 8260B			4/25/16 16:49	TMP	A

Surrogate Recoveries	*Results*	*Flag*	*Units*	*Limits*	*Method*	*Prepared*	*By*	*Analyzed*	*By*	*Cntr*
1,2-Dichloroethane-d4 (S)	92.4		%	62 - 133	SW846 8260B			4/25/16 16:49	TMP	A
4-Bromofluorobenzene (S)	105		%	79 - 114	SW846 8260B			4/25/16 16:49	TMP	A
Dibromofluoromethane (S)	88.9		%	78 - 116	SW846 8260B			4/25/16 16:49	TMP	A
Toluene-d8 (S)	102		%	76 - 127	SW846 8260B			4/25/16 16:49	TMP	A

Susan J. Scherer

Ms. Susan J Scherer
Project Coordinator

ALS Environmental

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CHAIN OF CUSTODY/ REQUEST FOR ANALYSIS

Generated by ALS

1 of 1

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

Client Name: Lancaster County Solid Waste MA

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

Contact: Mark Reider

Phone#: (717) 735-0193

Project Name/#: Creswell Quarterly Wells

Bill To: Lancaster County Solid Waste MA

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

Date Required: _____ **Approved By:** _____

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

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

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

ANALYSES/METHOD REQUESTED

Sample Description/Location (as it will appear on the lab report)	Sample Date	Time	*G or C	**Matrix	TOC	O-OH	VOC - Form 19Q	Field Measurements	Sample Depth for AUX Data	NH3-N, COD	Total Metals: Ca, Fe, Mn, Mg, K, Na	pH, NO3, Cl, F, SpC, SO4, Turb, TDS	Alkalinity, HCO3	
			Enter Number of Containers Per Sample or Field Results Below.											
1. CWMP012W	4-22-16	1007	G	GW	2	1	2	x	x	1	1	1	1	
2 Field Blank	"	1422			1	1	1			1	1	1	1	
3 Trip Blank	"	1513					1							
4														
5														
6														
7														
8														
9														
10														

Cooler Temp: 1 Therm ID: TH-352 (Receiving Lab)

No. of Coolers: _____

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

Courier/Tracking #:

Sample/COC Comments

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

Project Comments:

LOGGED BY(signature): _____ DATE: 4-22-16 TIME: 2257

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

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
1 [signature] ALS	4-22-16	1513	2 [signature]	4/22/16	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; Oil=Oil; OL=Other Liquid; SL=Sludge; SO=Soil; WP=Wipe; WW=Wastewater

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

Rev 8/04