

**FIRST VIRP SEMI-ANNUAL PROGRESS REPORT
MERCER UNIVERSITY TRIANGLE
HSI #10779
1535 MONTPELIER AVE
MACON, BIBB COUNTY, GEORGIA
GEC JOB NO. 090698.340**

PREPARED FOR

**MERCER UNIVERSITY
1400 COLEMAN AVE
MACON, GEORGIA 31207**

SUBMITTED TO

**MR. JASON METZGER
GEORGIA DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION
HAZARDOUS SITES RESPONSE PROGRAM
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AUGUST 20, 2014

PREPARED BY

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GEC

GEOTECHNICAL
&
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CONSULTANTS, INC

August 20, 2014

Mr. Jason Metzger
Georgia Environmental Protection Division
Response and Remediation Program
Suite 1462 East Tower
2 Martin Luther King, Jr. Drive S.E.
Atlanta, GA 30334

**SUBJECT: First VIRP Semi-annual Progress Report
Mercer University Triangle
HSI #10779
1535 Montpelier Ave
Macon, Bibb County, Georgia
GEC Job No. 090698.340**

Dear Mr. Metzger:

In accordance with the Voluntary Investigation and Remediation Program (VIRP) for the Mercer University Triangle site in Macon, Georgia, dated September 30, 2013, Geotechnical & Environmental Consultants, Inc. (GEC) is submitting this Semi-annual Progress Report. This report summarizes monitoring activities conducted at the site on October 17-18, 2013 and June 23-24, 2014 and the sampling results from the groundwater monitoring events. This report also addresses the comments provided by EPD regarding the previously submitted VIRP application.

Sincerely,
GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS, INC.



Paige Sforzo, E.I.T
Project Engineer



Jason A. Cooper, P.E.
Project Manager
Georgia Reg. No. 31694

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1.0 SITE DESCRIPTION

The subject property, known as the Mercer Triangle, consists of a single building housing different businesses including restaurants, Mercer University offices, and other offices. The primary source of contamination is located on the western side of the property under a sidewalk and Linden Avenue. No significant changes have occurred at the site since the last sampling event in April 2013. Mercer University Campus is located south of the subject property with Mercer offices and building located east and southeast. Residential properties are still located north of the subject site with residential property and a public park located west of the site.

No new potential receptors were noted during the sampling event, as development around the site has remained essentially the same since the April 2013 event.

2.0 SUMMARY OF GROUNDWATER SAMPLING PROTOCOL

On October 16-17, GEC was on site to perform groundwater sampling at the Mercer Triangle. The following wells were to be sampled: MWA-1, MWA-2, MWB-4, MWA-5, MWD-6, MW-9, and MW-10.

GEC arrived at the subject facility on October 16, 2013 to collect groundwater levels from the above-noted wells. Following the measurement of the groundwater depth, a required volume of water to be purged from each well was calculated specifically for the individual well. The wells were then slow-purged of a required volume determined specifically for each well utilizing a Proactive S.S. Hurricane centrifugal pump to minimize turbidity, which is equipped with an adjustable flow controller for low flow purging and sampling. Field parameters (pH, turbidity, conductivity, dissolved oxygen, oxidation/reduction potential (ORP), and temperature) were continually analyzed during the purging process utilizing a flow cell connected to a Horiba Water Quality Monitoring probe, which utilizes a hand-held computer for rapid, accurate measurement and display of the water quality parameters. The groundwater was pumped through the flow cell, and the field parameters were continually analyzed by the Horiba. Readings were recorded at least three times on five to six-minute intervals before sample collection began. Following the purging of each well, the well was sampled for metals through the pump. The pump was then removed from the well and a dedicated disposable PVC bailer was lowered into the well for volatile organic compound (VOC) collection. The VOC samples were immediately placed in a cooler with ice. The Horiba instrument was field calibrated each day prior to use. The water quality instruments, parameter measurement containers, and Hurricane pump were thoroughly cleansed with Liquinox soap solution and then rinsed with distilled water in preparation for the next monitoring point. Samples were collected as per EPD protocol as outlined in EPA Region 4 Field Branches Quality System and Technical Procedures, science and Ecosystem Support Division (SESD Ops), "Procedure SESDPROC-301-R3, Groundwater Sampling," effective date March 6, 2013, referenced in the EPD comment letter.

Following the completion of all sampling, the samples were transported back to the GEC office and

placed into refrigeration. The following day, the samples were packed in ice and shipped overnight to Analytical Environmental Services Laboratory in Atlanta, Georgia with a corresponding chain of custody form.

On June 23-24, GEC was on site to perform groundwater sampling at the Mercer Triangle. The following wells were to be sampled: MWA-1, MWA-2, MWB-4, MWA-5, MWD-6, MWA-8 MW-9, MW-10, MW-12, MW-13, MW-14 and MW-15.

GEC followed the same sampling method as previously stated for this sampling event.

Following the completion of all sampling, the samples were transported back to the GEC office and placed into refrigeration. The following day, the samples were packed in ice and shipped overnight to Environmental Science Corporation Laboratory in Mount Juliet, Tennessee with a corresponding chain of custody form.

Copies of the laboratory analytical results and field parameter sheets for each sampling event are included in Appendix C.

3.0 SUMMARY OF FIELD AND HYDROGEOLOGIC PARAMETERS

Field parameters were measured at each well until stabilization of parameters was achieved. The turbidity in each sample was found to be above 28 NTU in every sample, except for MWA-1 and MWA-2, due to the cloudy nature of the groundwater. Also, the pH in every well except MWB-4 was found to range between 2 and 5. This is likely a result of residual sodium persulfate in the groundwater. The readings for ORP, dissolved oxygen, and conductivity did not indicate conditions that would be uncommon for the site. Please refer to Appendix C for the field parameter sheets from each sampling event.

Based on groundwater levels measured during the October 2013 and June 2014 sampling events, the groundwater elevations decreased overall since the previous sampling event in April 2013. Groundwater levels showed a drop in every well sampled, except MWA-2, MWB-4, and MWD-6 which showed an increase. The groundwater elevations are summarized on Table 3 in Appendix B.

4.0 GROUNDWATER SAMPLING [(10/16-17/14) & (6/23-24/14)]

On October 16 and 17, 2013, GEC performed Groundwater sampling at the subject facility. The following wells were sampled for Appendix I VOCs and RCRA metals: MWA-1, MWA-2, MWB-4, MWA-5, MWD-6, MW-9, and MW-10. Once the samples were collected, the groundwater samples were placed in laboratory-supplied, vapor and fluid tight containers, labeled, preserved on ice, and delivered to Analytical Environmental Services Laboratory in Atlanta, Georgia for analytical testing. Proper chain of custody procedures and documentation were observed. The water samples were analyzed for the Appendix I VOCs and metals EPA Methods 8260B and 6020A, respectively.

On June 23 and 24, 2014, GEC performed Groundwater sampling at the subject facility. The following wells were sampled for Appendix I VOCs: MWA-1, MWA-2, MWB-4, MWA-5, MWD-6, MWA-8 MW-9, MW-10, MW-12, MW-13, MW-14 and MW-15. Once the samples were collected, the groundwater samples were placed in laboratory-supplied, vapor and fluid tight containers, labeled, preserved on ice, and delivered to Environmental Science Corporation Laboratory in Mount Juliet, Tennessee for analytical testing. Proper chain of custody procedures and documentation were observed. The water samples were analyzed for the Appendix I VOCs EPA Method 8260B.

The analytical data indicated that tetrachloroethene (PCE) and trichloroethene (TCE) are still present above their respective MCLs. However, the highest PCE and TCE concentrations continue to persist in well MWA-1. PCE and TCE concentrations continue to exhibit stable concentrations well below the historical high concentrations for each well. Well MWA-5 continues to be the only well with detections of chloromethane, chloroform, 1,1-dichloroethane, 1,2-dichloroethane, 1,1,2-trichloroethane, and methylene chloride. These compounds were first detected in MWA-5 in April 2012. Since that sampling event, the concentrations for each of the above-noted compounds have decreased substantially, with methylene chloride's concentrations decreasing from 600 to 56.7 µg/L and 1,2-dichloroethane decreasing from 28 to 6.44 µg/L. However, the June 2014 event showed an increase in the compounds with 1,2-dichloroethane concentration increasing from 6.44 to 9.8 µg/L, 1,1,2-Trichloroethane increasing from 4.37 to 12 µg/L and methylene chloride increasing from 25 to 210 µg/L. The presence of these compounds may be the result of degradation of PCE and TCE. Also, MW-13 and MW-14 (the southernmost wells used in delineating the plume) had increases in PCE and TCE values in the latest sampling event. The concentration values are lower than the historically highest values. Arsenic, chromium, and lead were detected above their respective MCLs in various wells, including MWA-1, MWA-5, and MWD-6. The results for volatile organic compounds and metals analysis are included on Table 2A and 2B in Appendix B.

Historical data has indicated that the groundwater contamination has been delineated to respective MCLs in all directions except for to the south and southeast. The groundwater contamination continues to follow historical trends. There are some signs of increases for TCE and PCE, but are still well below historical high concentrations. All groundwater contamination levels detected during the October 2013 event and June 2014 were well below historical highs for each respective well in which contamination has been observed.

5.0 VAPOR INTRUSION MODELING

Due to the fact that the contamination plume underlies a number of buildings in the area the potential vapor-intrusion pathway must be evaluated. GEC utilized the Johnson & Ettinger (1991) Model (JEM) for Subsurface Vapor Intrusion advanced groundwater spreadsheets to estimate the vapor intrusion pathway of the current groundwater plume. The buildings considered for vapor intrusion on the subject property are the music building and retail stores in the triangle, depicted in Figure 3A

through 3D in Appendix A. GEC ran the JEM for both buildings utilizing the most recent groundwater data from the closest monitoring well to each building (MW-13 for the music building and MWA-2 for the retail stores). The model was run for the following contaminants; Tetrachloroethene, Trichloroethene, and Cis-1,2-Dichloroethene. Soil stratum information was obtained from the boring logs for the appropriate monitoring well. The building dimensions were provided by Mercer University and are as follows. The music building is 198 feet long, 175 feet wide and 32 feet tall. The retail stores collectively are 136 feet long, 85 feet wide and 10 feet tall. Default parameters were used for the remaining data entry categories.

The results of the JEM provide carcinogen and noncarcinogen incremental risk calculations. The risk thresholds for these calculations are 10^{-5} for the carcinogen incremental risk and 1 for the noncarcinogen hazard quotient. The incremental risks for both the music building and retail stores were calculated to be lower than the risk thresholds; therefore GEC is of the opinion that vapor intrusion from the contaminated area is not a concern to the nearby buildings. Copies of the JEM data sheets for all iterations are included in Appendix D.

6.0 GROUNDWATER MODELING

Due to the most recent analytical results, GEC was unable to calibrate the Biochlor Model. GEC will rerun the model after the next sampling event. Other fate and transport models will be investigated, if warranted.

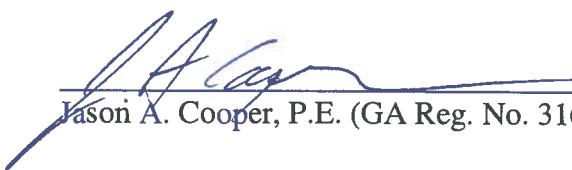
7.0 CONCLUSION

Copies of the invoice summaries since the VIRP application submittal are presented in Appendix E. The summaries include a breakdown of hours used per project task.

Since PCE and TCE are still present above their MCL's, GEC will continue semi-annual sampling and reporting per the approved VRP application. With the increase of PCE and TCE in MW-14, the southernmost monitoring well, GEC recommends installing an additional well in the down gradient direction to further delineate the plume. The exact location will be dependent upon building and underground utility locations. After the well installation, GEC will sample the wells for the semi-annual monitoring event, which will include the full groundwater monitoring network. That submittal will included an updated groundwater model and an updated CSM.

GROUNDWATER SCIENTIST STATEMENT

I certify that I am a qualified groundwater scientist who has received a baccalaureate or post-graduate degree in the natural sciences or engineering, and have sufficient training and experience in groundwater hydrology and related fields, as demonstrated by state registration and completion of accredited university courses, that enable me to make sound professional judgments regarding ground water monitoring and contaminant fate and transport. I further certify that this Semi-Annual Progress Report for the Mercer University Triangle (Hazardous Site Inventory No. 10779) was prepared by myself and appropriate qualified subordinates working under my direction.



Jason A. Cooper, P.E. (GA Reg. No. 31694)

8-19-2014

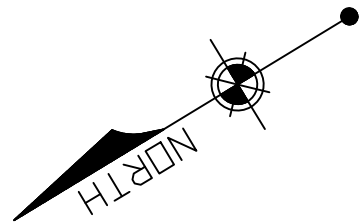
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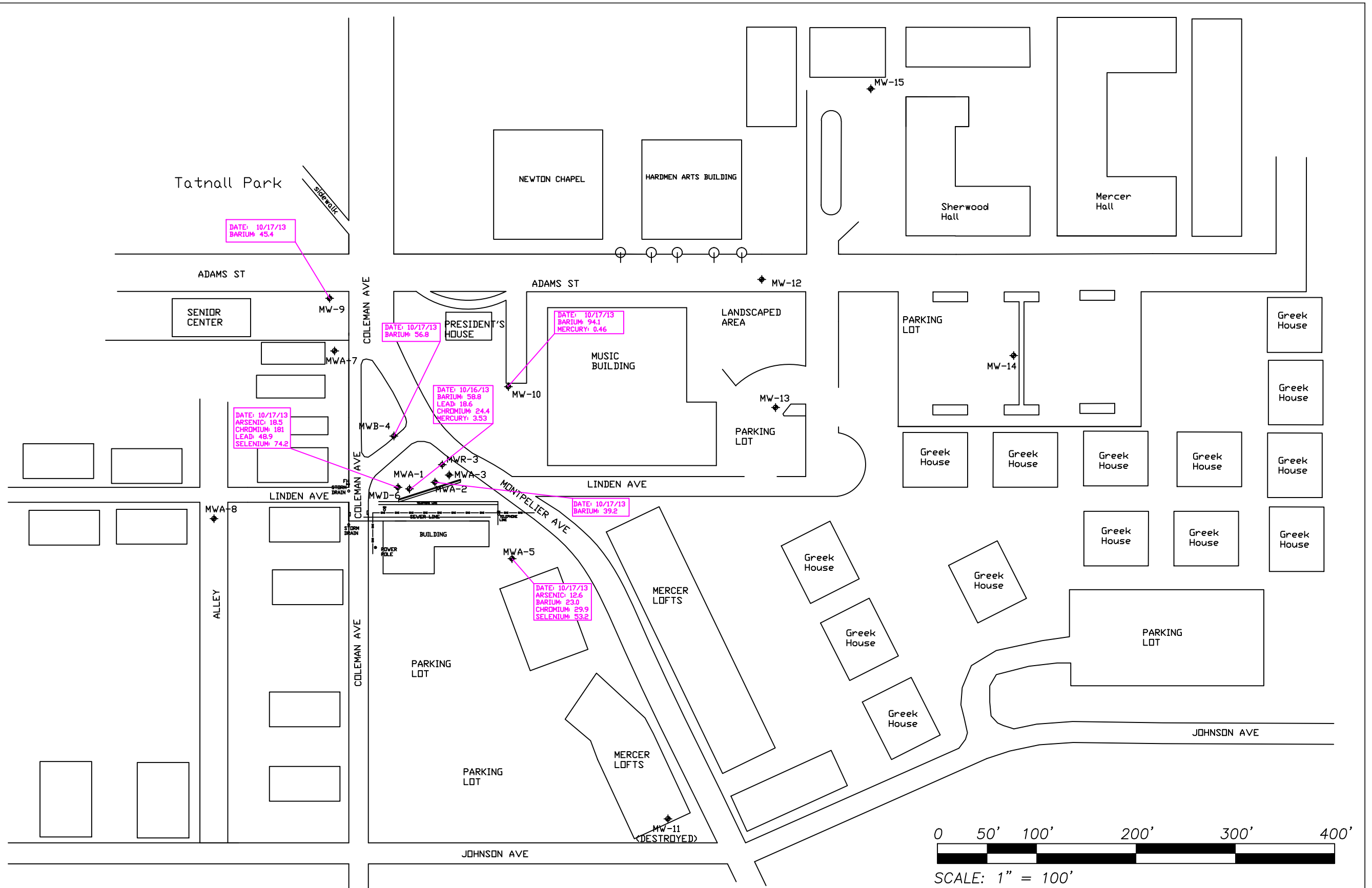
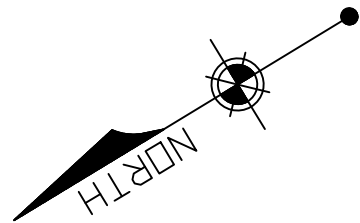


APPENDICES

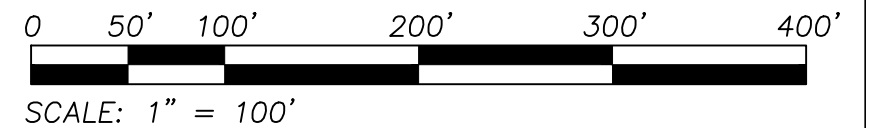
APPENDIX A:

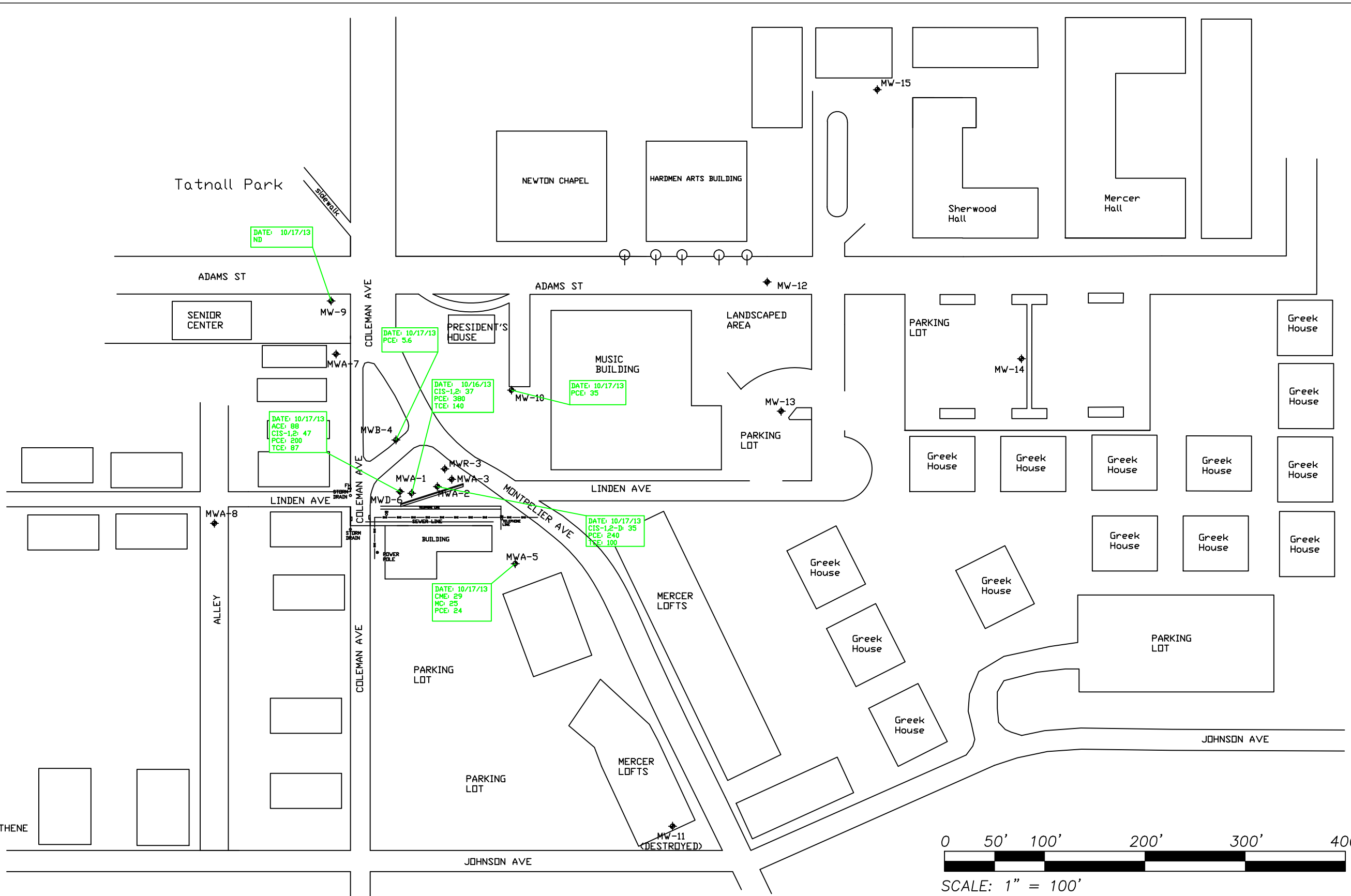
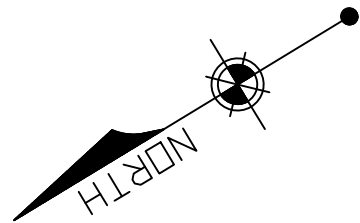
Figures



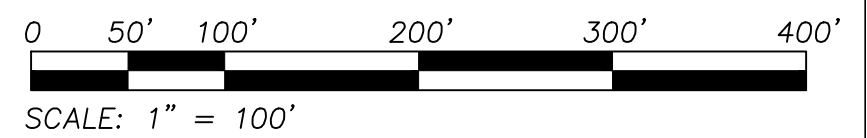


NOTE: ALL CONCENTRATIONS IN ug/L
ND = NO DETECTS



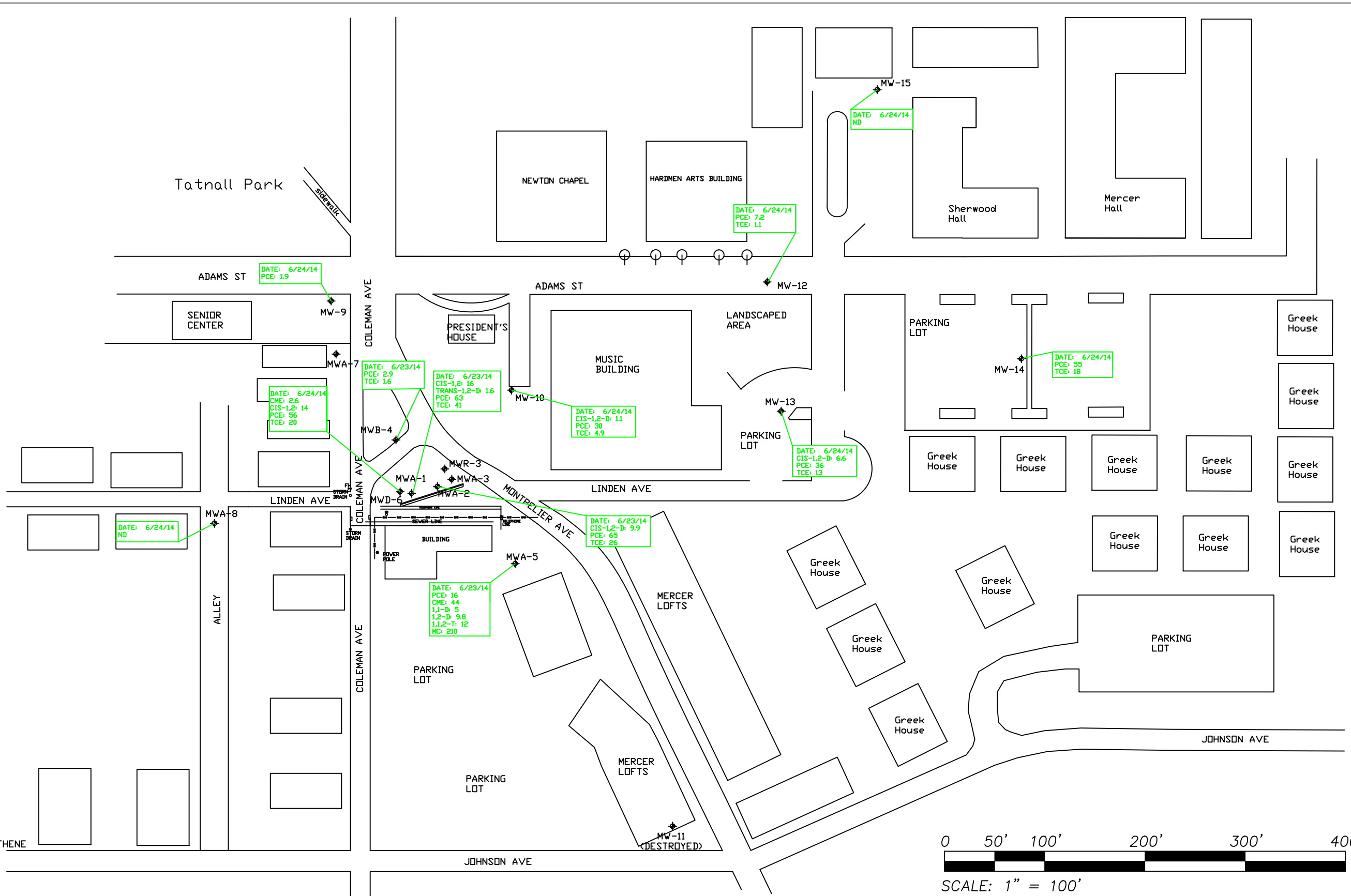
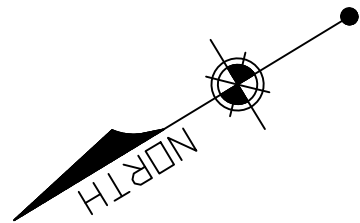


NOTE: ALL CONCENTRATIONS IN ug/L
 ACE = ACETONE
 CF = CHLOROFORM
 CME = CHLOROMETHANE
 1,1-DCA = 1,1-DICHLOROETHANE
 1,2-DCA = 1,2-DICHLOROETHANE
 CIS-1,2-D = CIS-1,2-DICHLOROETHENE
 TRANS-1,2-D = TRANS-1,2-DICHLOROETHENE
 CIS-1,2 = CIS-1,2-DICHLOROETHENE
 MC = METHYLENE CHLORIDE
 PCE = TETRACHLOROETHENE
 1,1,2-TCA = 1,1,2-TRICHLOROETHANE
 TCE = TRICHLOROETHENE
 XYL = XYLENES



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FIGURE 2B: GROUNDWATER QUALITY MAP
 VOCs - OCTOBER 2013
 MERCER TRIANGLE, HSRA #10779
 MACON, BIBB COUNTY, GEORGIA
 GEC JOB #MCE-02-596D

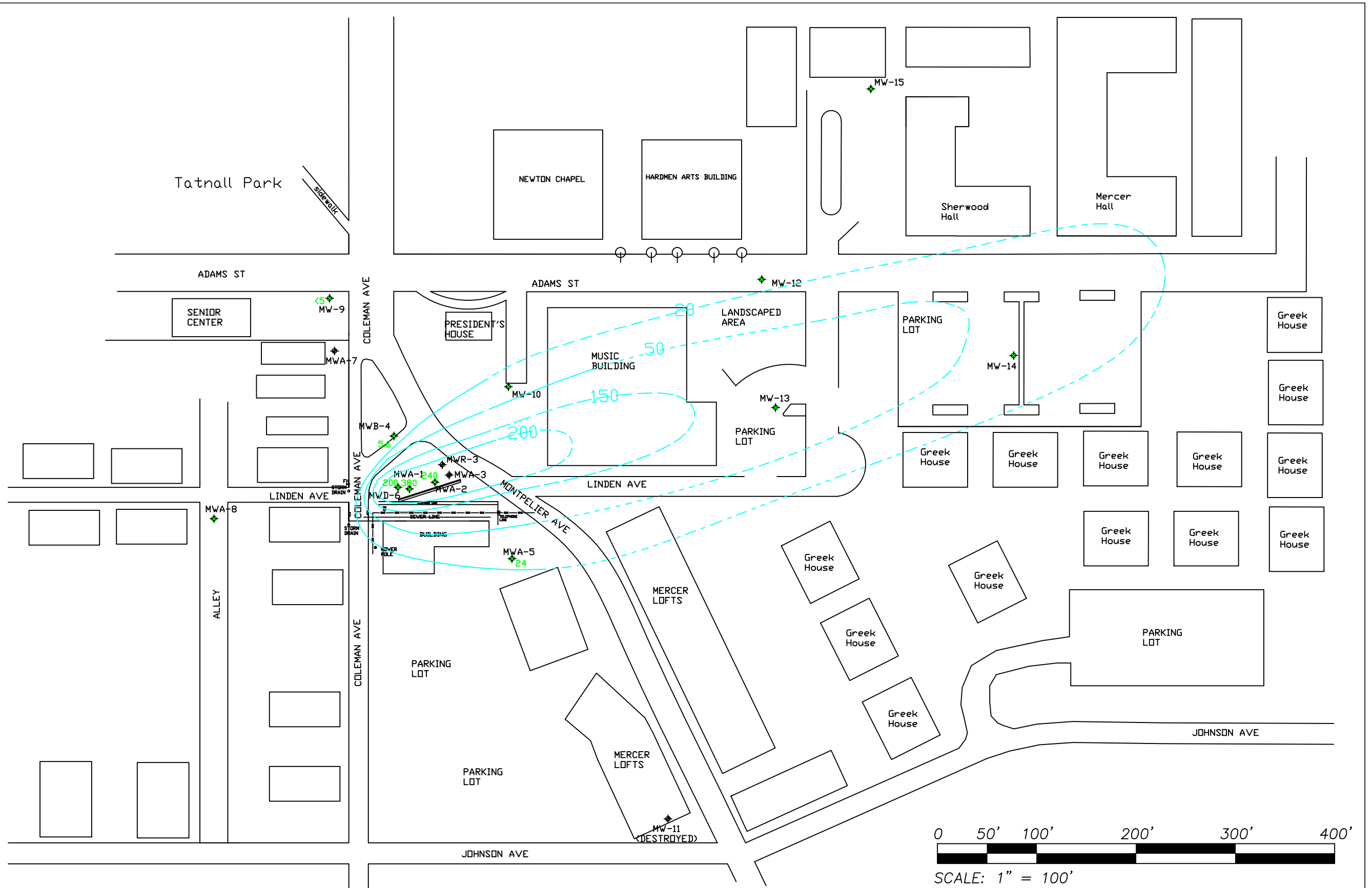
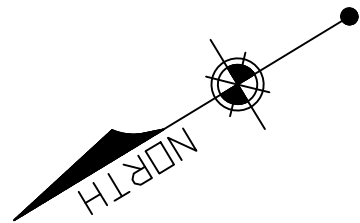


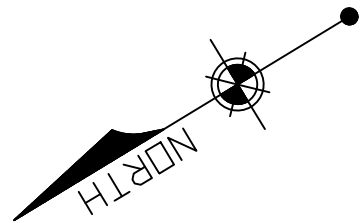
NOTE: ALL CONCENTRATIONS IN ug/L
 ACE = ACETONE
 CME = CHLOROMETHANE
 1,2-D = 1,2-DICHLOROETHENE
 1,1-D = 1,1-DICHLOROETHANE
 1,1,2-T = 1,1,2-TRICHLOROETHANE
 TRANS-1,2-D = TRANS-1,2-DICHLOROETHENE
 CIS-1,2 = CIS-1,2-DICHLOROETHENE
 PCE = TETRACHLOROETHENE
 TCE = TRICHLOROETHENE
 CARBON DS = CARBON DISULFIDE
 MC = METHYLENE CHLORIDE

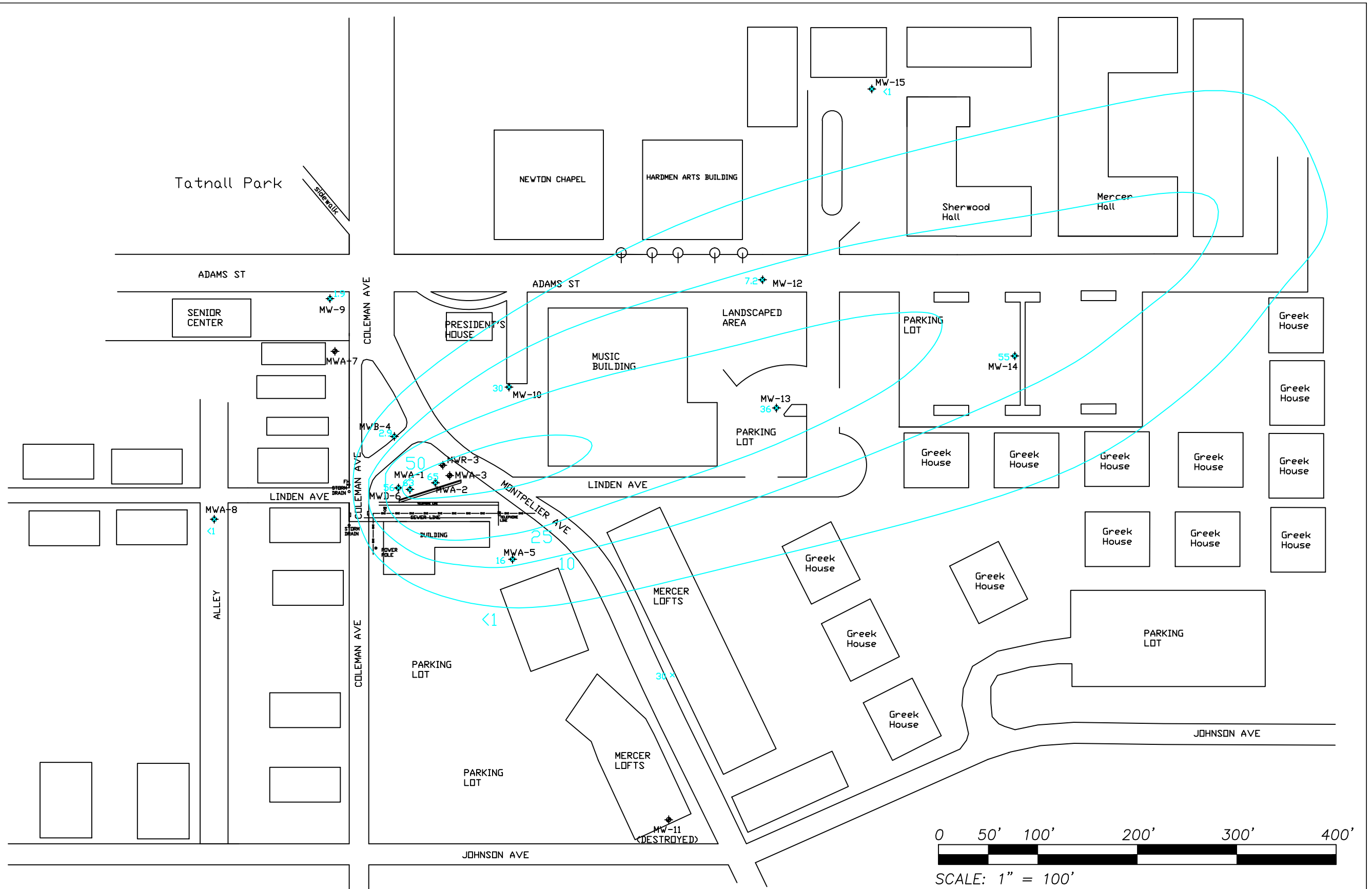
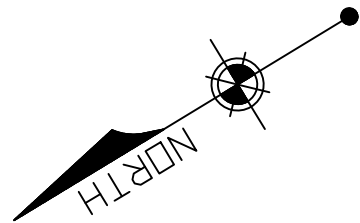


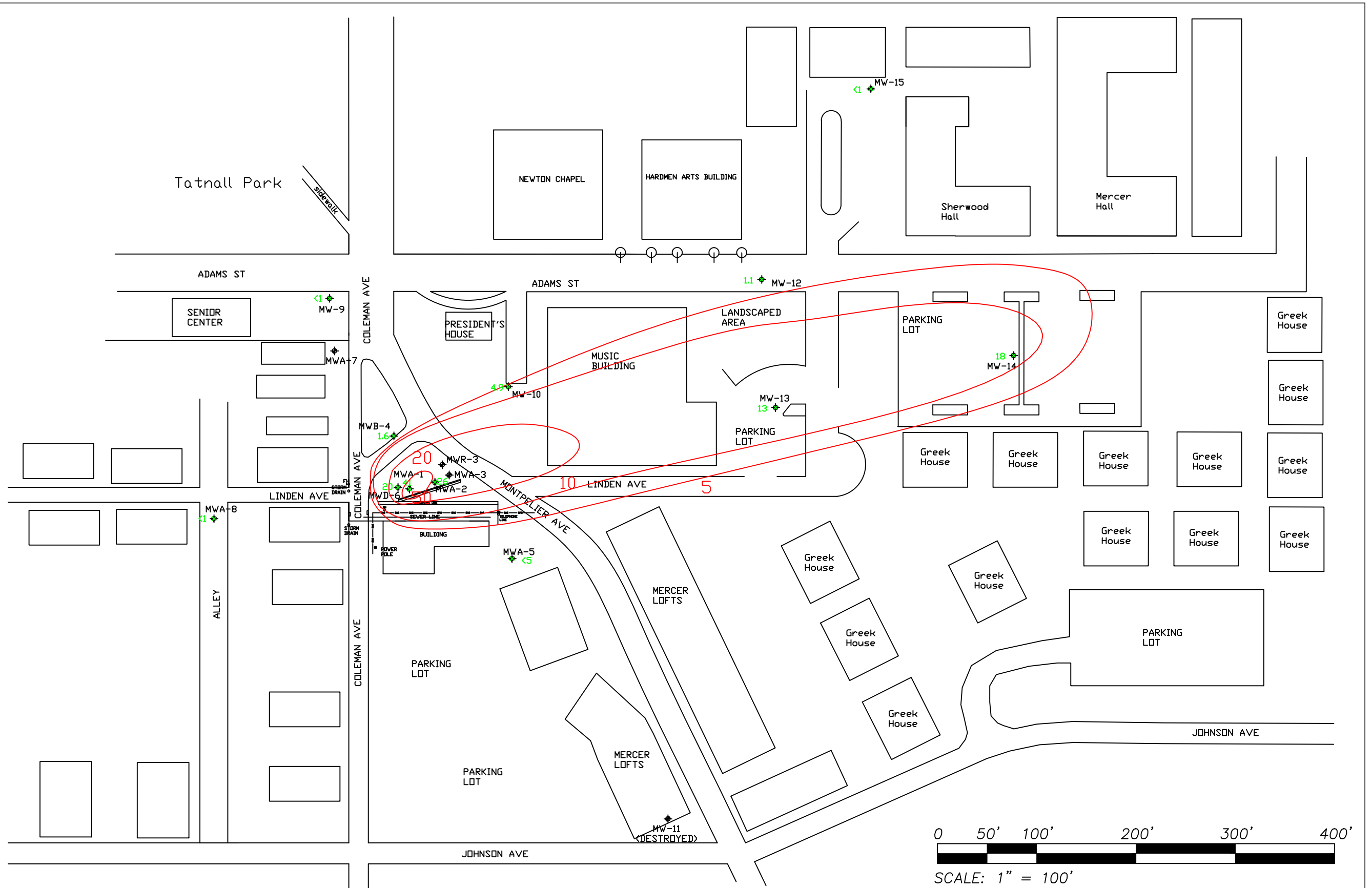
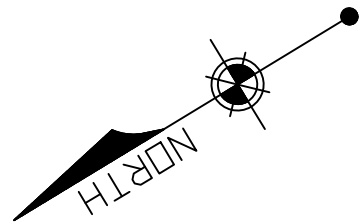
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FIGURE 2C: GROUNDWATER QUALITY MAP
 VOCs - JUNE 2014
 MERCER TRIANGLE, HSRA #10779
 MACON, BIBB COUNTY, GEORGIA
 GEC JOB #MCE-02-596D









APPENDIX B:

Tables

Table 1
Risk Reduction Standards

Soil	
Constituent	Type 1 and/or 4 RRS (mg/kg)
Tetrachloroethene	0.5
Trichloroethene	0.5
Cis 1,2-Dichloroethene	7
Trans 1,2-Dichloroethene	10
Acetone	400
Benzene	0.5
Toluene	100
Ethylbenzene	70
Xylenes	1,000
Naphthalene	100
1,2 Dichlorobenzene	60
Vinyl Chloride	0.2
Groundwater	
Constituent	Type 1 and/or 4 RRS (ug/L)
Tetrachloroethene	5
Trichloroethene	5
Cis 1,2-Dichloroethene	70
Trans 1,2-Dichloroethene	100
Benzene	5
Toluene	1,000
Ethylbenzene	700
Xylenes	1,0000
Naphthalene	20
1,2 Dichlorobenzene	600
Vinyl Chloride	2

Mercer Triangle
1535 Montpelier Ave
Macon, Bibb County, HSI # 10779

TABLE 2A: GROUNDWATER ANALYTICAL RESULTS
(VOLATILE ORGANIC COMPOUNDS)

Well Number	Date Sampled	Acetone	Benzene	Toluene	Ethylbenzene	Xylenes	cis-1,2-Dichloroethene	Trans-1,2-Dichloroethene	Naphthalene	Tetrachloroethene	Trichloroethene	1,2-Dichloro benzene	Di-isopropyl ether	p-Isopropyltoluene	Chloromethane	Chloroform	Carbon Disulfide	1,1-Dichloroethane	1,2-Dichloroethane	1,1,2-Trichloroethane	Methylene Chloride
	10/4/2012	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry
	4/30/2013	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry
MWB-4	12/18/2002	<10.0	<1.0	<5.0	<1.0	<3.0	<1.0	<1.0	<5.0	11	<1.0	<1.0	NT	NT	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0
	3/28/2006	<10.0	<1.0	<5.0	<1.0	<3.0	<1.0	<1.0	<5.0	31	3.4	<1.0	NT	NT	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0
	1/18/2008	<10.0	<1.0	<5.0	<1.0	<3.0	4.1	<1.0	<5.0	69	15	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0
	2/21/2008	<10.0	<1.0	<5.0	<1.0	<3.0	4.9	<1.0	<5.0	45	14	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0
	9/14/2009	<10.0	<1.0	<5.0	<1.0	<3.0	3	<1.0	<5.0	36	13	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0
	7/29/2010	<10.0	<1.0	<5.0	<1.0	<3.0	<1.0	<1.0	<5.0	7.9	2.8	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0
	4/11/2012	<10.0	<1.0	<5.0	<1.0	<3.0	<1.0	<1.0	<5.0	1.5	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0
	10/4/2012	<10.0	<1.0	<5.0	<1.0	<3.0	<1.0	<1.0	<5.0	6.83	3.51	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0
	4/30/2013	<50	<5	<5	<5	<5	<5	<5	NT	<5	<5	<5	NT	NT	<10	<5	8.4	<5	<5	<5	<5
	10/17/2013	<50	<5	<5	<5	<10	<5	<5	NT	5.6	<5	<5	NT	NT	<10	<5	<5	<5	<5	<5	<5
6/23/2014	<50	<1.0	<5	<1.0	<3.0	<1.0	<1.0	<5	2.9	1.6	<1.0	<1.0	<1.0	<2.5	<5	NT	<1.0	<1.0	<1.0	<5	
MWA-5	8/24/2006	NT	NT	NT	NT	NT	<1.0	<1.0	NT	27	<1.0	<1.0	NT	NT	NT	NT	NT	NT	NT	NT	NT
	1/18/2008	<10.0	<1.0	<5.0	<1.0	<3.0	<1.0	<1.0	<5.0	20	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0
	9/15/2009	<10.0	<1.0	<5.0	<1.0	<3.0	<1.0	<1.0	<5.0	26	1.4	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0
	7/30/2010	<10.0	12	81	5.2	16	3	<1.0	<5.0	66	8.6	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0
	9/16/2011	<10.0	<1.0	<5.0	<1.0	<3.0	<1.0	<1.0	<5.0	26	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0
	4/13/2012	<10.0	<1.0	<5.0	<1.0	<3.0	<1.0	<1.0	<5.0	9	<1.0	<1.0	<1.0	<1.0	490	16	<1.0	11	28	16	600
	10/4/2012	18	<1.0	<5.0	<1.0	<3.0	<1.0	<1.0	<5.0	28.7	1.09	<1.0	<1.0	<1.0	65.6	6.09	<1.0	1.49	6.44	4.37	56.7
	4/30/2013	<50	<5	<5	<5	<5	<5	<5	NT	26	<5	<5	NT	NT	19	<5	<5	<5	<5	<5	56
	10/17/2013	<50	<5	<5	<5	<10	<5	<5	NT	24	<5	<5	NT	NT	29	<5	<5	<5	<5	<5	25
6/23/2014	<250	<5	<25	<5	<15	<5	<5	<25	16	<5	<5	<5	<5	44	<25	NT	5	9.8	12	210	
MWD-6	8/24/2006	NT	NT	NT	NT	NT	<1.0	<1.0	NT	5	<1.0	<1.0	NT	NT	NT	NT	NT	NT	NT	NT	NT
	1/18/2008	<10.0	<1.0	<5.0	<1.0	<3.0	11	<1.0	<5.0	47	16	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0
	9/14/2009	<10.0	<1.0	<5.0	<1.0	<3.0	28	1.2	<5.0	150	74	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0
	7/30/2010	<10.0	<1.0	<5.0	<1.0	<3.0	2.1	<1.0	<5.0	17	5.3	<1.0	<1.0	<1.0	8.9	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0
	9/16/2011	<10.0	<1.0	<5.0	<1.0	<3.0	1.6	<1.0	<5.0	5	1.7	<1.0	<1.0	<1.0	25	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0
	4/11/2012	<10.0	<1.0	<5.0	<1.0	<3.0	4.8	<1.0	<5.0	13	6.9	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0
	10/4/2012	88.8	<1.0	<1.0	<1.0	2.1	5.01	<1.0	NT	17	7.5	<1.0	NT	NT	<1.0	1.22	<1.0	<1.0	<1.0	<1.0	<1.0
	4/30/2013	80	<5	<5	<5	<5	32	<5	NT	94	46	<5	NT	NT	<10	<5	<5	<5	<5	<5	<5
	10/17/2013	88	<5	<5	<5	<10	47	<5	NT	200	87	<5	NT	NT	<10	<5	<5	<5	<5	<5	<5
6/24/2014	<50	<1.0	<5	<1.0	<10	14	<1.0	<5	56	20	<1.0	<1.0	<1.0	2.6	<5	NT	<1.0	<1.0	<1.0	<5	

Mercer Triangle
1535 Montpelier Ave
Macon, Bibb County, HSI # 10779

TABLE 2A: GROUNDWATER ANALYTICAL RESULTS
(VOLATILE ORGANIC COMPOUNDS)

Well Number	Date Sampled	Acetone	Benzene	Toluene	Ethylbenzene	Xylenes	cis-1,2-Dichloroethene	Trans-1,2-Dichloroethene	Naphthalene	Tetrachloroethene	Trichloroethene	1,2-Dichloro benzene	Di-isopropyl ether	p-Isopropyltoluene	Chloromethane	Chloroform	Carbon Disulfide	1,1-Dichloroethane	1,2-Dichloroethane	1,1,2-Trichloroethane	Methylene Chloride
MW-12	1/18/2008	<10.0	<1.0	<5.0	<1.0	<3.0	4.4	<1.0	<5.0	46	9.4	<1.0	<1.0	54	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0
	9/15/2009	<10.0	<1.0	<5.0	<1.0	<3.0	1.5	<1.0	<5.0	37	5.1	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0
	4/13/2012	<10.0	<1.0	<5.0	<1.0	<3.0	<1.0	<1.0	<5.0	6.5	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0
	4/30/2013	<50	<5	<5	<5	<5	<5	<5	NT	5.3	<5	<5	NT	NT	<10	<5	<5	<5	<5	<5	<5
	6/24/2014	<50	<1.0	<5	<1.0	<3.0	<1.0	<1.0	<5	7.2	1.1	<1.0	<1.0	<1.0	<2.5	<5	NT	<1.0	<1.0	<1.0	<5
MW-13	11/19/2007	<10.0	<1.0	<5.0	<1.0	<3.0	3.1	<1.0	<5.0	41	6.5	<1.0	NT	NT	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0
	1/18/2008	<10.0	<1.0	<5.0	<1.0	<3.0	19	<1.0	<5.0	150	47	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0
	9/14/2009	<10.0	<1.0	<5.0	<1.0	<3.0	10	<1.0	<5.0	82	26	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0
	4/13/2012	<10.0	<1.0	<5.0	<1.0	<3.0	7.9	1.3	<5.0	83	22	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0
	4/30/2013	<50	<5	<5	<1.0	<3	<5	<5	NT	15	<5	<5	NT	NT	<10	<5	<5	<5	<5	<5	<5
	6/24/2014	<50	<1.0	<5	<1.0	<3	6.6	<1.0	<5.0	36	13	<1.0	<1.0	<1.0	<2.5	<5	NT	<1.0	<1.0	<1.0	<5
MW-14	1/18/2008	<10.0	<1.0	<5.0	<1.0	<3.0	2.1	<1.0	<5.0	71	40	<1.0	2	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0
	9/16/2009	<10.0	<1.0	<5.0	<1.0	<3.0	9.5	<1.0	<5.0	79	25	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0
	4/11/2012	<10.0	<1.0	<5.0	<1.0	<3.0	1.4	<1.0	<5.0	40	5.7	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0
	4/30/2013	<50	<5	<5	<5	<5	<5	<5	NT	30	6	<5	NT	NT	<10	<5	<5	<5	<5	<5	<5
	6/23/2014	<50	<1.0	<5	<1.0	<3	8.1	<1.0	<5	55	18	<1.0	<1.0	<1.0	<2.5	<5	NT	<1.0	<1.0	<1.0	<5
MW-15	1/18/2008	<10.0	<1.0	<5.0	<1.0	<3.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0
	9/15/2009	<10.0	<1.0	<5.0	<1.0	<3.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0
	4/11/2012	<10.0	<1.0	<5.0	<1.0	<3.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0
	4/30/2013	<50	<5	<5	<5	<5	<5	<5	NT	<5	<5	<5	<5	NT	NT	<10	<5	<5	<5	<5	<5
	6/24/2014	<50	<1.0	<5	<1.0	<3.0	<1.0	<1.0	<5	<1.0	<1.0	<1.0	<1.0	<1.0	<2.5	<5	NT	<1.0	<1.0	<1.0	<5
Type 1 Risk Reduction	4000	--	--	700	10,000	70		20	5	5	600	--	--		100			5	5	5	
Type 4 Risk Reduction	--	8.8	5241	--	--	1020	161	--	--	34.5	--	--	--	861				29000			

NOTE: All units reported in ug/l (ppb)

NOTE: NS = Not Sampled due to insufficient recharge; NT = Not Tested.

NOTE: * Only initial boring and sample locations, only temporary wells were used at MW-1 or MW-2

NOTE: The higher value between Type 1 and Type 4 RRS were used for determining whether or not the RRS had been exceeded.

Indicates exceedance of Type 1 RRS
7/30/2010 indicates dates after ISCO treatment

Please see laboratory results in Appendix C for full listing of QC Qualifiers

Mercer Triangle
1535 Montpelier Ave
Macon, Bibb County, HSI # 10779

TABLE 2B: GROUNDWATER ANALYTICAL RESULTS
(METALS)

Well Number	Date Sampled	Arsenic	Barium	Cadmium	Chromium	Lead	Selenium	Silver	Mercury
MWA-1	12/18/2002	NT	NT	NT	NT	NT	NT	NT	NT
	3/24/2006	NT	NT	NT	NT	NT	NT	NT	NT
	1/18/2008	NT	NT	NT	NT	NT	NT	NT	NT
	2/21/2008	NT	NT	NT	NT	NT	NT	NT	NT
	9/14/2009	NT	NT	NT	NT	NT	NT	NT	NT
	9/15/2011	<20.0	41	<5.0	<10.0	<5.0	<20.0	<10.0	0.89
	4/17/2012	<20.0	53	<5.0	21	68	<20.0	<10.0	0.27
	10/4/2012	<10.0	51.4	<5.0	<50.0	42.7	<10.0	<50.0	<2.0
	4/30/2013	<10	46.9	<5	<20	29	<50	<5	1.41
10/16/2013	<10	58.8	<5	24.4	18.6	<62.5	<5	3.53	
MWA-2	12/18/2002	NT	NT	NT	NT	NT	NT	NT	NT
	3/24/2006	NT	NT	NT	NT	NT	NT	NT	NT
	1/18/2008	NT	NT	NT	NT	NT	NT	NT	NT
	2/21/2008	NT	NT	NT	NT	NT	NT	NT	NT
	9/14/2009	NT	NT	NT	NT	NT	NT	NT	NT
	9/15/2011	<20.0	43	<5.0	<10.0	<5.0	<20.0	<10.0	0.22
	4/17/2012	<20.0	29	<5.0	<10.0	<5.0	<20.0	<10.0	<0.20
	10/4/2012	<20.0	<50.0	<5.0	<50.0	<10.0	<10.0	<50.0	<2.0
	4/30/2013	<10	32.5	<5	57.7	<10	<50	<5	<0.2
10/17/2013	<10	39.2	<5	<20	<10	<50	<5	<0.2	
MWA-3	9/15/2011	NT	NT	NT	NT	NT	NT	NT	NT
	4/17/2012	NT	NT	NT	NT	NT	NT	NT	NT
	10/4/2012	NT	NT	NT	NT	NT	NT	NT	NT
MWR-3	9/15/2011	<20.0	21	<5.0	<10.0	<5.0	<20.0	<10.0	0.51
	4/17/2012	NT	NT	NT	NT	NT	NT	NT	NT
	10/4/2012	dry	dry	dry	dry	dry	dry	dry	dry
MWB-4	12/18/2002	NT	NT	NT	NT	NT	NT	NT	NT
	3/28/2006	NT	NT	NT	NT	NT	NT	NT	NT
	1/18/2008	NT	NT	NT	NT	NT	NT	NT	NT
	2/21/2008	NT	NT	NT	NT	NT	NT	NT	NT
	9/15/2011	NT	NT	NT	NT	NT	NT	NT	NT
	4/11/2012	<20.0	65	<5.0	12	<10	<20.0	11	<0.20
	10/4/2012	<20.0	68.8	<5.0	<50.0	<10.0	<10.0	<50.0	<2.0
	4/30/2013	<10	195	<5	8.58	20	<50	<5	<0.2
10/17/2013	<10	56.8	<5	<20	<10	<50	<5	<0.2	
MWA-5	8/24/2006	NT	NT	NT	NT	NT	NT	NT	NT
	1/18/2008	NT	NT	NT	NT	NT	NT	NT	NT
	9/15/2009	NT	NT	NT	NT	NT	NT	NT	NT
	9/15/2011	170	<25	<25	160	28	<100	<50	<0.20
	4/17/2012	<20.0	37	<5.0	20	34	<20.0	<10.0	<0.20
	10/4/2012	10.2	<50.0	<5.0	<50.0	12.1	<10.0	<50.0	<0.20
	4/30/2013	<10	39.1	<5	<20	<10	<50	<5	<0.2
	10/17/2013	12.6	23.0	<5	29.9	<10	53.2	<5	<0.2
MWD-6	8/24/2006	NT	NT	NT	NT	NT	NT	NT	NT
	1/18/2008	NT	NT	NT	NT	NT	NT	NT	NT
	9/14/2009	NT	NT	NT	NT	NT	NT	NT	NT
	9/15/2011	<20.0	52	<5.0	35	<5.0	<20.0	<10.0	2.4

**Mercer Triangle
1535 Montpelier Ave
Macon, Bibb County, HSI # 10779**

**TABLE 2B: GROUNDWATER ANALYTICAL RESULTS
(METALS)**

Well Number	Date Sampled	Arsenic	Barium	Cadmium	Chromium	Lead	Selenium	Silver	Mercury
MW-15	4/17/2012	NT	NT	NT	NT	NT	NT	NT	NT
	10/4/2012	NT	NT	NT	NT	NT	NT	NT	NT
	4/30/2013	<10	27.8	<5	<20	<10	<50	<5	<0.2
Type 1 Risk Reduction		--	--	--	10,000	--	--	--	5
Type 4 Risk Reduction		8.8	5203	2298	--	1022	1022	--	--

NOTE: All units reported in ug/l (ppb)

NOTE: NS = Not Sampled due to insufficient recharge; NT = Not Tested.

NOTE: * Only initial boring and sample locations, only temporary wells were used at MW-1 or MW-2

NOTE: The higher value between Type 1 and Type 4 RRS were used for determining whether or not the RRS had been exceeded.

Please see laboratory results in Appendix D for full listing of QC Qualifiers

Mercer Triangle
1535 Montpelier Ave
Macon, Bibb County, HSI # 10779

TABLE 3: GROUNDWATER ELEVATIONS

Well Number	Date Measured	Ground Surface Elev. (ft)	Top of Casing Elev. (ft)	Depth of Screen Interval (ft)	Water Depth (ft)	Groundwater Elev. (ft)
MWA-1	5/9/2003	101.41	101.56	25-40'	31.26	70.30
	10/25/2006				32.49	68.92
	11/19/2007				32.73	68.83
	1/18/2008				33.32	68.24
	4/11/2012				33.20	68.36
	10/4/2012				31.45	70.11
	4/30/2013				31.10	70.46
	10/16/2013				29.45	72.11
6/23/2014				30.90	70.66	
MWA-2	5/9/2003	101.74	101.89	35-60'	49.61	52.28
	10/25/2006				50.09	51.80
	11/19/2007				51.64	50.25
	1/18/2008				50.85	51.04
	4/11/2012				51.05	50.84
	10/4/2012				51.29	50.60
	4/30/2013				51.03	50.86
	10/17/2013				48.44	53.45
6/23/2014				47.87	54.02	
MWA-3	5/9/2003	102.1	102.26	33-53'	50.40	51.86
	10/25/2006				DRY	-
	11/19/2007				DRY	-
	1/18/2008				50.20	52.06
	10/17/2013				DRY	DRY
	6/23/2014					
MWB-4	5/9/2003	100.44	100.59	40-55'	47.55	53.04
	10/25/2006				48.43	52.16
	11/19/2007				49.38	51.21
	1/18/2008				49.60	50.99
	4/11/2012				49.30	51.29
	10/4/2012				49.56	51.03
	4/30/2013				49.25	51.34
	10/17/2013				46.45	54.14
6/23/2014				45.85	54.74	
MWA-5	8/12/2006	103.94	103.65	40-65'	42.36	61.29
	10/25/2006				51.98	51.67
	11/19/2007				52.45	51.20
	1/18/2008				52.68	50.97
	4/11/2012				52.77	50.88
	10/4/2012				53.22	50.43
	4/30/2013				53.20	50.45
	10/17/2013				51.45	52.20
6/23/2014				50.35	53.30	

**Mercer Triangle
1535 Montpelier Ave
Macon, Bibb County, HSI # 10779**

TABLE 3: GROUNDWATER ELEVATIONS

Well Number	Date Measured	Ground Surface Elev. (ft)	Top of Casing Elev. (ft)	Depth of Screen Interval (ft)	Water Depth (ft)	Groundwater Elev. (ft)
MWD-6	8/12/2006	101.28	101.13	63-73'	68.32	32.81
	10/25/2006				51.48	49.65
	11/19/2007				49.41	51.72
	1/18/2008				49.52	51.61
	4/11/2012				49.81	51.32
	10/4/2012				49.90	51.23
	4/30/2013				51.80	49.33
	10/17/2013				47.23	53.90
	6/24/2014				46.75	54.38

Mercer Triangle
1535 Montpelier Ave
Macon, Bibb County, HSI # 10779

TABLE 3: GROUNDWATER ELEVATIONS

Well Number	Date Measured	Ground Surface Elev. (ft)	Top of Casing Elev. (ft)	Depth of Screen Interval (ft)	Water Depth (ft)	Groundwater Elev. (ft)
MW-7	8/12/2006	100.13	99.9	5-20'	8.47	91.43
	10/25/2006				10.88	89.02
	11/19/2007				18.78	81.12
	1/18/2008				13.28	86.62
MW-8	9/20/2006	98.13	97.96	45-60'	51.63	46.33
	10/25/2006				42.76	55.20
	11/19/2007				42.3	55.66
	1/18/2008				42.48	55.48
	4/11/2012				42.49	55.47
	4/30/2013				41.85	56.11
	6/24/2014				40.03	57.93
MW-9	10/26/2007	98.22	97.81	35-50'	44.96	52.85
	11/19/2007				44.83	52.98
	1/18/2008				45.10	52.71
	4/11/2012				45.13	52.68
	10/4/2012				45.27	52.54
	4/30/2013				44.71	53.10
	10/17/2013				42.35	55.46
	6/24/2014				41.92	55.89
MW-10	10/26/2007	112.85	112.67	50-65'	61.43	51.24
	11/19/2007				62.05	50.62
	1/18/2008				62.19	50.48
	4/11/2012				63.10	49.57
	10/4/2012				DRY	DRY
	10/17/2013				60.75	51.92
	6/24/2014				59.88	52.79
MW-11	10/26/2007	111.93	111.7	55-70'	58.89	52.81
	11/19/2007				58.88	52.82
	1/18/2008				59.60	52.10
MW-12	11/19/2007	118.32	118.09	68-83'	71.30	46.79
	1/18/2008				71.49	46.60
	4/11/2012				71.17	46.92
	4/30/2013				72.60	45.49
	6/24/2014				68.21	49.88
MW-13	11/19/2007	115.99	115.72	60-75'	67.72	48.00
	1/18/2008				68.00	47.72
	4/11/2012				67.97	47.75
	4/30/2013				69.35	46.37
	6/24/2014				65.38	50.34
	1/18/2008				72.80	45.59
	4/11/2012				72.40	45.99

**Mercer Triangle
1535 Montpelier Ave
Macon, Bibb County, HSI # 10779**

TABLE 3: GROUNDWATER ELEVATIONS

Well Number	Date Measured	Ground Surface Elev. (ft)	Top of Casing Elev. (ft)	Depth of Screen Interval (ft)	Water Depth (ft)	Groundwater Elev. (ft)
MW-14	4/30/2013	118.58	118.39	70-85'	74.38	44.01
	6/23/2014				69.93	48.46
MW-15	1/18/2008	115.04	114.64	50-65'	57.02	57.62
	4/11/2012				53.25	61.39
	4/30/2013				50.83	63.81
	6/24/2014				49.7	64.94

APPENDIX C:
Laboratory Analytical Results &
Field Logs



October 31, 2013

Jason Cooper
GeoTechnical & Env. Consultants, Inc.
514 Hillcrest Industrial Blvd.
Macon GA 31204

TEL: (478) 757-1606
FAX: (478) 757-1608

RE: Mercer HSRA

Dear Jason Cooper:

Order No: 1310H46

Analytical Environmental Services, Inc. received 7 samples on 10/19/2013 12:45:00 PM for the analyses presented in following report.

No problems were encountered during the analyses. Additionally, all results for the associated Quality Control samples were within EPA and/or AES established limits. Any discrepancies associated with the analyses contained herein will be noted and submitted in the form of a project Case Narrative.

AES' certifications are as follows:

- NELAC/Florida Certification number E87582 for analysis of Environmental Water, soil/hazardous waste, and Drinking Water Microbiology, effective 07/01/13-06/30/14.
- AIHA-LAP, LLC Laboratory ID: 100671 for Industrial Hygiene samples (Organics, Inorganics), Environmental Lead (Paint, Soil, Dust Wipes, Air), and Environmental Microbiology (Fungal) effective until 09/01/15.

These results relate only to the items tested. This report may only be reproduced in full.

If you have any questions regarding these test results, please feel free to call.

Chantelle Kanhai
Project Manager



ANALYTICAL ENVIRONMENTAL SERVICES, INC

3785 Presidential Parkway, Atlanta GA 30340-3704

TEL: (770) 457-8177 / TOLL-FREE (800) 972-4889 / FAX: (770) 457-8188

CHAIN OF CUSTODY

Work Order: 1310 H46

Date: _____ Page _____ of _____

COMPANY: GEC		ADDRESS: 514 Hillcrest Industrial Blvd Macon GA 31204		ANALYSIS REQUESTED		Visit our website www.aesatlanta.com to check on the status of your results, place bottle orders, etc.		No # of Containers	
PHONE: 478-757-1606	FAX: 478-757-1608	SIGNATURE: <i>[Signature]</i>		PRESERVATION (See codes)		REMARKS			
SAMPLED BY: <i>[Signature]</i>	SAMPLED		DATE	TIME	Grab	Composite	Matrix (See codes)		
1	MWA-1	10-16	3:30	✓		GW		✓	
2	MW-10	10-17	9:30	✓				✓	
3	MW-9	10-17	10:10	✓				✓	
4	MWD-6	10-17	11:30	✓				✓	
5	MWA-5	10-17	11:20	✓				✓	
6	MWA-2	10-17	1320 ¹⁰	✓				✓	
7	MWB-4	10-17	1420 ²⁰	✓				✓	
8									
9									
10									
11									
12									
13									
14									
RELINQUISHED BY: <i>[Signature]</i>	DATE/TIME: 10-18-13 1700	RECEIVED BY: <i>[Signature]</i>	DATE/TIME: 10-18-13 12:45P	PROJECT INFORMATION		PROJECT NAME: Mercer HSA		RECEIPT	
				PROJECT #: 090698.390		Total # of Containers			
				SITE ADDRESS:		Turnaround Time Request			
				SEND REPORT TO: jcooper@geconsultants.com		Standard 5 Business Days			
				INVOICE TO: (IF DIFFERENT FROM ABOVE)		2 Business Day Rush			
SPECIAL INSTRUCTIONS/COMMENTS:				SHIPMENT METHOD		Next Business Day Rush			
				OUT / / VIA:		Same Day Rush (auth req)			
				IN / / VIA:		Other			
				CLIENT: FedEx UPS MAIL COURIER		STATE PROGRAM (if any):			
				GREYHOUND OTHER		E-mail? Y/N, Fax? Y/N			
						DATA PACKAGE: I II III IV			
						QUOTE #:			
						PO#:			

SAMPLES RECEIVED AFTER 3PM OR ON SATURDAY ARE CONSIDERED RECEIVED THE NEXT BUSINESS DAY. IF TURNAROUND TIME IS NOT INDICATED, AES WILL PROCEED WITH STANDARD TAT OF SAMPLES.

SAMPLES ARE DISPOSED 30 DAYS AFTER REPORT COMPLETION UNLESS OTHER ARRANGEMENTS ARE MADE.

MATRIX CODES: A = Air GW = Groundwater SB = Sediment SO = Soil SW = Surface Water W = Water (Blanks) DW = Drinking Water (Blanks) O = Other (specify) WW = Waste Water
 PRESERVATIVE CODES: H+1 = Hydrochloric acid + ice I = Ice only N = Nitric acid S+1 = Sulfuric acid + ice S/M+1 = Sodium Bisulfate/Methanol + ice O = Other (specify) NA = None

White Copy - Original; Yellow Copy - Client

Client: GeoTechnical & Env. Consultants, Inc.
Project: Mercer HSRA
Lab ID: 1310H46

Case Narrative

Metals by ICP/MS Analysis by Method 6020A:

Due to sample matrix, samples 1310H46-001B and -005B required dilution during preparation and/or analysis resulting in elevated reporting limits.

Analytical Environmental Services, Inc

Date: 31-Oct-13

Client: GeoTechnical & Env. Consultants, Inc.	Client Sample ID: MWA-1
Project Name: Mercer HSRA	Collection Date: 10/16/2013 3:30:00 PM
Lab ID: 1310H46-001	Matrix: Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Mercury, Total SW7470A		(SW7470A)						
Mercury	0.00353	0.00020		mg/L	182818	1	10/24/2013 13:47	CG
APPENDIX I VOLATILE ORGANICS SW8260B		(SW5030B)						
1,1,1,2-Tetrachloroethane	BRL	5.0		ug/L	182791	1	10/23/2013 18:37	NP
1,1,1-Trichloroethane	BRL	5.0		ug/L	182791	1	10/23/2013 18:37	NP
1,1,2,2-Tetrachloroethane	BRL	5.0		ug/L	182791	1	10/23/2013 18:37	NP
1,1,2-Trichloroethane	BRL	5.0		ug/L	182791	1	10/23/2013 18:37	NP
1,1-Dichloroethane	BRL	5.0		ug/L	182791	1	10/23/2013 18:37	NP
1,1-Dichloroethene	BRL	5.0		ug/L	182791	1	10/23/2013 18:37	NP
1,2,3-Trichloropropane	BRL	5.0		ug/L	182791	1	10/23/2013 18:37	NP
1,2-Dibromo-3-chloropropane	BRL	5.0		ug/L	182791	1	10/23/2013 18:37	NP
1,2-Dibromoethane	BRL	5.0		ug/L	182791	1	10/23/2013 18:37	NP
1,2-Dichlorobenzene	BRL	5.0		ug/L	182791	1	10/23/2013 18:37	NP
1,2-Dichloroethane	BRL	5.0		ug/L	182791	1	10/23/2013 18:37	NP
1,2-Dichloropropane	BRL	5.0		ug/L	182791	1	10/23/2013 18:37	NP
1,4-Dichlorobenzene	BRL	5.0		ug/L	182791	1	10/23/2013 18:37	NP
2-Butanone	BRL	50		ug/L	182791	1	10/23/2013 18:37	NP
2-Hexanone	BRL	10		ug/L	182791	1	10/23/2013 18:37	NP
4-Methyl-2-pentanone	BRL	10		ug/L	182791	1	10/23/2013 18:37	NP
Acetone	BRL	50		ug/L	182791	1	10/23/2013 18:37	NP
Acrylonitrile	BRL	5.0		ug/L	182791	1	10/23/2013 18:37	NP
Benzene	BRL	5.0		ug/L	182791	1	10/23/2013 18:37	NP
Bromochloromethane	BRL	5.0		ug/L	182791	1	10/23/2013 18:37	NP
Bromodichloromethane	BRL	5.0		ug/L	182791	1	10/23/2013 18:37	NP
Bromoform	BRL	5.0		ug/L	182791	1	10/23/2013 18:37	NP
Bromomethane	BRL	5.0		ug/L	182791	1	10/23/2013 18:37	NP
Carbon disulfide	BRL	5.0		ug/L	182791	1	10/23/2013 18:37	NP
Carbon tetrachloride	BRL	5.0		ug/L	182791	1	10/23/2013 18:37	NP
Chlorobenzene	BRL	5.0		ug/L	182791	1	10/23/2013 18:37	NP
Chloroethane	BRL	10		ug/L	182791	1	10/23/2013 18:37	NP
Chloroform	BRL	5.0		ug/L	182791	1	10/23/2013 18:37	NP
Chloromethane	BRL	10		ug/L	182791	1	10/23/2013 18:37	NP
cis-1,2-Dichloroethene	37	5.0		ug/L	182791	1	10/23/2013 18:37	NP
cis-1,3-Dichloropropene	BRL	5.0		ug/L	182791	1	10/23/2013 18:37	NP
Dibromochloromethane	BRL	5.0		ug/L	182791	1	10/23/2013 18:37	NP
Dibromomethane	BRL	5.0		ug/L	182791	1	10/23/2013 18:37	NP
Ethylbenzene	BRL	5.0		ug/L	182791	1	10/23/2013 18:37	NP
Iodomethane	BRL	10		ug/L	182791	1	10/23/2013 18:37	NP
m,p-Xylene	BRL	10		ug/L	182791	1	10/23/2013 18:37	NP
Methylene chloride	BRL	5.0		ug/L	182791	1	10/23/2013 18:37	NP
o-Xylene	BRL	10		ug/L	182791	1	10/23/2013 18:37	NP

Qualifiers:

- * Value exceeds maximum contaminant level
- BRL Below reporting limit
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- > Greater than Result value

- E Estimated (value above quantitation range)
- S Spike Recovery outside limits due to matrix
- Narr See case narrative
- NC Not confirmed
- < Less than Result value
- J Estimated value detected below Reporting Limit

Client: GeoTechnical & Env. Consultants, Inc.	Client Sample ID: MWA-1
Project Name: Mercer HSRA	Collection Date: 10/16/2013 3:30:00 PM
Lab ID: 1310H46-001	Matrix: Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
APPENDIX I VOLATILE ORGANICS SW8260B		(SW5030B)						
Styrene	BRL	5.0		ug/L	182791	1	10/23/2013 18:37	NP
Tetrachloroethene	380	50		ug/L	182791	10	10/24/2013 15:14	NP
Toluene	BRL	5.0		ug/L	182791	1	10/23/2013 18:37	NP
trans-1,2-Dichloroethene	BRL	5.0		ug/L	182791	1	10/23/2013 18:37	NP
trans-1,3-Dichloropropene	BRL	5.0		ug/L	182791	1	10/23/2013 18:37	NP
trans-1,4-Dichloro-2-butene	BRL	10		ug/L	182791	1	10/23/2013 18:37	NP
Trichloroethene	140	5.0		ug/L	182791	1	10/23/2013 18:37	NP
Trichlorofluoromethane	BRL	5.0		ug/L	182791	1	10/23/2013 18:37	NP
Vinyl acetate	BRL	10		ug/L	182791	1	10/23/2013 18:37	NP
Vinyl chloride	BRL	2.0		ug/L	182791	1	10/23/2013 18:37	NP
Xylenes, Total	BRL	10		ug/L	182791	1	10/23/2013 18:37	NP
Surr: 4-Bromofluorobenzene	79.9	66.2-120		%REC	182791	1	10/23/2013 18:37	NP
Surr: 4-Bromofluorobenzene	87.2	66.2-120		%REC	182791	10	10/24/2013 15:14	NP
Surr: Dibromofluoromethane	96.4	79.5-121		%REC	182791	10	10/24/2013 15:14	NP
Surr: Dibromofluoromethane	107	79.5-121		%REC	182791	1	10/23/2013 18:37	NP
Surr: Toluene-d8	97.6	77-117		%REC	182791	10	10/24/2013 15:14	NP
Surr: Toluene-d8	98.4	77-117		%REC	182791	1	10/23/2013 18:37	NP

APPENDIX I METALS SW6020A		(SW3005A)						
Antimony	BRL	0.00600		mg/L	182725	5	10/29/2013 17:33	TA
Arsenic	BRL	0.0100		mg/L	182725	1	10/26/2013 00:03	TA
Barium	0.0588	0.0200		mg/L	182725	5	10/29/2013 17:33	TA
Beryllium	BRL	0.00400		mg/L	182725	5	10/29/2013 17:33	TA
Cadmium	BRL	0.00500		mg/L	182725	5	10/29/2013 17:33	TA
Chromium	0.0244	0.0200		mg/L	182725	1	10/26/2013 00:03	TA
Cobalt	BRL	0.0500		mg/L	182725	1	10/26/2013 00:03	TA
Copper	BRL	0.0200		mg/L	182725	5	10/29/2013 17:33	TA
Lead	0.0186	0.0100		mg/L	182725	1	10/26/2013 00:03	TA
Nickel	BRL	0.0400		mg/L	182725	1	10/26/2013 00:03	TA
Selenium	BRL	0.0625		mg/L	182725	5	10/29/2013 17:33	TA
Silver	BRL	0.00500		mg/L	182725	5	10/29/2013 17:33	TA
Thallium	BRL	0.00200		mg/L	182725	1	10/26/2013 00:03	TA
Vanadium	BRL	0.0500		mg/L	182725	1	10/26/2013 00:03	TA
Zinc	BRL	0.0250		mg/L	182725	5	10/29/2013 17:33	TA

Qualifiers:

- * Value exceeds maximum contaminant level
- BRL Below reporting limit
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- > Greater than Result value

- E Estimated (value above quantitation range)
- S Spike Recovery outside limits due to matrix
- Narr See case narrative
- NC Not confirmed
- < Less than Result value
- J Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc

Date: 31-Oct-13

Client: GeoTechnical & Env. Consultants, Inc.	Client Sample ID: MW-10
Project Name: Mercer HSRA	Collection Date: 10/17/2013 9:30:00 AM
Lab ID: 1310H46-002	Matrix: Aqueous

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Mercury, Total SW7470A					(SW7470A)			
Mercury	0.00046	0.00020		mg/L	182818	1	10/24/2013 13:49	CG
APPENDIX I VOLATILE ORGANICS SW8260B					(SW5030B)			
1,1,1,2-Tetrachloroethane	BRL	5.0		ug/L	182791	1	10/23/2013 19:08	NP
1,1,1-Trichloroethane	BRL	5.0		ug/L	182791	1	10/23/2013 19:08	NP
1,1,2,2-Tetrachloroethane	BRL	5.0		ug/L	182791	1	10/23/2013 19:08	NP
1,1,2-Trichloroethane	BRL	5.0		ug/L	182791	1	10/23/2013 19:08	NP
1,1-Dichloroethane	BRL	5.0		ug/L	182791	1	10/23/2013 19:08	NP
1,1-Dichloroethene	BRL	5.0		ug/L	182791	1	10/23/2013 19:08	NP
1,2,3-Trichloropropane	BRL	5.0		ug/L	182791	1	10/23/2013 19:08	NP
1,2-Dibromo-3-chloropropane	BRL	5.0		ug/L	182791	1	10/23/2013 19:08	NP
1,2-Dibromoethane	BRL	5.0		ug/L	182791	1	10/23/2013 19:08	NP
1,2-Dichlorobenzene	BRL	5.0		ug/L	182791	1	10/23/2013 19:08	NP
1,2-Dichloroethane	BRL	5.0		ug/L	182791	1	10/23/2013 19:08	NP
1,2-Dichloropropane	BRL	5.0		ug/L	182791	1	10/23/2013 19:08	NP
1,4-Dichlorobenzene	BRL	5.0		ug/L	182791	1	10/23/2013 19:08	NP
2-Butanone	BRL	50		ug/L	182791	1	10/23/2013 19:08	NP
2-Hexanone	BRL	10		ug/L	182791	1	10/23/2013 19:08	NP
4-Methyl-2-pentanone	BRL	10		ug/L	182791	1	10/23/2013 19:08	NP
Acetone	BRL	50		ug/L	182791	1	10/23/2013 19:08	NP
Acrylonitrile	BRL	5.0		ug/L	182791	1	10/23/2013 19:08	NP
Benzene	BRL	5.0		ug/L	182791	1	10/23/2013 19:08	NP
Bromochloromethane	BRL	5.0		ug/L	182791	1	10/23/2013 19:08	NP
Bromodichloromethane	BRL	5.0		ug/L	182791	1	10/23/2013 19:08	NP
Bromoform	BRL	5.0		ug/L	182791	1	10/23/2013 19:08	NP
Bromomethane	BRL	5.0		ug/L	182791	1	10/23/2013 19:08	NP
Carbon disulfide	BRL	5.0		ug/L	182791	1	10/23/2013 19:08	NP
Carbon tetrachloride	BRL	5.0		ug/L	182791	1	10/23/2013 19:08	NP
Chlorobenzene	BRL	5.0		ug/L	182791	1	10/23/2013 19:08	NP
Chloroethane	BRL	10		ug/L	182791	1	10/23/2013 19:08	NP
Chloroform	BRL	5.0		ug/L	182791	1	10/23/2013 19:08	NP
Chloromethane	BRL	10		ug/L	182791	1	10/23/2013 19:08	NP
cis-1,2-Dichloroethene	BRL	5.0		ug/L	182791	1	10/23/2013 19:08	NP
cis-1,3-Dichloropropene	BRL	5.0		ug/L	182791	1	10/23/2013 19:08	NP
Dibromochloromethane	BRL	5.0		ug/L	182791	1	10/23/2013 19:08	NP
Dibromomethane	BRL	5.0		ug/L	182791	1	10/23/2013 19:08	NP
Ethylbenzene	BRL	5.0		ug/L	182791	1	10/23/2013 19:08	NP
Iodomethane	BRL	10		ug/L	182791	1	10/23/2013 19:08	NP
m,p-Xylene	BRL	10		ug/L	182791	1	10/23/2013 19:08	NP
Methylene chloride	BRL	5.0		ug/L	182791	1	10/23/2013 19:08	NP
o-Xylene	BRL	10		ug/L	182791	1	10/23/2013 19:08	NP

Qualifiers:

- * Value exceeds maximum contaminant level
- BRL Below reporting limit
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- > Greater than Result value

- E Estimated (value above quantitation range)
- S Spike Recovery outside limits due to matrix
- Narr See case narrative
- NC Not confirmed
- < Less than Result value
- J Estimated value detected below Reporting Limit

Client: GeoTechnical & Env. Consultants, Inc.	Client Sample ID: MW-10
Project Name: Mercer HSRA	Collection Date: 10/17/2013 9:30:00 AM
Lab ID: 1310H46-002	Matrix: Aqueous

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
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APPENDIX I VOLATILE ORGANICS SW8260B

(SW5030B)

Styrene	BRL	5.0		ug/L	182791	1	10/23/2013 19:08	NP
Tetrachloroethene	35	5.0		ug/L	182791	1	10/23/2013 19:08	NP
Toluene	BRL	5.0		ug/L	182791	1	10/23/2013 19:08	NP
trans-1,2-Dichloroethene	BRL	5.0		ug/L	182791	1	10/23/2013 19:08	NP
trans-1,3-Dichloropropene	BRL	5.0		ug/L	182791	1	10/23/2013 19:08	NP
trans-1,4-Dichloro-2-butene	BRL	10		ug/L	182791	1	10/23/2013 19:08	NP
Trichloroethene	BRL	5.0		ug/L	182791	1	10/23/2013 19:08	NP
Trichlorofluoromethane	BRL	5.0		ug/L	182791	1	10/23/2013 19:08	NP
Vinyl acetate	BRL	10		ug/L	182791	1	10/23/2013 19:08	NP
Vinyl chloride	BRL	2.0		ug/L	182791	1	10/23/2013 19:08	NP
Xylenes, Total	BRL	10		ug/L	182791	1	10/23/2013 19:08	NP
Surr: 4-Bromofluorobenzene	77.7	66.2-120		%REC	182791	1	10/23/2013 19:08	NP
Surr: Dibromofluoromethane	107	79.5-121		%REC	182791	1	10/23/2013 19:08	NP
Surr: Toluene-d8	102	77-117		%REC	182791	1	10/23/2013 19:08	NP

APPENDIX I METALS SW6020A

(SW3005A)

Antimony	BRL	0.00600		mg/L	182725	1	10/26/2013 00:08	TA
Arsenic	BRL	0.0100		mg/L	182725	1	10/26/2013 00:08	TA
Barium	0.0941	0.0200		mg/L	182725	1	10/26/2013 00:08	TA
Beryllium	BRL	0.00400		mg/L	182725	1	10/29/2013 17:38	TA
Cadmium	BRL	0.00500		mg/L	182725	1	10/26/2013 00:08	TA
Chromium	BRL	0.0200		mg/L	182725	1	10/26/2013 00:08	TA
Cobalt	BRL	0.0500		mg/L	182725	1	10/26/2013 00:08	TA
Copper	BRL	0.0200		mg/L	182725	1	10/26/2013 00:08	TA
Lead	BRL	0.0100		mg/L	182725	1	10/26/2013 00:08	TA
Nickel	BRL	0.0400		mg/L	182725	1	10/26/2013 00:08	TA
Selenium	BRL	0.0500		mg/L	182725	1	10/26/2013 00:08	TA
Silver	BRL	0.00500		mg/L	182725	1	10/26/2013 00:08	TA
Thallium	BRL	0.00200		mg/L	182725	1	10/26/2013 00:08	TA
Vanadium	BRL	0.0500		mg/L	182725	1	10/26/2013 00:08	TA
Zinc	BRL	0.0200		mg/L	182725	1	10/26/2013 00:08	TA

Qualifiers:

- * Value exceeds maximum contaminant level
- BRL Below reporting limit
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- > Greater than Result value

- E Estimated (value above quantitation range)
- S Spike Recovery outside limits due to matrix
- Narr See case narrative
- NC Not confirmed
- < Less than Result value
- J Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc

Date: 31-Oct-13

Client: GeoTechnical & Env. Consultants, Inc.	Client Sample ID: MW-9
Project Name: Mercer HSRA	Collection Date: 10/17/2013 10:10:00 AM
Lab ID: 1310H46-003	Matrix: Aqueous

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Mercury, Total SW7470A					(SW7470A)			
Mercury	BRL	0.00020		mg/L	182818	1	10/24/2013 13:55	CG
APPENDIX I VOLATILE ORGANICS SW8260B					(SW5030B)			
1,1,1,2-Tetrachloroethane	BRL	5.0		ug/L	182791	1	10/24/2013 16:15	NP
1,1,1-Trichloroethane	BRL	5.0		ug/L	182791	1	10/24/2013 16:15	NP
1,1,2,2-Tetrachloroethane	BRL	5.0		ug/L	182791	1	10/24/2013 16:15	NP
1,1,2-Trichloroethane	BRL	5.0		ug/L	182791	1	10/24/2013 16:15	NP
1,1-Dichloroethane	BRL	5.0		ug/L	182791	1	10/24/2013 16:15	NP
1,1-Dichloroethene	BRL	5.0		ug/L	182791	1	10/24/2013 16:15	NP
1,2,3-Trichloropropane	BRL	5.0		ug/L	182791	1	10/24/2013 16:15	NP
1,2-Dibromo-3-chloropropane	BRL	5.0		ug/L	182791	1	10/24/2013 16:15	NP
1,2-Dibromoethane	BRL	5.0		ug/L	182791	1	10/24/2013 16:15	NP
1,2-Dichlorobenzene	BRL	5.0		ug/L	182791	1	10/24/2013 16:15	NP
1,2-Dichloroethane	BRL	5.0		ug/L	182791	1	10/24/2013 16:15	NP
1,2-Dichloropropane	BRL	5.0		ug/L	182791	1	10/24/2013 16:15	NP
1,4-Dichlorobenzene	BRL	5.0		ug/L	182791	1	10/24/2013 16:15	NP
2-Butanone	BRL	50		ug/L	182791	1	10/24/2013 16:15	NP
2-Hexanone	BRL	10		ug/L	182791	1	10/24/2013 16:15	NP
4-Methyl-2-pentanone	BRL	10		ug/L	182791	1	10/24/2013 16:15	NP
Acetone	BRL	50		ug/L	182791	1	10/24/2013 16:15	NP
Acrylonitrile	BRL	5.0		ug/L	182791	1	10/24/2013 16:15	NP
Benzene	BRL	5.0		ug/L	182791	1	10/24/2013 16:15	NP
Bromochloromethane	BRL	5.0		ug/L	182791	1	10/24/2013 16:15	NP
Bromodichloromethane	BRL	5.0		ug/L	182791	1	10/24/2013 16:15	NP
Bromoform	BRL	5.0		ug/L	182791	1	10/24/2013 16:15	NP
Bromomethane	BRL	5.0		ug/L	182791	1	10/24/2013 16:15	NP
Carbon disulfide	BRL	5.0		ug/L	182791	1	10/24/2013 16:15	NP
Carbon tetrachloride	BRL	5.0		ug/L	182791	1	10/24/2013 16:15	NP
Chlorobenzene	BRL	5.0		ug/L	182791	1	10/24/2013 16:15	NP
Chloroethane	BRL	10		ug/L	182791	1	10/24/2013 16:15	NP
Chloroform	BRL	5.0		ug/L	182791	1	10/24/2013 16:15	NP
Chloromethane	BRL	10		ug/L	182791	1	10/24/2013 16:15	NP
cis-1,2-Dichloroethene	BRL	5.0		ug/L	182791	1	10/24/2013 16:15	NP
cis-1,3-Dichloropropene	BRL	5.0		ug/L	182791	1	10/24/2013 16:15	NP
Dibromochloromethane	BRL	5.0		ug/L	182791	1	10/24/2013 16:15	NP
Dibromomethane	BRL	5.0		ug/L	182791	1	10/24/2013 16:15	NP
Ethylbenzene	BRL	5.0		ug/L	182791	1	10/24/2013 16:15	NP
Iodomethane	BRL	10		ug/L	182791	1	10/24/2013 16:15	NP
m,p-Xylene	BRL	10		ug/L	182791	1	10/24/2013 16:15	NP
Methylene chloride	BRL	5.0		ug/L	182791	1	10/24/2013 16:15	NP
o-Xylene	BRL	10		ug/L	182791	1	10/24/2013 16:15	NP

Qualifiers:

- * Value exceeds maximum contaminant level
- BRL Below reporting limit
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- > Greater than Result value

- E Estimated (value above quantitation range)
- S Spike Recovery outside limits due to matrix
- Narr See case narrative
- NC Not confirmed
- < Less than Result value
- J Estimated value detected below Reporting Limit

Client: GeoTechnical & Env. Consultants, Inc.	Client Sample ID: MW-9
Project Name: Mercer HSRA	Collection Date: 10/17/2013 10:10:00 AM
Lab ID: 1310H46-003	Matrix: Aqueous

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
APPENDIX I VOLATILE ORGANICS SW8260B		(SW5030B)						
Styrene	BRL	5.0		ug/L	182791	1	10/24/2013 16:15	NP
Tetrachloroethene	BRL	5.0		ug/L	182791	1	10/24/2013 16:15	NP
Toluene	BRL	5.0		ug/L	182791	1	10/24/2013 16:15	NP
trans-1,2-Dichloroethene	BRL	5.0		ug/L	182791	1	10/24/2013 16:15	NP
trans-1,3-Dichloropropene	BRL	5.0		ug/L	182791	1	10/24/2013 16:15	NP
trans-1,4-Dichloro-2-butene	BRL	10		ug/L	182791	1	10/24/2013 16:15	NP
Trichloroethene	BRL	5.0		ug/L	182791	1	10/24/2013 16:15	NP
Trichlorofluoromethane	BRL	5.0		ug/L	182791	1	10/24/2013 16:15	NP
Vinyl acetate	BRL	10		ug/L	182791	1	10/24/2013 16:15	NP
Vinyl chloride	BRL	2.0		ug/L	182791	1	10/24/2013 16:15	NP
Xylenes, Total	BRL	10		ug/L	182791	1	10/24/2013 16:15	NP
Surr: 4-Bromofluorobenzene	86.9	66.2-120		%REC	182791	1	10/24/2013 16:15	NP
Surr: Dibromofluoromethane	97.4	79.5-121		%REC	182791	1	10/24/2013 16:15	NP
Surr: Toluene-d8	97.7	77-117		%REC	182791	1	10/24/2013 16:15	NP

APPENDIX I METALS SW6020A		(SW3005A)						
Antimony	BRL	0.00600		mg/L	182725	1	10/26/2013 00:14	TA
Arsenic	BRL	0.0100		mg/L	182725	1	10/26/2013 00:14	TA
Barium	0.0454	0.0200		mg/L	182725	1	10/26/2013 00:14	TA
Beryllium	BRL	0.00400		mg/L	182725	1	10/26/2013 00:14	TA
Cadmium	BRL	0.00500		mg/L	182725	1	10/26/2013 00:14	TA
Chromium	BRL	0.0200		mg/L	182725	1	10/26/2013 00:14	TA
Cobalt	BRL	0.0500		mg/L	182725	1	10/26/2013 00:14	TA
Copper	BRL	0.0200		mg/L	182725	1	10/26/2013 00:14	TA
Lead	BRL	0.0100		mg/L	182725	1	10/26/2013 00:14	TA
Nickel	BRL	0.0400		mg/L	182725	1	10/26/2013 00:14	TA
Selenium	BRL	0.0500		mg/L	182725	1	10/26/2013 00:14	TA
Silver	BRL	0.00500		mg/L	182725	1	10/26/2013 00:14	TA
Thallium	BRL	0.00200		mg/L	182725	1	10/26/2013 00:14	TA
Vanadium	BRL	0.0500		mg/L	182725	1	10/26/2013 00:14	TA
Zinc	BRL	0.0200		mg/L	182725	1	10/26/2013 00:14	TA

Qualifiers:

- * Value exceeds maximum contaminant level
- BRL Below reporting limit
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- > Greater than Result value

- E Estimated (value above quantitation range)
- S Spike Recovery outside limits due to matrix
- Narr See case narrative
- NC Not confirmed
- < Less than Result value
- J Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc

Date: 31-Oct-13

Client: GeoTechnical & Env. Consultants, Inc.	Client Sample ID: MWD-6
Project Name: Mercer HSRA	Collection Date: 10/17/2013 11:30:00 AM
Lab ID: 1310H46-004	Matrix: Aqueous

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Mercury, Total SW7470A					(SW7470A)			
Mercury	BRL	0.00020		mg/L	182818	1	10/24/2013 13:40	CG
APPENDIX I VOLATILE ORGANICS SW8260B					(SW5030B)			
1,1,1,2-Tetrachloroethane	BRL	5.0		ug/L	182791	1	10/24/2013 16:46	NP
1,1,1-Trichloroethane	BRL	5.0		ug/L	182791	1	10/24/2013 16:46	NP
1,1,2,2-Tetrachloroethane	BRL	5.0		ug/L	182791	1	10/24/2013 16:46	NP
1,1,2-Trichloroethane	BRL	5.0		ug/L	182791	1	10/24/2013 16:46	NP
1,1-Dichloroethane	BRL	5.0		ug/L	182791	1	10/24/2013 16:46	NP
1,1-Dichloroethene	BRL	5.0		ug/L	182791	1	10/24/2013 16:46	NP
1,2,3-Trichloropropane	BRL	5.0		ug/L	182791	1	10/24/2013 16:46	NP
1,2-Dibromo-3-chloropropane	BRL	5.0		ug/L	182791	1	10/24/2013 16:46	NP
1,2-Dibromoethane	BRL	5.0		ug/L	182791	1	10/24/2013 16:46	NP
1,2-Dichlorobenzene	BRL	5.0		ug/L	182791	1	10/24/2013 16:46	NP
1,2-Dichloroethane	BRL	5.0		ug/L	182791	1	10/24/2013 16:46	NP
1,2-Dichloropropane	BRL	5.0		ug/L	182791	1	10/24/2013 16:46	NP
1,4-Dichlorobenzene	BRL	5.0		ug/L	182791	1	10/24/2013 16:46	NP
2-Butanone	BRL	50		ug/L	182791	1	10/24/2013 16:46	NP
2-Hexanone	BRL	10		ug/L	182791	1	10/24/2013 16:46	NP
4-Methyl-2-pentanone	BRL	10		ug/L	182791	1	10/24/2013 16:46	NP
Acetone	88	50		ug/L	182791	1	10/24/2013 16:46	NP
Acrylonitrile	BRL	5.0		ug/L	182791	1	10/24/2013 16:46	NP
Benzene	BRL	5.0		ug/L	182791	1	10/24/2013 16:46	NP
Bromochloromethane	BRL	5.0		ug/L	182791	1	10/24/2013 16:46	NP
Bromodichloromethane	BRL	5.0		ug/L	182791	1	10/24/2013 16:46	NP
Bromoform	BRL	5.0		ug/L	182791	1	10/24/2013 16:46	NP
Bromomethane	BRL	5.0		ug/L	182791	1	10/24/2013 16:46	NP
Carbon disulfide	BRL	5.0		ug/L	182791	1	10/24/2013 16:46	NP
Carbon tetrachloride	BRL	5.0		ug/L	182791	1	10/24/2013 16:46	NP
Chlorobenzene	BRL	5.0		ug/L	182791	1	10/24/2013 16:46	NP
Chloroethane	BRL	10		ug/L	182791	1	10/24/2013 16:46	NP
Chloroform	BRL	5.0		ug/L	182791	1	10/24/2013 16:46	NP
Chloromethane	BRL	10		ug/L	182791	1	10/24/2013 16:46	NP
cis-1,2-Dichloroethene	47	5.0		ug/L	182791	1	10/24/2013 16:46	NP
cis-1,3-Dichloropropene	BRL	5.0		ug/L	182791	1	10/24/2013 16:46	NP
Dibromochloromethane	BRL	5.0		ug/L	182791	1	10/24/2013 16:46	NP
Dibromomethane	BRL	5.0		ug/L	182791	1	10/24/2013 16:46	NP
Ethylbenzene	BRL	5.0		ug/L	182791	1	10/24/2013 16:46	NP
Iodomethane	BRL	10		ug/L	182791	1	10/24/2013 16:46	NP
m,p-Xylene	BRL	10		ug/L	182791	1	10/24/2013 16:46	NP
Methylene chloride	BRL	5.0		ug/L	182791	1	10/24/2013 16:46	NP
o-Xylene	BRL	10		ug/L	182791	1	10/24/2013 16:46	NP

Qualifiers:

- * Value exceeds maximum contaminant level
- BRL Below reporting limit
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- > Greater than Result value

- E Estimated (value above quantitation range)
- S Spike Recovery outside limits due to matrix
- Narr See case narrative
- NC Not confirmed
- < Less than Result value
- J Estimated value detected below Reporting Limit

Client: GeoTechnical & Env. Consultants, Inc.	Client Sample ID: MWD-6
Project Name: Mercer HSRA	Collection Date: 10/17/2013 11:30:00 AM
Lab ID: 1310H46-004	Matrix: Aqueous

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
APPENDIX I VOLATILE ORGANICS SW8260B (SW5030B)								
Styrene	BRL	5.0		ug/L	182791	1	10/24/2013 16:46	NP
Tetrachloroethene	200	50		ug/L	182791	10	10/25/2013 11:38	NP
Toluene	BRL	5.0		ug/L	182791	1	10/24/2013 16:46	NP
trans-1,2-Dichloroethene	BRL	5.0		ug/L	182791	1	10/24/2013 16:46	NP
trans-1,3-Dichloropropene	BRL	5.0		ug/L	182791	1	10/24/2013 16:46	NP
trans-1,4-Dichloro-2-butene	BRL	10		ug/L	182791	1	10/24/2013 16:46	NP
Trichloroethene	87	5.0		ug/L	182791	1	10/24/2013 16:46	NP
Trichlorofluoromethane	BRL	5.0		ug/L	182791	1	10/24/2013 16:46	NP
Vinyl acetate	BRL	10		ug/L	182791	1	10/24/2013 16:46	NP
Vinyl chloride	BRL	2.0		ug/L	182791	1	10/24/2013 16:46	NP
Xylenes, Total	BRL	10		ug/L	182791	1	10/24/2013 16:46	NP
Surr: 4-Bromofluorobenzene	87.3	66.2-120		%REC	182791	1	10/24/2013 16:46	NP
Surr: 4-Bromofluorobenzene	86.2	66.2-120		%REC	182791	10	10/25/2013 11:38	NP
Surr: Dibromofluoromethane	101	79.5-121		%REC	182791	1	10/24/2013 16:46	NP
Surr: Dibromofluoromethane	107	79.5-121		%REC	182791	10	10/25/2013 11:38	NP
Surr: Toluene-d8	96.7	77-117		%REC	182791	1	10/24/2013 16:46	NP
Surr: Toluene-d8	99.4	77-117		%REC	182791	10	10/25/2013 11:38	NP

APPENDIX I METALS SW6020A (SW3005A)								
Antimony	BRL	0.00600		mg/L	182725	10	10/29/2013 17:49	TA
Arsenic	0.0185	0.0100		mg/L	182725	1	10/26/2013 00:19	TA
Barium	BRL	0.0200		mg/L	182725	10	10/29/2013 17:49	TA
Beryllium	0.0134	0.00400		mg/L	182725	10	10/29/2013 17:49	TA
Cadmium	BRL	0.00500		mg/L	182725	10	10/29/2013 17:49	TA
Chromium	0.181	0.0200		mg/L	182725	1	10/26/2013 00:19	TA
Cobalt	BRL	0.0500		mg/L	182725	1	10/26/2013 00:19	TA
Copper	0.0628	0.0200		mg/L	182725	10	10/29/2013 17:49	TA
Lead	0.0489	0.0100		mg/L	182725	1	10/26/2013 00:19	TA
Nickel	0.0416	0.0400		mg/L	182725	1	10/26/2013 00:19	TA
Selenium	0.0742	0.0500		mg/L	182725	10	10/29/2013 17:49	TA
Silver	BRL	0.00500		mg/L	182725	10	10/29/2013 17:49	TA
Thallium	BRL	0.00200		mg/L	182725	1	10/26/2013 00:19	TA
Vanadium	BRL	0.0500		mg/L	182725	1	10/26/2013 00:19	TA
Zinc	0.118	0.0500		mg/L	182725	10	10/29/2013 17:49	TA

Qualifiers:	* Value exceeds maximum contaminant level	E Estimated (value above quantitation range)
	BRL Below reporting limit	S Spike Recovery outside limits due to matrix
	H Holding times for preparation or analysis exceeded	Narr See case narrative
	N Analyte not NELAC certified	NC Not confirmed
	B Analyte detected in the associated method blank	< Less than Result value
	> Greater than Result value	J Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc

Date: 31-Oct-13

Client: GeoTechnical & Env. Consultants, Inc.	Client Sample ID: MWA-5
Project Name: Mercer HSRA	Collection Date: 10/17/2013 11:20:00 AM
Lab ID: 1310H46-005	Matrix: Aqueous

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Mercury, Total SW7470A					(SW7470A)			
Mercury	BRL	0.00020		mg/L	182818	1	10/24/2013 13:57	CG
APPENDIX I VOLATILE ORGANICS SW8260B					(SW5030B)			
1,1,1,2-Tetrachloroethane	BRL	5.0		ug/L	182791	1	10/24/2013 17:17	NP
1,1,1-Trichloroethane	BRL	5.0		ug/L	182791	1	10/24/2013 17:17	NP
1,1,2,2-Tetrachloroethane	BRL	5.0		ug/L	182791	1	10/24/2013 17:17	NP
1,1,2-Trichloroethane	BRL	5.0		ug/L	182791	1	10/24/2013 17:17	NP
1,1-Dichloroethane	BRL	5.0		ug/L	182791	1	10/24/2013 17:17	NP
1,1-Dichloroethene	BRL	5.0		ug/L	182791	1	10/24/2013 17:17	NP
1,2,3-Trichloropropane	BRL	5.0		ug/L	182791	1	10/24/2013 17:17	NP
1,2-Dibromo-3-chloropropane	BRL	5.0		ug/L	182791	1	10/24/2013 17:17	NP
1,2-Dibromoethane	BRL	5.0		ug/L	182791	1	10/24/2013 17:17	NP
1,2-Dichlorobenzene	BRL	5.0		ug/L	182791	1	10/24/2013 17:17	NP
1,2-Dichloroethane	BRL	5.0		ug/L	182791	1	10/24/2013 17:17	NP
1,2-Dichloropropane	BRL	5.0		ug/L	182791	1	10/24/2013 17:17	NP
1,4-Dichlorobenzene	BRL	5.0		ug/L	182791	1	10/24/2013 17:17	NP
2-Butanone	BRL	50		ug/L	182791	1	10/24/2013 17:17	NP
2-Hexanone	BRL	10		ug/L	182791	1	10/24/2013 17:17	NP
4-Methyl-2-pentanone	BRL	10		ug/L	182791	1	10/24/2013 17:17	NP
Acetone	BRL	50		ug/L	182791	1	10/24/2013 17:17	NP
Acrylonitrile	BRL	5.0		ug/L	182791	1	10/24/2013 17:17	NP
Benzene	BRL	5.0		ug/L	182791	1	10/24/2013 17:17	NP
Bromochloromethane	BRL	5.0		ug/L	182791	1	10/24/2013 17:17	NP
Bromodichloromethane	BRL	5.0		ug/L	182791	1	10/24/2013 17:17	NP
Bromoform	BRL	5.0		ug/L	182791	1	10/24/2013 17:17	NP
Bromomethane	BRL	5.0		ug/L	182791	1	10/24/2013 17:17	NP
Carbon disulfide	BRL	5.0		ug/L	182791	1	10/24/2013 17:17	NP
Carbon tetrachloride	BRL	5.0		ug/L	182791	1	10/24/2013 17:17	NP
Chlorobenzene	BRL	5.0		ug/L	182791	1	10/24/2013 17:17	NP
Chloroethane	BRL	10		ug/L	182791	1	10/24/2013 17:17	NP
Chloroform	BRL	5.0		ug/L	182791	1	10/24/2013 17:17	NP
Chloromethane	29	10		ug/L	182791	1	10/24/2013 17:17	NP
cis-1,2-Dichloroethene	BRL	5.0		ug/L	182791	1	10/24/2013 17:17	NP
cis-1,3-Dichloropropene	BRL	5.0		ug/L	182791	1	10/24/2013 17:17	NP
Dibromochloromethane	BRL	5.0		ug/L	182791	1	10/24/2013 17:17	NP
Dibromomethane	BRL	5.0		ug/L	182791	1	10/24/2013 17:17	NP
Ethylbenzene	BRL	5.0		ug/L	182791	1	10/24/2013 17:17	NP
Iodomethane	BRL	10		ug/L	182791	1	10/24/2013 17:17	NP
m,p-Xylene	BRL	10		ug/L	182791	1	10/24/2013 17:17	NP
Methylene chloride	25	5.0		ug/L	182791	1	10/24/2013 17:17	NP
o-Xylene	BRL	10		ug/L	182791	1	10/24/2013 17:17	NP

Qualifiers:

- * Value exceeds maximum contaminant level
- BRL Below reporting limit
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- > Greater than Result value

- E Estimated (value above quantitation range)
- S Spike Recovery outside limits due to matrix
- Narr See case narrative
- NC Not confirmed
- < Less than Result value
- J Estimated value detected below Reporting Limit

Client: GeoTechnical & Env. Consultants, Inc.	Client Sample ID: MWA-5
Project Name: Mercer HSRA	Collection Date: 10/17/2013 11:20:00 AM
Lab ID: 1310H46-005	Matrix: Aqueous

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
APPENDIX I VOLATILE ORGANICS SW8260B (SW5030B)								
Styrene	BRL	5.0		ug/L	182791	1	10/24/2013 17:17	NP
Tetrachloroethene	24	5.0		ug/L	182791	1	10/24/2013 17:17	NP
Toluene	BRL	5.0		ug/L	182791	1	10/24/2013 17:17	NP
trans-1,2-Dichloroethene	BRL	5.0		ug/L	182791	1	10/24/2013 17:17	NP
trans-1,3-Dichloropropene	BRL	5.0		ug/L	182791	1	10/24/2013 17:17	NP
trans-1,4-Dichloro-2-butene	BRL	10		ug/L	182791	1	10/24/2013 17:17	NP
Trichloroethene	BRL	5.0		ug/L	182791	1	10/24/2013 17:17	NP
Trichlorofluoromethane	BRL	5.0		ug/L	182791	1	10/24/2013 17:17	NP
Vinyl acetate	BRL	10		ug/L	182791	1	10/24/2013 17:17	NP
Vinyl chloride	BRL	2.0		ug/L	182791	1	10/24/2013 17:17	NP
Xylenes, Total	BRL	10		ug/L	182791	1	10/24/2013 17:17	NP
Surr: 4-Bromofluorobenzene	88.5	66.2-120		%REC	182791	1	10/24/2013 17:17	NP
Surr: Dibromofluoromethane	107	79.5-121		%REC	182791	1	10/24/2013 17:17	NP
Surr: Toluene-d8	98	77-117		%REC	182791	1	10/24/2013 17:17	NP

APPENDIX I METALS SW6020A (SW3005A)								
Antimony	BRL	0.00600		mg/L	182725	10	10/29/2013 18:10	TA
Arsenic	0.0126	0.0100		mg/L	182725	1	10/26/2013 00:24	TA
Barium	0.0230	0.0200		mg/L	182725	10	10/29/2013 18:10	TA
Beryllium	BRL	0.00400		mg/L	182725	1	10/29/2013 17:54	TA
Cadmium	BRL	0.00500		mg/L	182725	10	10/29/2013 18:10	TA
Chromium	0.0299	0.0200		mg/L	182725	1	10/26/2013 00:24	TA
Cobalt	BRL	0.0500		mg/L	182725	1	10/26/2013 00:24	TA
Copper	BRL	0.0200		mg/L	182725	10	10/29/2013 18:10	TA
Lead	BRL	0.0100		mg/L	182725	1	10/26/2013 00:24	TA
Nickel	BRL	0.0400		mg/L	182725	1	10/26/2013 00:24	TA
Selenium	0.0532	0.0500		mg/L	182725	10	10/29/2013 18:10	TA
Silver	BRL	0.00500		mg/L	182725	10	10/29/2013 18:10	TA
Thallium	BRL	0.00200		mg/L	182725	1	10/26/2013 00:24	TA
Vanadium	BRL	0.0500		mg/L	182725	1	10/26/2013 00:24	TA
Zinc	BRL	0.0500		mg/L	182725	10	10/29/2013 18:10	TA

Qualifiers:

- * Value exceeds maximum contaminant level
- BRL Below reporting limit
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- > Greater than Result value

- E Estimated (value above quantitation range)
- S Spike Recovery outside limits due to matrix
- Narr See case narrative
- NC Not confirmed
- < Less than Result value
- J Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc

Date: 31-Oct-13

Client: GeoTechnical & Env. Consultants, Inc.	Client Sample ID: MWA-2
Project Name: Mercer HSRA	Collection Date: 10/17/2013 1:20:00 PM
Lab ID: 1310H46-006	Matrix: Aqueous

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Mercury, Total SW7470A		(SW7470A)						
Mercury	BRL	0.00020		mg/L	182818	1	10/24/2013 13:59	CG
APPENDIX I VOLATILE ORGANICS SW8260B		(SW5030B)						
1,1,1,2-Tetrachloroethane	BRL	5.0		ug/L	182791	1	10/24/2013 17:48	NP
1,1,1-Trichloroethane	BRL	5.0		ug/L	182791	1	10/24/2013 17:48	NP
1,1,2,2-Tetrachloroethane	BRL	5.0		ug/L	182791	1	10/24/2013 17:48	NP
1,1,2-Trichloroethane	BRL	5.0		ug/L	182791	1	10/24/2013 17:48	NP
1,1-Dichloroethane	BRL	5.0		ug/L	182791	1	10/24/2013 17:48	NP
1,1-Dichloroethene	BRL	5.0		ug/L	182791	1	10/24/2013 17:48	NP
1,2,3-Trichloropropane	BRL	5.0		ug/L	182791	1	10/24/2013 17:48	NP
1,2-Dibromo-3-chloropropane	BRL	5.0		ug/L	182791	1	10/24/2013 17:48	NP
1,2-Dibromoethane	BRL	5.0		ug/L	182791	1	10/24/2013 17:48	NP
1,2-Dichlorobenzene	BRL	5.0		ug/L	182791	1	10/24/2013 17:48	NP
1,2-Dichloroethane	BRL	5.0		ug/L	182791	1	10/24/2013 17:48	NP
1,2-Dichloropropane	BRL	5.0		ug/L	182791	1	10/24/2013 17:48	NP
1,4-Dichlorobenzene	BRL	5.0		ug/L	182791	1	10/24/2013 17:48	NP
2-Butanone	BRL	50		ug/L	182791	1	10/24/2013 17:48	NP
2-Hexanone	BRL	10		ug/L	182791	1	10/24/2013 17:48	NP
4-Methyl-2-pentanone	BRL	10		ug/L	182791	1	10/24/2013 17:48	NP
Acetone	BRL	50		ug/L	182791	1	10/24/2013 17:48	NP
Acrylonitrile	BRL	5.0		ug/L	182791	1	10/24/2013 17:48	NP
Benzene	BRL	5.0		ug/L	182791	1	10/24/2013 17:48	NP
Bromochloromethane	BRL	5.0		ug/L	182791	1	10/24/2013 17:48	NP
Bromodichloromethane	BRL	5.0		ug/L	182791	1	10/24/2013 17:48	NP
Bromoform	BRL	5.0		ug/L	182791	1	10/24/2013 17:48	NP
Bromomethane	BRL	5.0		ug/L	182791	1	10/24/2013 17:48	NP
Carbon disulfide	BRL	5.0		ug/L	182791	1	10/24/2013 17:48	NP
Carbon tetrachloride	BRL	5.0		ug/L	182791	1	10/24/2013 17:48	NP
Chlorobenzene	BRL	5.0		ug/L	182791	1	10/24/2013 17:48	NP
Chloroethane	BRL	10		ug/L	182791	1	10/24/2013 17:48	NP
Chloroform	BRL	5.0		ug/L	182791	1	10/24/2013 17:48	NP
Chloromethane	BRL	10		ug/L	182791	1	10/24/2013 17:48	NP
cis-1,2-Dichloroethene	35	5.0		ug/L	182791	1	10/24/2013 17:48	NP
cis-1,3-Dichloropropene	BRL	5.0		ug/L	182791	1	10/24/2013 17:48	NP
Dibromochloromethane	BRL	5.0		ug/L	182791	1	10/24/2013 17:48	NP
Dibromomethane	BRL	5.0		ug/L	182791	1	10/24/2013 17:48	NP
Ethylbenzene	BRL	5.0		ug/L	182791	1	10/24/2013 17:48	NP
Iodomethane	BRL	10		ug/L	182791	1	10/24/2013 17:48	NP
m,p-Xylene	BRL	10		ug/L	182791	1	10/24/2013 17:48	NP
Methylene chloride	BRL	5.0		ug/L	182791	1	10/24/2013 17:48	NP
o-Xylene	BRL	10		ug/L	182791	1	10/24/2013 17:48	NP

Qualifiers:

- * Value exceeds maximum contaminant level
- BRL Below reporting limit
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- > Greater than Result value

- E Estimated (value above quantitation range)
- S Spike Recovery outside limits due to matrix
- Narr See case narrative
- NC Not confirmed
- < Less than Result value
- J Estimated value detected below Reporting Limit

Client: GeoTechnical & Env. Consultants, Inc.	Client Sample ID: MWA-2
Project Name: Mercer HSRA	Collection Date: 10/17/2013 1:20:00 PM
Lab ID: 1310H46-006	Matrix: Aqueous

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
APPENDIX I VOLATILE ORGANICS SW8260B (SW5030B)								
Styrene	BRL	5.0		ug/L	182791	1	10/24/2013 17:48	NP
Tetrachloroethene	240	50		ug/L	182791	10	10/25/2013 12:14	NP
Toluene	BRL	5.0		ug/L	182791	1	10/24/2013 17:48	NP
trans-1,2-Dichloroethene	BRL	5.0		ug/L	182791	1	10/24/2013 17:48	NP
trans-1,3-Dichloropropene	BRL	5.0		ug/L	182791	1	10/24/2013 17:48	NP
trans-1,4-Dichloro-2-butene	BRL	10		ug/L	182791	1	10/24/2013 17:48	NP
Trichloroethene	100	5.0		ug/L	182791	1	10/24/2013 17:48	NP
Trichlorofluoromethane	BRL	5.0		ug/L	182791	1	10/24/2013 17:48	NP
Vinyl acetate	BRL	10		ug/L	182791	1	10/24/2013 17:48	NP
Vinyl chloride	BRL	2.0		ug/L	182791	1	10/24/2013 17:48	NP
Xylenes, Total	BRL	10		ug/L	182791	1	10/24/2013 17:48	NP
Surr: 4-Bromofluorobenzene	83	66.2-120		%REC	182791	10	10/25/2013 12:14	NP
Surr: 4-Bromofluorobenzene	85.1	66.2-120		%REC	182791	1	10/24/2013 17:48	NP
Surr: Dibromofluoromethane	104	79.5-121		%REC	182791	1	10/24/2013 17:48	NP
Surr: Dibromofluoromethane	107	79.5-121		%REC	182791	10	10/25/2013 12:14	NP
Surr: Toluene-d8	97.3	77-117		%REC	182791	1	10/24/2013 17:48	NP
Surr: Toluene-d8	99	77-117		%REC	182791	10	10/25/2013 12:14	NP

APPENDIX I METALS SW6020A (SW3005A)								
Antimony	BRL	0.00600		mg/L	182725	1	10/26/2013 00:29	TA
Arsenic	BRL	0.0100		mg/L	182725	1	10/26/2013 00:29	TA
Barium	0.0392	0.0200		mg/L	182725	1	10/26/2013 00:29	TA
Beryllium	BRL	0.00400		mg/L	182725	1	10/26/2013 00:29	TA
Cadmium	BRL	0.00500		mg/L	182725	1	10/26/2013 00:29	TA
Chromium	BRL	0.0200		mg/L	182725	1	10/26/2013 00:29	TA
Cobalt	BRL	0.0500		mg/L	182725	1	10/26/2013 00:29	TA
Copper	BRL	0.0200		mg/L	182725	1	10/26/2013 00:29	TA
Lead	BRL	0.0100		mg/L	182725	1	10/26/2013 00:29	TA
Nickel	BRL	0.0400		mg/L	182725	1	10/26/2013 00:29	TA
Selenium	BRL	0.0500		mg/L	182725	1	10/26/2013 00:29	TA
Silver	BRL	0.00500		mg/L	182725	1	10/26/2013 00:29	TA
Thallium	BRL	0.00200		mg/L	182725	1	10/26/2013 00:29	TA
Vanadium	BRL	0.0500		mg/L	182725	1	10/26/2013 00:29	TA
Zinc	BRL	0.0200		mg/L	182725	1	10/26/2013 00:29	TA

Qualifiers:

- * Value exceeds maximum contaminant level
- BRL Below reporting limit
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- > Greater than Result value

- E Estimated (value above quantitation range)
- S Spike Recovery outside limits due to matrix
- Narr See case narrative
- NC Not confirmed
- < Less than Result value
- J Estimated value detected below Reporting Limit

Client: GeoTechnical & Env. Consultants, Inc.	Client Sample ID: MWB-4
Project Name: Mercer HSRA	Collection Date: 10/17/2013 2:20:00 PM
Lab ID: 1310H46-007	Matrix: Aqueous

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Mercury, Total SW7470A					(SW7470A)			
Mercury	BRL	0.00020		mg/L	182818	1	10/24/2013 14:01	CG
APPENDIX I VOLATILE ORGANICS SW8260B					(SW5030B)			
1,1,1,2-Tetrachloroethane	BRL	5.0		ug/L	182791	1	10/25/2013 11:07	NP
1,1,1-Trichloroethane	BRL	5.0		ug/L	182791	1	10/25/2013 11:07	NP
1,1,2,2-Tetrachloroethane	BRL	5.0		ug/L	182791	1	10/25/2013 11:07	NP
1,1,2-Trichloroethane	BRL	5.0		ug/L	182791	1	10/25/2013 11:07	NP
1,1-Dichloroethane	BRL	5.0		ug/L	182791	1	10/25/2013 11:07	NP
1,1-Dichloroethene	BRL	5.0		ug/L	182791	1	10/25/2013 11:07	NP
1,2,3-Trichloropropane	BRL	5.0		ug/L	182791	1	10/25/2013 11:07	NP
1,2-Dibromo-3-chloropropane	BRL	5.0		ug/L	182791	1	10/25/2013 11:07	NP
1,2-Dibromoethane	BRL	5.0		ug/L	182791	1	10/25/2013 11:07	NP
1,2-Dichlorobenzene	BRL	5.0		ug/L	182791	1	10/25/2013 11:07	NP
1,2-Dichloroethane	BRL	5.0		ug/L	182791	1	10/25/2013 11:07	NP
1,2-Dichloropropane	BRL	5.0		ug/L	182791	1	10/25/2013 11:07	NP
1,4-Dichlorobenzene	BRL	5.0		ug/L	182791	1	10/25/2013 11:07	NP
2-Butanone	BRL	50		ug/L	182791	1	10/25/2013 11:07	NP
2-Hexanone	BRL	10		ug/L	182791	1	10/25/2013 11:07	NP
4-Methyl-2-pentanone	BRL	10		ug/L	182791	1	10/25/2013 11:07	NP
Acetone	BRL	50		ug/L	182791	1	10/25/2013 11:07	NP
Acrylonitrile	BRL	5.0		ug/L	182791	1	10/25/2013 11:07	NP
Benzene	BRL	5.0		ug/L	182791	1	10/25/2013 11:07	NP
Bromochloromethane	BRL	5.0		ug/L	182791	1	10/25/2013 11:07	NP
Bromodichloromethane	BRL	5.0		ug/L	182791	1	10/25/2013 11:07	NP
Bromoform	BRL	5.0		ug/L	182791	1	10/25/2013 11:07	NP
Bromomethane	BRL	5.0		ug/L	182791	1	10/25/2013 11:07	NP
Carbon disulfide	BRL	5.0		ug/L	182791	1	10/25/2013 11:07	NP
Carbon tetrachloride	BRL	5.0		ug/L	182791	1	10/25/2013 11:07	NP
Chlorobenzene	BRL	5.0		ug/L	182791	1	10/25/2013 11:07	NP
Chloroethane	BRL	10		ug/L	182791	1	10/25/2013 11:07	NP
Chloroform	BRL	5.0		ug/L	182791	1	10/25/2013 11:07	NP
Chloromethane	BRL	10		ug/L	182791	1	10/25/2013 11:07	NP
cis-1,2-Dichloroethene	BRL	5.0		ug/L	182791	1	10/25/2013 11:07	NP
cis-1,3-Dichloropropene	BRL	5.0		ug/L	182791	1	10/25/2013 11:07	NP
Dibromochloromethane	BRL	5.0		ug/L	182791	1	10/25/2013 11:07	NP
Dibromomethane	BRL	5.0		ug/L	182791	1	10/25/2013 11:07	NP
Ethylbenzene	BRL	5.0		ug/L	182791	1	10/25/2013 11:07	NP
Iodomethane	BRL	10		ug/L	182791	1	10/25/2013 11:07	NP
m,p-Xylene	BRL	10		ug/L	182791	1	10/25/2013 11:07	NP
Methylene chloride	BRL	5.0		ug/L	182791	1	10/25/2013 11:07	NP
o-Xylene	BRL	10		ug/L	182791	1	10/25/2013 11:07	NP

Qualifiers:

- * Value exceeds maximum contaminant level
- BRL Below reporting limit
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- > Greater than Result value

- E Estimated (value above quantitation range)
- S Spike Recovery outside limits due to matrix
- Narr See case narrative
- NC Not confirmed
- < Less than Result value
- J Estimated value detected below Reporting Limit

Client: GeoTechnical & Env. Consultants, Inc.	Client Sample ID: MWB-4
Project Name: Mercer HSRA	Collection Date: 10/17/2013 2:20:00 PM
Lab ID: 1310H46-007	Matrix: Aqueous

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
APPENDIX I VOLATILE ORGANICS SW8260B (SW5030B)								
Styrene	BRL	5.0		ug/L	182791	1	10/25/2013 11:07	NP
Tetrachloroethene	5.6	5.0		ug/L	182791	1	10/25/2013 11:07	NP
Toluene	BRL	5.0		ug/L	182791	1	10/25/2013 11:07	NP
trans-1,2-Dichloroethene	BRL	5.0		ug/L	182791	1	10/25/2013 11:07	NP
trans-1,3-Dichloropropene	BRL	5.0		ug/L	182791	1	10/25/2013 11:07	NP
trans-1,4-Dichloro-2-butene	BRL	10		ug/L	182791	1	10/25/2013 11:07	NP
Trichloroethene	BRL	5.0		ug/L	182791	1	10/25/2013 11:07	NP
Trichlorofluoromethane	BRL	5.0		ug/L	182791	1	10/25/2013 11:07	NP
Vinyl acetate	BRL	10		ug/L	182791	1	10/25/2013 11:07	NP
Vinyl chloride	BRL	2.0		ug/L	182791	1	10/25/2013 11:07	NP
Xylenes, Total	BRL	10		ug/L	182791	1	10/25/2013 11:07	NP
Surr: 4-Bromofluorobenzene	85.1	66.2-120		%REC	182791	1	10/25/2013 11:07	NP
Surr: Dibromofluoromethane	106	79.5-121		%REC	182791	1	10/25/2013 11:07	NP
Surr: Toluene-d8	101	77-117		%REC	182791	1	10/25/2013 11:07	NP

APPENDIX I METALS SW6020A (SW3005A)								
Antimony	BRL	0.00600		mg/L	182725	1	10/26/2013 00:34	TA
Arsenic	BRL	0.0100		mg/L	182725	1	10/26/2013 00:34	TA
Barium	0.0568	0.0200		mg/L	182725	1	10/26/2013 00:34	TA
Beryllium	BRL	0.00400		mg/L	182725	1	10/26/2013 00:34	TA
Cadmium	BRL	0.00500		mg/L	182725	1	10/26/2013 00:34	TA
Chromium	BRL	0.0200		mg/L	182725	1	10/26/2013 00:34	TA
Cobalt	BRL	0.0500		mg/L	182725	1	10/26/2013 00:34	TA
Copper	BRL	0.0200		mg/L	182725	1	10/26/2013 00:34	TA
Lead	BRL	0.0100		mg/L	182725	1	10/26/2013 00:34	TA
Nickel	BRL	0.0400		mg/L	182725	1	10/26/2013 00:34	TA
Selenium	BRL	0.0500		mg/L	182725	1	10/26/2013 00:34	TA
Silver	BRL	0.00500		mg/L	182725	1	10/26/2013 00:34	TA
Thallium	BRL	0.00200		mg/L	182725	1	10/26/2013 00:34	TA
Vanadium	BRL	0.0500		mg/L	182725	1	10/26/2013 00:34	TA
Zinc	BRL	0.0200		mg/L	182725	1	10/26/2013 00:34	TA

Qualifiers:	* Value exceeds maximum contaminant level	E Estimated (value above quantitation range)
	BRL Below reporting limit	S Spike Recovery outside limits due to matrix
	H Holding times for preparation or analysis exceeded	Narr See case narrative
	N Analyte not NELAC certified	NC Not confirmed
	B Analyte detected in the associated method blank	< Less than Result value
	> Greater than Result value	J Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc.

Sample/Cooler Receipt Checklist

Client GEC

Work Order Number 1310446

Checklist completed by [Signature]
Signature

10/19/13 - 10/22/13
Date

Carrier name: FedEx UPS Courier Client US Mail Other

- Shipping container/cooler in good condition? Yes No Not Present
- Custody seals intact on shipping container/cooler? Yes No Not Present
- Custody seals intact on sample bottles? Yes No Not Present
- Container/Temp Blank temperature in compliance? (4°C±2)* Yes No

Cooler #1 3.1° Cooler #2 _____ Cooler #3 _____ Cooler #4 _____ Cooler#5 _____ Cooler #6 _____

- Chain of custody present? Yes No
- Chain of custody signed when relinquished and received? Yes No
- Chain of custody agrees with sample labels? Yes No
- Samples in proper container/bottle? Yes No
- Sample containers intact? Yes No
- Sufficient sample volume for indicated test? Yes No
- All samples received within holding time? Yes No
- Was TAT marked on the COC? Yes No
- Proceed with Standard TAT as per project history? Yes No Not Applicable
- Water - VOA vials have zero headspace? No VOA vials submitted Yes No
- Water - pH acceptable upon receipt? Yes No Not Applicable

Adjusted? _____ Checked by [Signature]

Sample Condition: Good Other(Explain) _____

(For diffusive samples or AIHA lead) Is a known blank included? Yes No

See Case Narrative for resolution of the Non-Conformance.

* Samples do not have to comply with the given range for certain parameters.

GEC

GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS, INC.

Project No.: Moroc ASRA Sample Date: 10-17 Team Leader: _____
 Well ID: MWA-1 MWD-6 Sample Time: 11:30 AM Team Number: _____
 Sample ID: _____ Sample Team Members: _____

(planned method) _____ (note changes to planned method in comments section below)
 Purge Method: _____ Changed Method: _____

Sample Method: _____ Changed Method: _____

Static Water Level: 47.23 ft Does well purge dry? Yes No

Well Depth:* 72.50 ft * Check box if well depth measured, no check if used previous measured well depth

Water Column:** 25.27 ft ** Water Column = Measured Well Depth - Static Water Level

Well Diameter: _____ in

Well Diameter (inches)	1	2	4	6	10	12
Volume Factor (gallons/feet)	0.04	0.17	0.66	1.50	4.08	5.88

Well Volume:*** 4.29 gals ^{12.8} *** Well Volume = Water Column x Volume Factor

Date	Time	Depth to water (ft. TOC)	Volume Removed (gals)	pH	Specific Conductance (mS/cm)	Temperature (°C)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	Redox Potential (mV)
10-16-17	11	50	In	3.76	3.19	23.00	2800	1.05	255
10-16	Dry	64.20	4.29	4.03	2.63	23.87	170	5.13	158
10-17	11:30	N/A	N/A	3.75	3.53	23.85	73.4	4.05	135
		Final Readings							

Previous Readings: _____

*Prev. Measured Well Depth: _____ ft Hach Ferrous Iron Result: _____ mg/L

Constructed Well Depth: _____ ft Hach Dissolved Oxygen Result: _____ mg/L

Well Stickup Height: _____ ft Sample Mgmt. Turbidity: _____ NTUs

Purge Flow Rate: _____ gal/min

Anticipated Volume Based On Readings From Previous Year
 Volume Factor/Well Volume/Minimum Purge (gal)
 _____ / _____ / _____

Purging/Sampling/Well Repair Comments:

Related QC Samples:
 QC Sample ID: _____
 EB MS
 DUP MSD

GEC

GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS, INC.

Project No.: Meyer HSPA Sample Date: 10-17 Team Leader: _____
 Well ID: MW-9 Sample Time: 10:10 Team Number: _____
 Sample ID: _____ Sample Team Members: _____

Purge Method: _____ (planned method) Changed Method: _____ (note changes to planned method in comments section below)
 Sample Method: _____ Changed Method: _____

Static Water Level: 42.35 ft Does well purge dry? Yes No
 Well Depth: * 48.90 ft * Check box if well depth measured, no check if used previous measured well depth
 Water Column: ** _____ ft ** Water Column = Measured Well Depth - Static Water Level
 Well Diameter: _____ in 3.5 Volume Factor (gallons/feet)

Well Diameter (inches)	1	2	4	6	10	12
Volume Factor (gallons/feet)	0.04	0.17	0.66	1.50	4.08	5.88

 Well Volume: *** 1.11 gals *** Well Volume = Water Column x Volume Factor

Date	Time	Depth to water (ft. TOC)	Volume Removed (gals)	pH	Specific Conductance (mS/cm)	Temperature (°C)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	Redox Potential (mV)
10-17	9:45	42.41	Inched	4.38	.169	22.57	2800	5.60	287
10-17	9:55	42.45	1.5 gail	4.40	.167	22.90	64.6	4.34	286
10-17	10:00	42.46	2 gail	4.45	.166	22.75	30.7	4.07	288
10-17	10:05	42.48	4.5 gail	4.53	.166	22.87	27.1	4.08	286
10-17	10:10	42.50	6	4.55	.166	22.86	28	4.11	286
Final Readings									

Previous Readings: _____

*Prev. Measured Well Depth: _____ ft Hach Ferrous Iron Result: _____ mg/L
 Constructed Well Depth: _____ ft Hach Dissolved Oxygen Result: _____ mg/L
 Well Stickup Height: _____ ft Sample Mgmt. Turbidity: _____ NTUs
 Purge Flow Rate: _____ gal/min

Anticipated Volume Based On Readings From Previous Year
 Volume Factor/Well Volume/Minimum Purge (gal)
 _____ / _____ / _____

Purging/Sampling/Well Repair Comments:

Related QC Samples:
 QC Sample ID: _____
 BB MS
 DUP MSD

GEC

GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS, INC.

57.15

Project No.: Mercer HSPA Sample Date: 10-17 Team Leader: _____
 Well ID: MWA-5 Sample Time: _____ Team Number: _____
 Sample ID: _____ Sample Team Members: _____

(planned method) _____ (note changes to planned method in comments section below)
 Purge Method: _____ Changed Method: _____
 Sample Method: _____ Changed Method: _____

Static Water Level: 57.45 ft Does well purge dry? Yes No

Well Depth: * 63.00 ft * Check box if well depth measured, no check if used previous measured well depth

Water Column: ** _____ ft ** Water Column = Measured Well Depth - Static Water Level

Well Diameter: _____ in

Well Diameter (inches)	1	2	4	6	10	12
Volume Factor (gallons/feet)	0.04	0.17	0.66	1.50	4.08	5.88

Well Volume: *** 2 gals

*** Well Volume = Water Column x Volume Factor

Date	Time	Depth to water (ft. TOC)	Volume Removed (gals)	pH	Specific Conductance (mS/cm)	Temperature (°C)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	Redox Potential (mV)
10-17	10:35	52.36	Initial	2.89	2.60	23.45	7800	1.24	382
↓	10:45	53.32	2	2.93	2.20	23.43	623	0.62	335
↓	10:55	54.09	4	2.93	2.13	23.33	323	0.48	336
↓	11:05	54.44	6	2.96	2.15	23.83	140	1.06	385
↓	11:15	54.76	8	2.95	2.13	23.80	138	1.04	350
Final Readings									

Previous Readings: _____

*Prev. Measured Well Depth: _____ ft Hach Ferrous Iron Result: _____ mg/L
 Constructed Well Depth: _____ ft Hach Dissolved Oxygen Result: _____ mg/L
 Well Stickup Height: _____ ft Sample Mgmt. Turbidity: _____ NTUs

Purge Flow Rate: _____ gal/min

Anticipated Volume Based On Readings From Previous Year
 Volume Factor/Well Volume/Minimum Purge (gal)
 [] / [] / []

Purging/Sampling/Well Repair Comments: _____

Related QC Samples:
 QC Sample ID: _____
 BB MS
 DUP MSD

GEC

GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS, INC.

Project No.: Merced HSRRA Sample Date: 10-17-13 Team Leader: _____
 Well ID: MWB-4 Sample Time: 14:20 Team Number: _____
 Sample ID: _____ Sample Team Members: _____

(planned method) (note changes to planned method in comments section below)
 Purge Method: _____ Changed Method: _____
 Sample Method: _____ Changed Method: _____

Static Water Level: 46.45 ft Does well purge dry? Yes No
 Well Depth: * 55.60 ft * Check box if well depth measured, no check if used previous measured well depth
 Water Column: ** 9.15 ft ** Water Column = Measured Well Depth - Static Water Level
 Well Diameter: 2 in
 Well Volume: *** 1.55 gals *** Well Volume = Water Column x Volume Factor

Well Diameter (inches)	1	2	4	6	10	12
Volume Factor (gallons/feet)	0.04	0.17	0.66	1.50	4.08	5.88

Date	Time	Depth to water (ft. TOC)	Volume Removed (gals)	pH	Specific Conductance (mS/cm)	Temperature (°C)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	Redox Potential (mV)
10-17	1335	47.30	Initial	4.92	0.155	24.58	2800	6.38	304
10-17	1340	47.86	1.55	5.47	0.149	22.33	213	3.79	216
10-17	1345	47.38	3.10	5.35	0.145	22.62	176	3.41	223
10-17	1355	47.32	4.65	5.24	0.139	22.59	102	3.47	238
10-17	14:05	47.30	6.10	5.20	0.137	22.61	49.6	3.60	272
10-17	14:12	47.31	7.65	5.18	0.137	22.64	30.4	3.69	284
Final Readings									

Previous Readings: _____

*Prev. Measured Well Depth: _____ ft Hach Ferrous Iron Result: _____ mg/L
 Constructed Well Depth: _____ ft Hach Dissolved Oxygen Result: _____ mg/L
 Well Stickup Height: _____ ft Sample Mgmt. Turbidity: _____ NTUs

Purge Flow Rate: _____ gal/min
 Purging/Sampling/Well Repair Comments: _____

Anticipated Volume Based On Readings From Previous Year
 Volume Factor/Well Volume/Minimum Purge (gal)
 _____ / _____ / _____

Related QC Samples:
 QC Sample ID: _____
 BB MS
 DUP MSD

GEC

GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS, INC.

Project No.: Mener Sample Date: 10-17 Team Leader: _____
 Well ID: MWA-2 Sample Time: 1320 Team Number: _____
 Sample ID: _____ Sample Team Members: _____

(planned method) (note changes to planned method in comments section below)
 Purge Method: _____ Changed Method: _____
 Sample Method: _____ Changed Method: _____

Static Water Level: 48.44 ft Does well purge dry? Yes No
 Well Depth:* 60.20 ft * Check box if well depth measured, no check if used previous measured well depth
 Water Column:** 11.76 ft ** Water Column = Measured Well Depth - Static Water Level
 Well Diameter: 2 in
 Well Volume:*** 2 gals *** Well Volume = Water Column x Volume Factor

Well Diameter (inches)	1	2	4	6	10	12
Volume Factor (gallons/feet)	0.04	0.17	0.66	1.50	4.08	5.88

Date	Time	Depth to water (ft. TOC)	Volume Removed (gals)	pH	Specific Conductance (mS/cm)	Temperature (°C)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	Redox Potential (mV)
10-17	1235	46.45	Int	3.99	.243	22.80	>800	13.46	370
10-17	1242	48.63	2	4.00	.240	23.32	540	4.72	353
10-17	1248	48.63	4	3.97	.231	23.18	107	4.59	362
10-17	1305	48.70	6	3.94	.224	23.05	1.0	3.78	377
10-17	1314	48.71	8	3.94	.225	23.12	0	3.80	383
Final Readings									

Previous Readings: _____

*Prev. Measured Well Depth: _____ ft Hach Ferrous Iron Result: _____ mg/L
 Constructed Well Depth: _____ ft Hach Dissolved Oxygen Result: _____ mg/L
 Well Stickup Height: _____ ft Sample Mgmt. Turbidity: _____ NTUs
 Purge Flow Rate: _____ gal/min

Anticipated Volume Based On Readings From Previous Year
 Volume Factor/Well Volume/Minimum Purge (gal)
 _____ / _____ / _____

Purging/Sampling/Well Repair Comments:

Related QC Samples:
 QC Sample ID: _____
 EB MS
 DUP MSD

GEC

GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS, INC.

Project No.: Mercer HSRA Sample Date: 10-17 Team Leader: _____
 Well ID: MW-10 Sample Time: 9:30 Team Number: _____
 Sample ID: _____ Sample Team Members: _____

Purge Method: (planned method) Pailer Changed Method: _____
 Sample Method: Pailer Changed Method: _____

Static Water Level: 60.75 ft Does well purge dry? Yes No

Well Depth:* 64.1 ft * Check box if well depth measured, no check if used previous measured well depth

Water Column:** _____ ft ** Water Column = Measured Well Depth - Static Water Level

Well Diameter: _____ in

Well Diameter (inches)	1	2	4	6	10	12
Volume Factor (gallons/feet)	0.04	0.17	0.66	1.50	4.08	5.88

Well Volume:*** _____ gals *** Well Volume = Water Column x Volume Factor

Date	Time	Depth to water (ft. TOC)	Volume Removed (gals)	pH	Specific Conductance (mS/cm)	Temperature (°C)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	Redox Potential (mV)
10-17	920	-	.75	4.13	429	20.40	7800	3.32	259
10-17	925	-	1.25	4.46	207	20.52	760	2.84	252
10-17	930	-	1.50	4.74	181	20.54	763	2.80	250
Final Readings									

Previous Readings: _____

*Prev. Measured Well Depth: _____ ft Hach Ferrous Iron Result: _____ mg/L
 Constructed Well Depth: _____ ft Hach Dissolved Oxygen Result: _____ mg/L
 Well Stickup Height: _____ ft Sample Mgmt. Turbidity: _____ NTUs
 Purge Flow Rate: _____ gal/min

Anticipated Volume Based On Readings From Previous Year
 Volume Factor/Well Volume/Minimum Purge (gal)
 _____ / _____ / _____

Purging/Sampling/Well Repair Comments:

Related QC Samples:
 QC Sample ID: _____
 BB MS
 DUP MSD

GEC

GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS, INC.

Project No.: Merzer, KSA Sample Date: 10-16 Team Leader: _____

Well ID: MWR-3 Sample Time: _____ Team Number: _____

Sample ID: _____ Sample Team Members: _____

Purge Method: _____ (planned method) Changed Method: _____ (note changes to planned method in comments section below)

Sample Method: _____ Changed Method: _____

Static Water Level: 44.56 ft ~~44.15~~ Does well purge dry? Yes No

Well Depth:* _____ ft * Check box if well depth measured, no check if used previous measured well depth

Water Column:** _____ ft ** Water Column = Measured Well Depth - Static Water Level

Well Diameter: _____ in

Well Volume:*** _____ gals

Well Diameter (inches)	1	2	4	6	10	12
Volume Factor (gallons/feet)	0.04	0.17	0.66	1.50	4.08	5.88

*** Well Volume = Water Column x Volume Factor

Date	Time	Depth to water (ft. TOC)	Volume Removed (gals)	pH	Specific Conductance (mS/cm)	Temperature (°C)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	Redox Potential (mV)
Final Readings									

Previous Readings:

--	--	--	--	--	--	--	--	--	--

*Prev. Measured Well Depth: _____ ft Hach Ferrous Iron Result: _____ mg/L

Constructed Well Depth: _____ ft Hach Dissolved Oxygen Result: _____ mg/L

Well Stickup Height: _____ ft Sample Mgmt. Turbidity: _____ NTUs

Purge Flow Rate: _____ gal/min

Anticipated Volume Based On Readings From Previous Year
Volume Factor/Well Volume/Minimum Purge (gal)
____ / _____ / _____

Purging/Sampling/Well Repair Comments:

Related QC Samples:
QC Sample ID: _____
BB MS
DUP MSD

GEC

GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS, INC.

Memo to HSA

Project No.: MWA-1 Sample Date: 10-16 Team Leader: _____
 Well ID: _____ Sample Time: _____ Team Number: _____
 Sample ID: _____ Sample Team Members: _____

Purge Method: _____ (planned method) Changed Method: _____ (note changes to planned method in comments section below)
 Sample Method: _____ Changed Method: _____

Static Water Level: 29.45 ft Does well purge dry? Yes No
 Well Depth:* 140.00 ft * Check box if well depth measured, no check if used previous measured well depth
 Water Column:** 10.55 ft ** Water Column = Measured Well Depth - Static Water Level
 Well Diameter: 2" in
 Well Volume:*** 2 gals *** Well Volume = Water Column x Volume Factor

Well Diameter (inches)	1	2	4	6	10	12
Volume Factor (gallons/foot)	0.04	0.17	0.66	1.50	4.08	5.88

Date	Time	Depth to water (ft. TOC)	Volume Removed (gals)	pH	Specific Conductance (mS/cm)	Temperature (°C)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	Redox Potential (mV)
10-16	1:55	30.08	Initial	4.16	.181	30.92	743	7.02	300
10-16	2:	29.95	2 gals	4.04	.196	25.90	382	3.62	257
10-16	2:25	30.25	4	4.00	.201	24.68	283	3.63	264
10-16	2:35	30.51	6	3.95	.211	23.16	134	3.43	267
10-16	2:50	30.25	8	3.95	.207	23.66	166	3.25	271
10-16	3:05	30.20	10	3.95	.209	23.88	127	3.29	255
Final Readings									

Previous Readings: _____

*Prev. Measured Well Depth: _____ ft Hach Ferrous Iron Result: _____ mg/L
 Constructed Well Depth: _____ ft Hach Dissolved Oxygen Result: _____ mg/L
 Well Stickup Height: _____ ft Sample Mgmt. Turbidity: _____ NTUs
 Purge Flow Rate: _____ gal/min

Purging/Sampling/Well Repair Comments: _____

Anticipated Volume Based On Readings From Previous Year
 Volume Factor/Well Volume/Minimum Purge (gal)
 _____ / _____ / _____

Related QC Samples:
 QC Sample ID: _____
 EB MS
 DUP MSD



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Jason Cooper
GEC - Macon, GA
514 Hillcrest Industrial Blvd.
Macon, GA 31204

Report Summary

Tuesday July 01, 2014

Report Number: L706684
Samples Received: 06/25/14
Client Project: 090698.340

Description: Mercer

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By:


Jimmy Hunt, ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - 01157CA, CT - PH-0197,
FL - E87487, GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016,
NC - ENV375/DW21704/BIO041, ND - R-140, NJ - TN002, NJ NELAP - TN002,
SC - 84004, TN - 2006, VA - 460132, WV - 233, AZ - 0612,
MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032011-1,
TX - T104704245-11-3, OK - 9915, PA - 68-02979, IA Lab #364, EPA - TN002

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REPORT OF ANALYSIS

July 01, 2014

Jason Cooper
GEC - Macon, GA
514 Hillcrest Industrial Blvd.
Macon, GA 31204

ESC Sample # : L706684-01

Date Received : June 25, 2014
Description : Mercer

Site ID : MACON, GA

Sample ID : MW-5

Project # : 090698.340

Collected By : Anthony Whipple
Collection Date : 06/23/14 09:20

Table with 8 columns: Parameter, Result, Det. Limit, Units, Method, Date/Time, Analyst, Dil. Rows include Volatile Organics, Acetone, Acrolein, Acrylonitrile, Benzene, Bromobenzene, Bromodichloromethane, Bromoform, Bromomethane, n-Butylbenzene, sec-Butylbenzene, tert-Butylbenzene, Carbon tetrachloride, Chlorobenzene, Chlorodibromomethane, Chloroethane, 2-Chloroethyl vinyl ether, Chloroform, Chloromethane, 2-Chlorotoluene, 4-Chlorotoluene, 1,2-Dibromo-3-Chloropropane, 1,2-Dibromoethane, Dibromomethane, 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, Dichlorodifluoromethane, 1,1-Dichloroethane, 1,2-Dichloroethane, 1,1-Dichloroethene, cis-1,2-Dichloroethene, trans-1,2-Dichloroethene, 1,2-Dichloropropane, 1,1-Dichloropropene, 1,3-Dichloropropane, cis-1,3-Dichloropropene, trans-1,3-Dichloropropene, 2,2-Dichloropropane, Di-isopropyl ether.

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

AZ -0612, MN - 047-999-395, NY - 11742, NJ - TN002, WI - 998093910



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REPORT OF ANALYSIS

July 01, 2014

Jason Cooper
 GEC - Macon, GA
 514 Hillcrest Industrial Blvd.
 Macon, GA 31204

ESC Sample # : L706684-01

Date Received : June 25, 2014
 Description : Mercer

Site ID : MACON, GA

Sample ID : MW-5

Project # : 090698.340

Collected By : Anthony Whipple
 Collection Date : 06/23/14 09:20

Parameter	Result	Det. Limit	Units	Method	Date/Time	Analyst	Dil.
Ethylbenzene	BDL	5.0	ug/l	8260B	06/27/14 1832	JC	5
Hexachloro-1,3-butadiene	BDL	5.0	ug/l	8260B	06/27/14 1832	JC	5
Isopropylbenzene	BDL	5.0	ug/l	8260B	06/27/14 1832	JC	5
p-Isopropyltoluene	BDL	5.0	ug/l	8260B	06/27/14 1832	JC	5
2-Butanone (MEK)	BDL	50.	ug/l	8260B	06/27/14 1832	JC	5
Methylene Chloride	210	25.	ug/l	8260B	06/27/14 1832	JC	5
4-Methyl-2-pentanone (MIBK)	BDL	50.	ug/l	8260B	06/27/14 1832	JC	5
Methyl tert-butyl ether	BDL	5.0	ug/l	8260B	06/27/14 1832	JC	5
Naphthalene	BDL	25.	ug/l	8260B	06/27/14 1832	JC	5
n-Propylbenzene	BDL	5.0	ug/l	8260B	06/27/14 1832	JC	5
Styrene	BDL	5.0	ug/l	8260B	06/27/14 1832	JC	5
1,1,1,2-Tetrachloroethane	BDL	5.0	ug/l	8260B	06/27/14 1832	JC	5
1,1,2,2-Tetrachloroethane	BDL	5.0	ug/l	8260B	06/27/14 1832	JC	5
1,1,2-Trichlorotrifluoroethane	BDL	5.0	ug/l	8260B	06/27/14 1832	JC	5
Tetrachloroethene	16.	5.0	ug/l	8260B	06/27/14 1832	JC	5
Toluene	BDL	25.	ug/l	8260B	06/27/14 1832	JC	5
1,2,3-Trichlorobenzene	BDL	5.0	ug/l	8260B	06/27/14 1832	JC	5
1,2,4-Trichlorobenzene	BDL	5.0	ug/l	8260B	06/27/14 1832	JC	5
1,1,1-Trichloroethane	BDL	5.0	ug/l	8260B	06/27/14 1832	JC	5
1,1,2-Trichloroethane	12.	5.0	ug/l	8260B	06/27/14 1832	JC	5
Trichloroethene	BDL	5.0	ug/l	8260B	06/27/14 1832	JC	5
Trichlorofluoromethane	BDL	25.	ug/l	8260B	06/27/14 1832	JC	5
1,2,3-Trichloropropane	BDL	12.	ug/l	8260B	06/27/14 1832	JC	5
1,2,4-Trimethylbenzene	BDL	5.0	ug/l	8260B	06/27/14 1832	JC	5
1,2,3-Trimethylbenzene	BDL	5.0	ug/l	8260B	06/27/14 1832	JC	5
1,3,5-Trimethylbenzene	BDL	5.0	ug/l	8260B	06/27/14 1832	JC	5
Vinyl chloride	BDL	5.0	ug/l	8260B	06/27/14 1832	JC	5
Xylenes, Total	BDL	15.	ug/l	8260B	06/27/14 1832	JC	5
Surrogate Recovery							
Toluene-d8	104.		% Rec.	8260B	06/27/14 1832	JC	5
Dibromofluoromethane	101.		% Rec.	8260B	06/27/14 1832	JC	5
4-Bromofluorobenzene	95.3		% Rec.	8260B	06/27/14 1832	JC	5

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Laboratory Certification Numbers:

AIHA - 100789 , AL - 40660, CA - I-2327, CT- PH-0197, FL - E87487, GA - 923, IN - C-TN-01
 KY - 90010, KYUST-0016, NC - ENV375,DW21704, ND - R-140, SC - 84004, TN - 2006, VA - 00109, WV - 233
 AZ -0612, MN - 047-999-395, NY - 11742, NJ - TN002, WI - 998093910

Notes:

The reported analytical results relate only to the sample submitted
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 All samples analyzed in accordance with 40 CFR, Part 136.3
 Reported: 06/30/14 14:31 Revised: 07/01/14 07:58



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REPORT OF ANALYSIS

July 01, 2014

Jason Cooper
 GEC - Macon, GA
 514 Hillcrest Industrial Blvd.
 Macon, GA 31204

ESC Sample # : L706684-02

Date Received : June 25, 2014
 Description : Mercer

Site ID : MACON, GA

Sample ID : MWA-1

Project # : 090698.340

Collected By : Anthony Whipple
 Collection Date : 06/23/14 11:20

Parameter	Result	Det. Limit	Units	Method	Date/Time	Analyst	Dil.
Volatile Organics							
Acetone	BDL	50.	ug/l	8260B	06/27/14 1851	JC	1
Acrolein	BDL	50.	ug/l	8260B	06/27/14 1851	JC	1
Acrylonitrile	BDL	10.	ug/l	8260B	06/27/14 1851	JC	1
Benzene	BDL	1.0	ug/l	8260B	06/27/14 1851	JC	1
Bromobenzene	BDL	1.0	ug/l	8260B	06/27/14 1851	JC	1
Bromodichloromethane	BDL	1.0	ug/l	8260B	06/27/14 1851	JC	1
Bromoform	BDL	1.0	ug/l	8260B	06/27/14 1851	JC	1
Bromomethane	BDL	5.0	ug/l	8260B	06/27/14 1851	JC	1
n-Butylbenzene	BDL	1.0	ug/l	8260B	06/27/14 1851	JC	1
sec-Butylbenzene	BDL	1.0	ug/l	8260B	06/27/14 1851	JC	1
tert-Butylbenzene	BDL	1.0	ug/l	8260B	06/27/14 1851	JC	1
Carbon tetrachloride	BDL	1.0	ug/l	8260B	06/27/14 1851	JC	1
Chlorobenzene	BDL	1.0	ug/l	8260B	06/27/14 1851	JC	1
Chlorodibromomethane	BDL	1.0	ug/l	8260B	06/27/14 1851	JC	1
Chloroethane	BDL	5.0	ug/l	8260B	06/27/14 1851	JC	1
2-Chloroethyl vinyl ether	BDL	50.	ug/l	8260B	06/27/14 1851	JC	1
Chloroform	BDL	5.0	ug/l	8260B	06/27/14 1851	JC	1
Chloromethane	BDL	2.5	ug/l	8260B	06/27/14 1851	JC	1
2-Chlorotoluene	BDL	1.0	ug/l	8260B	06/27/14 1851	JC	1
4-Chlorotoluene	BDL	1.0	ug/l	8260B	06/27/14 1851	JC	1
1,2-Dibromo-3-Chloropropane	BDL	5.0	ug/l	8260B	06/27/14 1851	JC	1
1,2-Dibromoethane	BDL	1.0	ug/l	8260B	06/27/14 1851	JC	1
Dibromomethane	BDL	1.0	ug/l	8260B	06/27/14 1851	JC	1
1,2-Dichlorobenzene	BDL	1.0	ug/l	8260B	06/27/14 1851	JC	1
1,3-Dichlorobenzene	BDL	1.0	ug/l	8260B	06/27/14 1851	JC	1
1,4-Dichlorobenzene	BDL	1.0	ug/l	8260B	06/27/14 1851	JC	1
Dichlorodifluoromethane	BDL	5.0	ug/l	8260B	06/27/14 1851	JC	1
1,1-Dichloroethane	BDL	1.0	ug/l	8260B	06/27/14 1851	JC	1
1,2-Dichloroethane	BDL	1.0	ug/l	8260B	06/27/14 1851	JC	1
1,1-Dichloroethene	BDL	1.0	ug/l	8260B	06/27/14 1851	JC	1
cis-1,2-Dichloroethene	16.	1.0	ug/l	8260B	06/27/14 1851	JC	1
trans-1,2-Dichloroethene	1.6	1.0	ug/l	8260B	06/27/14 1851	JC	1
1,2-Dichloropropane	BDL	1.0	ug/l	8260B	06/27/14 1851	JC	1
1,1-Dichloropropene	BDL	1.0	ug/l	8260B	06/27/14 1851	JC	1
1,3-Dichloropropane	BDL	1.0	ug/l	8260B	06/27/14 1851	JC	1
cis-1,3-Dichloropropene	BDL	1.0	ug/l	8260B	06/27/14 1851	JC	1
trans-1,3-Dichloropropene	BDL	1.0	ug/l	8260B	06/27/14 1851	JC	1
2,2-Dichloropropane	BDL	1.0	ug/l	8260B	06/27/14 1851	JC	1
Di-isopropyl ether	BDL	1.0	ug/l	8260B	06/27/14 1851	JC	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

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REPORT OF ANALYSIS

July 01, 2014

Jason Cooper
 GEC - Macon, GA
 514 Hillcrest Industrial Blvd.
 Macon, GA 31204

ESC Sample # : L706684-02

Date Received : June 25, 2014
 Description : Mercer

Site ID : MACON, GA

Sample ID : MWA-1

Project # : 090698.340

Collected By : Anthony Whipple
 Collection Date : 06/23/14 11:20

Parameter	Result	Det. Limit	Units	Method	Date/Time	Analyst	Dil.
Ethylbenzene	BDL	1.0	ug/l	8260B	06/27/14 1851	JC	1
Hexachloro-1,3-butadiene	BDL	1.0	ug/l	8260B	06/27/14 1851	JC	1
Isopropylbenzene	BDL	1.0	ug/l	8260B	06/27/14 1851	JC	1
p-Isopropyltoluene	BDL	1.0	ug/l	8260B	06/27/14 1851	JC	1
2-Butanone (MEK)	BDL	10.	ug/l	8260B	06/27/14 1851	JC	1
Methylene Chloride	BDL	5.0	ug/l	8260B	06/27/14 1851	JC	1
4-Methyl-2-pentanone (MIBK)	BDL	10.	ug/l	8260B	06/27/14 1851	JC	1
Methyl tert-butyl ether	BDL	1.0	ug/l	8260B	06/27/14 1851	JC	1
Naphthalene	BDL	5.0	ug/l	8260B	06/27/14 1851	JC	1
n-Propylbenzene	BDL	1.0	ug/l	8260B	06/27/14 1851	JC	1
Styrene	BDL	1.0	ug/l	8260B	06/27/14 1851	JC	1
1,1,1,2-Tetrachloroethane	BDL	1.0	ug/l	8260B	06/27/14 1851	JC	1
1,1,2,2-Tetrachloroethane	BDL	1.0	ug/l	8260B	06/27/14 1851	JC	1
1,1,2-Trichlorotrifluoroethane	BDL	1.0	ug/l	8260B	06/27/14 1851	JC	1
Tetrachloroethene	63.	1.0	ug/l	8260B	06/27/14 1851	JC	1
Toluene	BDL	5.0	ug/l	8260B	06/27/14 1851	JC	1
1,2,3-Trichlorobenzene	BDL	1.0	ug/l	8260B	06/27/14 1851	JC	1
1,2,4-Trichlorobenzene	BDL	1.0	ug/l	8260B	06/27/14 1851	JC	1
1,1,1-Trichloroethane	BDL	1.0	ug/l	8260B	06/27/14 1851	JC	1
1,1,2-Trichloroethane	BDL	1.0	ug/l	8260B	06/27/14 1851	JC	1
Trichloroethene	41.	1.0	ug/l	8260B	06/27/14 1851	JC	1
Trichlorofluoromethane	BDL	5.0	ug/l	8260B	06/27/14 1851	JC	1
1,2,3-Trichloropropane	BDL	2.5	ug/l	8260B	06/27/14 1851	JC	1
1,2,4-Trimethylbenzene	BDL	1.0	ug/l	8260B	06/27/14 1851	JC	1
1,2,3-Trimethylbenzene	BDL	1.0	ug/l	8260B	06/27/14 1851	JC	1
1,3,5-Trimethylbenzene	BDL	1.0	ug/l	8260B	06/27/14 1851	JC	1
Vinyl chloride	BDL	1.0	ug/l	8260B	06/27/14 1851	JC	1
Xylenes, Total	BDL	3.0	ug/l	8260B	06/27/14 1851	JC	1
Surrogate Recovery							
Toluene-d8	99.4		% Rec.	8260B	06/27/14 1851	JC	1
Dibromofluoromethane	106.		% Rec.	8260B	06/27/14 1851	JC	1
4-Bromofluorobenzene	95.1		% Rec.	8260B	06/27/14 1851	JC	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit (PQL)

Laboratory Certification Numbers:

AIHA - 100789 , AL - 40660, CA - I-2327, CT- PH-0197, FL - E87487, GA - 923, IN - C-TN-01
 KY - 90010, KYUST-0016, NC - ENV375,DW21704, ND - R-140, SC - 84004, TN - 2006, VA - 00109, WV - 233
 AZ -0612, MN - 047-999-395, NY - 11742, NJ - TN002, WI - 998093910

Notes:

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 All samples analyzed in accordance with 40 CFR, Part 136.3
 Reported: 06/30/14 14:31 Revised: 07/01/14 07:58



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Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

July 01, 2014

Jason Cooper
GEC - Macon, GA
514 Hillcrest Industrial Blvd.
Macon, GA 31204

ESC Sample # : L706684-03

Date Received : June 25, 2014
Description : Mercer

Site ID : MACON, GA

Sample ID : MWA-2

Project # : 090698.340

Collected By : Anthony Whipple
Collection Date : 06/23/14 12:05

Table with columns: Parameter, Result, Det. Limit, Units, Method, Date/Time, Analyst, Dil. Rows include Volatile Organics, Acetone, Acrolein, Acrylonitrile, Benzene, Bromobenzene, Bromodichloromethane, Bromoform, Bromomethane, n-Butylbenzene, sec-Butylbenzene, tert-Butylbenzene, Carbon tetrachloride, Chlorobenzene, Chlorodibromomethane, Chloroethane, 2-Chloroethyl vinyl ether, Chloroform, Chloromethane, 2-Chlorotoluene, 4-Chlorotoluene, 1,2-Dibromo-3-Chloropropane, 1,2-Dibromoethane, Dibromomethane, 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, Dichlorodifluoromethane, 1,1-Dichloroethane, 1,2-Dichloroethane, 1,1-Dichloroethene, cis-1,2-Dichloroethene, trans-1,2-Dichloroethene, 1,2-Dichloropropane, 1,1-Dichloropropene, 1,3-Dichloropropane, cis-1,3-Dichloropropene, trans-1,3-Dichloropropene, 2,2-Dichloropropane, Di-isopropyl ether.

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

AZ -0612, MN - 047-999-395, NY - 11742, NJ - TN002, WI - 998093910



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REPORT OF ANALYSIS

July 01, 2014

Jason Cooper
 GEC - Macon, GA
 514 Hillcrest Industrial Blvd.
 Macon, GA 31204

ESC Sample # : L706684-03

Date Received : June 25, 2014
 Description : Mercer

Site ID : MACON, GA

Sample ID : MWA-2

Project # : 090698.340

Collected By : Anthony Whipple
 Collection Date : 06/23/14 12:05

Parameter	Result	Det. Limit	Units	Method	Date/Time	Analyst	Dil.
Ethylbenzene	BDL	1.0	ug/l	8260B	06/27/14 1911	JC	1
Hexachloro-1,3-butadiene	BDL	1.0	ug/l	8260B	06/27/14 1911	JC	1
Isopropylbenzene	BDL	1.0	ug/l	8260B	06/27/14 1911	JC	1
p-Isopropyltoluene	BDL	1.0	ug/l	8260B	06/27/14 1911	JC	1
2-Butanone (MEK)	BDL	10.	ug/l	8260B	06/27/14 1911	JC	1
Methylene Chloride	BDL	5.0	ug/l	8260B	06/27/14 1911	JC	1
4-Methyl-2-pentanone (MIBK)	BDL	10.	ug/l	8260B	06/27/14 1911	JC	1
Methyl tert-butyl ether	BDL	1.0	ug/l	8260B	06/27/14 1911	JC	1
Naphthalene	BDL	5.0	ug/l	8260B	06/27/14 1911	JC	1
n-Propylbenzene	BDL	1.0	ug/l	8260B	06/27/14 1911	JC	1
Styrene	BDL	1.0	ug/l	8260B	06/27/14 1911	JC	1
1,1,1,2-Tetrachloroethane	BDL	1.0	ug/l	8260B	06/27/14 1911	JC	1
1,1,2,2-Tetrachloroethane	BDL	1.0	ug/l	8260B	06/27/14 1911	JC	1
1,1,2-Trichlorotrifluoroethane	BDL	1.0	ug/l	8260B	06/27/14 1911	JC	1
Tetrachloroethene	65.	1.0	ug/l	8260B	06/27/14 1911	JC	1
Toluene	BDL	5.0	ug/l	8260B	06/27/14 1911	JC	1
1,2,3-Trichlorobenzene	BDL	1.0	ug/l	8260B	06/27/14 1911	JC	1
1,2,4-Trichlorobenzene	BDL	1.0	ug/l	8260B	06/27/14 1911	JC	1
1,1,1-Trichloroethane	BDL	1.0	ug/l	8260B	06/27/14 1911	JC	1
1,1,2-Trichloroethane	BDL	1.0	ug/l	8260B	06/27/14 1911	JC	1
Trichloroethene	26.	1.0	ug/l	8260B	06/27/14 1911	JC	1
Trichlorofluoromethane	BDL	5.0	ug/l	8260B	06/27/14 1911	JC	1
1,2,3-Trichloropropane	BDL	2.5	ug/l	8260B	06/27/14 1911	JC	1
1,2,4-Trimethylbenzene	BDL	1.0	ug/l	8260B	06/27/14 1911	JC	1
1,2,3-Trimethylbenzene	BDL	1.0	ug/l	8260B	06/27/14 1911	JC	1
1,3,5-Trimethylbenzene	BDL	1.0	ug/l	8260B	06/27/14 1911	JC	1
Vinyl chloride	BDL	1.0	ug/l	8260B	06/27/14 1911	JC	1
Xylenes, Total	BDL	3.0	ug/l	8260B	06/27/14 1911	JC	1
Surrogate Recovery							
Toluene-d8	100.		% Rec.	8260B	06/27/14 1911	JC	1
Dibromofluoromethane	106.		% Rec.	8260B	06/27/14 1911	JC	1
4-Bromofluorobenzene	94.9		% Rec.	8260B	06/27/14 1911	JC	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit (PQL)

Laboratory Certification Numbers:

AIHA - 100789 , AL - 40660, CA - I-2327, CT- PH-0197, FL - E87487, GA - 923, IN - C-TN-01
 KY - 90010, KYUST-0016, NC - ENV375,DW21704, ND - R-140, SC - 84004, TN - 2006, VA - 00109, WV - 233
 AZ -0612, MN - 047-999-395, NY - 11742, NJ - TN002, WI - 998093910

Notes:

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REPORT OF ANALYSIS

July 01, 2014

Jason Cooper
 GEC - Macon, GA
 514 Hillcrest Industrial Blvd.
 Macon, GA 31204

ESC Sample # : L706684-04

Date Received : June 25, 2014
 Description : Mercer

Site ID : MACON, GA

Sample ID : MWB-4

Project # : 090698.340

Collected By : Anthony Whipple
 Collection Date : 06/23/14 15:55

Parameter	Result	Det. Limit	Units	Method	Date/Time	Analyst	Dil.
Volatile Organics							
Acetone	BDL	50.	ug/l	8260B	06/27/14 1931	JC	1
Acrolein	BDL	50.	ug/l	8260B	06/27/14 1931	JC	1
Acrylonitrile	BDL	10.	ug/l	8260B	06/27/14 1931	JC	1
Benzene	BDL	1.0	ug/l	8260B	06/27/14 1931	JC	1
Bromobenzene	BDL	1.0	ug/l	8260B	06/27/14 1931	JC	1
Bromodichloromethane	BDL	1.0	ug/l	8260B	06/27/14 1931	JC	1
Bromoform	BDL	1.0	ug/l	8260B	06/27/14 1931	JC	1
Bromomethane	BDL	5.0	ug/l	8260B	06/27/14 1931	JC	1
n-Butylbenzene	BDL	1.0	ug/l	8260B	06/27/14 1931	JC	1
sec-Butylbenzene	BDL	1.0	ug/l	8260B	06/27/14 1931	JC	1
tert-Butylbenzene	BDL	1.0	ug/l	8260B	06/27/14 1931	JC	1
Carbon tetrachloride	BDL	1.0	ug/l	8260B	06/27/14 1931	JC	1
Chlorobenzene	BDL	1.0	ug/l	8260B	06/27/14 1931	JC	1
Chlorodibromomethane	BDL	1.0	ug/l	8260B	06/27/14 1931	JC	1
Chloroethane	BDL	5.0	ug/l	8260B	06/27/14 1931	JC	1
2-Chloroethyl vinyl ether	BDL	50.	ug/l	8260B	06/27/14 1931	JC	1
Chloroform	BDL	5.0	ug/l	8260B	06/27/14 1931	JC	1
Chloromethane	BDL	2.5	ug/l	8260B	06/27/14 1931	JC	1
2-Chlorotoluene	BDL	1.0	ug/l	8260B	06/27/14 1931	JC	1
4-Chlorotoluene	BDL	1.0	ug/l	8260B	06/27/14 1931	JC	1
1,2-Dibromo-3-Chloropropane	BDL	5.0	ug/l	8260B	06/27/14 1931	JC	1
1,2-Dibromoethane	BDL	1.0	ug/l	8260B	06/27/14 1931	JC	1
Dibromomethane	BDL	1.0	ug/l	8260B	06/27/14 1931	JC	1
1,2-Dichlorobenzene	BDL	1.0	ug/l	8260B	06/27/14 1931	JC	1
1,3-Dichlorobenzene	BDL	1.0	ug/l	8260B	06/27/14 1931	JC	1
1,4-Dichlorobenzene	BDL	1.0	ug/l	8260B	06/27/14 1931	JC	1
Dichlorodifluoromethane	BDL	5.0	ug/l	8260B	06/27/14 1931	JC	1
1,1-Dichloroethane	BDL	1.0	ug/l	8260B	06/27/14 1931	JC	1
1,2-Dichloroethane	BDL	1.0	ug/l	8260B	06/27/14 1931	JC	1
1,1-Dichloroethene	BDL	1.0	ug/l	8260B	06/27/14 1931	JC	1
cis-1,2-Dichloroethene	BDL	1.0	ug/l	8260B	06/27/14 1931	JC	1
trans-1,2-Dichloroethene	BDL	1.0	ug/l	8260B	06/27/14 1931	JC	1
1,2-Dichloropropane	BDL	1.0	ug/l	8260B	06/27/14 1931	JC	1
1,1-Dichloropropene	BDL	1.0	ug/l	8260B	06/27/14 1931	JC	1
1,3-Dichloropropane	BDL	1.0	ug/l	8260B	06/27/14 1931	JC	1
cis-1,3-Dichloropropene	BDL	1.0	ug/l	8260B	06/27/14 1931	JC	1
trans-1,3-Dichloropropene	BDL	1.0	ug/l	8260B	06/27/14 1931	JC	1
2,2-Dichloropropane	BDL	1.0	ug/l	8260B	06/27/14 1931	JC	1
Di-isopropyl ether	BDL	1.0	ug/l	8260B	06/27/14 1931	JC	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

AZ -0612, MN - 047-999-395, NY - 11742, NJ - TN002, WI - 998093910



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REPORT OF ANALYSIS

July 01, 2014

Jason Cooper
GEC - Macon, GA
514 Hillcrest Industrial Blvd.
Macon, GA 31204

ESC Sample # : L706684-04

Date Received : June 25, 2014
Description : Mercer

Site ID : MACON, GA

Sample ID : MWB-4

Project # : 090698.340

Collected By : Anthony Whipple
Collection Date : 06/23/14 15:55

Table with columns: Parameter, Result, Det. Limit, Units, Method, Date/Time, Analyst, Dil. Lists various chemical parameters and their detection results.

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit (PQL)

Laboratory Certification Numbers:

AIHA - 100789, AL - 40660, CA - I-2327, CT- PH-0197, FL - E87487, GA - 923, IN - C-TN-01
KY - 90010, KYUST-0016, NC - ENV375, DW21704, ND - R-140, SC - 84004, TN - 2006, VA - 00109, WV - 233
AZ -0612, MN - 047-999-395, NY - 11742, NJ - TN002, WI - 998093910

Notes:

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Reported: 06/30/14 14:31 Revised: 07/01/14 07:58



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REPORT OF ANALYSIS

July 01, 2014

Jason Cooper
GEC - Macon, GA
514 Hillcrest Industrial Blvd.
Macon, GA 31204

ESC Sample # : L706684-05

Date Received : June 25, 2014
Description : Mercer

Site ID : MACON, GA

Sample ID : MW-14

Project # : 090698.340

Collected By : Anthony Whipple
Collection Date : 06/23/14 14:35

Table with 8 columns: Parameter, Result, Det. Limit, Units, Method, Date/Time, Analyst, Dil. Rows include Volatile Organics, Acetone, Acrolein, Acrylonitrile, Benzene, Bromobenzene, Bromodichloromethane, Bromoform, Bromomethane, n-Butylbenzene, sec-Butylbenzene, tert-Butylbenzene, Carbon tetrachloride, Chlorobenzene, Chlorodibromomethane, Chloroethane, 2-Chloroethyl vinyl ether, Chloroform, Chloromethane, 2-Chlorotoluene, 4-Chlorotoluene, 1,2-Dibromo-3-Chloropropane, 1,2-Dibromoethane, Dibromomethane, 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, Dichlorodifluoromethane, 1,1-Dichloroethane, 1,2-Dichloroethane, 1,1-Dichloroethene, cis-1,2-Dichloroethene, trans-1,2-Dichloroethene, 1,2-Dichloropropane, 1,1-Dichloropropene, 1,3-Dichloropropane, cis-1,3-Dichloropropene, trans-1,3-Dichloropropene, 2,2-Dichloropropane, Di-isopropyl ether.

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

AZ -0612, MN - 047-999-395, NY - 11742, NJ - TN002, WI - 998093910



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REPORT OF ANALYSIS

July 01, 2014

Jason Cooper
GEC - Macon, GA
514 Hillcrest Industrial Blvd.
Macon, GA 31204

ESC Sample # : L706684-05

Date Received : June 25, 2014
Description : Mercer

Site ID : MACON, GA

Sample ID : MW-14

Project # : 090698.340

Collected By : Anthony Whipple
Collection Date : 06/23/14 14:35

Table with 10 columns: Parameter, Result, Det. Limit, Units, Method, Date/Time, Analyst, Dil. Rows include various chemical compounds like Ethylbenzene, Hexachloro-1,3-butadiene, etc.

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Laboratory Certification Numbers:

AIHA - 100789 , AL - 40660, CA - I-2327, CT- PH-0197, FL - E87487, GA - 923, IN - C-TN-01
KY - 90010, KYUST-0016, NC - ENV375,DW21704, ND - R-140, SC - 84004, TN - 2006, VA - 00109, WV - 233
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Notes:

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REPORT OF ANALYSIS

July 01, 2014

Jason Cooper
 GEC - Macon, GA
 514 Hillcrest Industrial Blvd.
 Macon, GA 31204

ESC Sample # : L706684-06

Date Received : June 25, 2014
 Description : Mercer

Site ID : MACON, GA

Sample ID : MW-9

Project # : 090698.340

Collected By : Anthony Whipple
 Collection Date : 06/24/14 08:11

Parameter	Result	Det. Limit	Units	Method	Date/Time	Analyst	Dil.
Volatile Organics							
Acetone	BDL	50.	ug/l	8260B	06/27/14 2010	JC	1
Acrolein	BDL	50.	ug/l	8260B	06/27/14 2010	JC	1
Acrylonitrile	BDL	10.	ug/l	8260B	06/27/14 2010	JC	1
Benzene	BDL	1.0	ug/l	8260B	06/27/14 2010	JC	1
Bromobenzene	BDL	1.0	ug/l	8260B	06/27/14 2010	JC	1
Bromodichloromethane	BDL	1.0	ug/l	8260B	06/27/14 2010	JC	1
Bromoform	BDL	1.0	ug/l	8260B	06/27/14 2010	JC	1
Bromomethane	BDL	5.0	ug/l	8260B	06/27/14 2010	JC	1
n-Butylbenzene	BDL	1.0	ug/l	8260B	06/27/14 2010	JC	1
sec-Butylbenzene	BDL	1.0	ug/l	8260B	06/27/14 2010	JC	1
tert-Butylbenzene	BDL	1.0	ug/l	8260B	06/27/14 2010	JC	1
Carbon tetrachloride	BDL	1.0	ug/l	8260B	06/27/14 2010	JC	1
Chlorobenzene	BDL	1.0	ug/l	8260B	06/27/14 2010	JC	1
Chlorodibromomethane	BDL	1.0	ug/l	8260B	06/27/14 2010	JC	1
Chloroethane	BDL	5.0	ug/l	8260B	06/27/14 2010	JC	1
2-Chloroethyl vinyl ether	BDL	50.	ug/l	8260B	06/27/14 2010	JC	1
Chloroform	BDL	5.0	ug/l	8260B	06/27/14 2010	JC	1
Chloromethane	BDL	2.5	ug/l	8260B	06/27/14 2010	JC	1
2-Chlorotoluene	BDL	1.0	ug/l	8260B	06/27/14 2010	JC	1
4-Chlorotoluene	BDL	1.0	ug/l	8260B	06/27/14 2010	JC	1
1,2-Dibromo-3-Chloropropane	BDL	5.0	ug/l	8260B	06/27/14 2010	JC	1
1,2-Dibromoethane	BDL	1.0	ug/l	8260B	06/27/14 2010	JC	1
Dibromomethane	BDL	1.0	ug/l	8260B	06/27/14 2010	JC	1
1,2-Dichlorobenzene	BDL	1.0	ug/l	8260B	06/27/14 2010	JC	1
1,3-Dichlorobenzene	BDL	1.0	ug/l	8260B	06/27/14 2010	JC	1
1,4-Dichlorobenzene	BDL	1.0	ug/l	8260B	06/27/14 2010	JC	1
Dichlorodifluoromethane	BDL	5.0	ug/l	8260B	06/27/14 2010	JC	1
1,1-Dichloroethane	BDL	1.0	ug/l	8260B	06/27/14 2010	JC	1
1,2-Dichloroethane	BDL	1.0	ug/l	8260B	06/27/14 2010	JC	1
1,1-Dichloroethene	BDL	1.0	ug/l	8260B	06/27/14 2010	JC	1
cis-1,2-Dichloroethene	BDL	1.0	ug/l	8260B	06/27/14 2010	JC	1
trans-1,2-Dichloroethene	BDL	1.0	ug/l	8260B	06/27/14 2010	JC	1
1,2-Dichloropropane	BDL	1.0	ug/l	8260B	06/27/14 2010	JC	1
1,1-Dichloropropene	BDL	1.0	ug/l	8260B	06/27/14 2010	JC	1
1,3-Dichloropropane	BDL	1.0	ug/l	8260B	06/27/14 2010	JC	1
cis-1,3-Dichloropropene	BDL	1.0	ug/l	8260B	06/27/14 2010	JC	1
trans-1,3-Dichloropropene	BDL	1.0	ug/l	8260B	06/27/14 2010	JC	1
2,2-Dichloropropane	BDL	1.0	ug/l	8260B	06/27/14 2010	JC	1
Di-isopropyl ether	BDL	1.0	ug/l	8260B	06/27/14 2010	JC	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

AZ -0612, MN - 047-999-395, NY - 11742, NJ - TN002, WI - 998093910



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REPORT OF ANALYSIS

July 01, 2014

Jason Cooper
 GEC - Macon, GA
 514 Hillcrest Industrial Blvd.
 Macon, GA 31204

ESC Sample # : L706684-06

Date Received : June 25, 2014
 Description : Mercer

Site ID : MACON, GA

Sample ID : MW-9

Project # : 090698.340

Collected By : Anthony Whipple
 Collection Date : 06/24/14 08:11

Parameter	Result	Det. Limit	Units	Method	Date/Time	Analyst	Dil.
Ethylbenzene	BDL	1.0	ug/l	8260B	06/27/14 2010	JC	1
Hexachloro-1,3-butadiene	BDL	1.0	ug/l	8260B	06/27/14 2010	JC	1
Isopropylbenzene	BDL	1.0	ug/l	8260B	06/27/14 2010	JC	1
p-Isopropyltoluene	BDL	1.0	ug/l	8260B	06/27/14 2010	JC	1
2-Butanone (MEK)	BDL	10.	ug/l	8260B	06/27/14 2010	JC	1
Methylene Chloride	BDL	5.0	ug/l	8260B	06/27/14 2010	JC	1
4-Methyl-2-pentanone (MIBK)	BDL	10.	ug/l	8260B	06/27/14 2010	JC	1
Methyl tert-butyl ether	BDL	1.0	ug/l	8260B	06/27/14 2010	JC	1
Naphthalene	BDL	5.0	ug/l	8260B	06/27/14 2010	JC	1
n-Propylbenzene	BDL	1.0	ug/l	8260B	06/27/14 2010	JC	1
Styrene	BDL	1.0	ug/l	8260B	06/27/14 2010	JC	1
1,1,1,2-Tetrachloroethane	BDL	1.0	ug/l	8260B	06/27/14 2010	JC	1
1,1,2,2-Tetrachloroethane	BDL	1.0	ug/l	8260B	06/27/14 2010	JC	1
1,1,2-Trichlorotrifluoroethane	BDL	1.0	ug/l	8260B	06/27/14 2010	JC	1
Tetrachloroethene	1.9	1.0	ug/l	8260B	06/27/14 2010	JC	1
Toluene	BDL	5.0	ug/l	8260B	06/27/14 2010	JC	1
1,2,3-Trichlorobenzene	BDL	1.0	ug/l	8260B	06/27/14 2010	JC	1
1,2,4-Trichlorobenzene	BDL	1.0	ug/l	8260B	06/27/14 2010	JC	1
1,1,1-Trichloroethane	BDL	1.0	ug/l	8260B	06/27/14 2010	JC	1
1,1,2-Trichloroethane	BDL	1.0	ug/l	8260B	06/27/14 2010	JC	1
Trichloroethene	BDL	1.0	ug/l	8260B	06/27/14 2010	JC	1
Trichlorofluoromethane	BDL	5.0	ug/l	8260B	06/27/14 2010	JC	1
1,2,3-Trichloropropane	BDL	2.5	ug/l	8260B	06/27/14 2010	JC	1
1,2,4-Trimethylbenzene	BDL	1.0	ug/l	8260B	06/27/14 2010	JC	1
1,2,3-Trimethylbenzene	BDL	1.0	ug/l	8260B	06/27/14 2010	JC	1
1,3,5-Trimethylbenzene	BDL	1.0	ug/l	8260B	06/27/14 2010	JC	1
Vinyl chloride	BDL	1.0	ug/l	8260B	06/27/14 2010	JC	1
Xylenes, Total	BDL	3.0	ug/l	8260B	06/27/14 2010	JC	1
Surrogate Recovery							
Toluene-d8	101.		% Rec.	8260B	06/27/14 2010	JC	1
Dibromofluoromethane	107.		% Rec.	8260B	06/27/14 2010	JC	1
4-Bromofluorobenzene	95.9		% Rec.	8260B	06/27/14 2010	JC	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit (PQL)

Laboratory Certification Numbers:

AIHA - 100789 , AL - 40660, CA - I-2327, CT- PH-0197, FL - E87487, GA - 923, IN - C-TN-01
 KY - 90010, KYUST-0016, NC - ENV375,DW21704, ND - R-140, SC - 84004, TN - 2006, VA - 00109, WV - 233
 AZ -0612, MN - 047-999-395, NY - 11742, NJ - TN002, WI - 998093910

Notes:

The reported analytical results relate only to the sample submitted
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 All samples analyzed in accordance with 40 CFR, Part 136.3
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REPORT OF ANALYSIS

July 01, 2014

Jason Cooper
 GEC - Macon, GA
 514 Hillcrest Industrial Blvd.
 Macon, GA 31204

ESC Sample # : L706684-07

Date Received : June 25, 2014
 Description : Mercer

Site ID : MACON, GA

Sample ID : MWD-6

Project # : 090698.340

Collected By : Anthony Whipple
 Collection Date : 06/24/14 10:00

Parameter	Result	Det. Limit	Units	Method	Date/Time	Analyst	Dil.
Volatile Organics							
Acetone	BDL	50.	ug/l	8260B	06/27/14 2029	JC	1
Acrolein	BDL	50.	ug/l	8260B	06/27/14 2029	JC	1
Acrylonitrile	BDL	10.	ug/l	8260B	06/27/14 2029	JC	1
Benzene	BDL	1.0	ug/l	8260B	06/27/14 2029	JC	1
Bromobenzene	BDL	1.0	ug/l	8260B	06/27/14 2029	JC	1
Bromodichloromethane	BDL	1.0	ug/l	8260B	06/27/14 2029	JC	1
Bromoform	BDL	1.0	ug/l	8260B	06/27/14 2029	JC	1
Bromomethane	BDL	5.0	ug/l	8260B	06/27/14 2029	JC	1
n-Butylbenzene	BDL	1.0	ug/l	8260B	06/27/14 2029	JC	1
sec-Butylbenzene	BDL	1.0	ug/l	8260B	06/27/14 2029	JC	1
tert-Butylbenzene	BDL	1.0	ug/l	8260B	06/27/14 2029	JC	1
Carbon tetrachloride	BDL	1.0	ug/l	8260B	06/27/14 2029	JC	1
Chlorobenzene	BDL	1.0	ug/l	8260B	06/27/14 2029	JC	1
Chlorodibromomethane	BDL	1.0	ug/l	8260B	06/27/14 2029	JC	1
Chloroethane	BDL	5.0	ug/l	8260B	06/27/14 2029	JC	1
2-Chloroethyl vinyl ether	BDL	50.	ug/l	8260B	06/27/14 2029	JC	1
Chloroform	BDL	5.0	ug/l	8260B	06/27/14 2029	JC	1
Chloromethane	BDL	2.5	ug/l	8260B	06/27/14 2029	JC	1
2-Chlorotoluene	BDL	1.0	ug/l	8260B	06/27/14 2029	JC	1
4-Chlorotoluene	BDL	1.0	ug/l	8260B	06/27/14 2029	JC	1
1,2-Dibromo-3-Chloropropane	BDL	5.0	ug/l	8260B	06/27/14 2029	JC	1
1,2-Dibromoethane	BDL	1.0	ug/l	8260B	06/27/14 2029	JC	1
Dibromomethane	BDL	1.0	ug/l	8260B	06/27/14 2029	JC	1
1,2-Dichlorobenzene	BDL	1.0	ug/l	8260B	06/27/14 2029	JC	1
1,3-Dichlorobenzene	BDL	1.0	ug/l	8260B	06/27/14 2029	JC	1
1,4-Dichlorobenzene	BDL	1.0	ug/l	8260B	06/27/14 2029	JC	1
Dichlorodifluoromethane	BDL	5.0	ug/l	8260B	06/27/14 2029	JC	1
1,1-Dichloroethane	BDL	1.0	ug/l	8260B	06/27/14 2029	JC	1
1,2-Dichloroethane	BDL	1.0	ug/l	8260B	06/27/14 2029	JC	1
1,1-Dichloroethene	BDL	1.0	ug/l	8260B	06/27/14 2029	JC	1
cis-1,2-Dichloroethene	14.	1.0	ug/l	8260B	06/27/14 2029	JC	1
trans-1,2-Dichloroethene	BDL	1.0	ug/l	8260B	06/27/14 2029	JC	1
1,2-Dichloropropane	BDL	1.0	ug/l	8260B	06/27/14 2029	JC	1
1,1-Dichloropropene	BDL	1.0	ug/l	8260B	06/27/14 2029	JC	1
1,3-Dichloropropane	BDL	1.0	ug/l	8260B	06/27/14 2029	JC	1
cis-1,3-Dichloropropene	BDL	1.0	ug/l	8260B	06/27/14 2029	JC	1
trans-1,3-Dichloropropene	BDL	1.0	ug/l	8260B	06/27/14 2029	JC	1
2,2-Dichloropropane	BDL	1.0	ug/l	8260B	06/27/14 2029	JC	1
Di-isopropyl ether	BDL	1.0	ug/l	8260B	06/27/14 2029	JC	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

AZ -0612, MN - 047-999-395, NY - 11742, NJ - TN002, WI - 998093910



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REPORT OF ANALYSIS

July 01, 2014

Jason Cooper
 GEC - Macon, GA
 514 Hillcrest Industrial Blvd.
 Macon, GA 31204

ESC Sample # : L706684-07

Date Received : June 25, 2014
 Description : Mercer

Site ID : MACON, GA

Sample ID : MWD-6

Project # : 090698.340

Collected By : Anthony Whipple
 Collection Date : 06/24/14 10:00

Parameter	Result	Det. Limit	Units	Method	Date/Time	Analyst	Dil.
Ethylbenzene	BDL	1.0	ug/l	8260B	06/27/14 2029	JC	1
Hexachloro-1,3-butadiene	BDL	1.0	ug/l	8260B	06/27/14 2029	JC	1
Isopropylbenzene	BDL	1.0	ug/l	8260B	06/27/14 2029	JC	1
p-Isopropyltoluene	BDL	1.0	ug/l	8260B	06/27/14 2029	JC	1
2-Butanone (MEK)	BDL	10.	ug/l	8260B	06/27/14 2029	JC	1
Methylene Chloride	BDL	5.0	ug/l	8260B	06/27/14 2029	JC	1
4-Methyl-2-pentanone (MIBK)	BDL	10.	ug/l	8260B	06/27/14 2029	JC	1
Methyl tert-butyl ether	BDL	1.0	ug/l	8260B	06/27/14 2029	JC	1
Naphthalene	BDL	5.0	ug/l	8260B	06/27/14 2029	JC	1
n-Propylbenzene	BDL	1.0	ug/l	8260B	06/27/14 2029	JC	1
Styrene	BDL	1.0	ug/l	8260B	06/27/14 2029	JC	1
1,1,1,2-Tetrachloroethane	BDL	1.0	ug/l	8260B	06/27/14 2029	JC	1
1,1,2,2-Tetrachloroethane	BDL	1.0	ug/l	8260B	06/27/14 2029	JC	1
1,1,2-Trichlorotrifluoroethane	BDL	1.0	ug/l	8260B	06/27/14 2029	JC	1
Tetrachloroethene	56.	1.0	ug/l	8260B	06/27/14 2029	JC	1
Toluene	BDL	5.0	ug/l	8260B	06/27/14 2029	JC	1
1,2,3-Trichlorobenzene	BDL	1.0	ug/l	8260B	06/27/14 2029	JC	1
1,2,4-Trichlorobenzene	BDL	1.0	ug/l	8260B	06/27/14 2029	JC	1
1,1,1-Trichloroethane	BDL	1.0	ug/l	8260B	06/27/14 2029	JC	1
1,1,2-Trichloroethane	BDL	1.0	ug/l	8260B	06/27/14 2029	JC	1
Trichloroethene	20.	1.0	ug/l	8260B	06/27/14 2029	JC	1
Trichlorofluoromethane	BDL	5.0	ug/l	8260B	06/27/14 2029	JC	1
1,2,3-Trichloropropane	BDL	2.5	ug/l	8260B	06/27/14 2029	JC	1
1,2,4-Trimethylbenzene	BDL	1.0	ug/l	8260B	06/27/14 2029	JC	1
1,2,3-Trimethylbenzene	BDL	1.0	ug/l	8260B	06/27/14 2029	JC	1
1,3,5-Trimethylbenzene	BDL	1.0	ug/l	8260B	06/27/14 2029	JC	1
Vinyl chloride	BDL	1.0	ug/l	8260B	06/27/14 2029	JC	1
Xylenes, Total	BDL	3.0	ug/l	8260B	06/27/14 2029	JC	1
Surrogate Recovery							
Toluene-d8	100.		% Rec.	8260B	06/27/14 2029	JC	1
Dibromofluoromethane	109.		% Rec.	8260B	06/27/14 2029	JC	1
4-Bromofluorobenzene	93.7		% Rec.	8260B	06/27/14 2029	JC	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit (PQL)

Laboratory Certification Numbers:

AIHA - 100789 , AL - 40660, CA - I-2327, CT- PH-0197, FL - E87487, GA - 923, IN - C-TN-01
 KY - 90010, KYUST-0016, NC - ENV375, DW21704, ND - R-140, SC - 84004, TN - 2006, VA - 00109, WV - 233
 AZ -0612, MN - 047-999-395, NY - 11742, NJ - TN002, WI - 998093910

Notes:

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REPORT OF ANALYSIS

July 01, 2014

Jason Cooper
GEC - Macon, GA
514 Hillcrest Industrial Blvd.
Macon, GA 31204

ESC Sample # : L706684-08

Date Received : June 25, 2014
Description : Mercer

Site ID : MACON, GA

Sample ID : MW-13

Project # : 090698.340

Collected By : Anthony Whipple
Collection Date : 06/24/14 11:05

Table with columns: Parameter, Result, Det. Limit, Units, Method, Date/Time, Analyst, Dil. Lists various organic compounds and their detection results.

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

AZ -0612, MN - 047-999-395, NY - 11742, NJ - TN002, WI - 998093910



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REPORT OF ANALYSIS

July 01, 2014

Jason Cooper
 GEC - Macon, GA
 514 Hillcrest Industrial Blvd.
 Macon, GA 31204

ESC Sample # : L706684-08

Date Received : June 25, 2014
 Description : Mercer

Site ID : MACON, GA

Sample ID : MW-13

Project # : 090698.340

Collected By : Anthony Whipple
 Collection Date : 06/24/14 11:05

Parameter	Result	Det. Limit	Units	Method	Date/Time	Analyst	Dil.
Ethylbenzene	BDL	1.0	ug/l	8260B	06/27/14 2049	JC	1
Hexachloro-1,3-butadiene	BDL	1.0	ug/l	8260B	06/27/14 2049	JC	1
Isopropylbenzene	BDL	1.0	ug/l	8260B	06/27/14 2049	JC	1
p-Isopropyltoluene	BDL	1.0	ug/l	8260B	06/27/14 2049	JC	1
2-Butanone (MEK)	BDL	10.	ug/l	8260B	06/27/14 2049	JC	1
Methylene Chloride	BDL	5.0	ug/l	8260B	06/27/14 2049	JC	1
4-Methyl-2-pentanone (MIBK)	BDL	10.	ug/l	8260B	06/27/14 2049	JC	1
Methyl tert-butyl ether	BDL	1.0	ug/l	8260B	06/27/14 2049	JC	1
Naphthalene	BDL	5.0	ug/l	8260B	06/27/14 2049	JC	1
n-Propylbenzene	BDL	1.0	ug/l	8260B	06/27/14 2049	JC	1
Styrene	BDL	1.0	ug/l	8260B	06/27/14 2049	JC	1
1,1,1,2-Tetrachloroethane	BDL	1.0	ug/l	8260B	06/27/14 2049	JC	1
1,1,2,2-Tetrachloroethane	BDL	1.0	ug/l	8260B	06/27/14 2049	JC	1
1,1,2-Trichlorotrifluoroethane	BDL	1.0	ug/l	8260B	06/27/14 2049	JC	1
Tetrachloroethene	36.	1.0	ug/l	8260B	06/27/14 2049	JC	1
Toluene	BDL	5.0	ug/l	8260B	06/27/14 2049	JC	1
1,2,3-Trichlorobenzene	BDL	1.0	ug/l	8260B	06/27/14 2049	JC	1
1,2,4-Trichlorobenzene	BDL	1.0	ug/l	8260B	06/27/14 2049	JC	1
1,1,1-Trichloroethane	BDL	1.0	ug/l	8260B	06/27/14 2049	JC	1
1,1,2-Trichloroethane	BDL	1.0	ug/l	8260B	06/27/14 2049	JC	1
Trichloroethene	13.	1.0	ug/l	8260B	06/27/14 2049	JC	1
Trichlorofluoromethane	BDL	5.0	ug/l	8260B	06/27/14 2049	JC	1
1,2,3-Trichloropropane	BDL	2.5	ug/l	8260B	06/27/14 2049	JC	1
1,2,4-Trimethylbenzene	BDL	1.0	ug/l	8260B	06/27/14 2049	JC	1
1,2,3-Trimethylbenzene	BDL	1.0	ug/l	8260B	06/27/14 2049	JC	1
1,3,5-Trimethylbenzene	BDL	1.0	ug/l	8260B	06/27/14 2049	JC	1
Vinyl chloride	BDL	1.0	ug/l	8260B	06/27/14 2049	JC	1
Xylenes, Total	BDL	3.0	ug/l	8260B	06/27/14 2049	JC	1
Surrogate Recovery							
Toluene-d8	101.		% Rec.	8260B	06/27/14 2049	JC	1
Dibromofluoromethane	107.		% Rec.	8260B	06/27/14 2049	JC	1
4-Bromofluorobenzene	95.2		% Rec.	8260B	06/27/14 2049	JC	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit (PQL)

Laboratory Certification Numbers:

AIHA - 100789 , AL - 40660, CA - I-2327, CT- PH-0197, FL - E87487, GA - 923, IN - C-TN-01
 KY - 90010, KYUST-0016, NC - ENV375, DW21704, ND - R-140, SC - 84004, TN - 2006, VA - 00109, WV - 233
 AZ -0612, MN - 047-999-395, NY - 11742, NJ - TN002, WI - 998093910

Notes:

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REPORT OF ANALYSIS

July 01, 2014

Jason Cooper
 GEC - Macon, GA
 514 Hillcrest Industrial Blvd.
 Macon, GA 31204

ESC Sample # : L706684-09

Date Received : June 25, 2014
 Description : Mercer

Site ID : MACON, GA

Sample ID : MW-10

Project # : 090698.340

Collected By : Anthony Whipple
 Collection Date : 06/24/14 11:47

Parameter	Result	Det. Limit	Units	Method	Date/Time	Analyst	Dil.
Volatile Organics							
Acetone	BDL	50.	ug/l	8260B	06/27/14 2108	JC	1
Acrolein	BDL	50.	ug/l	8260B	06/27/14 2108	JC	1
Acrylonitrile	BDL	10.	ug/l	8260B	06/27/14 2108	JC	1
Benzene	BDL	1.0	ug/l	8260B	06/27/14 2108	JC	1
Bromobenzene	BDL	1.0	ug/l	8260B	06/27/14 2108	JC	1
Bromodichloromethane	BDL	1.0	ug/l	8260B	06/27/14 2108	JC	1
Bromoform	BDL	1.0	ug/l	8260B	06/27/14 2108	JC	1
Bromomethane	BDL	5.0	ug/l	8260B	06/27/14 2108	JC	1
n-Butylbenzene	BDL	1.0	ug/l	8260B	06/27/14 2108	JC	1
sec-Butylbenzene	BDL	1.0	ug/l	8260B	06/27/14 2108	JC	1
tert-Butylbenzene	BDL	1.0	ug/l	8260B	06/27/14 2108	JC	1
Carbon tetrachloride	BDL	1.0	ug/l	8260B	06/27/14 2108	JC	1
Chlorobenzene	BDL	1.0	ug/l	8260B	06/27/14 2108	JC	1
Chlorodibromomethane	BDL	1.0	ug/l	8260B	06/27/14 2108	JC	1
Chloroethane	BDL	5.0	ug/l	8260B	06/27/14 2108	JC	1
2-Chloroethyl vinyl ether	BDL	50.	ug/l	8260B	06/27/14 2108	JC	1
Chloroform	BDL	5.0	ug/l	8260B	06/27/14 2108	JC	1
Chloromethane	BDL	2.5	ug/l	8260B	06/27/14 2108	JC	1
2-Chlorotoluene	BDL	1.0	ug/l	8260B	06/27/14 2108	JC	1
4-Chlorotoluene	BDL	1.0	ug/l	8260B	06/27/14 2108	JC	1
1,2-Dibromo-3-Chloropropane	BDL	5.0	ug/l	8260B	06/27/14 2108	JC	1
1,2-Dibromoethane	BDL	1.0	ug/l	8260B	06/27/14 2108	JC	1
Dibromomethane	BDL	1.0	ug/l	8260B	06/27/14 2108	JC	1
1,2-Dichlorobenzene	BDL	1.0	ug/l	8260B	06/27/14 2108	JC	1
1,3-Dichlorobenzene	BDL	1.0	ug/l	8260B	06/27/14 2108	JC	1
1,4-Dichlorobenzene	BDL	1.0	ug/l	8260B	06/27/14 2108	JC	1
Dichlorodifluoromethane	BDL	5.0	ug/l	8260B	06/27/14 2108	JC	1
1,1-Dichloroethane	BDL	1.0	ug/l	8260B	06/27/14 2108	JC	1
1,2-Dichloroethane	BDL	1.0	ug/l	8260B	06/27/14 2108	JC	1
1,1-Dichloroethene	BDL	1.0	ug/l	8260B	06/27/14 2108	JC	1
cis-1,2-Dichloroethene	1.1	1.0	ug/l	8260B	06/27/14 2108	JC	1
trans-1,2-Dichloroethene	BDL	1.0	ug/l	8260B	06/27/14 2108	JC	1
1,2-Dichloropropane	BDL	1.0	ug/l	8260B	06/27/14 2108	JC	1
1,1-Dichloropropene	BDL	1.0	ug/l	8260B	06/27/14 2108	JC	1
1,3-Dichloropropane	BDL	1.0	ug/l	8260B	06/27/14 2108	JC	1
cis-1,3-Dichloropropene	BDL	1.0	ug/l	8260B	06/27/14 2108	JC	1
trans-1,3-Dichloropropene	BDL	1.0	ug/l	8260B	06/27/14 2108	JC	1
2,2-Dichloropropane	BDL	1.0	ug/l	8260B	06/27/14 2108	JC	1
Di-isopropyl ether	BDL	1.0	ug/l	8260B	06/27/14 2108	JC	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

AZ -0612, MN - 047-999-395, NY - 11742, NJ - TN002, WI - 998093910



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REPORT OF ANALYSIS

Jason Cooper
 GEC - Macon, GA
 514 Hillcrest Industrial Blvd.
 Macon, GA 31204

July 01, 2014

Date Received : June 25, 2014
 Description : Mercer

ESC Sample # : L706684-09

Sample ID : MW-10

Site ID : MACON, GA

Collected By : Anthony Whipple
 Collection Date : 06/24/14 11:47

Project # : 090698.340

Parameter	Result	Det. Limit	Units	Method	Date/Time	Analyst	Dil.
Ethylbenzene	BDL	1.0	ug/l	8260B	06/27/14 2108	JC	1
Hexachloro-1,3-butadiene	BDL	1.0	ug/l	8260B	06/27/14 2108	JC	1
Isopropylbenzene	BDL	1.0	ug/l	8260B	06/27/14 2108	JC	1
p-Isopropyltoluene	BDL	1.0	ug/l	8260B	06/27/14 2108	JC	1
2-Butanone (MEK)	BDL	10.	ug/l	8260B	06/27/14 2108	JC	1
Methylene Chloride	BDL	5.0	ug/l	8260B	06/27/14 2108	JC	1
4-Methyl-2-pentanone (MIBK)	BDL	10.	ug/l	8260B	06/27/14 2108	JC	1
Methyl tert-butyl ether	BDL	1.0	ug/l	8260B	06/27/14 2108	JC	1
Naphthalene	BDL	5.0	ug/l	8260B	06/27/14 2108	JC	1
n-Propylbenzene	BDL	1.0	ug/l	8260B	06/27/14 2108	JC	1
Styrene	BDL	1.0	ug/l	8260B	06/27/14 2108	JC	1
1,1,1,2-Tetrachloroethane	BDL	1.0	ug/l	8260B	06/27/14 2108	JC	1
1,1,2,2-Tetrachloroethane	BDL	1.0	ug/l	8260B	06/27/14 2108	JC	1
1,1,2-Trichlorotrifluoroethane	BDL	1.0	ug/l	8260B	06/27/14 2108	JC	1
Tetrachloroethene	30.	1.0	ug/l	8260B	06/27/14 2108	JC	1
Toluene	BDL	5.0	ug/l	8260B	06/27/14 2108	JC	1
1,2,3-Trichlorobenzene	BDL	1.0	ug/l	8260B	06/27/14 2108	JC	1
1,2,4-Trichlorobenzene	BDL	1.0	ug/l	8260B	06/27/14 2108	JC	1
1,1,1-Trichloroethane	BDL	1.0	ug/l	8260B	06/27/14 2108	JC	1
1,1,2-Trichloroethane	BDL	1.0	ug/l	8260B	06/27/14 2108	JC	1
Trichloroethene	4.9	1.0	ug/l	8260B	06/27/14 2108	JC	1
Trichlorofluoromethane	BDL	5.0	ug/l	8260B	06/27/14 2108	JC	1
1,2,3-Trichloropropane	BDL	2.5	ug/l	8260B	06/27/14 2108	JC	1
1,2,4-Trimethylbenzene	BDL	1.0	ug/l	8260B	06/27/14 2108	JC	1
1,2,3-Trimethylbenzene	BDL	1.0	ug/l	8260B	06/27/14 2108	JC	1
1,3,5-Trimethylbenzene	BDL	1.0	ug/l	8260B	06/27/14 2108	JC	1
Vinyl chloride	BDL	1.0	ug/l	8260B	06/27/14 2108	JC	1
Xylenes, Total	BDL	3.0	ug/l	8260B	06/27/14 2108	JC	1
Surrogate Recovery							
Toluene-d8	101.		% Rec.	8260B	06/27/14 2108	JC	1
Dibromofluoromethane	106.		% Rec.	8260B	06/27/14 2108	JC	1
4-Bromofluorobenzene	94.3		% Rec.	8260B	06/27/14 2108	JC	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit (PQL)

Laboratory Certification Numbers:

AIHA - 100789 , AL - 40660, CA - I-2327, CT- PH-0197, FL - E87487, GA - 923, IN - C-TN-01
 KY - 90010, KYUST-0016, NC - ENV375, DW21704, ND - R-140, SC - 84004, TN - 2006, VA - 00109, WV - 233
 AZ -0612, MN - 047-999-395, NY - 11742, NJ - TN002, WI - 998093910

Notes:

The reported analytical results relate only to the sample submitted
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 All samples analyzed in accordance with 40 CFR, Part 136.3
 Reported: 06/30/14 14:31 Revised: 07/01/14 07:58



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REPORT OF ANALYSIS

July 01, 2014

Jason Cooper
 GEC - Macon, GA
 514 Hillcrest Industrial Blvd.
 Macon, GA 31204

ESC Sample # : L706684-10

Date Received : June 25, 2014
 Description : Mercer

Site ID : MACON, GA

Sample ID : MW-15

Project # : 090698.340

Collected By : Anthony Whipple
 Collection Date : 06/24/14 14:07

Parameter	Result	Det. Limit	Units	Method	Date/Time	Analyst	Dil.
Volatile Organics							
Acetone	BDL	50.	ug/l	8260B	06/27/14 2128	JC	1
Acrolein	BDL	50.	ug/l	8260B	06/27/14 2128	JC	1
Acrylonitrile	BDL	10.	ug/l	8260B	06/27/14 2128	JC	1
Benzene	BDL	1.0	ug/l	8260B	06/27/14 2128	JC	1
Bromobenzene	BDL	1.0	ug/l	8260B	06/27/14 2128	JC	1
Bromodichloromethane	BDL	1.0	ug/l	8260B	06/27/14 2128	JC	1
Bromoform	BDL	1.0	ug/l	8260B	06/27/14 2128	JC	1
Bromomethane	BDL	5.0	ug/l	8260B	06/27/14 2128	JC	1
n-Butylbenzene	BDL	1.0	ug/l	8260B	06/27/14 2128	JC	1
sec-Butylbenzene	BDL	1.0	ug/l	8260B	06/27/14 2128	JC	1
tert-Butylbenzene	BDL	1.0	ug/l	8260B	06/27/14 2128	JC	1
Carbon tetrachloride	BDL	1.0	ug/l	8260B	06/27/14 2128	JC	1
Chlorobenzene	BDL	1.0	ug/l	8260B	06/27/14 2128	JC	1
Chlorodibromomethane	BDL	1.0	ug/l	8260B	06/27/14 2128	JC	1
Chloroethane	BDL	5.0	ug/l	8260B	06/27/14 2128	JC	1
2-Chloroethyl vinyl ether	BDL	50.	ug/l	8260B	06/27/14 2128	JC	1
Chloroform	BDL	5.0	ug/l	8260B	06/27/14 2128	JC	1
Chloromethane	BDL	2.5	ug/l	8260B	06/27/14 2128	JC	1
2-Chlorotoluene	BDL	1.0	ug/l	8260B	06/27/14 2128	JC	1
4-Chlorotoluene	BDL	1.0	ug/l	8260B	06/27/14 2128	JC	1
1,2-Dibromo-3-Chloropropane	BDL	5.0	ug/l	8260B	06/27/14 2128	JC	1
1,2-Dibromoethane	BDL	1.0	ug/l	8260B	06/27/14 2128	JC	1
Dibromomethane	BDL	1.0	ug/l	8260B	06/27/14 2128	JC	1
1,2-Dichlorobenzene	BDL	1.0	ug/l	8260B	06/27/14 2128	JC	1
1,3-Dichlorobenzene	BDL	1.0	ug/l	8260B	06/27/14 2128	JC	1
1,4-Dichlorobenzene	BDL	1.0	ug/l	8260B	06/27/14 2128	JC	1
Dichlorodifluoromethane	BDL	5.0	ug/l	8260B	06/27/14 2128	JC	1
1,1-Dichloroethane	BDL	1.0	ug/l	8260B	06/27/14 2128	JC	1
1,2-Dichloroethane	BDL	1.0	ug/l	8260B	06/27/14 2128	JC	1
1,1-Dichloroethene	BDL	1.0	ug/l	8260B	06/27/14 2128	JC	1
cis-1,2-Dichloroethene	BDL	1.0	ug/l	8260B	06/27/14 2128	JC	1
trans-1,2-Dichloroethene	BDL	1.0	ug/l	8260B	06/27/14 2128	JC	1
1,2-Dichloropropane	BDL	1.0	ug/l	8260B	06/27/14 2128	JC	1
1,1-Dichloropropene	BDL	1.0	ug/l	8260B	06/27/14 2128	JC	1
1,3-Dichloropropane	BDL	1.0	ug/l	8260B	06/27/14 2128	JC	1
cis-1,3-Dichloropropene	BDL	1.0	ug/l	8260B	06/27/14 2128	JC	1
trans-1,3-Dichloropropene	BDL	1.0	ug/l	8260B	06/27/14 2128	JC	1
2,2-Dichloropropane	BDL	1.0	ug/l	8260B	06/27/14 2128	JC	1
Di-isopropyl ether	BDL	1.0	ug/l	8260B	06/27/14 2128	JC	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

AZ -0612, MN - 047-999-395, NY - 11742, NJ - TN002, WI - 998093910



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REPORT OF ANALYSIS

July 01, 2014

Jason Cooper
 GEC - Macon, GA
 514 Hillcrest Industrial Blvd.
 Macon, GA 31204

ESC Sample # : L706684-10

Date Received : June 25, 2014
 Description : Mercer

Site ID : MACON, GA

Sample ID : MW-15

Project # : 090698.340

Collected By : Anthony Whipple
 Collection Date : 06/24/14 14:07

Parameter	Result	Det. Limit	Units	Method	Date/Time	Analyst	Dil.
Ethylbenzene	BDL	1.0	ug/l	8260B	06/27/14 2128	JC	1
Hexachloro-1,3-butadiene	BDL	1.0	ug/l	8260B	06/27/14 2128	JC	1
Isopropylbenzene	BDL	1.0	ug/l	8260B	06/27/14 2128	JC	1
p-Isopropyltoluene	BDL	1.0	ug/l	8260B	06/27/14 2128	JC	1
2-Butanone (MEK)	BDL	10.	ug/l	8260B	06/27/14 2128	JC	1
Methylene Chloride	BDL	5.0	ug/l	8260B	06/27/14 2128	JC	1
4-Methyl-2-pentanone (MIBK)	BDL	10.	ug/l	8260B	06/27/14 2128	JC	1
Methyl tert-butyl ether	BDL	1.0	ug/l	8260B	06/27/14 2128	JC	1
Naphthalene	BDL	5.0	ug/l	8260B	06/27/14 2128	JC	1
n-Propylbenzene	BDL	1.0	ug/l	8260B	06/27/14 2128	JC	1
Styrene	BDL	1.0	ug/l	8260B	06/27/14 2128	JC	1
1,1,1,2-Tetrachloroethane	BDL	1.0	ug/l	8260B	06/27/14 2128	JC	1
1,1,2,2-Tetrachloroethane	BDL	1.0	ug/l	8260B	06/27/14 2128	JC	1
1,1,2-Trichlorotrifluoroethane	BDL	1.0	ug/l	8260B	06/27/14 2128	JC	1
Tetrachloroethene	BDL	1.0	ug/l	8260B	06/27/14 2128	JC	1
Toluene	BDL	5.0	ug/l	8260B	06/27/14 2128	JC	1
1,2,3-Trichlorobenzene	BDL	1.0	ug/l	8260B	06/27/14 2128	JC	1
1,2,4-Trichlorobenzene	BDL	1.0	ug/l	8260B	06/27/14 2128	JC	1
1,1,1-Trichloroethane	BDL	1.0	ug/l	8260B	06/27/14 2128	JC	1
1,1,2-Trichloroethane	BDL	1.0	ug/l	8260B	06/27/14 2128	JC	1
Trichloroethene	BDL	1.0	ug/l	8260B	06/27/14 2128	JC	1
Trichlorofluoromethane	BDL	5.0	ug/l	8260B	06/27/14 2128	JC	1
1,2,3-Trichloropropane	BDL	2.5	ug/l	8260B	06/27/14 2128	JC	1
1,2,4-Trimethylbenzene	BDL	1.0	ug/l	8260B	06/27/14 2128	JC	1
1,2,3-Trimethylbenzene	BDL	1.0	ug/l	8260B	06/27/14 2128	JC	1
1,3,5-Trimethylbenzene	BDL	1.0	ug/l	8260B	06/27/14 2128	JC	1
Vinyl chloride	BDL	1.0	ug/l	8260B	06/27/14 2128	JC	1
Xylenes, Total	BDL	3.0	ug/l	8260B	06/27/14 2128	JC	1
Surrogate Recovery							
Toluene-d8	102.		% Rec.	8260B	06/27/14 2128	JC	1
Dibromofluoromethane	106.		% Rec.	8260B	06/27/14 2128	JC	1
4-Bromofluorobenzene	95.6		% Rec.	8260B	06/27/14 2128	JC	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit (PQL)

Laboratory Certification Numbers:

AIHA - 100789 , AL - 40660, CA - I-2327, CT- PH-0197, FL - E87487, GA - 923, IN - C-TN-01
 KY - 90010, KYUST-0016, NC - ENV375, DW21704, ND - R-140, SC - 84004, TN - 2006, VA - 00109, WV - 233
 AZ -0612, MN - 047-999-395, NY - 11742, NJ - TN002, WI - 998093910

Notes:

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Reported: 06/30/14 14:31 Revised: 07/01/14 07:58



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REPORT OF ANALYSIS

July 01, 2014

Jason Cooper
GEC - Macon, GA
514 Hillcrest Industrial Blvd.
Macon, GA 31204

ESC Sample # : L706684-11

Date Received : June 25, 2014
Description : Mercer

Site ID : MACON, GA

Sample ID : MW-12

Project # : 090698.340

Collected By : Anthony Whipple
Collection Date : 06/24/14 15:06

Table with columns: Parameter, Result, Det. Limit, Units, Method, Date/Time, Analyst Dil. Rows include Volatile Organics, Acetone, Acrolein, Acrylonitrile, Benzene, Bromobenzene, Bromodichloromethane, Bromoform, Bromomethane, n-Butylbenzene, sec-Butylbenzene, tert-Butylbenzene, Carbon tetrachloride, Chlorobenzene, Chlorodibromomethane, Chloroethane, 2-Chloroethyl vinyl ether, Chloroform, Chloromethane, 2-Chlorotoluene, 4-Chlorotoluene, 1,2-Dibromo-3-Chloropropane, 1,2-Dibromoethane, Dibromomethane, 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, Dichlorodifluoromethane, 1,1-Dichloroethane, 1,2-Dichloroethane, 1,1-Dichloroethene, cis-1,2-Dichloroethene, trans-1,2-Dichloroethene, 1,2-Dichloropropane, 1,1-Dichloropropene, 1,3-Dichloropropane, cis-1,3-Dichloropropene, trans-1,3-Dichloropropene, 2,2-Dichloropropane, Di-isopropyl ether.

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

AZ -0612, MN - 047-999-395, NY - 11742, NJ - TN002, WI - 998093910



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REPORT OF ANALYSIS

July 01, 2014

Jason Cooper
 GEC - Macon, GA
 514 Hillcrest Industrial Blvd.
 Macon, GA 31204

ESC Sample # : L706684-11

Date Received : June 25, 2014
 Description : Mercer

Site ID : MACON, GA

Sample ID : MW-12

Project # : 090698.340

Collected By : Anthony Whipple
 Collection Date : 06/24/14 15:06

Parameter	Result	Det. Limit	Units	Method	Date/Time	Analyst	Dil.
Ethylbenzene	BDL	1.0	ug/l	8260B	06/27/14 2148	JC	1
Hexachloro-1,3-butadiene	BDL	1.0	ug/l	8260B	06/27/14 2148	JC	1
Isopropylbenzene	BDL	1.0	ug/l	8260B	06/27/14 2148	JC	1
p-Isopropyltoluene	BDL	1.0	ug/l	8260B	06/27/14 2148	JC	1
2-Butanone (MEK)	BDL	10.	ug/l	8260B	06/27/14 2148	JC	1
Methylene Chloride	BDL	5.0	ug/l	8260B	06/27/14 2148	JC	1
4-Methyl-2-pentanone (MIBK)	BDL	10.	ug/l	8260B	06/27/14 2148	JC	1
Methyl tert-butyl ether	BDL	1.0	ug/l	8260B	06/27/14 2148	JC	1
Naphthalene	BDL	5.0	ug/l	8260B	06/27/14 2148	JC	1
n-Propylbenzene	BDL	1.0	ug/l	8260B	06/27/14 2148	JC	1
Styrene	BDL	1.0	ug/l	8260B	06/27/14 2148	JC	1
1,1,1,2-Tetrachloroethane	BDL	1.0	ug/l	8260B	06/27/14 2148	JC	1
1,1,2,2-Tetrachloroethane	BDL	1.0	ug/l	8260B	06/27/14 2148	JC	1
1,1,2-Trichlorotrifluoroethane	BDL	1.0	ug/l	8260B	06/27/14 2148	JC	1
Tetrachloroethene	7.2	1.0	ug/l	8260B	06/27/14 2148	JC	1
Toluene	BDL	5.0	ug/l	8260B	06/27/14 2148	JC	1
1,2,3-Trichlorobenzene	BDL	1.0	ug/l	8260B	06/27/14 2148	JC	1
1,2,4-Trichlorobenzene	BDL	1.0	ug/l	8260B	06/27/14 2148	JC	1
1,1,1-Trichloroethane	BDL	1.0	ug/l	8260B	06/27/14 2148	JC	1
1,1,2-Trichloroethane	BDL	1.0	ug/l	8260B	06/27/14 2148	JC	1
Trichloroethene	1.1	1.0	ug/l	8260B	06/27/14 2148	JC	1
Trichlorofluoromethane	BDL	5.0	ug/l	8260B	06/27/14 2148	JC	1
1,2,3-Trichloropropane	BDL	2.5	ug/l	8260B	06/27/14 2148	JC	1
1,2,4-Trimethylbenzene	BDL	1.0	ug/l	8260B	06/27/14 2148	JC	1
1,2,3-Trimethylbenzene	BDL	1.0	ug/l	8260B	06/27/14 2148	JC	1
1,3,5-Trimethylbenzene	BDL	1.0	ug/l	8260B	06/27/14 2148	JC	1
Vinyl chloride	BDL	1.0	ug/l	8260B	06/27/14 2148	JC	1
Xylenes, Total	BDL	3.0	ug/l	8260B	06/27/14 2148	JC	1
Surrogate Recovery							
Toluene-d8	101.		% Rec.	8260B	06/27/14 2148	JC	1
Dibromofluoromethane	106.		% Rec.	8260B	06/27/14 2148	JC	1
4-Bromofluorobenzene	94.8		% Rec.	8260B	06/27/14 2148	JC	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit (PQL)

Laboratory Certification Numbers:

AIHA - 100789 , AL - 40660, CA - I-2327, CT- PH-0197, FL - E87487, GA - 923, IN - C-TN-01
 KY - 90010, KYUST-0016, NC - ENV375, DW21704, ND - R-140, SC - 84004, TN - 2006, VA - 00109, WV - 233
 AZ -0612, MN - 047-999-395, NY - 11742, NJ - TN002, WI - 998093910

Notes:

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Reported: 06/30/14 14:31 Revised: 07/01/14 07:58



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REPORT OF ANALYSIS

July 01, 2014

Jason Cooper
 GEC - Macon, GA
 514 Hillcrest Industrial Blvd.
 Macon, GA 31204

ESC Sample # : L706684-12

Date Received : June 25, 2014
 Description : Mercer

Site ID : MACON, GA

Sample ID : MWA-8

Project # : 090698.340

Collected By : Anthony Whipple
 Collection Date : 06/24/14 16:14

Parameter	Result	Det. Limit	Units	Method	Date/Time	Analyst	Dil.
Volatile Organics							
Acetone	BDL	50.	ug/l	8260B	06/29/14 0930	JC	1
Acrolein	BDL	50.	ug/l	8260B	06/29/14 0930	JC	1
Acrylonitrile	BDL	10.	ug/l	8260B	06/29/14 0930	JC	1
Benzene	BDL	1.0	ug/l	8260B	06/29/14 0930	JC	1
Bromobenzene	BDL	1.0	ug/l	8260B	06/29/14 0930	JC	1
Bromodichloromethane	BDL	1.0	ug/l	8260B	06/29/14 0930	JC	1
Bromoform	BDL	1.0	ug/l	8260B	06/29/14 0930	JC	1
Bromomethane	BDL	5.0	ug/l	8260B	06/29/14 0930	JC	1
n-Butylbenzene	BDL	1.0	ug/l	8260B	06/29/14 0930	JC	1
sec-Butylbenzene	BDL	1.0	ug/l	8260B	06/29/14 0930	JC	1
tert-Butylbenzene	BDL	1.0	ug/l	8260B	06/29/14 0930	JC	1
Carbon tetrachloride	BDL	1.0	ug/l	8260B	06/29/14 0930	JC	1
Chlorobenzene	BDL	1.0	ug/l	8260B	06/29/14 0930	JC	1
Chlorodibromomethane	BDL	1.0	ug/l	8260B	06/29/14 0930	JC	1
Chloroethane	BDL	5.0	ug/l	8260B	06/29/14 0930	JC	1
2-Chloroethyl vinyl ether	BDL	50.	ug/l	8260B	06/29/14 0930	JC	1
Chloroform	BDL	5.0	ug/l	8260B	06/29/14 0930	JC	1
Chloromethane	BDL	2.5	ug/l	8260B	06/29/14 0930	JC	1
2-Chlorotoluene	BDL	1.0	ug/l	8260B	06/29/14 0930	JC	1
4-Chlorotoluene	BDL	1.0	ug/l	8260B	06/29/14 0930	JC	1
1,2-Dibromo-3-Chloropropane	BDL	5.0	ug/l	8260B	06/29/14 0930	JC	1
1,2-Dibromoethane	BDL	1.0	ug/l	8260B	06/29/14 0930	JC	1
Dibromomethane	BDL	1.0	ug/l	8260B	06/29/14 0930	JC	1
1,2-Dichlorobenzene	BDL	1.0	ug/l	8260B	06/29/14 0930	JC	1
1,3-Dichlorobenzene	BDL	1.0	ug/l	8260B	06/29/14 0930	JC	1
1,4-Dichlorobenzene	BDL	1.0	ug/l	8260B	06/29/14 0930	JC	1
Dichlorodifluoromethane	BDL	5.0	ug/l	8260B	06/29/14 0930	JC	1
1,1-Dichloroethane	BDL	1.0	ug/l	8260B	06/29/14 0930	JC	1
1,2-Dichloroethane	BDL	1.0	ug/l	8260B	06/29/14 0930	JC	1
1,1-Dichloroethene	BDL	1.0	ug/l	8260B	06/29/14 0930	JC	1
cis-1,2-Dichloroethene	BDL	1.0	ug/l	8260B	06/29/14 0930	JC	1
trans-1,2-Dichloroethene	BDL	1.0	ug/l	8260B	06/29/14 0930	JC	1
1,2-Dichloropropane	BDL	1.0	ug/l	8260B	06/29/14 0930	JC	1
1,1-Dichloropropene	BDL	1.0	ug/l	8260B	06/29/14 0930	JC	1
1,3-Dichloropropane	BDL	1.0	ug/l	8260B	06/29/14 0930	JC	1
cis-1,3-Dichloropropene	BDL	1.0	ug/l	8260B	06/29/14 0930	JC	1
trans-1,3-Dichloropropene	BDL	1.0	ug/l	8260B	06/29/14 0930	JC	1
2,2-Dichloropropane	BDL	1.0	ug/l	8260B	06/29/14 0930	JC	1
Di-isopropyl ether	BDL	1.0	ug/l	8260B	06/29/14 0930	JC	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

AZ -0612, MN - 047-999-395, NY - 11742, NJ - TN002, WI - 998093910



12065 Lebanon Rd.
 Mt. Juliet, TN 37122
 (615) 758-5858
 1-800-767-5859
 Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

July 01, 2014

Jason Cooper
 GEC - Macon, GA
 514 Hillcrest Industrial Blvd.
 Macon, GA 31204

ESC Sample # : L706684-12

Date Received : June 25, 2014
 Description : Mercer

Site ID : MACON, GA

Sample ID : MWA-8

Project # : 090698.340

Collected By : Anthony Whipple
 Collection Date : 06/24/14 16:14

Parameter	Result	Det. Limit	Units	Method	Date/Time	Analyst	Dil.
Ethylbenzene	BDL	1.0	ug/l	8260B	06/29/14 0930	JC	1
Hexachloro-1,3-butadiene	BDL	1.0	ug/l	8260B	06/29/14 0930	JC	1
Isopropylbenzene	BDL	1.0	ug/l	8260B	06/29/14 0930	JC	1
p-Isopropyltoluene	BDL	1.0	ug/l	8260B	06/29/14 0930	JC	1
2-Butanone (MEK)	BDL	10.	ug/l	8260B	06/29/14 0930	JC	1
Methylene Chloride	BDL	5.0	ug/l	8260B	06/29/14 0930	JC	1
4-Methyl-2-pentanone (MIBK)	BDL	10.	ug/l	8260B	06/29/14 0930	JC	1
Methyl tert-butyl ether	BDL	1.0	ug/l	8260B	06/29/14 0930	JC	1
Naphthalene	BDL	5.0	ug/l	8260B	06/29/14 0930	JC	1
n-Propylbenzene	BDL	1.0	ug/l	8260B	06/29/14 0930	JC	1
Styrene	BDL	1.0	ug/l	8260B	06/29/14 0930	JC	1
1,1,1,2-Tetrachloroethane	BDL	1.0	ug/l	8260B	06/29/14 0930	JC	1
1,1,2,2-Tetrachloroethane	BDL	1.0	ug/l	8260B	06/29/14 0930	JC	1
1,1,2-Trichlorotrifluoroethane	BDL	1.0	ug/l	8260B	06/29/14 0930	JC	1
Tetrachloroethene	BDL	1.0	ug/l	8260B	06/29/14 0930	JC	1
Toluene	BDL	5.0	ug/l	8260B	06/29/14 0930	JC	1
1,2,3-Trichlorobenzene	BDL	1.0	ug/l	8260B	06/29/14 0930	JC	1
1,2,4-Trichlorobenzene	BDL	1.0	ug/l	8260B	06/29/14 0930	JC	1
1,1,1-Trichloroethane	BDL	1.0	ug/l	8260B	06/29/14 0930	JC	1
1,1,2-Trichloroethane	BDL	1.0	ug/l	8260B	06/29/14 0930	JC	1
Trichloroethene	BDL	1.0	ug/l	8260B	06/29/14 0930	JC	1
Trichlorofluoromethane	BDL	5.0	ug/l	8260B	06/29/14 0930	JC	1
1,2,3-Trichloropropane	BDL	2.5	ug/l	8260B	06/29/14 0930	JC	1
1,2,4-Trimethylbenzene	BDL	1.0	ug/l	8260B	06/29/14 0930	JC	1
1,2,3-Trimethylbenzene	BDL	1.0	ug/l	8260B	06/29/14 0930	JC	1
1,3,5-Trimethylbenzene	BDL	1.0	ug/l	8260B	06/29/14 0930	JC	1
Vinyl chloride	BDL	1.0	ug/l	8260B	06/29/14 0930	JC	1
Xylenes, Total	BDL	3.0	ug/l	8260B	06/29/14 0930	JC	1
Surrogate Recovery							
Toluene-d8	96.5		% Rec.	8260B	06/29/14 0930	JC	1
Dibromofluoromethane	97.3		% Rec.	8260B	06/29/14 0930	JC	1
4-Bromofluorobenzene	90.4		% Rec.	8260B	06/29/14 0930	JC	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit (PQL)

Laboratory Certification Numbers:

AIHA - 100789 , AL - 40660, CA - I-2327, CT- PH-0197, FL - E87487, GA - 923, IN - C-TN-01
 KY - 90010, KYUST-0016, NC - ENV375, DW21704, ND - R-140, SC - 84004, TN - 2006, VA - 00109, WV - 233
 AZ -0612, MN - 047-999-395, NY - 11742, NJ - TN002, WI - 998093910

Notes:

The reported analytical results relate only to the sample submitted
 This report shall not be reproduced, except in full, without the written approval from ESC.
 All samples analyzed in accordance with 40 CFR, Part 136.3

Reported: 06/30/14 14:31 Revised: 07/01/14 07:58

Summary of Remarks For Samples Printed
07/01/14 at 07:58:37

TSR Signing Reports: 350
R5 - Desired TAT

Always include HG on AP2 metals

Sample: L706684-01 Account: GEOSCIGA Received: 06/25/14 09:00 Due Date: 07/02/14 00:00 RPT Date: 06/30/14 14:31
Sample: L706684-02 Account: GEOSCIGA Received: 06/25/14 09:00 Due Date: 07/02/14 00:00 RPT Date: 06/30/14 14:31
Sample: L706684-03 Account: GEOSCIGA Received: 06/25/14 09:00 Due Date: 07/02/14 00:00 RPT Date: 06/30/14 14:31
Sample: L706684-04 Account: GEOSCIGA Received: 06/25/14 09:00 Due Date: 07/02/14 00:00 RPT Date: 06/30/14 14:31
Sample: L706684-05 Account: GEOSCIGA Received: 06/25/14 09:00 Due Date: 07/02/14 00:00 RPT Date: 06/30/14 14:31
Sample: L706684-06 Account: GEOSCIGA Received: 06/25/14 09:00 Due Date: 07/02/14 00:00 RPT Date: 06/30/14 14:31
Sample: L706684-07 Account: GEOSCIGA Received: 06/25/14 09:00 Due Date: 07/02/14 00:00 RPT Date: 06/30/14 14:31
Sample: L706684-08 Account: GEOSCIGA Received: 06/25/14 09:00 Due Date: 07/02/14 00:00 RPT Date: 06/30/14 14:31
Sample: L706684-09 Account: GEOSCIGA Received: 06/25/14 09:00 Due Date: 07/02/14 00:00 RPT Date: 06/30/14 14:31
Sample: L706684-10 Account: GEOSCIGA Received: 06/25/14 09:00 Due Date: 07/02/14 00:00 RPT Date: 06/30/14 14:31
Sample: L706684-11 Account: GEOSCIGA Received: 06/25/14 09:00 Due Date: 07/02/14 00:00 RPT Date: 06/30/14 14:31
Sample: L706684-12 Account: GEOSCIGA Received: 06/25/14 09:00 Due Date: 07/02/14 00:00 RPT Date: 06/30/14 14:31



12065 Lebanon Road
Mt. Juliet, TN 37122

Phone: (800) 767-5859
Phone: (615) 758-5858
Fax: (615) 758-5859

CoCode **GEOSCIGA** (lab use only)
Template/Prelogin
Shipped Via:

Remarks/Contaminant

Sample # (lab only)

Analysis/Container/Preservative

Billing Information:

Billy Wi
514 Hillcrest Industrial Blvd.
Macon, GA 31204-3472

Report to: Jason Cooper

Project Description: Mercer HSR 2013
City/State Collected: Macon GA

Client Project #: 090698.340
ESC Key:

Site/Facility ID#: P.O.#:

Collected by (signature):
Immediately
Packed on Ice N ___ Y ___

Date Results Needed:
Email? ___ No ___ Yes
FAX? ___ No ___ Yes

Rush? (Lab MUST Be Notified)
Same Day 200%
Next Day 100%
Two Day 50%
Three Day 25%

No. of Cntrs

Date

Depth

Matrix*

Sample ID

MW-15
MW-12
MWA-8

6-24 1407
1506
1614

G
GLW
↓

SOIL 1155

*Matrix: **SS** - Soil/Solid **GW** - Groundwater **WW** - WasteWater **DW** - Drinking Water **OT** - Other
 Remarks: *Jimmy can you please invoice this project for 12 full VOC's Thanks Tony* ASAP

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Temp:	Bottles Received:	Condition:
Relinquished by: (Signature)	6/24/14	5:45	Received by: (Signature)			(lab use only)
Relinquished by: (Signature)			Received for lab by: (Signature)	Date:	Time:	CoC Seals Intact Y ___ N ___ NA
						pH Checked: NCF:

Samples returned via: UPS FedEx Courier

Temp: Bottles Received:

Date: Time:

Received for lab by: (Signature)

Date: Time:

Relinquished by: (Signature)

Date: Time:

pH _____ Temp _____
Flow _____ Other _____



12065 Lebanon Road
Mt Juliet, TN 37122

Phone: (800) 767-5859
Phone: (615) 758-5858
Fax: (615) 758-5859

CoCode **GEOSCIGA** (lab use only)
Template/Prelogin
Shipped Via:

Remarks/Contaminant

Sample # (lab use only)

Analysis/Container/Preservative

Billing Information:
Billy Wi
514 Hillcrest Industrial Blvd.
Macon, GA 31204-3472

Company Name/Address:
GEC - Macon, GA
514 Hillcrest Industrial Blvd.
Macon, GA 31204

Report to: Jason Cooper
Email to:

Project Description: Mercer
City/State Collected: Macon GA

Client Project #: 090688.340
ESC Key:

Site/Facility ID#: P.O.#:

Collected by: (print) [Signature]
Collected by (signature): [Signature]
Immediately Packed on Ice N ___ Y ___
Date Results Needed:
Email? ___ No ___ Yes
FAX? ___ No ___ Yes

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	Date Results Needed:		No. of Cntrs
						Same Day 200%	Next Day 100%	
MW-5	G	GW		6/23	9:20			2
MWA-1					1120			
MWA-2					1205			
MWB-4					1555			
MW-14					1435			
MW-9				6-24	8:11			
MWD-6					1000			
MW-13					1105			
MWD					1147			

*Matrix: SS - Soil/Solid GW - Groundwater WW - Waste Water DW - Drinking Water OT - Other
Remarks: Jeffrey Conyer please invoice ASAP for the 12 full voc's Thanks
This Project

Relinquished by: (Signature) [Signature]
Relinquished by: (Signature) [Signature]
Relinquished by: (Signature) [Signature]

Date: Time: Received by: (Signature)
Date: Time: Received by: (Signature)
Date: Time: Received for lab by: (Signature)

Samples returned via: UPS Courier
Temp: Bottles Received:
Date: Time: pH Checked: NCF:

pH _____ Temp _____
Flow _____ Other _____

Condition: (lab use only)
CoC Seals Intact ___ Y ___ N ___ NA
pH Checked: NCF:

GEC

GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS, INC.

Project No.: _____ Sample Date : 6/23/14 Team Leader : _____
 Well ID : MWR-3 Sample Time : _____ Team Number: _____
 Sample ID: _____ Sample Team Members: _____

Purge Method : _____ (planned method) _____ (note changes to planned method in comments section below)
 Changed Method: _____
 Sample Method : _____ Changed Method: _____

Static Water Level: 48.40 ft Does well purge dry? Yes No
 Well Depth: * 49.43 ft * Check box if well depth measured, no check if used previous measured well depth
 Water Column: ** _____ ft ** Water Column = Measured Well Depth - Static Water Level
 Well Diameter: _____ in
 Well Volume: *** _____ gals *** Well Volume = Water Column x Volume Factor

Well Diameter (inches)	1	2	4	6	10	12
Volume Factor (gallons/feet)	0.04	0.17	0.66	1.50	4.08	5.88

Date	Time	Depth to water (ft. TOC)	Volume Removed (gals)	pH	Specific Conductance (mS/cm)	Temperature (°C)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	Redox Potential (mV)
6/23	14:12	70.20	2.0	4.22	207	33.27	800	4.66	375
	14:16	70.24	2.1	3.26	209	24.20	720	3.67	418
		Final Readings							

Previous Readings: _____

*Prev. Measured Well Depth: _____ ft Hach Ferrous Iron Result: _____ mg/L
 Constructed Well Depth: _____ ft Hach Dissolved Oxygen Result: _____ mg/L
 Well Stickup Height: _____ ft Sample Mgmt. Turbidity: _____ NTUs
 Purge Flow Rate: _____ gal/min

Anticipated Volume Based On Readings From Previous Year
 Volume Factor/Well Volume/Minimum Purge (gal)
 _____ / _____ / _____

Purging/Sampling/Well Repair Comments:
well is bent @ 3' and 6'
only 1' of water in well was not
sampled

Related QC Samples:
 QC Sample ID: _____
 BB MS
 DUP MSD

GEC

GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS, INC.

Project No.: Mercer HSPA Sample Date: 6/23/14 Team Leader: _____
 Well ID: MW-5 Sample Time: 0920 Team Number: _____
 Sample ID: _____ Sample Team Members: _____

(planned method) (note changes to planned method in comments section below)
 Purge Method: Pump Changed Method: _____
 Sample Method: Pump Changed Method: _____

Static Water Level: 50.35 ft Does well purge dry? Yes No
 Well Depth: 58.32 ft * Check box if well depth measured, no check if used previous measured well depth
 Water Column: 7.97 ft ** Water Column = Measured Well Depth - Static Water Level
 Well Diameter: 2 in
 Well Volume: 1.35 gals *** Well Volume = Water Column x Volume Factor

Well Diameter (inches)	1	2	4	6	10	12
Volume Factor (gallons/foot)	0.04	0.17	0.66	1.50	4.08	5.88

Date	Time	Depth to water (ft. TOC)	Volume Removed (gals)	pH	Specific Conductance (mS/cm)	Temperature (°C)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	Redox Potential (mV)
6/24	8:52	51.29		3.18	1.71	22.63	Over 800	6.61	389
	8:56	51.43		3.12	1.69	22.98	11	6.13	393
	9:00	51.52		3.25	1.62	23.24	784	5.93	403
	9:04	51.77		3.37	1.44	23.34	210	5.94	415
	9:08	51.84		3.44	1.35	23.32	240	5.91	422
	9:12	51.92		3.38	1.30	23.66	199	5.86	435
		Final Readings							

Previous Readings: _____

*Prev. Measured Well Depth: _____ ft Hach Ferrous Iron Result: _____ mg/L
 Constructed Well Depth: _____ ft Hach Dissolved Oxygen Result: _____ mg/L
 Well Stickup Height: _____ ft Sample Mgmt. Turbidity: _____ NTUs
 Purge Flow Rate: _____ gal/min

Anticipated Volume Based On Readings From Previous Year
 Volume Factor/Well Volume/Minimum Purge (gal)
 _____ / _____ / _____

ing/Sampling/Well Repair Comments:

Related QC Samples:
 QC Sample ID: _____
 EB MS
 DUP MSD

GEC

GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS, INC.

Merced HSPA

Project No.: _____ Sample Date: 6/23/14 Team Leader: _____

Well ID: MWA-1 Sample Time: 1:20 Team Number: _____

Sample ID: _____ Sample Team Members: _____

(planned method)

(note changes to planned method in comments section below)

Purge Method: pump Changed Method: _____

Sample Method: pump Changed Method: _____

Static Water Level: 30.90 ft. Does well purge dry? Yes No

Well Depth*: 40.25 ft * Check box if well depth measured, no check if used previous measured well depth

Water Column:** 9.35 ft ** Water Column = Measured Well Depth - Static Water Level

Well Diameter: 2 in

Well Diameter (inches)	1	2	4	6	10	12
Volume Factor (gallons/foot)	0.04	0.17	0.66	1.50	4.08	5.88

Well Volume:*** 1.6 gals *** Well Volume = Water Column x Volume Factor

ord/mv

Date	Time	Depth to water (ft. TOC)	Volume Removed (gals)	pH	Specific Conductance (mS/cm)	Temperature (°C)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	Redox Potential (mV)
	10:58	31.9	0	4.21	249	24.45	0	5.24	334
	11:04	31.61	1.6	3.82	2154	22.23	260	3.60	280
	11:08	31.80	3.2	3.52	152	22.08	104	3.20	307
	11:02	31.91	4.8	3.25	153	22.03	976	3.20	329
	11:16	31.98	6.4	3.16	154	21.97	860	3.12	337
Final Readings									

Previous Readings:

--	--	--	--	--	--	--	--

*Prev. Measured Well Depth: _____ ft Hach Ferrous Iron Result: _____ mg/L

Constructed Well Depth: _____ ft Hach Dissolved Oxygen Result: _____ mg/L

Well Stickup Height: _____ ft Sample Mgmt. Turbidity: _____ NTUs

Purge Flow Rate: _____ gal/min

Anticipated Volume Based On Readings From Previous Year
Volume Factor/Well Volume/Minimum Purge (gal)
____ / ____ / ____

Purging/Sampling/Well Repair Comments:

Related QC Samples:
QC Sample ID: _____
EB MS
DUP MSD

GEC

GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS, INC.

Project No.: Mercer HRSA Sample Date: 6/23/14 Team Leader: _____
 Well ID: MWB-4 Sample Time: 1555 Team Number: _____
 Sample ID: _____ Sample Team Members: _____

Purge Method: (planned method) pump (note changes to planned method in comments section below)
 Changed Method: _____
 Sample Method: pump Changed Method: _____

Static Water Level: 45.85 ft Does well purge dry? Yes No
 Well Depth: * 55.90 ft * Check box if well depth measured, no check if used previous measured well depth
 Water Column: ** 10.05 ft ** Water Column = Measured Well Depth - Static Water Level
 Well Diameter: 2 in
 Well Volume: *** 1.70 gals *** Well Volume = Water Column x Volume Factor

Well Diameter (inches)	1	2	4	6	10	12
Volume Factor (gallons/feet)	0.04	0.17	0.66	1.50	4.08	5.88

Date	Time	Depth to water (ft. TOC)	Volume Removed (gals)	pH	Specific Conductance (mS/cm)	Temperature (°C)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	Redox Potential (mV)
6/23	15:36	46.28	0	5.0	126	25.85	260	5.01	348
	15:40	46.43	1.7	4.53	124	22.95	105	4.68	369
	15:44	46.52	2.4	4.42	122	22.73	42	4.66	368
	15:48	46.45	3.1	4.37	121	22.71	33	4.58	360
	15:52	46.49	4.8	4.31		22.72	22.3	4.53	359
Final Readings									

Previous Readings: _____

*Prev. Measured Well Depth: _____ ft Hach Ferrous Iron Result: _____ mg/L
 Constructed Well Depth: _____ ft Hach Dissolved Oxygen Result: _____ mg/L
 Well Stickup Height: _____ ft Sample Mgmt. Turbidity: _____ NTUs
 Purge Flow Rate: _____ gal/min

Anticipated Volume Based On Readings From Previous Year
 Volume Factor/Well Volume/Minimum Purge (gal)
 _____ / _____ / _____

Purging/Sampling/Well Repair Comments:

Related QC Samples:
 QC Sample ID: _____
 EB MS
 DUP MSD

GEC

GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS, INC.

Project No.: mercer_HSR A Sample Date: 6/23/14 Team Leader: _____
 Well ID: MW-14 Sample Time: 1435 Team Number: _____
 Sample ID: _____ Sample Team Members: _____

Purge Method: pump (planned method) Changed Method: _____
 Sample Method: pump Changed Method: _____

Static Water Level: 69.93 ft Does well purge dry? Yes No
 Well Depth: * 83.72 ft * Check box if well depth measured, no check if used previous measured well depth
 Water Column: ** 13.79 ft ** Water Column = Measured Well Depth - Static Water Level
 Well Diameter: 2 in
 Well Volume: *** 23/2.5 gals *** Well Volume = Water Column x Volume Factor

Well Diameter (inches)	1	2	4	6	10	12
Volume Factor (gallons/feet)	0.04	0.17	0.66	1.50	4.08	5.88

Date	Time	Depth to water (ft. TOC)	Volume Removed (gals)	pH	Specific Conductance (mS/cm)	Temperature (°C)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	Redox Potential (mV)
	1412	70.12	0	4.22	207	33.27	0.00	4.66	375
	1416	70.24	2.5	3.26	209	24.20	720	3.67	418
	1420	70.3	5	3.32	224	23.39	184	3.52	427
	1424	70.37	7.5	3.36	224	23.30	135	3.51	428
	1428	70.41	10	3.39	227	23.37	70	3.44	431
	1432	7.45	12.5	3.43	228	23.30	42.8	3.43	432
Final Readings									

Previous Readings: _____

*Prev. Measured Well Depth: _____ ft Hach Ferrous Iron Result: _____ mg/L
 Constructed Well Depth: _____ ft Hach Dissolved Oxygen Result: _____ mg/L
 Well Stickup Height: _____ ft Sample Mgmt. Turbidity: _____ NTUs
 Purge Flow Rate: _____ gal/min

Anticipated Volume Based On Readings From Previous Year
 Volume Factor/Well Volume/Minimum Purge (gal)
 _____ / _____ / _____

Purging/Sampling/Well Repair Comments:

Related QC Samples:
 QC Sample ID: _____
 EB MS
 DUP MSD

GEC

GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS, INC.

Project No.: Mercer HSPA Sample Date: 6/24/14 Team Leader: _____
 Well ID: MW-9 Sample Time: 8:11 Team Number: _____
 Sample ID: _____ Sample Team Members: _____

Purge Method: (planned method) Pump Changed Method: _____
 Sample Method: pump Changed Method: _____

Static Water Level: 41.92 ft Does well purge dry? Yes No
 Well Depth: * 49.10 ft * Check box if well depth measured, no check if used previous measured well depth
 Water Column: ** 7.18 ft ** Water Column = Measured Well Depth - Static Water Level
 Well Diameter: 2 in
 Well Volume: *** 1.3 gals *** Well Volume = Water Column x Volume Factor

Well Diameter (inches)	1	2	4	6	10	12
Volume Factor (gallons/feet)	0.04	0.17	0.66	1.50	4.08	5.88

Date	Time	Depth to water (ft. TOC)	Volume Removed (gals)	pH	Specific Conductance (mS/cm)	Temperature (°C)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	Redox Potential (mV)
6/24	7:54	41.95	0	4.14	.175	22.62	628	5.12	395
	7:57	41.97	1.3	4.36	.156	22.51	291	4.86	377
	8:00	41.97	2.6	4.27	.152	22.54	59.2	4.61	391
	8:03	41.98	3.9	4.28	.151	22.65	19.9	4.81	397
	8:06	41.98	5.2	4.49	.150	22.69	12.1	4.78	391
	8:09	41.98	6.5	4.49	.150	22.72	7.2	4.71	392
	8:								
		Final Readings							

Previous Readings: _____

*Prev. Measured Well Depth: _____ ft Hach Ferrous Iron Result: _____ mg/L
 Constructed Well Depth: _____ ft Hach Dissolved Oxygen Result: _____ mg/L
 Well Stickup Height: _____ ft Sample Mgmt. Turbidity: _____ NTUs
 Purge Flow Rate: _____ gal/min
 Purging/Sampling/Well Repair Comments: _____

Anticipated Volume Based On Readings From Previous Year
 Volume Factor/Well Volume/Minimum Purge (gal)
 _____ / _____ / _____

Related QC Samples:
 QC Sample ID: _____
 EB MS
 DUP MSD

GEC

GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS, INC.

Project No.: Merced ASRA Sample Date: 6/23/14 Team Leader: _____
 Well ID: MWD-6 Sample Time: 10:00 Team Number: _____
 Sample ID: _____ Sample Team Members: _____

Purge Method: Pump (planned method) Changed Method: _____
 Sample Method: Boiler Changed Method: _____

Static Water Level: 46.75 ft. Does well purge dry? Yes No
 Well Depth: * 72.82 ft * Check box if well depth measured, no check if used previous measured well depth
 Water Column: ** 26.07 ft ** Water Column = Measured Well Depth - Static Water Level
 Well Diameter: 2 in
 Well Volume: *** _____ gals *** Well Volume = Water Column x Volume Factor

Well Diameter (inches)	1	2	4	6	10	12
Volume Factor (gallons/feet)	0.04	0.17	0.66	1.50	4.08	5.88

Date	Time	Depth to water (ft. TOC)	Volume Removed (gals)	pH	Specific Conductance (mS/cm)	Temperature (°C)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	Redox Potential (mV)
6/23	003	49.30	9.0	3.70	3.59	22.44	800	3.79	226
	1012	62.80	4.5	4.72	4.73	22.89	184	4.35	220
	10:30	68.0	9	3.86	7.00	24.35	251	6.80	291
	Drw		13.5	4.57		23.01			
6/24	0958	53.69	0	3.74	3.33	22.86	9.7	5.83	374
Final Readings									

Previous Readings: _____

*Prev. Measured Well Depth: _____ ft Hach Ferrous Iron Result: _____ mg/L
 Constructed Well Depth: _____ ft Hach Dissolved Oxygen Result: _____ mg/L
 Well Stickup Height: _____ ft Sample Mgmt. Turbidity: _____ NTUs
 Purge Flow Rate: _____ gal/min
 Purging/Sampling/Well Repair Comments: _____

Anticipated Volume Based On Readings From Previous Year
 Volume Factor/Well Volume/Minimum Purge Volume
 _____ / _____ / _____

Related QC Samples:
 QC Sample ID: _____
 EB M
 DUP N

GEC

GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS, INC.

Project No.: Mercer-HSRA Sample Date: 6/24/14 Team Leader: _____
 Well ID: MU-13 Sample Time: 1105 Team Number: _____
 Sample ID: _____ Sample Team Members: _____

(planned method) (note changes to planned method in comments section below)
 Purge Method: pump Changed Method: _____
 Sample Method: pump Changed Method: _____

Static Water Level: 65.38 ft Does well purge dry? Yes No
 Well Depth: * 75.35 ft * Check box if well depth measured, no check if used previous measured well depth
 Water Column: ** 29.97 ft ** Water Column = Measured Well Depth - Static Water Level
 Well Diameter: 2 in
 Well Volume: *** 1.7 gals *** Well Volume = Water Column x Volume Factor

Well Diameter (inches)	1	2	4	6	10	12
Volume Factor (gallons/feet)	0.04	0.17	0.66	1.50	4.08	5.88

Date	Time	Depth to water (ft. TOC)	Volume Removed (gals)	pH	Specific Conductance (mS/cm)	Temperature (°C)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	Redox Potential (mV)
6/24	1037	65.50	0	3.41	.361	22.34	380	8.13	460
	1042	65.46	1.7	3.28	.219	22.49	312	6.83	462
	1047	65.49	3.4	3.23	.213	22.58	76.1	6.47	471
	1052	65.48	5.1	3.21	.212	22.49	19.1	6.32	479
	1057	65.49	6.8	3.23	.213	22.50	4.8	5.98	483
	1102	65.47		3.24	.214	22.42	2.5	5.70	486
Final Readings									

Previous Readings:

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*Prev. Measured Well Depth: _____ ft Hach Ferrous Iron Result: _____ mg/L
 Constructed Well Depth: _____ ft Hach Dissolved Oxygen Result: _____ mg/L
 Well Stickup Height: _____ ft Sample Mgmt. Turbidity: _____ NTUs
 Purge Flow Rate: _____ gal/min
 Purging/Sampling/Well Repair Comments: _____

Anticipated Volume Based On Readings From Previous Year
 Volume Factor/Well Volume/Minimum Purge (gal)
 _____ / _____ / _____

Related QC Samples:
 QC Sample ID: _____
 EB MS
 DUP MSD

GEC

GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS, INC.

Project No.: MERCER ASRN Sample Date: 6/24/14 Team Leader: _____
 Well ID: MW-10 Sample Time: 1147 Team Number: _____
 Sample ID: _____ Sample Team Members: _____

Purge Method: (planned method) pump (note changes to planned method in comments section below)
 Changed Method: _____
 Sample Method: _____ Changed Method: _____

Static Water Level: 59.88 ft Does well purge dry? Yes No
 Well Depth: * 64.30 ft * Check box if well depth measured, no check if used previous measured well depth
 Water Column: ** 4.42 ft ** Water Column = Measured Well Depth - Static Water Level
 Well Diameter: 2 in
 Well Volume: *** .75 gals *** Well Volume = Water Column x Volume Factor

Well Diameter (inches)	1	2	4	6	10	12
Volume Factor (gallons/feet)	0.04	0.17	0.66	1.50	4.08	5.88

Date	Time	Depth to water (ft. TOC)	Volume Removed (gals)	pH	Specific Conductance (mS/cm)	Temperature (°C)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	Redox Potential (mV)
	1135	59.92	0	5.40	.205	23.84	over flow	2.256	256.358
	1137	59.95	.75	5.08	.174	22.02	11	1.94	322
	1139	59.92	1.50	4.88	.167	21.92	653	1.79	318
	1141	59.92	2.25	4.93	.164	21.80	381 381	1.68	311
	1143	59.91	3.0	4.81	.164	21.80	165	1.75	304
	1145	59.90	3.75	4.81	.164	21.85	109	1.71	299
Final Readings									

Previous Readings:

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*Prev. Measured Well Depth: _____ ft Hach Ferrous Iron Result: _____ mg/L
 Constructed Well Depth: _____ ft Hach Dissolved Oxygen Result: _____ mg/L
 Well Stickup Height: _____ ft Sample Mgmt. Turbidity: _____ NTUs
 Purge Flow Rate: _____ gal/min
 Purging/Sampling/Well Repair Comments: _____

Anticipated Volume Based On Readings From Previous Year
 Volume Factor/Well Volume/Minimum Purge (gal)
 _____ / _____ / _____

Related QC Samples:
 QC Sample ID: _____
 EB MS
 DUP MSD

GEC

GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS, INC.

Project No.: Merced HSR Sample Date: 6/24/14 Team Leader: _____
 Well ID: MW-15 Sample Time: 1407 Team Number: _____
 Sample ID: _____ Sample Team Members: _____

Purge Method: pump (planned method) Changed Method: _____ (note changes to planned method in comments section below)
 Sample Method: pump Changed Method: _____

Static Water Level: 49.70 ft Does well purge dry? Yes No

Well Depth*: 64.10 ft * Check box if well depth measured, no check if used previous measured well depth

Water Column:** 14.4 ft ** Water Column = Measured Well Depth - Static Water Level

Well Diameter: 2 in

Well Diameter (inches)	1	2	4	6	10	12
Volume Factor (gallons/feet)	0.04	0.17	0.66	1.50	4.08	5.88

Well Volume:*** 2.5 gals

*** Well Volume = Water Column x Volume Factor

Date	Time	Depth to water (ft. TOC)	Volume Removed (gals)	pH	Specific Conductance (mS/cm)	Temperature (°C)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	Redox Potential (mV)
	1340	50.67	0	4.06	.103	26.63	674	3.23	377
	1345	51.23	2.5	3.98	.099	23.91	379	4.24	400
	1350	54.25	5	3.98	.095	24.32	437	4.04	403
	1355	55.13	7.5	3.96	.095	24.31	424	3.84	410
	1400	55.86	10	3.98	.096	24.20	381	4.21	413
	1405		12.5	3.95	.098	23.96	310	4.10	413
Final Readings									

Previous Readings:

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*Prev. Measured Well Depth: _____ ft Hach Ferrous Iron Result: _____ mg/L

Constructed Well Depth: _____ ft Hach Dissolved Oxygen Result: _____ mg/L

Well Stickup Height: _____ ft Sample Mgmt. Turbidity: _____ NTUs

Purge Flow Rate: _____ gal/min

Anticipated Volume Based On Readings From Previous Year
Volume Factor/Well Volume/Minimum Purge (gal)

/ /

Purging/Sampling/Well Repair Comments:

Related QC Samples:
QC Sample ID: _____

EB MS
 DUP MSD

GEC

GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS, INC.

Project No.: Mexico HSR Sample Date: 6/24/14 Team Leader: _____
 Well ID: MW-12 Sample Time: 1506 Team Number: _____
 Sample ID: _____ Sample Team Members: _____

Purge Method: (planned method) pump (note changes to planned method in comments section below) Changed Method: _____
 Sample Method: pum Changed Method: _____

Static Water Level: 68.21 ft Does well purge dry? Yes No
 Well Depth:* 82.26 ft * Check box if well depth measured, no check if used previous measured well depth
 Water Column:** 14.05 ft ** Water Column = Measured Well Depth - Static Water Level
 Well Diameter: 2 in
 Well Volume:*** 2.5 gals *** Well Volume = Water Column x Volume Factor

Well Diameter (inches)	1	2	4	6	10	12
Volume Factor (gallons/foot)	0.04	0.17	0.66	1.50	4.08	5.88

Date	Time	Depth to water (ft. TOC)	Volume Removed (gals)	pH	Specific Conductance (mS/cm)	Temperature (°C)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	Redox Potential (mV)
6/24	1439	68.35	0	4.32	.145	29.11	over 800	3.18	351
	1444	68.42	2.5	4.20	.147	23.33	270	3.40	350
	1449	68.48	5	4.21	.148	23.29	265	3.37	350
	1454	68.46	7.5	4.21	.149	23.29 ^{33.9}	46.8	3.36	371
	1459	68.48	10	4.14	.150	22.95	29.1	3.33	379
	1504	68.49	12.5	4.13	.150	22.94	18.5	3.36	388
Final Readings									

Previous Readings:

--	--	--	--	--	--	--	--	--	--

*Prev. Measured Well Depth: _____ ft Hach Ferrous Iron Result: _____ mg/L
 Constructed Well Depth: _____ ft Hach Dissolved Oxygen Result: _____ mg/L
 Well Stickup Height: _____ ft Sample Mgmt. Turbidity: _____ NTUs
 Purge Flow Rate: _____ gal/min

Anticipated Volume Based On Readings From Previous Year
 Volume Factor/Well Volume/Minimum Purge (gal)
 _____ / _____ / _____

Purging/Sampling/Well Repair Comments:

Related QC Samples:
 QC Sample ID: _____
 EB MS
 DUP MSD

GEC

GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS, INC.

Project No.: Mercer HSR Sample Date: 6/24/16 Team Leader: _____
 Well ID: MWA-8 Sample Time: 1612 Team Number: _____
 Sample ID: _____ Sample Team Members: _____

(planned method) (note changes to planned method in comments section below)
 Purge Method: pump Changed Method: _____
 Sample Method: pump Changed Method: _____

Static Water Level: 40.03 ft Does well purge dry? Yes No
 Well Depth: * 58.81 ft * Check box if well depth measured, no check if used previous measured well depth

Water Column: ** 18.78 ft ** Water Column = Measured Well Depth - Static Water Level
 Well Diameter: 2 in
 Well Volume: *** 3.2 gals *** Well Volume = Water Column x Volume Factor

Well Diameter (inches)	1	2	4	6	10	12
Volume Factor (gallons/foot)	0.04	0.17	0.66	1.50	4.08	5.88

Date	Time	Depth to water (ft. TOC)	Volume Removed (gals)	pH	Specific Conductance (mS/cm)	Temperature (°C)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	Redox Potential (mV)
6/24	1540	42.15	0	4.46	.102	25.25	364	5.88	357
	1546	43.88	3.2	4.34	.100	23.15	322	5.70	359
	1552	44.00	6.4	4.39	.102	23.99	160	5.22	363
	1558	45.20	9.6	4.31	.094	22.28	70.3	5.19	369
	1604	45.84	12.8	4.22	.084	22.38	34.2	5.27	380
	1610	46.50	16	4.20	.081	22.15	22.0	5.12	386
Final Readings									

Previous Readings:

--	--	--	--	--	--	--	--	--	--

*Prev. Measured Well Depth: _____ ft Hach Ferrous Iron Result: _____ mg/L
 Constructed Well Depth: _____ ft Hach Dissolved Oxygen Result: _____ mg/L
 Well Stickup Height: _____ ft Sample Mgmt. Turbidity: _____ NTUs
 Purge Flow Rate: _____ gal/min
 Purging/Sampling/Well Repair Comments: _____

Anticipated Volume Based On Readings From Previous Year
 Volume Factor/Well Volume/Minimum Purge (gal)
 _____ / _____ / _____

Related QC Samples:
 QC Sample ID: _____
 EB MS
 DUP MSD

APPENDIX D:
Johnson & Ettinger Model

Music Building

DATA ENTRY SHEET

GW-ADV
Version 3.1; 02/04

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES

Reset to Defaults

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES

ENTER
Chemical CAS No. (numbers only, no dashes)

ENTER
Initial groundwater conc., C_w ($\mu\text{g/L}$)

79016 1.30E+01

Chemical

Trichloroethylene

MORE
↓

ENTER Average soil/ groundwater temperature, T_s ($^{\circ}\text{C}$)	ENTER Depth below grade to bottom of enclosed space floor, L_f (cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER Totals must add up to value of L_{WT} (cell G28)			ENTER Soil stratum directly above water table, (Enter A, B, or C)	ENTER SCS soil type directly above water table	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
T_s	L_f	L_{WT}	Thickness of soil stratum A, h_A (cm)	Thickness of soil stratum B, (Enter value or 0) h_B (cm)	Thickness of soil stratum C, (Enter value or 0) h_C (cm)					
19	15	1978	503	152	1323	C	SC	SC		

MORE
↓

ENTER Stratum A SCS soil type	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
SC	1.63	0.385	0.197	SI	1.35	0.489	0.167	SC	1.63	0.385	0.197

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	6035	5358	975	0.1	0.25	5

MORE
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ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1

END

Used to calculate risk-based groundwater concentration.

CHEMICAL PROPERTIES SHEET

Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Henry's law constant at reference temperature, H ($\text{atm}\cdot\text{m}^3/\text{mol}$)	Henry's law constant reference temperature, T_R ($^{\circ}\text{C}$)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B ($^{\circ}\text{K}$)	Critical temperature, T_C ($^{\circ}\text{K}$)	Organic carbon partition coefficient, K_{oc} (cm^3/g)	Pure component water solubility, S (mg/L)	Unit risk factor, URF ($\mu\text{g}/\text{m}^3$) ⁻¹	Reference conc., RfC (mg/m^3)
7.90E-02	9.10E-06	1.03E-02	25	7,505	360.36	544.20	1.66E+02	1.47E+03	1.1E-04	4.0E-02

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{ie} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
9.46E+08	1963	0.188	0.322	0.188	0.299	1.77E-09	0.837	1.48E-09	30.00	0.385	0.030	0.355	22,786

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} ($\text{atm}\cdot\text{m}^3/\text{mol}$)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D_A^{eff} (cm^2/s)	Stratum B effective diffusion coefficient, D_B^{eff} (cm^2/s)	Stratum C effective diffusion coefficient, D_C^{eff} (cm^2/s)	Capillary zone effective diffusion coefficient, D_{cz}^{eff} (cm^2/s)	Total overall effective diffusion coefficient, D_T^{eff} (cm^2/s)	Diffusion path length, L_d (cm)
2.19E+06	3.27E+07	6.97E-05	15	8,445	7.67E-03	3.20E-01	1.78E-04	2.04E-03	7.59E-03	2.04E-03	1.07E-05	5.31E-04	1963

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu\text{g}/\text{m}^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu\text{g}/\text{m}^3$)	Unit risk factor, URF ($\mu\text{g}/\text{m}^3$) ⁻¹	Reference conc., RfC (mg/m^3)
15	4.16E+03	0.10	8.33E+01	2.04E-03	2.28E+03	6.63E+77	3.65E-06	1.52E-02	1.1E-04	4.0E-02

END

RESULTS SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (µg/L)	Indoor exposure groundwater conc., noncarcinogen (µg/L)	Risk-based indoor exposure groundwater conc., (µg/L)	Pure component water solubility, S (µg/L)	Final indoor exposure groundwater conc., (µg/L)
NA	NA	NA	1.47E+06	NA

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
6.9E-07	3.6E-04

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

MESSAGE: Risk/HQ or risk-based groundwater concentration is based on a route-to-route extrapolation.

SCROLL
DOWN
TO "END"

END

DATA ENTRY SHEET

GW-ADV
Version 3.1; 02/04

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES

Reset to Defaults

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES

ENTER
Chemical
CAS No.
(numbers only,
no dashes)

ENTER
Initial
groundwater
conc.,
 C_w
($\mu\text{g/L}$)

127184 3.60E+01

Chemical
Tetrachloroethylene

MORE
↓

ENTER Average soil/ groundwater temperature, T_s ($^{\circ}\text{C}$)	ENTER Depth below grade to bottom of enclosed space floor, L_f (cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER Totals must add up to value of L_{WT} (cell G28)			ENTER Soil stratum directly above water table, (Enter A, B, or C)	ENTER SCS soil type directly above water table	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
Thickness of soil stratum A, h_A (cm)	Thickness of soil stratum B, (Enter value or 0) h_B (cm)	Thickness of soil stratum C, (Enter value or 0) h_C (cm)								
19	15	1992	518	152	1322	C	SC	SC		

MORE
↓

ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
SC	1.63	0.385	0.197	SI	1.35	0.489	0.167	SC	1.63	0.385	0.197

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	6035	5358	975	0.1	0.25	5

MORE
↓

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1

END

Used to calculate risk-based
groundwater concentration.

CHEMICAL PROPERTIES SHEET

Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Henry's law constant at reference temperature, H ($\text{atm}\cdot\text{m}^3/\text{mol}$)	Henry's law constant reference temperature, T_R ($^\circ\text{C}$)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B ($^\circ\text{K}$)	Critical temperature, T_C ($^\circ\text{K}$)	Organic carbon partition coefficient, K_{oc} (cm^3/g)	Pure component water solubility, S (mg/L)	Unit risk factor, URF ($\mu\text{g}/\text{m}^3$) ⁻¹	Reference conc., RfC (mg/m^3)
7.20E-02	8.20E-06	1.84E-02	25	8,288	394.40	620.20	1.55E+02	2.00E+02	5.9E-06	6.0E-01

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_{ie} (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{rg} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm ³ /cm ³)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm ³ /cm ³)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm ³ /cm ³)	Floor-wall seam perimeter, X_{crack} (cm)
9.46E+08	1977	0.188	0.322	0.188	0.299	1.77E-09	0.837	1.48E-09	30.00	0.385	0.030	0.355	22,786

Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)	Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D_A^{eff} (cm ² /s)	Stratum B effective diffusion coefficient, D_B^{eff} (cm ² /s)	Stratum C effective diffusion coefficient, D_C^{eff} (cm ² /s)	Capillary zone effective diffusion coefficient, D_{cz}^{eff} (cm ² /s)	Total overall effective diffusion coefficient, D_T^{eff} (cm ² /s)	Diffusion path length, L_d (cm)
2.19E+06	3.27E+07	6.97E-05	15	9,462	1.32E-02	5.52E-01	1.78E-04	1.86E-03	6.92E-03	1.86E-03	7.38E-06	3.91E-04	1977

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu\text{g}/\text{m}^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D^{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu\text{g}/\text{m}^3$)	Unit risk factor, URF ($\mu\text{g}/\text{m}^3$) ⁻¹	Reference conc., RfC (mg/m ³)
15	1.99E+04	0.10	8.33E+01	1.86E-03	2.28E+03	2.53E+85	2.74E-06	5.44E-02	5.9E-06	6.0E-01

END

RESULTS SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (µg/L)	Indoor exposure groundwater conc., noncarcinogen (µg/L)	Risk-based indoor exposure groundwater conc., (µg/L)	Pure component water solubility, S (µg/L)	Final indoor exposure groundwater conc., (µg/L)
NA	NA	NA	2.00E+05	NA

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
1.3E-07	8.7E-05

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL
DOWN
TO "END"

END

DATA ENTRY SHEET

GW-ADV
Version 3.1; 02/04

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES

Reset to Defaults

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES

ENTER
Chemical
CAS No.
(numbers only,
no dashes)

ENTER
Initial
groundwater
conc.,
 C_w
($\mu\text{g/L}$)

156592 6.60E+00

Chemical

cis-1,2-Dichloroethylene

MORE
↓

ENTER Average soil/ groundwater temperature, T_s ($^{\circ}\text{C}$)	ENTER Depth below grade to bottom of enclosed space floor, L_f (cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER Totals must add up to value of L_{WT} (cell G28)			ENTER Soil stratum directly above water table, (Enter A, B, or C)	ENTER SCS soil type directly above water table	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
Thickness of soil stratum A, h_A (cm)	Thickness of soil stratum B, (Enter value or 0) h_B (cm)	Thickness of soil stratum C, (Enter value or 0) h_C (cm)								
19	15	1992	518	152	1322	C	SC	SC		

MORE
↓

ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
SC	1.63	0.385	0.197	SI	1.35	0.489	0.167	SC	1.63	0.385	0.197

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	6035	5358	975	0.1	0.25	

MORE
↓

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1

END

Used to calculate risk-based groundwater concentration.

CHEMICAL PROPERTIES SHEET

Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Henry's law constant at reference temperature, H ($\text{atm}\cdot\text{m}^3/\text{mol}$)	Henry's law constant reference temperature, T_R ($^\circ\text{C}$)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B ($^\circ\text{K}$)	Critical temperature, T_C ($^\circ\text{K}$)	Organic carbon partition coefficient, K_{oc} (cm^3/g)	Pure component water solubility, S (mg/L)	Unit risk factor, URF ($\mu\text{g}/\text{m}^3$) ⁻¹	Reference conc., RfC (mg/m^3)
7.36E-02	1.13E-05	4.07E-03	25	7,192	333.65	544.00	3.55E+01	3.50E+03	0.0E+00	3.5E-02

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{ie} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
9.46E+08	1977	0.188	0.322	0.188	0.299	1.77E-09	0.837	1.48E-09	30.00	0.385	0.030	0.355	22,786

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D_A^{eff} (cm^2/s)	Stratum B effective diffusion coefficient, D_B^{eff} (cm^2/s)	Stratum C effective diffusion coefficient, D_C^{eff} (cm^2/s)	Capillary zone effective diffusion coefficient, D_{cz}^{eff} (cm^2/s)	Total overall effective diffusion coefficient, D_T^{eff} (cm^2/s)	Diffusion path length, L_d (cm)
2.19E+06	3.27E+07	6.97E-05	15	7,643	3.12E-03	1.30E-01	1.78E-04	1.90E-03	7.07E-03	1.90E-03	2.29E-05	8.68E-04	1977

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu\text{g}/\text{m}^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu\text{g}/\text{m}^3$)	Unit risk factor, URF ($\mu\text{g}/\text{m}^3$) ⁻¹	Reference conc., RfC (mg/m ³)
15	8.60E+02	0.10	8.35E+00	1.90E-03	2.28E+03	2.29E+08	2.41E-06	2.07E-03	NA	3.5E-02

END

RESULTS SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (µg/L)	Indoor exposure groundwater conc., noncarcinogen (µg/L)	Risk-based indoor exposure groundwater conc., (µg/L)	Pure component water solubility, S (µg/L)	Final indoor exposure groundwater conc., (µg/L)
NA	NA	NA	3.50E+06	NA

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	5.7E-05

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

MESSAGE: Risk/HQ or risk-based groundwater concentration is based on a route-to-route extrapolation.

SCROLL
DOWN
TO "END"

END

Retail Stores

DATA ENTRY SHEET

GW-ADV
Version 3.1; 02/04

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES

Reset to Defaults

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES

ENTER
Chemical
CAS No.
(numbers only,
no dashes)

ENTER
Initial
groundwater
conc.,
 C_w
($\mu\text{g/L}$)

79016 2.60E+01

Chemical

Trichloroethylene

MORE
↓

ENTER Average soil/ groundwater temperature, T_s ($^{\circ}\text{C}$)	ENTER Depth below grade to bottom of enclosed space floor, L_f (cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER Totals must add up to value of L_{WT} (cell G28)			ENTER Soil stratum directly above water table, (Enter A, B, or C)	ENTER SCS soil type directly above water table	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
Thickness of soil stratum A, h_A (cm)	Thickness of soil stratum B, (Enter value or 0) h_B (cm)	Thickness of soil stratum C, (Enter value or 0) h_C (cm)								
19	15	1459	579	274	606	C	SC	C		

MORE
↓

ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
C	1.43	0.459	0.215	SI	1.35	0.489	0.167	SC	1.63	0.385	0.197

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	4145	2591	305	0.1	0.25	5

MORE
↓

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1

END

Used to calculate risk-based
groundwater concentration.

CHEMICAL PROPERTIES SHEET

Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Henry's law constant at reference temperature, H ($\text{atm}\cdot\text{m}^3/\text{mol}$)	Henry's law constant reference temperature, T_R ($^{\circ}\text{C}$)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B ($^{\circ}\text{K}$)	Critical temperature, T_C ($^{\circ}\text{K}$)	Organic carbon partition coefficient, K_{oc} (cm^3/g)	Pure component water solubility, S (mg/L)	Unit risk factor, URF ($\mu\text{g}/\text{m}^3$) ⁻¹	Reference conc., RfC (mg/m^3)
7.90E-02	9.10E-06	1.03E-02	25	7,505	360.36	544.20	1.66E+02	1.47E+03	1.1E-04	4.0E-02

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_{ie} (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{rg} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm ³ /cm ³)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm ³ /cm ³)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm ³ /cm ³)	Floor-wall seam perimeter, X_{crack} (cm)
9.46E+08	1444	0.244	0.322	0.188	0.324	2.30E-09	0.821	1.88E-09	30.00	0.385	0.030	0.355	13,472

Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)	Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D_A^{eff} (cm ² /s)	Stratum B effective diffusion coefficient, D_B^{eff} (cm ² /s)	Stratum C effective diffusion coefficient, D_C^{eff} (cm ² /s)	Capillary zone effective diffusion coefficient, D_{cz}^{eff} (cm ² /s)	Total overall effective diffusion coefficient, D_T^{eff} (cm ² /s)	Diffusion path length, L_d (cm)
2.27E+05	1.09E+07	1.23E-04	15	8,445	7.67E-03	3.20E-01	1.78E-04	3.42E-03	7.59E-03	2.04E-03	1.07E-05	4.39E-04	1444

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu\text{g}/\text{m}^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D^{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu\text{g}/\text{m}^3$)	Unit risk factor, URF ($\mu\text{g}/\text{m}^3$) ⁻¹	Reference conc., RfC (mg/m ³)
15	8.31E+03	0.10	8.33E+01	3.42E-03	1.35E+03	3.42E+78	1.41E-05	1.17E-01	1.1E-04	4.0E-02

END

RESULTS SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (µg/L)	Indoor exposure groundwater conc., noncarcinogen (µg/L)	Risk-based indoor exposure groundwater conc., (µg/L)	Pure component water solubility, S (µg/L)	Final indoor exposure groundwater conc., (µg/L)
NA	NA	NA	1.47E+06	NA

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
5.3E-06	2.8E-03

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

MESSAGE: Risk/HQ or risk-based groundwater concentration is based on a route-to-route extrapolation.

SCROLL
DOWN
TO "END"

END

DATA ENTRY SHEET

GW-ADV
Version 3.1; 02/04

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES

Reset to Defaults

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES

ENTER
Chemical CAS No. (numbers only, no dashes)

ENTER
Initial groundwater conc., C_w ($\mu\text{g/L}$)

127184 6.50E+01

Chemical

Tetrachloroethylene

MORE
↓

ENTER Average soil/ groundwater temperature, T_s ($^{\circ}\text{C}$)	ENTER Depth below grade to bottom of enclosed space floor, L_f (cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER Totals must add up to value of L_{WT} (cell G28)			ENTER Soil stratum directly above water table, (Enter A, B, or C)	ENTER SCS soil type directly above water table	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
h_A (cm)	h_B (cm)	h_C (cm)	Thickness of soil stratum A, h_A (cm)	Thickness of soil stratum B, (Enter value or 0) h_B (cm)	Thickness of soil stratum C, (Enter value or 0) h_C (cm)					
19	15	1459	579	274	606	C	SC	C		

MORE
↓

ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
C	1.43	0.459	0.215	SI	1.35	0.489	0.167	SC	1.63	0.385	0.197

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	4145	2591	305	0.1	0.25	5

MORE
↓

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1

END

Used to calculate risk-based groundwater concentration.

CHEMICAL PROPERTIES SHEET

Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Henry's law constant at reference temperature, H ($\text{atm}\cdot\text{m}^3/\text{mol}$)	Henry's law constant reference temperature, T_R ($^{\circ}\text{C}$)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B ($^{\circ}\text{K}$)	Critical temperature, T_C ($^{\circ}\text{K}$)	Organic carbon partition coefficient, K_{oc} (cm^3/g)	Pure component water solubility, S (mg/L)	Unit risk factor, URF ($\mu\text{g}/\text{m}^3$) ⁻¹	Reference conc., RfC (mg/m^3)
7.20E-02	8.20E-06	1.84E-02	25	8,288	394.40	620.20	1.55E+02	2.00E+02	5.9E-06	6.0E-01

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{fe} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
9.46E+08	1444	0.244	0.322	0.188	0.324	2.30E-09	0.821	1.88E-09	30.00	0.385	0.030	0.355	13,472

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D_A^{eff} (cm^2/s)	Stratum B effective diffusion coefficient, D_B^{eff} (cm^2/s)	Stratum C effective diffusion coefficient, D_C^{eff} (cm^2/s)	Capillary zone effective diffusion coefficient, D_{cz}^{eff} (cm^2/s)	Total overall effective diffusion coefficient, D_T^{eff} (cm^2/s)	Diffusion path length, L_d (cm)
2.27E+05	1.09E+07	1.23E-04	15	9,462	1.32E-02	5.52E-01	1.78E-04	3.12E-03	6.92E-03	1.86E-03	7.38E-06	3.14E-04	1444

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu\text{g}/\text{m}^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu\text{g}/\text{m}^3$)	Unit risk factor, URF ($\mu\text{g}/\text{m}^3$) ⁻¹	Reference conc., RfC (mg/m ³)
15	3.58E+04	0.10	8.33E+01	3.12E-03	1.35E+03	1.51E+86	1.02E-05	3.65E-01	5.9E-06	6.0E-01

END

RESULTS SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (µg/L)	Indoor exposure groundwater conc., noncarcinogen (µg/L)	Risk-based indoor exposure groundwater conc., (µg/L)	Pure component water solubility, S (µg/L)	Final indoor exposure groundwater conc., (µg/L)
NA	NA	NA	2.00E+05	NA

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
8.8E-07	5.8E-04

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL
DOWN
TO "END"

END

DATA ENTRY SHEET

GW-ADV
Version 3.1; 02/04

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES

Reset to Defaults

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES

ENTER
Chemical
CAS No.
(numbers only,
no dashes)

ENTER
Initial
groundwater
conc.,
 C_w
($\mu\text{g/L}$)

156592 9.90E+00

Chemical

cis-1,2-Dichloroethylene

MORE
↓

ENTER Average soil/ groundwater temperature, T_s ($^{\circ}\text{C}$)	ENTER Depth below grade to bottom of enclosed space floor, L_f (cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER Totals must add up to value of L_{WT} (cell G28)			ENTER Soil stratum directly above water table, (Enter A, B, or C)	ENTER SCS soil type directly above water table	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
h_A (cm)	Thickness of soil stratum A, h_A (cm)	Thickness of soil stratum B, (Enter value or 0) h_B (cm)	Thickness of soil stratum C, (Enter value or 0) h_C (cm)							
19	15	1459	579	274	606	C	SC	C		

MORE
↓

ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
C	1.43	0.459	0.215	SI	1.35	0.489	0.167	SC	1.63	0.385	0.197

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	4145	2591	305	0.1	0.25	5

MORE
↓

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1

END

Used to calculate risk-based groundwater concentration.

CHEMICAL PROPERTIES SHEET

Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Henry's law constant at reference temperature, H ($\text{atm}\cdot\text{m}^3/\text{mol}$)	Henry's law constant reference temperature, T_R ($^{\circ}\text{C}$)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B ($^{\circ}\text{K}$)	Critical temperature, T_C ($^{\circ}\text{K}$)	Organic carbon partition coefficient, K_{oc} (cm^3/g)	Pure component water solubility, S (mg/L)	Unit risk factor, URF ($\mu\text{g}/\text{m}^3$) ⁻¹	Reference conc., RfC (mg/m^3)
7.36E-02	1.13E-05	4.07E-03	25	7,192	333.65	544.00	3.55E+01	3.50E+03	0.0E+00	3.5E-02

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_e (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
9.46E+08	1444	0.244	0.322	0.188	0.324	2.30E-09	0.821	1.88E-09	30.00	0.385	0.030	0.355	13,472

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} ($\text{atm}\cdot\text{m}^3/\text{mol}$)	Henry's law constant at ave. groundwater temperature, H_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D_A^{eff} (cm^2/s)	Stratum B effective diffusion coefficient, D_B^{eff} (cm^2/s)	Stratum C effective diffusion coefficient, D_C^{eff} (cm^2/s)	Capillary zone effective diffusion coefficient, D_{cz}^{eff} (cm^2/s)	Total overall effective diffusion coefficient, D_T^{eff} (cm^2/s)	Diffusion path length, L_d (cm)
2.27E+05	1.09E+07	1.23E-04	15	7,643	3.12E-03	1.30E-01	1.78E-04	3.19E-03	7.07E-03	1.90E-03	2.29E-05	7.89E-04	1444

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu\text{g}/\text{m}^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu\text{g}/\text{m}^3$)	Unit risk factor, URF ($\mu\text{g}/\text{m}^3$) ⁻¹	Reference conc., RfC (mg/m^3)
15	1.29E+03	0.10	8.33E+01	3.19E-03	1.35E+03	1.78E+84	2.45E-05	3.16E-02	NA	3.5E-02

END

RESULTS SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

INCREMENTAL RISK CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (µg/L)	Indoor exposure groundwater conc., noncarcinogen (µg/L)	Risk-based indoor exposure groundwater conc., (µg/L)	Pure component water solubility, S (µg/L)	Final indoor exposure groundwater conc., (µg/L)	Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	NA	NA	3.50E+06	NA	NA	8.7E-04

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

MESSAGE: Risk/HQ or risk-based groundwater concentration is based on a route-to-route extrapolation.

SCROLL
DOWN
TO "END"

END

APPENDIX E:

Billing Summary

Invoice

GEC

GEOTECHNICAL
&
ENVIRONMENTAL
CONSULTANTS, INC

514 Hillcrest Industrial Blvd

Macon, GA 31204

Phone: 478-757-1606 Fax: 478-757-1608

Russell Vullo
Mercer University
1400 Coleman Avenue
Macon, GA 31207

October 10, 2013

Invoice No: 000021372

Project 090698.340 Mercer HSRA - 2013

Professional Services through October 6, 2013

Phase 700 Professional Services

Task 702 Project Management

Professional Personnel

	Hours	Rate	Amount
Registered Engineer	7.25	90.00	652.50
Totals	7.25		652.50
Total Labor			652.50

Total this Task \$652.50

Task 704 Project Research

Professional Personnel

	Hours	Rate	Amount
Registered Engineer	2.00	90.00	180.00
Totals	2.00		180.00
Total Labor			180.00

Total this Task \$180.00

Task 706 Report Preparation

Professional Personnel

	Hours	Rate	Amount
Registered Engineer	81.00	90.00	7,290.00
Totals	81.00		7,290.00
Total Labor			7,290.00

Total this Task \$7,290.00

Task 707 Report Review

Professional Personnel

	Hours	Rate	Amount
Registered Engineer	10.25	90.00	922.50
Registered Geologist	2.00	90.00	180.00
Totals	12.25		1,102.50
Total Labor			1,102.50

Total this Task \$1,102.50

Task 709 Drafting

Professional Personnel

	Hours	Rate	Amount	
Registered Engineer	3.00	90.00	270.00	
Draftsman	10.50	40.00	420.00	
Totals	13.50		690.00	
Total Labor				690.00

Total this Task \$690.00

Total this Phase \$9,915.00

Phase 720 Field Services

Task 401 Site Reconnaissance

Professional Personnel

	Hours	Rate	Amount	
Engineering Aide	3.00	40.00	120.00	
Totals	3.00		120.00	
Total Labor				120.00

Total this Task \$120.00

Task 406 Packaging of Samples for Shipping

Professional Personnel

	Hours	Rate	Amount	
Senior Environmental Technician	1.00	60.00	60.00	
Totals	1.00		60.00	
Total Labor				60.00

Total this Task \$60.00

Task 500 Mileage

Unit Billing

0.65 per mile				
4/30/2013	10.0 Miles @ 0.65		6.50	
Total Units			6.50	6.50

Total this Task \$6.50

Task 764 Groundwater Sampling

Professional Personnel

	Hours	Rate	Amount	
Engineering Aide	8.50	40.00	340.00	
Senior Environmental Technician	18.50	60.00	1,110.00	
Totals	27.00		1,450.00	
Total Labor				1,450.00

Consultants

Analytical Environmental Services, Inc				
5/14/2013	Analytical Environmental Services, Inc	MERCER HSRA	1,581.25	
	Total Consultants		1,581.25	1,581.25

Reimbursable Expenses

Supplies				
4/16/2013	EON Products, Inc	MERCER	103.95	
	Total Reimbursables		103.95	103.95

Total this Task \$3,135.20

 Task 783 Well Survey

Professional Personnel

		Hours	Rate	Amount
Registered Engineer		.50	90.00	45.00
Totals		.50		45.00
	Total Labor			45.00

Total this Task \$45.00

Total this Phase \$3,366.70

Total this Invoice \$13,281.70

Invoice



**G E O T E C H N I C A L
&
E N V I R O N M E N T A L
C O N S U L T A N T S , I N C**

514 Hillcrest Industrial Blvd

Macon, GA 31204

Phone: 478-757-1606 Fax: 478-757-1608

Russell Vullo
Mercer University
1400 Coleman Avenue
Macon, GA 31207

December 2, 2013
Invoice No: 000021830

Project 090698.340 Mercer HSRA - 2013

Professional Services through November 17, 2013

Phase 700 Professional Services

Task 702 Project Management

Professional Personnel

	Hours	Rate	Amount	
Staff Engineer	.25	90.00	22.50	
Environmental Specialist	5.50	60.00	330.00	
Totals	5.75		352.50	
Total Labor				352.50
		Total this Task		\$352.50

Task 706 Report Preparation

Professional Personnel

	Hours	Rate	Amount	
Registered Engineer	11.00	90.00	990.00	
Totals	11.00		990.00	
Total Labor				990.00
		Total this Task		\$990.00

Total this Phase \$1,342.50

Phase 720 Field Services

Task 479 Soil Sampling-Environmental

Reimbursable Expenses

Supplies				
10/16/2013	EON Products, Inc	TUBING	46.95	
11/8/2013	Cardmember Service - RH		8.20	
	Total Reimbursables		55.15	55.15
		Total this Task		\$55.15

Task 728 Site Visit

Professional Personnel

	Hours	Rate	Amount	
Senior Environmental Technician	1.50	60.00	90.00	
Totals	1.50		90.00	
Total Labor				90.00
		Total this Task		\$90.00

Task 764 Groundwater Sampling

Professional Personnel

	Hours	Rate	Amount	
	7.00		0.00	
Environmental Technician	18.00	60.00	1,080.00	
Engineering Aide	8.00	40.00	320.00	
Totals	33.00		1,400.00	
Total Labor				1,400.00

Consultants

Analytical Environmental Services, Inc				
10/31/2013	Analytical Environmental Services, Inc	MERCER HSRA	1,006.25	
	Total Consultants		1,006.25	1,006.25
		Total this Task		\$2,406.25
		Total this Phase		\$2,551.40
		Total this Invoice		\$3,893.90

Invoice



**GEOTECHNICAL
&
ENVIRONMENTAL
CONSULTANTS, INC**

**514 Hillcrest Industrial Blvd
Macon, GA 31204**

Phone: 478-757-1606 Fax: 478-757-1608

Russell Vullo
Mercer University
1400 Coleman Avenue
Macon, GA 31207

June 26, 2014
Invoice No: 000023440

Project 090698.340 Mercer HSRA - 2013

Professional Services through June 26, 2014

Professional Personnel

	Hours	Rate	Amount	
Registered Engineer	13.00	90.00	1,170.00	
Engineering Aide	18.00	40.00	720.00	
Senior Environmental Technician	17.50	60.00	1,050.00	
Totals	48.50		2,940.00	
Total Labor				2,940.00

Consultants

Miscellaneous 6/25/2014	LAB ANALYSIS		1,259.25	
	Total Consultants		1,259.25	1,259.25

Total this Invoice \$4,199.25