February 20, 2014

Georgia Environmental Protection Division
Response and Remediation Program
Suite 1462, East Tower
2 Martin Luther King, Jr. Drive, S.E.
Atlanta, Georgia 30354

Attn: Ms. Robin Futch, P.G., PMP
P: (404) 657 8600
E: robin.futch@dnr.state.ga.us

Re: Voluntary Investigation and Remediation Plan and Application, October 27, 2011
Martha's Dry Cleaners, HSI Site No. 10764
4608 Skidaway Road
Savannah, Chatham County, Georgia
Tax Parcel: 2-0120-01-004
Terracon Project No.: ES117125

Dear Ms. Futch:

On behalf of Bible Baptist Church, Terracon Consultants, Inc. (Terracon) has received and reviewed the Georgia Environmental Protection Division (EPD) Voluntary Investigation and Remediation Plan and Application review comment letter, dated February 17, 2012 and EPD's Extension Request letter dated September 26, 2012. On January 17, 2014 Terracon was authorized to perform sampling and reporting for the subject property. The following paragraphs summarize the EPD's comments and detail the requested work to be completed. The EPD's comments are included below in *italics*, followed with our response.

1. *Section 6.2 proposes the use of monitored natural attenuation (MNA) in addition to the use of an environmental covenant to restrict the use of groundwater on the affected parcel. Please include an additional restriction for the parcel that either prevents any building to be constructed over the affected area, or requires that a vapor intrusion model be developed and submitted to EPD before any building construction can occur.*

This comment is acknowledged. The proposed environmental covenant will be revised accordingly and submitted to the EPD prior to approval.

2. *Groundwater is currently not delineated to the Type 1 Risk Reduction Standard (RRS) for tetrachloroethene (PCE) as required by the Act. Horizontal and vertical delineation must be completed within the timeframe provided in the checklist and VIRP acceptance letter dated February 12, 2012.*

The property owner requested and the EPD approved an extension of one (1) year to fulfill the requirements and timeframe provided in the checklist and VIRP acceptance letter dated February 12, 2012. Therefore, horizontal delineation on all impacted properties to the Type 1 RRS will be completed by February 17, 2015. As of the January 2014 sampling event, vertical delineation to the Type I Risk RRS for tetrachloroethene has been achieved. Tetrachloroethene concentrations in MW-21-D are currently and have been since August 2012 below the applicable Type I RRS. Horizontal delineation is expected to take place within 2014. Monitoring Well MW-24 is just above the Type 1 RRS at a level of 6.82 µg/L. Skidaway Road is located just south and west of MW-24.

3. *Section 5.1 of the report indicates that MW-23 is to be used as a Point of Demonstration Well (POD). EPD does not agree that this should be used as a POD well as it is not immediately downgradient of the former source area. The POD well should be located outside the furthest extent and along the centerline of the plume.*

On July 31, 2012, a new groundwater monitoring well, MW-24, was installed downgradient of the former source area. The location of the MW-24 was chosen based on the September 2011 potentiometric surface data.

4. *The existence of PCE's degradation products indicates that biotransformation is occurring for the existing plume. In addition to the collections of PCE and its degradation products, and the field measurements already collected, please collect the following parameters, as a minimum, to help determine the rate of biotransformation is occurring at the site and to ensure that MNA is a viable options for remediation at the site.*

    a. *Dissolved Oxygen*
    b. *Nitrate*
    c. *Iron (II)*
    d. *Sulfate*
    e. *Sulfide*
    f. *Methane*
    g. *Chloride*

The additionally requested parameters were collected during the sampling events conducted in 2012 and 2014. The laboratory data are presented in Tables 3 of the Semi-annual Report, dated February 20, 2014. During future sampling events, vinyl chloride will be analyzed for as requested by EPD on February 20, 2014.

5. *Section 6.2 of the report indicates that the model for the site shows that the plume will only migrate approximately 180 feet downgradient before reaching levels below the Type 1 RRS. Please note that this statement is incorrect. Using Bible Baptist Church, Inc.'s (BBC) input values, the Biochlor model shows that the plume will extend well beyond 1000 feet and move as a slug and won't reach Type 1 RRS at the "source" area for 20 years. The model should show the maximum extent of*

migration of the plume at equilibrium, which is not necessarily in 5 years. Please reevaluate the model and resubmit as additional data is collected.

The BIOCHLOR model was reevaluated as requested with the results presented in Section 5.0 of the Semi-annual Status report, dated February 20, 2014.

6. *Since modeling is proposed to demonstrate that groundwater contamination will not extend beyond a point of demonstration as part of the selected corrective action, a discussion of the modeling should be included in the report. The discussion should include a definition of the study objectives, model calibration, model verification, and sensitivity analysis. The model should then be used to determine predictive scenarios to meet the study objectives.*

Please see Section 5.0 of the Semi-annual Status report, dated February 17, 2014 for a discussion of the revised BIOCHLOR model and input parameters.

7. *Please provide references and the rationale for selection of input parameters. Note that unless measured on site, a default soil bulk density of 1.5 and a default fraction organic carbon (f_{oc}) of 0.002 should be used for modeling purposes. These values are obtained from the EPA soil screening guidance (SSG). The k_{oc} values used are chemical specific values and should be obtained from the EPA Region 3 Regional Screening Level (RSL) tables available online. These tables are updated periodically and adjustments to the model may be necessary in future model runs.*

Please see Section 5.0 of the Semi-annual Status report, dated February 20, 2014 for a discussion of the revised BIOCHLOR model and input parameters including soil bulk density, fraction organic carbon, and k_{oc} values.

8. *A half-life of 720 years was used to predict biotransformation of PCE to TCE. Please note this value seems artificially elevated as typical half-life values range from 0.58 years to 9.9 years. Please update the model accordingly.*

Terracon acknowledges the comment and a discussion of the revised BIOCHLOR model is provide in the Annual Status Report, dated February 20, 2014.

9. *Section 4.1 of the report and Appendix D of the report indicate that the wells were installed by using fine sand as a filter pack seal, before placement of neat grout cement. These wells were not installed according to the USEPA guidance document titled "Design and Installation of Monitoring Wells". Section 2.3.4 of the document states "where neat cement grouts are to be used, the placement of a bentonite pellet seal above the filter pack is mandatory to prevent the possibility of grout infiltration into the screened interval prior to setting. Bentonite chips or other sealing products should not be substituted in this application". Although EPD is not requiring the replacement of these wells at this time, please note that all future wells that are installed at this site or future sites in the state of Georgia, must contain a bentonite seal, whether it is in conjunction with a fine sand seal or by itself. For well installation*

guidelines for the state of Georgia, please refer to the USEPA guidance document mentioned above.

Terracon acknowledges the comment and will install all future monitoring wells in strict accordance with the USEPA guidance document *titled "Design and Installation of Monitoring Wells".* However, it should be noted there has been no evidence of infiltration of grout into the filter pack zone. Groundwater quality data from the site indicates that pH ranges from 4.09 to 6.2, which is well below the range of values expected if neat cement grout had infiltrated into the filter pack through the fine sand seal.

10. *Section 4.3.1 of the Report indicates that stabilization was achieved if temperature remained constant for three consecutive readings and conductivity did not very more than 10 percent. Please note that guidance on this has changed. The updated USEPA SESD operation procedure document titled "Groundwater Sampling" states that stabilization occurs when specific conductance varies no more than approximately 5 percent. Temperature is no longer a stabilization parameter yet should still be collected as part of any sampling plan. Please review this document and update future sampling protocol as necessary.*

Terracon acknowledges the comments and will conduct all future groundwater sampling events in accordance with the most up-to-date revision of the USEPA SESD operation procedure document titled "Groundwater Sampling". It should be noted that the September 2011 sampling event occurred prior to the change in the USEPA SESD guidance document SESDPROC-301-R2 (October 28, 2011).

11. *The field sampling logs provided in Appendix G are inadequate for determining whether sampling was conducted in accordance with the groundwater sampling procedures described in the USEPA guidance document referenced in Comment 9. In all future sampling events, record and follow the procedures outlined in the guidance document. Please note the following specific items and correct future sampling events:*

    a. *It is unclear if a submersible pump or a peristaltic pump was used to purge some of the wells.*
    b. *Section 4.3.2 states that Teflon tubing was used to collect samples, while the field logs in Appendix G indicate polyethylene tubing was used. Please clarify and indicate on the field logs correct tubing used for sampling.*
    c. *Section 4.3.1 states that well volumes were calculated for each well. In future reports please provide the well volume calculations on the field logs.*
    d. *The pump rate was not included on the field logs.*
    e. *PH was not within 0.1 for three consecutive readings for all wells with the exception of MW-23.*
    f. *Specific Conductivity was not within 5 percent for wells MW_19 and MW-21S.*
    g. *Turbidity less than 10 NTU has been shown to be easily achievable and attempts should be made to reach this goal when collecting samples.*
    h. *EPD cannot verify if low flow/low stress methods as indicated in section 4.3.1 of the report were used to purge and collect samples from the site. For low*

flow/low stress, the pump intake should be placed at the top of the water column and a minimum of three well volumes should be removed. Please indicate on the field logs the volume of water removed during purging.

Terracon acknowledges the comments and will verify that the appropriate procedures and record keeping is performed during all future groundwater sampling events in accordance with the most up-to-date revision of the USEPA SESD operation procedure document titled "Groundwater Sampling", currently SESDPROC-301-R3 (March 3, 2013). All groundwater samples from the September 23, 2011 sampling event were collected using Teflon lined polyethylene tubing. All future groundwater sample field forms will include at a minimum the following: well volume calculations, sampling materials, pumping rates, pumping method, and total volume of water removed during purging.

The August 2012 and January 2014 sampling events were completed in accordance with SESDPROC-301-R2 and SESDPROC-301-R3, respectively. Purging was completed during both sampling events in accordance with Section 3.2.2 "Tubing-in-Screened-Interval" Method (SESDPROC-301-R2, page 17 and SEDPROC-301-R3, page 16), which states "*the peristaltic pump tubing or intake point of the submersible is placed in the approximate mid-portion of the screened interval of the well."* The pumping rate was adjusted so that only a slight and stable drawdown of the water column after pumping begins. Collection of the groundwater samples was conducted after three (3) well volumes had been removed and the chemical parameters were stabilized. However, if after three (3) well volumes have been removed, the chemical parameters were not stabilized, additional wells volumes (up to five well volumes) were removed. If the parameters had not stabilized within five (5) volumes, the groundwater samples were collected. In addition to the collection of chemical stabilization parameters during purging, depth to water, pumping rate, and total volume removed were recorded on the 2012 and 2014 field sampling forms.

12. *The field log for MW-21D states that a sheen was visible on the water inside the well casing. Please provide further explanation and additional investigation of this if necessary.*

The "sheen" reported on the water inside the well casing of MW-21D was not related to contamination by volatile organic compounds (VOC). The field personnel mistakenly identified the grout film on top of the water in the annulus between the six (6) inch casing and the two (2) inch inner casing as a sheen. The situation was investigated immediately after the field personnel observed the "sheen", however the field form was not corrected to reflect that the "sheen" was not related to any VOC contamination.

13. *As required by Item 6 of the VIRP Checklist, in order to document the oversight of the VIRP development by a Professional Engineer or Geologist (PE/PG), a monthly summary of hours invoiced and a description of services provided to the participant*

must be provided as part of the application. The summary for all work completed to date should be included with the first semi-annual report.

The Semi-annual Report, dated February 20, 2014 and the associated invoices (Terracon Invoice No. T344781 dated 9/18/2012 and T494976 dated 2/21/2014), includes a description of services and the number of hours work for since the submittal of the VIRP, dated October 28, 2011.

14. *In section 2.3.2 of the VIRP, Bible Baptist Church (BBC) states "the 'water table' zone is the zone that is intersected by the mine operations". Please clarify what this statement means as EPD is unaware of mine operations occurring in the past at this location.*

There have been no mining operations at the site. The inclusion of any reference to mine operations was the result of a copying error.

15. *In future submittals, Figure 4 of the report should be updated to include MW-21S on the cross-section and Figure 5 should be updated to include MW-21D.*

This comment is acknowledged and the cross-sections have been revised.

16. *Please note, the values listed in Table 3—Site Delineation Concentration Criteria for carbon disulfide and 1,1,2-trichloroethane are incorrect. The correct values are 4 mg/L and 0.005 mg/L respectively. Please not the corrections in future submittals.*

This comment is acknowledged and the table has been revised accordingly.

17. *Please note the figures and Table 4 of the Report refer to "trichloroethene" as "trichloroethane". Please correct in future report submittals.*

This comment is acknowledged and the table has been revised accordingly.

We appreciate the opportunity to provide the above information for this project. If you have any questions concerning this report, please contact us at your earliest convenience.

Sincerely,
Terracon Consultants, Inc.

Stewart A. Dixon, P.G.
Environmental Department Manager

William S. Anderson, III, P.E.
Senior Principal / Office Manager

Semi-annual Status Report

Martha's Dry Cleaner
4608 Skidaway Road
Savannah, Chatham County, Georgia
EPD HSI No. 10764

February 20, 2014
Terracon Project No. ES117125

Prepared for:

Bible Baptist Church
Savannah, Georgia

Prepared by:

Terracon Consultants, Inc.
Savannah, Georgia

Offices Nationwide
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Terracon

February 20, 2014

Georgia Department of Natural Resources
Environmental Protection Division
Response and Remediation Program
2 Martin Luther King, Jr. Drive, SE
Suite 1462
Atlanta, Georgia 30334-9000

Attn: Ms. Robin Futch, P.G., PMP
P: (404) 657 8600

Re: Semi-annual Status Report
Martha's Dry Cleaner
EPD HSI No. 10764
4608 Skidaway Road
Savannah, Chatham County, Georgia
Terracon Project No.: ES117128

Dear Ms. Futch:

Terracon Consultants, Inc. (Terracon) is pleased to submit the enclosed 2014 Semi-annual Status report for the above-referenced site. On January 17, 2014 Terracon was authorized to perform sampling and reporting for the subject property. This report documents the field work conducted at the site from August 2012 to January 2014 and presents the current site conditions as of January 2014.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning this report, please contact us at your earliest convenience.

Sincerely,
Terracon Consultants, Inc.

Stewart A. Dixon, P.G.
Environmental Department Manager

GEORGIA REGISTERED No. 20997 PROFESSIONAL ENGINEER WILLIAM S. ANDERSON III

William S. Anderson, III, P.E.
Senior Principal / Office Manager

Enclosures
cc: 1 – Client (PDF)
1 – File

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REGISTERED PROFESSIONAL CERTIFICATION

"I certify under penalty of law that this report and all attachments were prepared by me or under my direct supervision in accordance with the Voluntary Remediation Program Act (O.C.G.A. Section 12-8-101, et seq.). I am a professional engineer/professional geologist who is registered with the Georgia State Board of Registration for Professional Engineers and Land Surveyors/Georgia State Board of Registration for Professional Geologists and I have the necessary experience and am in charge of the investigation and remediation of this release of regulated substances.

Furthermore, to document my direct oversight of the Voluntary Remediation Plan development, implementation of corrective action, and long term monitoring, I have attached a monthly summary of hours invoiced and description of services provided by me to the Voluntary Remediation Program participant since the previous submittal to the Georgia Environmental Protection Division.

The information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Name: William S. Anderson III

Signature: _____

Date: 2-21-14

Georgia Stamp

SEMI-ANNUAL STATUS REPORT

MARTHA'S DRY CLEANER
HSI Site No. 10764
4608 Skidaway Road
Savannah, Chatham County, Georgia

Terracon Project No. ES117125
February 20, 2014

1.0 INTRODUCTION

The Martha's Dry Cleaner site is located at 4608 Skidaway Road, Savannah, Georgia (property) as shown in Figure 1 in Appendix A. The subject property is an approximately 1.5-acre parcel of land, previously identified on the Chatham County Tax Assessor's website as Tax Parcel ID 2-0120-01-001C, which is currently a portion of Tax Parcel ID 2-0120-01-004 and makes up the campus of Bible Baptist Church. Bible Baptist Church acquired the subject property in October 2004.

Historically, the property was developed and operated from 1986 to 2000 as a small shopping center that included Martha's Dry Cleaner, which rented the space until July 31, 2000. A number of environmental assessments had been conducted on the property between 1996 and 2008, which revealed the presence of tetrachloroethene (PCE) and trichloroethene (TCE) as contaminants of concern in soil and groundwater. The property was listed on the Hazardous Site Inventory in May 2003 as site number 10764.

The property is bound to the north by a church building and parking lot owned by Bible Baptist Church. The property is bound to the east by LaRoche Avenue and Savannah State University, which is located beyond LaRoche Avenue. The property is bound to the south by the Bible Baptist Church campus and a residential property owned by Thomas and Gretchen Alnutt. The property is bound to the west by Skidaway Road and residential properties. The property is located in an area of mixed land use with mostly residential, commercial, and retail properties.

2.0 SITE COMPLIANCE SUMMARY

On March 31, 2003, Mr. J. Cary Lester of Discount Auto Parts issued a release notification for concentrations of PCE in soil and groundwater that exceeded the reportable quantities. PCE contamination at the property is believed to be related to the dry cleaning operations at the former Martha's Dry Cleaner located on the property. On May 5, 2003, Mr. Michael Medlock of

the Georgia EPD issued a memorandum recommending HSI listing for Martha's Dry Cleaner. On May 30, 2003, Mr. Harold F. Reheis of the Georgia EPD issued a letter stating that property was listed on the HSI.

EMC Engineering (EMC) conducted an assessment to delineate the soil on the property. The results of this assessment were presented in a report dated March 15, 2005 for Bible Baptist Church. EMC delineated the PCE contaminated soil at the site with respect to the Georgia EPD Type 1 Risk Reduction Standard for PCE (0.5 mg/kg). EMC determined that the horizontal extent of PCE contamination was approximately 0.4 acres.

S&ME conducted additional soil and groundwater assessment in October 2005. The results of this assessment were presented in a report dated December, 2005. Five (5) soil borings were advanced using direct-push Geoprobe™ technology. Groundwater samples were collected from these soil boring locations and analyzed for Volatile Organic Compounds (VOCs), Semi-Volatile Organic Compounds (SVOCs), and Resource Conservation and Recovery Act (RCRA) Metals. S&ME recommended that additional soil and groundwater investigation were to be conducted to determine if metal contaminants were present in the soil and groundwater at the property.

S&ME collected groundwater samples from seventeen (17) groundwater monitoring wells on May 22 and 23, 2006. The sampling event showed that seven (7) volatile organic compounds (PCE, TCE, toluene, cis-1,2-DCE, trans-1,2-DCE, 1,1,2-trichlorethane, and xylenes) were detected in the groundwater samples. Soil samples were also collected from four (4) soil boring locations. The only VOC compound detected in the soil was acetone, which was known as a common laboratory contaminant. The four soil samples were also analyzed for RCRA metals. Arsenic, barium, chromium, lead, mercury, and silver were detected in the soil samples collected. Type 3 and 4 Risk Reduction Standards (RRSs) were calculated for all regulated constituents detected in groundwater and soil samples collected. The results of this assessment identified PCE and TCE as the primary contaminants of concern at the subject site. In addition, the assessment also recommended that the soils exceeding the established RRSs be delineated. Results of S&ME's assessment were provided to the Georgia EPD.

According to the Remediation Activities Report dated November 14, 2008, prepared by WPC, soil delineation and removal activities were performed at the subject property on June 18, 2008 until July 2, 2008. A total of 1,764.5 tons of contaminated soil was removed from the property and were disposed of at a permitted Subtitle D landfill. During the soil excavation activities, three (3) continuous air monitoring stations were set up to sample for contaminant vapors emanating from the soil excavation. The report concluded that the confirmation soil sampling showed that the soils located on the subject property had been effectively remediated to levels below the Type 1 risk reduction standards (RRSs). The results of these investigations were provided to the Georgia EPD. The Georgia EPD issued a letter dated April 20, 2010 concurring that the on-site soils met the residential Type 1 RRSs cleanup standards.

On October 2011, a Voluntary Investigation and Remediation Plan (VIRP) and Application was submitted to the Georgia EPD for the site. The site was accepted into the Voluntary Remediation Program (VRP) by the Georgia EPD based on the VIRP acceptance letter dated February 17, 2012. EPD granted the property owner a one (1) year extension to fulfill the requirements detailed in their February 17, 2012 letter. Because of the one (1) year extension, Terracon submitted a summary letter dated September 10, 2012 to Georgia EPD that included the most recent groundwater sampling data and a site plan with the location of the newly installed groundwater monitoring well (MW-24).

2.1 Site Geology Summary

The subject property is included on the Savannah, Georgia, 7.5 minute series United States Geological Survey topographic quadrangle map (Figure 1). The site topography is relatively flat with the exception of two dry retention ponds located on the eastern portion of the property.

The borings completed at the property identified the shallow subsurface material as very stiff sand to clayey sand to an approximate elevation of 10 feet underlain by silty sands to an approximate elevation of -20 feet. The shallow geologic cross section is presented in Figures 7 and 8. Depth to groundwater at the site typically ranges from 7.6 to 13.8 feet below ground surface (bgs) depending seasonal variations.

2.2 Risk Reduction Standards

As the site and surrounding properties are used for residential purposes, Type 1 RRS (residential, site-specific) were developed in accordance with the HSRA rules. Concentrations of PCE currently and in the past have exceeded the Type 1 RRS in select shallow groundwater monitoring wells at the site.

3.0 GROUNDWATER MONITORING

Groundwater at the site is to be sampled on a semi-annual basis, as specified in the approved VIRP, dated October 25, 2011 and approved by the Georgia EPD in a letter dated February 2012. However in September 2012, the Georgia EPD granted the property owner a one (1) year extension to fulfill the requirements detailed in their February 17, 2012 letter. Therefore, groundwater sampling at the site did not occur during 2013.

The sampling methodology and results for the August 2012 semi-annual groundwater sampling event and the January 2014 semi-annual groundwater sampling event are presented in the following subsections.

Site figures prepared from the data collected during the August 2012 and January 2014 sampling events, and the data tables are included in Appendix A and B, respectively. Laboratory data from the August 2012 and January 2014 sampling events are included in Appendix C. The monitoring well purge and sampling logs from both sampling events are provided in Appendix E.

3.1 August 2012 Semi-Annual Event Assessment Methodology

The August 2012 field activities included the installation of an additional downgradient groundwater monitoring well and collection of groundwater samples from the seven (7) wells at the site.

3.1.1 Monitoring Well Installation

Terracon's field activities commenced on July 31, 2012 by Mr. Stewart A. Dixon, P.G., a Terracon Professional Geologist. As part of the scope of work, one (1) permanent shallow monitoring well (MW-24) was installed at the location identified in Figure 3. The monitoring well was installed in accordance with procedures described in the US EPA Region 4, Science and Ecosystem Support Division guidance document titled *Design and Installation of Monitoring Wells (SESDGUID-101-R0, dated February 18, 2008).*

Utilizing this guidance, the shallow monitoring well, MW-24, was drilled utilizing a truck-mounted drill rig advancing 8.25-inch outside diameter hollow-stem augers equipped with a bottom plug. The auger was advanced to a depth of twenty (20) feet below ground surface. A well-graded filter pack sand was poured into the hollow-stem auger to begin the filter pack placement. Once approximately six (6) inches of sand had been placed into the annulus, the monitoring well was constructed utilizing a 2-inch diameter x 10-feet long Schedule 40 PVC Screen and 2-inch diameter x 10-feet long Schedule 40 PVC Riser. The well was lowered into the hollow-stem auger and the bottom plug was released.

The sand filter pack installation was then continued and the hollow-stem auger was gradually removed in order to prevent the annulus from collapsing. Filter pack placement ceased at approximately 2 feet above the top of the screened interval. Two (2) feet of bentonite chips were placed above the filter pack and subsequently hydrated. After the bentonite was allowed to hydrate per manufacturer's instructions, the remaining annulus space was then filled with a neat cement grout, which extended to the ground surface where the well was completed with a locking cap, flush mount steel cover, and a two (2) feet by two (2) feet concrete pad.

Development of each well was achieved by removing groundwater with a GeoTech peristaltic pump and new disposable Teflon tubing. Groundwater from each well was purged until a relatively non-turbid sample was produced. For the purposes of this project, approximately 20

gallons of groundwater was removed from each monitoring well in order to produce a non-turbid sample.

Drilling services were performed by a State of Georgia licensed well driller using a truck-mounted Mobile D-53 drill rig under the supervision of a Terracon Professional Geologist. Borings were advanced using a hollow-stem auger. All augers and sampling utensils were decontaminated in general accordance with ASTM D 5088 – 90 "*Decontamination of Field Equipment Used at Non Radioactive Waste Sites*". The downhole sampling equipment was cleaned using Alconox soap and high pressure steam wash before entering the site, before introduction into the subsurface, between each sampling event, between each borehole location, and before leaving the site. New disposable gloves were utilized between each sample to minimize the possibility of cross contamination. For the purposes of this project, three complete sets of augers were decontaminated prior to entering the site and were utilized individually for each well in order to eliminate the need for decontamination between wells. All drill cuttings and development water were containerized on-site in 55-gallon steel drums.

Soil samples were collected from the boring continuously at one (1) foot intervals and logged to document soil lithology, color, moisture content, and sensory evidence of impairment. The monitoring well construction diagram and boring log for MW-24 is included in Appendix F.

3.2 Groundwater Sampling Event

The 2012 sampling event was performed by Terracon on July 31, 2012 through August 1, 2012. Groundwater samples were collected from seven (7) monitoring wells. Prior to sampling, each monitoring well was opened and allowed to equilibrate. An electronic water-level meter was used to measure the water level in the wells.

Groundwater samples were collected from each of the monitoring wells using low-flow methodology with a peristaltic pump and disposable Teflon tubing. Groundwater was purged until a relatively non-turbid sample was produced. Groundwater monitoring activities at the site were conducted in accordance with *EPA Region 4, SESD Groundwater Sampling Operating Procedure, dated October 28, 2011*. The sampling activities are discussed in the following sections.

The monitoring wells were purged using a peristaltic pump and disposable Teflon tubing. Before purging commenced, the groundwater level and total well depth was measured for each monitoring well to calculate the volume of the well. Once the well volume was calculated purging commenced. During purging, the pump intake (Teflon tubing) was maintained within the mid-point of the screened interval and field parameters, including pH, specific conductance, temperature, ORP, and turbidity, were monitored. Pumping rate and drawdown was also monitored during purging activities.

An adequate purge was achieved when water quality parameters (pH, conductivity, temperature, and turbidity) stabilized in accordance with the EPA purging guidance and a minimum of three (3) well volumes were removed. However, additional purging of up to five (5) wells volumes was conducted if water quality parameter stabilization had not been achieved after three (3) well volumes. As stated in the *EPA Region 4, SESD Groundwater Sampling Operating Procedure, October 2011*, groundwater samples were collected at the discretion of the environmental professional if stabilization had not occurred after the removal of five (5) well volumes. Water quality parameters were measured using an YSI 556 MPS equipped with a flow through cell. The August 2012 field sampling data sheets are included in Appendix E.

Samples were collected from each monitoring well using a peristaltic pump and new disposable teflon tubing via the "Straw Method." One end of the tubing was submerged within one-foot of the top of the water column of the monitoring well sampled, and the other end of the tubing was momentarily attached to the pump to fill the tubing with water. After initial water was discharged through the pump head, the tubing was quickly removed from the pump and a gloved thumb was placed on the tubing to inhibit water flow inside the tube. The tubing was then removed from the well and the water contained inside the tubing was allowed to gravity drain into the appropriate sample vials.

Once the sample vials were filled and sealed correctly, the sample vials were immediately placed on ice in a laboratory supplied cooler, and delivered to Avery Laboratories & Environmental Services, LLC analytical laboratory in Savannah, Georgia. The samples were analyzed for the following parameters:

- Carbon disulfide,
- Trans-1,2-dichloroethene,
- Cis-1,2-dichloroethene,
- Trichloroethene,
- 1,1,2-trichloroethane, and
- Tetrachloroethene

For quality assurance, one duplicate sample was collected, and submitted to laboratory using the same procedure described above. The duplicate sample was analyzed for the same parameters.

The groundwater samples collected at the site were also analyzed for the following natural attenuation parameters:

- Alkalinity,
- Carbon dioxide,
- Chloride,
- Nitrate as N,

- Nitrite as N,
- Sulfate,
- Sulfide,
- Ethane,
- Ethene,
- Methane, and
- Iron (II).

The electronic water level meter was decontaminated prior to its initial use and after being used at each well by cleaning with a Liquinox and distilled water mixture, followed by a distilled water rinse. The purge water produced during sampling activities was contained in clean, 55-gallon drums for future disposal.

3.3 January 2014 Semi-Annual Event Assessment Methodology

The January 2014 sampling event was performed by Terracon on January 27, 2014 through January 29, 2014. Groundwater samples were collected from the seven (7) on-site monitoring wells. Prior to sampling, each monitoring well was opened and allowed to equilibrate. An electronic water-level meter was used to measure the water level in all of the wells on January 27, 2014 between 13:35 and 14:05.

Groundwater samples were collected from each of the monitoring wells using low-flow methodology with a peristaltic pump and disposable Teflon tubing. Groundwater was purged until a relatively non-turbid sample was produced. Groundwater monitoring activities at the site were conducted in accordance with *EPA Region 4, SESD Groundwater Sampling Operating Procedure, November 2013*. Discussed below are the details of the sampling activities.

The monitoring wells were purged using a peristaltic pump and disposable Teflon tubing. Before purging commenced, the groundwater level and total well depth was measured for each monitoring well to calculate the volume of the well. Once the well volume was calculated purging commenced. During purging, the pump intake (Teflon tubing) was maintained within the mid-point of the screened interval and field parameters, including pH, specific conductance, temperature, ORP, and turbidity, were monitored. Pumping rate and drawdown were also monitored during purging activities.

An adequate purge was achieved when water quality parameters (pH, conductivity, temperature, and turbidity) stabilized in accordance with the EPA purging guidance and a minimum of three (3) well volumes were removed. However, additional purging of up to five (5) wells volumes was conducted if water quality parameter stabilization had not been achieved after three (3) well volumes. As stated in the *EPA Region 4, SESD Groundwater Sampling Operating Procedure, November 2013*, groundwater samples were collected at the discretion of the environmental professional if stabilization had not occurred after the removal of five (5) well

volumes. Water quality parameters were measured using an YSI 556 MPS equipped with a flow through cell. The January 2014 field sampling data sheets are attached in Appendix E.

Samples were collected from each monitoring well using a peristaltic pump and new disposable Teflon tubing via the "Straw Method." One end of the tubing was submerged within one-foot of the top of the water column of the monitoring well sampled, and the other end of the tubing was momentarily attached to the pump to fill the tubing with water. After initial water was discharged through the pump head, the tubing was quickly removed from the pump and a gloved thumb was placed on the tubing to inhibit water flow inside the tube. The tubing was then removed from the well and the water contained inside the tubing was allowed to gravity drain into the appropriate sample vials.

Once the sample vials were filled and sealed correctly, the sample vials were immediately placed on ice in a laboratory supplied cooler, and delivered to Avery Laboratories & Environmental Services, LLC analytical laboratory in Savannah, Georgia. The samples were analyzed for the following parameters:

- Carbon disulfide,
- Trans-1,2-dichloroethene,
- Cis-1,2-dichloroethene,
- Trichloroethene,
- 1,1,2-trichloroethane, and
- Tetrachloroethene

For quality assurance, one duplicate sample was collected, and submitted to laboratory using the same procedure described above. The duplicate sample was analyzed for the same parameters. The groundwater samples collected at the site were also analyzed for the following natural attenuation parameters:

- Alkalinity,
- Carbon dioxide,
- Chloride,
- Nitrate as N,
- Nitrite as N,
- Sulfate,
- Sulfide,
- Ethane,
- Ethene,
- Methane, and
- Iron (II).

The electronic water level meter was decontaminated prior to its initial use and after being used at each well by cleaning with a Liquinox and distilled water mixture, followed by a distilled water rinse. The purge water produced during sampling activities was contained in clean, 55-gallon drums for future disposal.

3.4 Groundwater Flow Direction

Water level measurements collected during the August 2012 and January 2014, in conjunction with the elevation of each monitoring well's top of casing reference point, were used to calculate the elevation of the water table at each monitoring well. A summary of the depth-to-groundwater measurements and corresponding groundwater elevation data are presented in Table 1.

Groundwater potentiometric maps for the August 2012 and January 2014 events were prepared from the elevation data to estimate groundwater flow direction and horizontal hydraulic gradients for the surficial aquifer are presented as Figures 3 and 4, respectively. As shown on the figures, groundwater elevations at the site have varied over time likely caused by yearly and seasonal variation in recharge and other mitigating geologic factors; however, the regional groundwater flow is generally to the southwest.

Based on the current data, the groundwater appears to be flowing generally in the southwest direction. This groundwater flow direction reflects the dominant direction determined in past investigations. The hydraulic gradient at the site based on the August 2012 potentiometric data was 0.005 ft/ft, while the hydraulic gradient based on the January 2014 potentiometric data is 0.001 ft/ft. Groundwater elevations are summarized on Table 1.

4.0 GROUNDWATER ANALYTICAL RESULTS

Groundwater analytical results are discussed in the following sections. To be conservative, the concentration values from the duplicate samples collected from select wells are reported "as the analytical results" when those values have higher detected concentrations for the respective analytes.

A summary of the recent and historical groundwater data is presented in Table 2. The August 2012 and January 2014 groundwater quality data is illustrated as Figures 5 and Figure 6, respectively. The laboratory analytical results for both the August 2012 and January 2014 sampling events are presented in Appendix C.

4.1 Volatile Organic Compounds

The laboratory analytical data indicated that all VOCs analyzed for during the August 2012 and January 2014 sampling events were found to be either below the reporting limit of 1 µg/L or below the approved Type 1 RRS with the exception of PCE concentrations in MW-21S and MW-24.

PCE concentrations exceed the Type 1 RRS in two (2) wells (MW-21-S and MW-24). The PCE concentrations in MW-24 have remained relatively stable from August 2012 to January 2014 at concentrations of 7.82 µg/L and 6.82 µg/L, respectively. PCE concentrations at MW-21-S have decreased steadily since September 2011 from 270 µg/L to 188 µg/L (January 2014).

PCE was also detected in MW-19 and MW-23 during the January 2014 sampling event, however concentrations are below the Type 1 RRS. PCE concentrations in MW-19 have steadily decreased from a high of 16.6 µg/L measured in September 2011 to 1.46 µg/L as measured in January 2014. Based on the January 2014 data, PCE concentrations in MW-23 have increased from less than 1.0 µg/L (below the laboratory reporting limit) to 2.29 µg/L, which is below the Type I RRS.

4.2 Natural Attenuation Parameters

In order to help determine the rate of biotransformation occurring at the site and to ensure that Monitored Natural Attenuation is a remediation option of the site, natural attenuation parameters were collected during the August 2012 and January 2014 sampling events. The laboratory analytical results from source area wells (MW-21-S and MW-21-D) and the downgradient well (MW-19, MW-23, and MW-24) were input in the Natural Attenuation Screening Protocol within the U.S. Environmental Protection Agency's BIOCHLOR Natural Attenuation Decision Support System Version 2.2 dated March 2002 (BIOCHLOR) to determine the likelihood of anaerobic biodegradation occurring at the site.

The results of the natural attenuation screening protocol indicated that there is limited evidence of anaerobic biodegradation (reductive dechlorination) of chlorinated organics at the site. However, the groundwater monitoring data from 2012 to 2014 indicates that PCE concentrations have decreased at MW-19 and MW-21-S. Based on the January 2014 sampling data, the PCE concentration at MW-21-S has decreased by 30.4% since 2011.

5.0 FATE AND TRANSPORT MODELING

The BIOCHLOR fate and transport model submitted with the VIRP (October 2011) was revised based on both the Georgia EPD review comments received in a letter dated February 17, 2012 and the collection of additional water and on-site soil quality data. Our objective in using the

BIOCHLOR model was to understand the fate and transport of the groundwater plume in the absence of a source, since the source area soils have been previously remediated and to help determine whether Monitored Natural Attenuation is a valid method of corrective action.

The following sections provide a summary of the revised model parameters, assumptions, and the BIOCHLOR modeling procedures. Results and conclusions are presented at the end of this section. Documentation of calculations and model results is contained in Appendix G: Fate and Transport Model Documentation.

5.1 Model Parameters and Assumptions

The following items address the preliminary contaminant transport calculations necessary for fulfilling the data input requirements of the BIOCHLOR model. Actual aquifer specific data collected from the site was used to calculate the majority of the parameters discussed in the following sections.

5.1.1 Seepage Velocity

The velocity of groundwater movement through the surficial aquifer, or seepage velocity, was calculated using the following equation from Fetter (2001):

$$v_x = -\frac{Ki}{\eta}$$

Where

v_x	is the seepage velocity (ft/yr)
K	is the hydraulic conductivity (ft/yr)
i	is the hydraulic gradient (ft/ft)
η	is the effective porosity (dimensionless)

The hydraulic conductivity data was presented in the VIRP indicated that the average site hydraulic conductivity is 2.8×10^{-3} cm/sec or 7.82 ft/day, which was used in the original BIOCHLOR model presented in the VIRP (October 28, 2011). However, to be conservative the highest hydraulic conductivity value measured on-site of 3.3×10^{-3} cm/sec or 9.27 ft/day was used for the revised BIOCHLOR model.

Based on the groundwater elevation data collected during the September 2011 monitoring event, the hydraulic gradient (i) was calculated at 0.006 ft/ft. An effective porosity (η) of 0.2 was selected based on average values found in the BIOCHLOR User's Manual v1.0. As such, the seepage velocity calculated is 101.7 ft/yr.

5.1.2 Dispersivity

Dispersivity values used in the model were based on guidance found in the BIOCHLOR User's Manual v1.0 based on the length of the plume from the field data. The plume length for the subject site was estimated to be 300 feet based on the January 2014 groundwater sampling data. The Longitudinal dispersivity (α_x) was calculated in BIOCHLOR using the equation from (Xu and Eckstein, 1995; Al-Suwaiyan, 1996) as follows:

$$\alpha_x = 3.28 * 0.82 * \left[log_{10}\left(\frac{L_p}{3.28}\right)\right]^{2.446}$$

Where

L_p is the plume length (ft)

Based on high reliability points from Gelhar et al (1992), transverse dispersivity (α_y) is calculated below:

$$\alpha_y = 0.1\alpha_x$$

Vertical dispersivity (α_z) is generally approximated at $1x10^{-99}$ feet, based on conservative estimates.

5.1.3 Retardation Factor

Concentration of dissolved contaminates can be reduced by adsorption to the aquifer media thereby retarding the flow of this contaminant through the subsurface. The retardation factor is the ratio of the groundwater seepage velocity to the rate that organic chemicals migrate in the groundwater. The adsorption to the aquifer media and resultant retardation of contaminant transport is controlled by the soil bulk density, effective porosity, organic carbon-water partition coefficient (K_{oc}), distribution coefficient, and fraction of organic carbon (f_{oc}) on uncontaminated soil.

As directed by the Georgia EPD in their letter, dated February 17, 2012 the following values and / or sources were used to for following input parameters:

- Soil bulk density – 1.5 kg/L
- K_{oc}
  - Tetrachloroethene 94.94 L/kg
  - Trichloroethene 60.7 L/kg
  - Dichloroethene (1,2-cis and 1,2-trans) 39.6 L/kg
  - Vinyl Chloride 21.73 L/kg

The k_{oc} values were taken from the U.S. Environmental Protection Agency (USEPA) Region 3 Regional Screening Level Tables, dated November 2013. The K_{oc} value used for ethene was the default value from the BIOCHLOR User's Manual v1.0.

5.1.3.1 Fraction Organic Carbon

Three (3) total organic carbon (TOC) samples were collected from the surficial aquifer matrix on January 27, 2014. The TOC samples were collected approximately 300 feet south of MW-19, well outside of the documented contaminant plume. Field screening of the samples with a photoionization detector (PID) indicated that the samples were free of volatile contamination. The boring locations were separated by a distance of approximately 30 feet. The location of the soil samples are shown on Figure 1 in Appendix A.

Samples were collected by advancing a stainless steel hand auger to a depth of approximately 9.5 feet to 10 feet below ground surface, within the saturated zone (saturated conditions were encountered at a depth of approximately 9.5 feet below ground surface). The lithology of the borings generally consisted of fine sand to a depth of approximately 10 feet below ground surface.

All sample collection tools were decontaminated in general accordance with ASTM D 5088 – 90 *"Decontamination of Field Equipment Used at Non-Radioactive Waste Sites"*. The downhole equipment was cleaned using Alconox soap before entering the site, before introduction into the subsurface, and before leaving the site. New disposal gloves were used by all field personnel to minimize the possibility of cross contamination. All removed soils were returned to the borehole following sample collection.

Following field screening, each sample was inserted into laboratory supplied glassware, placed on ice in an insulated cooler, and logged on the chain of custody. The samples were transported via hand delivery to Avery Laboratories & Environmental Services, LLC of Savannah, Georgia to be analyzed for Total Organic Carbon. In order to confirm that the samples were collected from an uncontaminated area, they were also analyzed for volatile organic compounds (VOCs) per EPA Method 8260. The laboratory analytical results are summarized on Table 4 in Appendix D. The chain of custody and laboratory data sheets are also included in Appendix D.

As shown on Table 4, Appendix B, the laboratory analytical results confirmed the TOC samples were collected from an uncontaminated region of the site's surficial aquifer matrix. The samples contained a TOC concentration above the laboratory method limits with the exception of SS-3. The TOC laboratory results were as follows: SS-1 – 2,200 mg/kg, SS-2 – 679 mg/kg, and a laboratory J-Flagged TOC estimated value for SS-3 of 295 mg/kg. Because the samples were collected within close proximity to each other and at the same relative depth, the J-Flagged

estimated concentration 295 mg/kg was determined to be an outlier. Therefore, the TOC value from SS-2 was used to calculate the fraction of organic carbon (f_{oc}).

A f_{oc} value of 0.00068 was calculated from the TOC value from SS-2 (679 mg/kg). This value was incorporated in the BIOCHLOR simulation to determine whether it was reasonable based on field conditions. The f_{oc} value of 0.00068 resulted in downgradient concentrations at MW-24 higher than those observed during the January 2014 sampling event without adjustment of the PCE half-life beyond the acceptable range of 0.58 to 9.9 years. As such the TOC concentrations from SS-1 and SS-2 were averaged to represent the site resulting in a f_{OC} of 0.000145, which allowed for model calibration to the observed downgradient concentration levels within the acceptable the range of PCE half-life values.

5.1.4 Source Data Input Parameters

Based on analytical data from the 2011, 2012, and 2014 monitoring events, the area in the vicinity of MW-21-S was selected as the "source" area. A PCE concentration of 270 µg/L was selected as the source concentration, which was the highest concentration measured during the September 2011 monitoring event (first monitoring event post source soil remediation completed in 2008). In addition, monitoring MW-21-S is within the source removal soil remediation work area.

A source width of 90 feet was selected based on the distance between MW-21-S and MW-19 and the concentrations of PCE measured during the September 2011 sampling event. Using the historic shallowest depth to groundwater of approximately 7 feet below grade and the deepest screened interval depth of 20 feet below grade, a source vertical thickness (Z) of 13 feet was selected. A plume length of 300 feet was calculated based on the distance between MW-21-S and MW-24 along the potentiometric surface, which represents a concentration gradient of 270 µg/L (September 2011) to 7.82 µg/L (January 2014), respectively.

The source area was modeled as a decaying single planar source, because the groundwater monitoring data from the past three sampling events (2011, 2012, and 2014) shows evidence of a decaying source concentration and based on the past source soil remediation activities conducted at the site in the vicinity of MW-21-S. A source decay constant was calculated using the guidance in BIOCHLOR User's Manual Addendum v2.2 (March 2002). The source decay rate constant (k_s) was calculated by plotting temporal aqueous concentrations in the source area well (MW-21-S) on a semi-log plot and determining the slope (concentration plot included in Appendix G). Because Excel will calculate a slope in units of 1/days, the calculated slope value was converted to units of 1/years as required by BIOCHLOR 2.2, which results in a k_s of 0.0365 1/yr.

5.2 BIOCHLOR Model Simulations

5.2.1 Model Calibration

Using the input parameters described in the previous sections along with the groundwater analytical data from the 2011 through 2014 sampling events, multiple BIOCHLOR simulations were run until the modeled concentration at the downgradient well (MW-24) approximately matched the actual observed concentrations. The calibration simulation run time was for three years (2011 to 2014). Calibration of the model was achieved by adjustment of the PCE half-life until the modeled concentration at MW-24 matched the observed concentration from the January 2014 monitoring event. The calibrated three (3) year BIOCHLOR model predicts a PCE concentration of 8.0 µg/L at a distance of 252 feet from the source well MW-21-S, which is comparable to the observed concentration of 6.82 µg/L at MW-25 located 255 feet from the source area. A half-life value of 0.58 years for PCE was used to calibrate the BIOCHLOR model.

5.2.2 BIOCHLOR Model Results

The calibrated three (3) BIOCHLOR model simulation (assuming 1st order decay) predicts that PCE concentration exceeding the Type 1 RRS are not confined to the subject property and extend at least 270 to 280 feet down gradient from the source area (which is just off site under Skidaway Road). This was confirmed based on the January 2014 monitoring event data at MW-24 near the property boundary.

A 23 year BIOCHLOR simulation predicts that PCE concentrations exceeding Type 1 RRS will be present at a distance of between 300 to 320 feet down gradient from the source area, again indicating that the plume will extend just off the subject property under the Skidaway Road right-of-way. The model simulation results are included in Appendix G.

6.0 CONCLUSIONS AND RECOMENDATIONS

In accordance with the VIRP, groundwater monitoring at Martha's Dry Cleaner (HSI No. 10764) commenced in 2011. A semi-annual groundwater sampling event was conducted in August 2012, however work at the site was suspended during 2013 based on a one (1) year extension granted to the property owner by Georgia EPD. Terracon was authorized to resume groundwater monitoring at the property in January 2014 along with revision of the fate and transport model.

The analytical results from the most recent groundwater sampling events (August 2012 and January 2014) indicate that two (2) of the wells (MW-21-S and MW-24) are not in compliance with the Type 1 RRS for PCE. Since groundwater monitoring well MW-24 is a downgradient monitoring well located at the property boundary, Terracon cannot certify that PCE has been

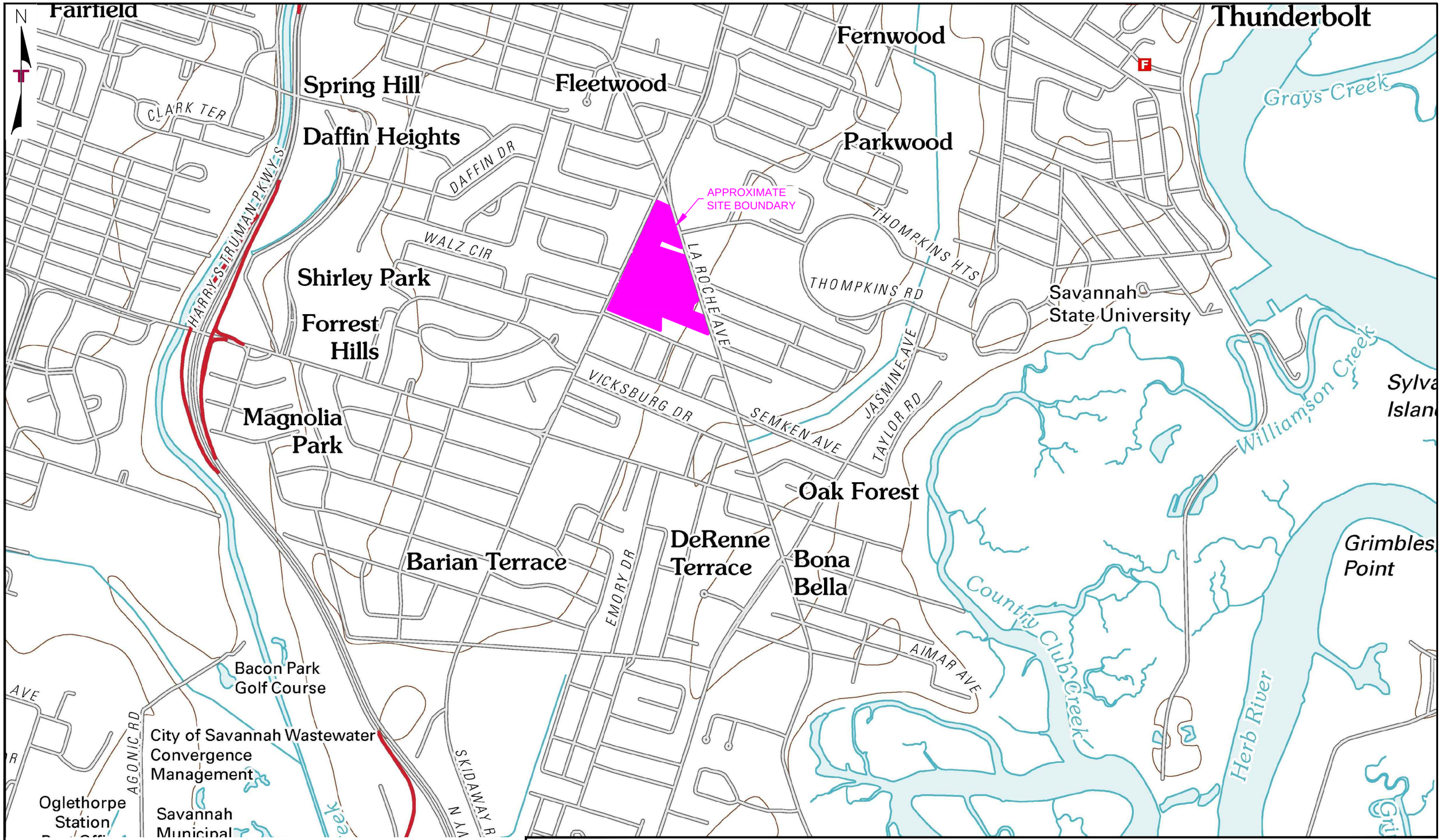
horizontally delineated to below the Type 1 RRS on all impacted properties. However, based on the groundwater data collected at the site from 2011 to January 2014, Terracon can certify that the PCE plume has been vertically delineated to below the Type 1 RRS. In general, the PCE concentrations have exhibited a consistent general downward trend since 2011 in MW-19 and MW-21-S, and have been relatively stable in MW-24 since 2012.

The fate and transport model was revised and modified based on comments from Georgia EPD and additional site specific groundwater and soil quality data. The revised model indicates that that PCE concentrations at the Type 1 RRS of 5 µg/L will travel 300 to 320 feet (approximately 56 feet from the property boundary) down gradient from the source area in the next 20 years. Also, the site specific geochemical data indicates that there is limited evidence of reductive dechlorination occurring at the site based on the Natural Attenuation Screening Protocol within BIOCHLOR.

In accordance with the approved VIRP project schedule and approved one (1) year extension provided by EPD, semi-annual monitoring of the groundwater will continue in 2014 as well at the horizontal delineation of the PCE plume to the Type 1 RRS of 5 µg/L. In addition to the previously discussed analytes, all of the groundwater monitoring events at the site will be sampled for vinyl chloride in the future. The next groundwater sampling event report will be submitted by August 17, 2014. Please refer to Appendix H for details concerning the hours worked and the costs associated with the property since 2011.

APPENDIX A

FIGURES



1000 0 250 500 1000

SCALE IN FEET

USGS TOPOGRAPHIC QUADRANGLE MAP
SAVANNAH, GEORGIA
MAP DATE: 2011

Project Mngr:	SAD
Drawn By:	PTK
Checked By:	SAD
Approved By:	WSA

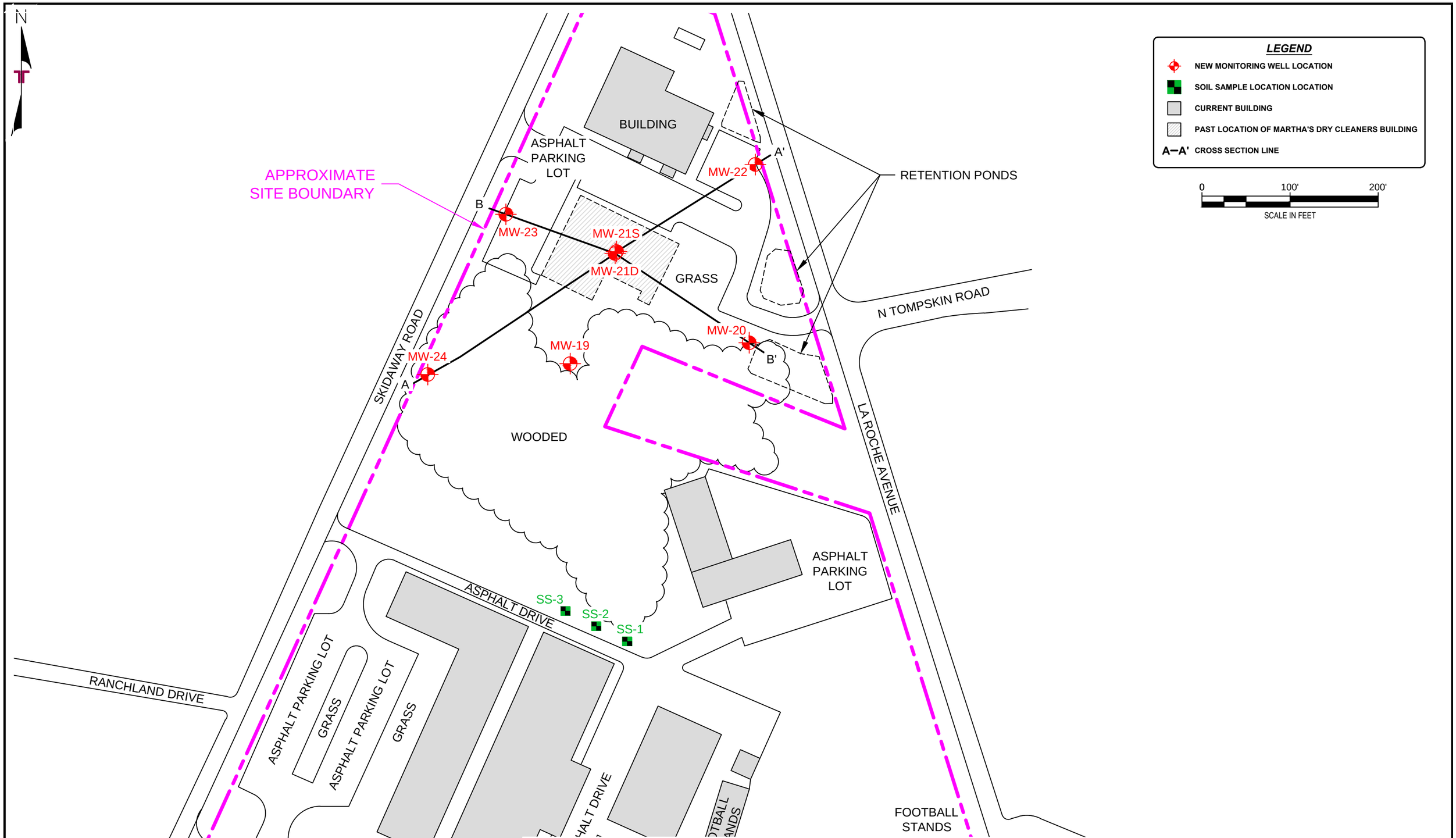
Project No.	ES117125
Scale:	AS SHOWN
File No.	ES117125
Date:	Februrary 2014

Terracon
Consulting Engineers and Scientists
2201 ROWLAND AVENUE SAVANNAH, GA 31404
PH. (912) 629-4000 FAX. (912) 629-4001

SITE VICINITY / TOPOGRAPHIC MAP

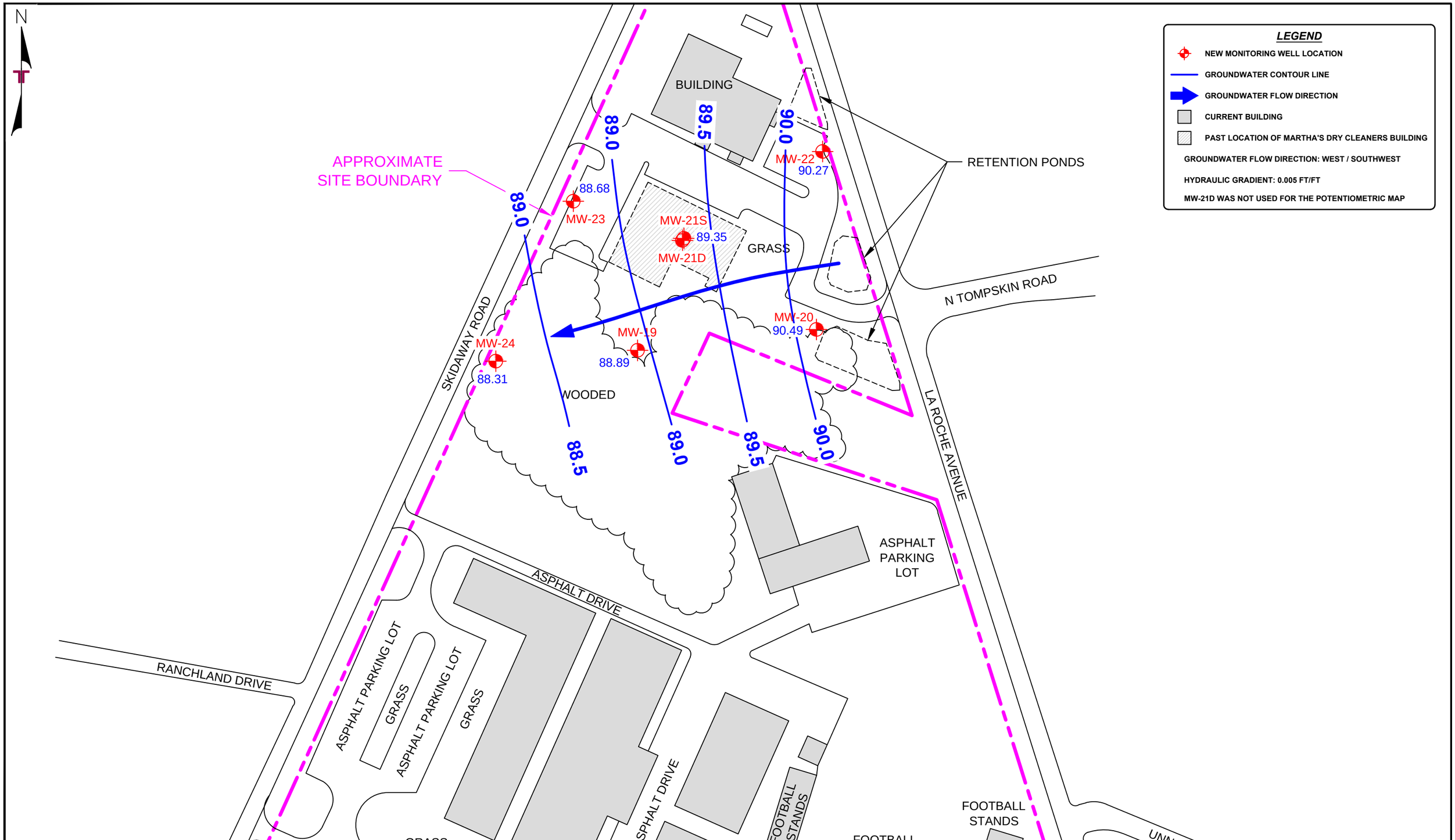
MARTHA'S DRY CLEANER
4608 SKIDAWAY ROAD
SAVANNAH, CHATHAM COUNTY, GEORGIA
HSI NO. 10764

FIG. No.
1



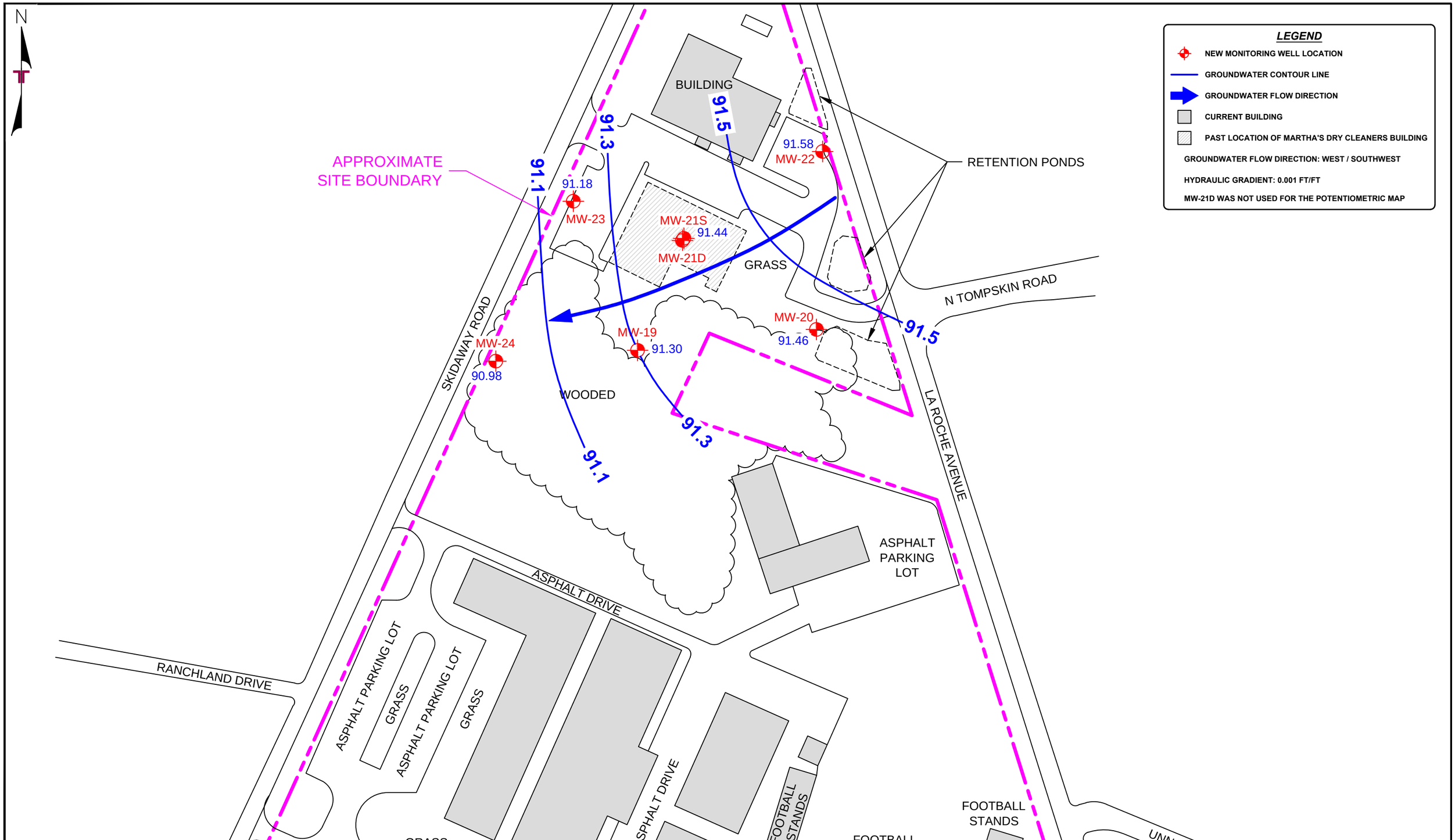
Project Mngr: WSA	Project No. ES117125	Terracon Consulting Engineers and Scientists	SITE PLAN
Drawn By: SAD	Scale: AS SHOWN	2201 ROWLAND AVENUE SAVANNAH, GA 31404	MARTHA'S DRY CLEANER
Checked By: WSA	File No. ES117125	PH. (912) 629-4000 FAX. (912) 629-4001	4608 SKIDAWAY ROAD
Approved By: WSA	Date: February 2014		SAVANNAH, CHATHAM COUNTY, GEORGIA
			HSI NO. 10764

FIG. No. 2



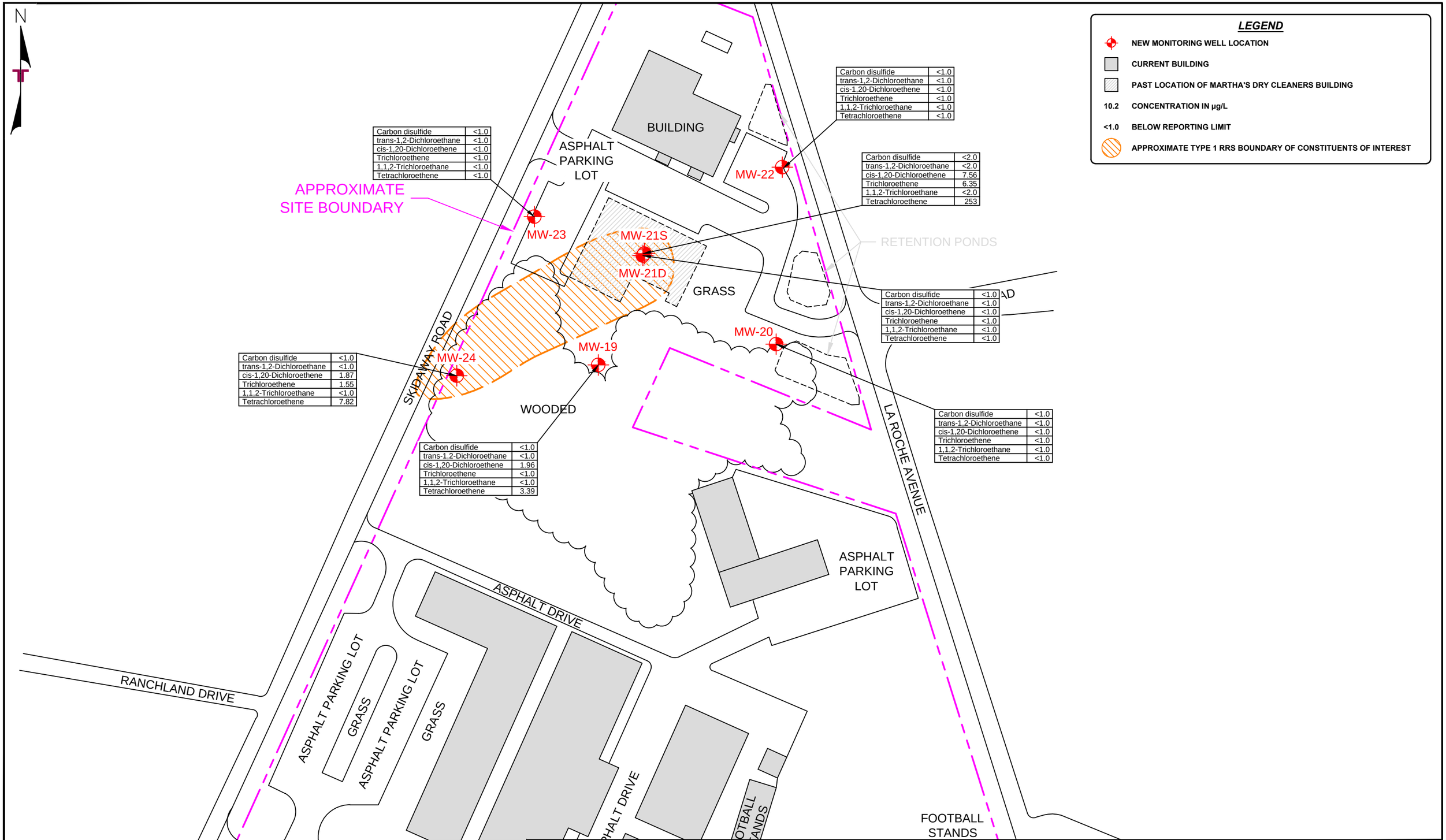
Project Mngr: SAD	Project No. ES117125	Terracon Consulting Engineers and Scientists	POTENTIOMETRIC SURFACE MAP - AUGUST 2012
Drawn By: SAD	Scale: AS SHOWN	2201 ROWLAND AVENUE SAVANNAH, GA 31404	MARTHA'S DRY CLEANER 4608 SKIDAWAY ROAD SAVANNAH, CHATHAM COUNTY, GEORGIA HSI NO. 10764
Checked By: WSA	File No. ES117125	PH. (912) 629-4000 FAX. (912) 629-4001	
Approved By: WSA	Date: February 2014		

FIG. No. 3



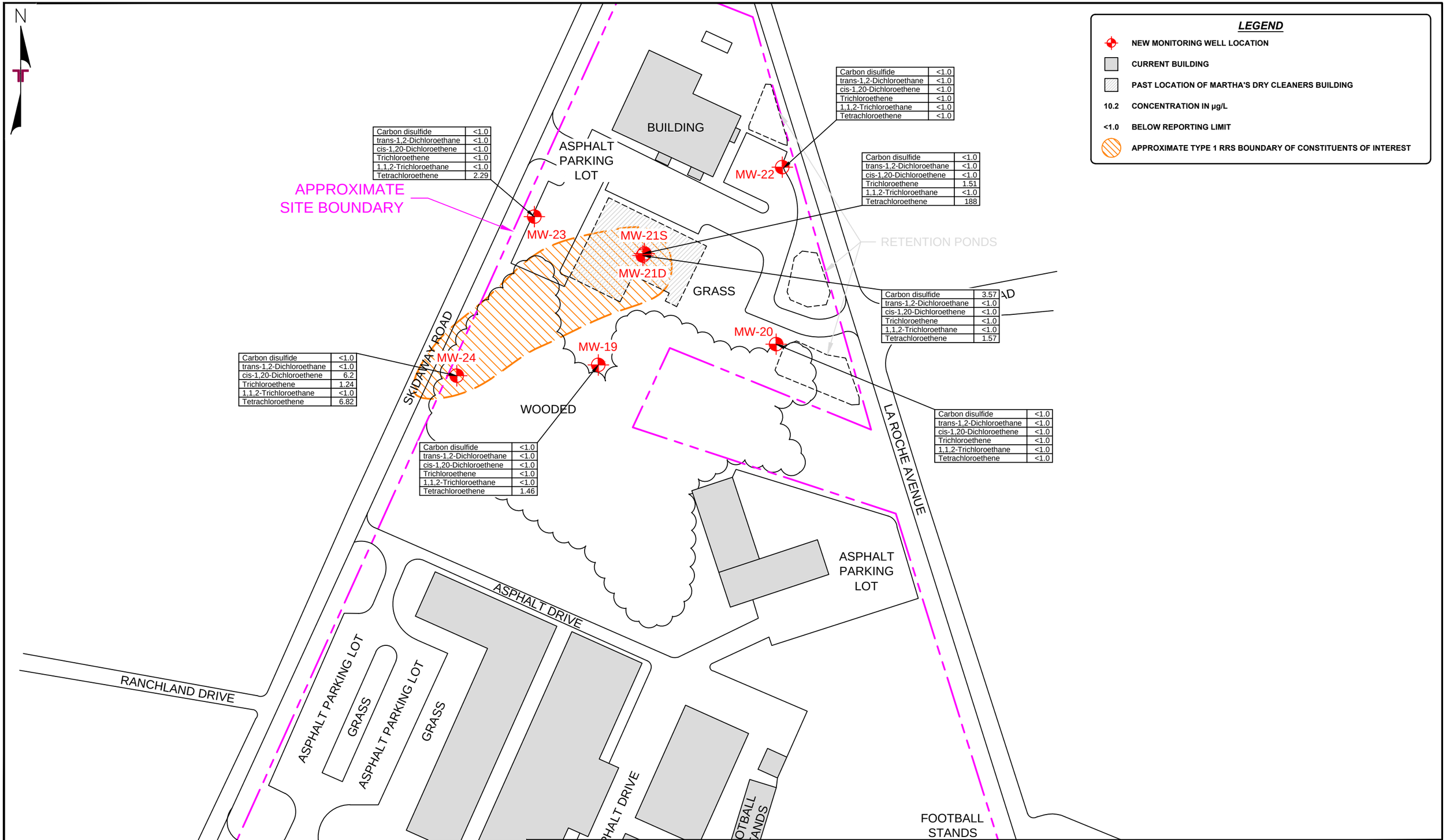
Project Mngr: SAD	Project No. ES117125	Terracon Consulting Engineers and Scientists	POTENTIOMETRIC SURFACE MAP - JANUARY 2014
Drawn By: SAD	Scale: AS SHOWN	2201 ROWLAND AVENUE SAVANNAH, GA 31404	MARTHA'S DRY CLEANER
Checked By: WSA	File No. ES117125	PH. (912) 629-4000 FAX. (912) 629-4001	4608 SKIDAWAY ROAD
Approved By: WSA	Date: February 2014		SAVANNAH, CHATHAM COUNTY, GEORGIA
			HSI NO. 10764

FIG. No. 4



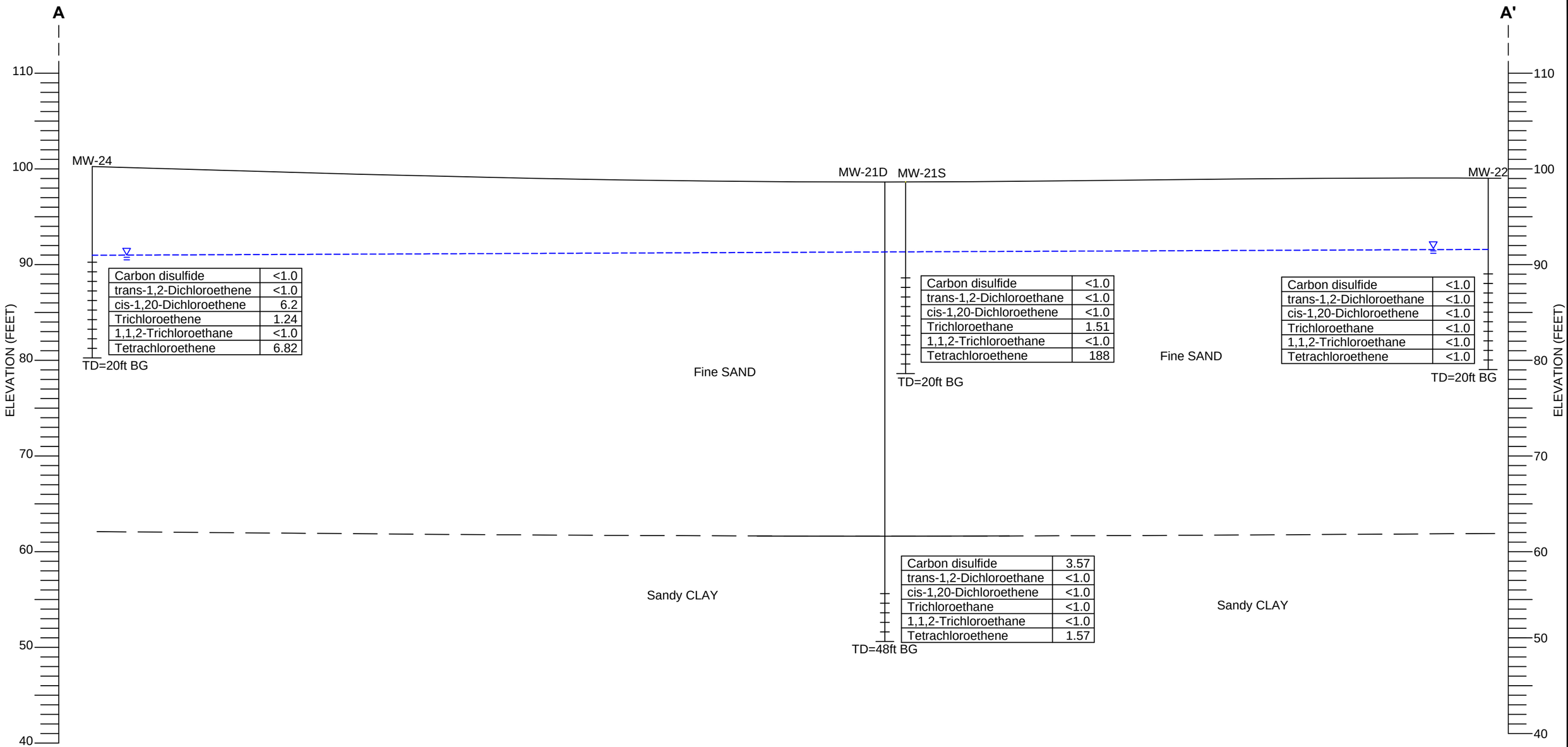
Project Mngr: SAD	Project No. ES117125	Terracon Consulting Engineers and Scientists	GROUNDWATER ANALYTICAL RESULTS - AUGUST 2012
Drawn By: SAD	Scale: AS SHOWN	2201 ROWLAND AVENUE SAVANNAH, GA 31404	MARTHA'S DRY CLEANER
Checked By: WSA	File No. ES117125	PH. (912) 629-4000 FAX. (912) 629-4001	4608 SKIDAWAY ROAD
Approved By: WSA	Date: February 2014		SAVANNAH, CHATHAM COUNTY, GEORGIA
			HSI NO. 10764

FIG. No. 5



Project Mngr: SAD	Project No. ES117125	Terracon Consulting Engineers and Scientists	GROUNDWATER ANALYTICAL RESULTS - JANUARY 2014
Drawn By: SAD	Scale: AS SHOWN	2201 ROWLAND AVENUE SAVANNAH, GA 31404	MARTHA'S DRY CLEANER 4608 SKIDAWAY ROAD SAVANNAH, CHATHAM COUNTY, GEORGIA HSI NO. 10764
Checked By: WSA	File No. ES117125	PH. (912) 629-4000 FAX. (912) 629-4001	
Approved By: WSA	Date: February 2014		

FIG. No. 6

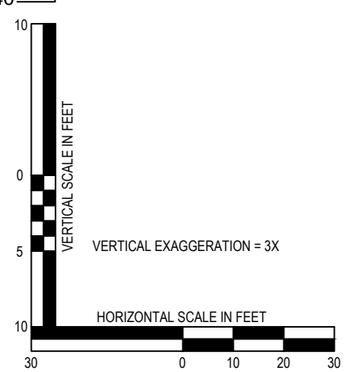


Carbon disulfide	<1.0
trans-1,2-Dichloroethene	<1.0
cis-1,20-Dichloroethene	6.2
Trichloroethene	1.24
1,1,2-Trichloroethane	<1.0
Tetrachloroethene	6.82

Carbon disulfide	<1.0
trans-1,2-Dichloroethane	<1.0
cis-1,20-Dichloroethene	<1.0
Trichloroethane	1.51
1,1,2-Trichloroethane	<1.0
Tetrachloroethene	188

Carbon disulfide	<1.0
trans-1,2-Dichloroethane	<1.0
cis-1,20-Dichloroethene	<1.0
Trichloroethane	<1.0
1,1,2-Trichloroethane	<1.0
Tetrachloroethene	<1.0

Carbon disulfide	3.57
trans-1,2-Dichloroethane	<1.0
cis-1,20-Dichloroethene	<1.0
Trichloroethane	<1.0
1,1,2-Trichloroethane	<1.0
Tetrachloroethene	1.57



LEGEND

MW-19
(MONITORING WELL)

WATER LEVEL

SCREEN INTERVAL

TD = TOTAL DEPTH (in feet)

10.2 CONCENTRATION IN µg/L - JANUARY 2014 DATA

BG BELOW GRADE

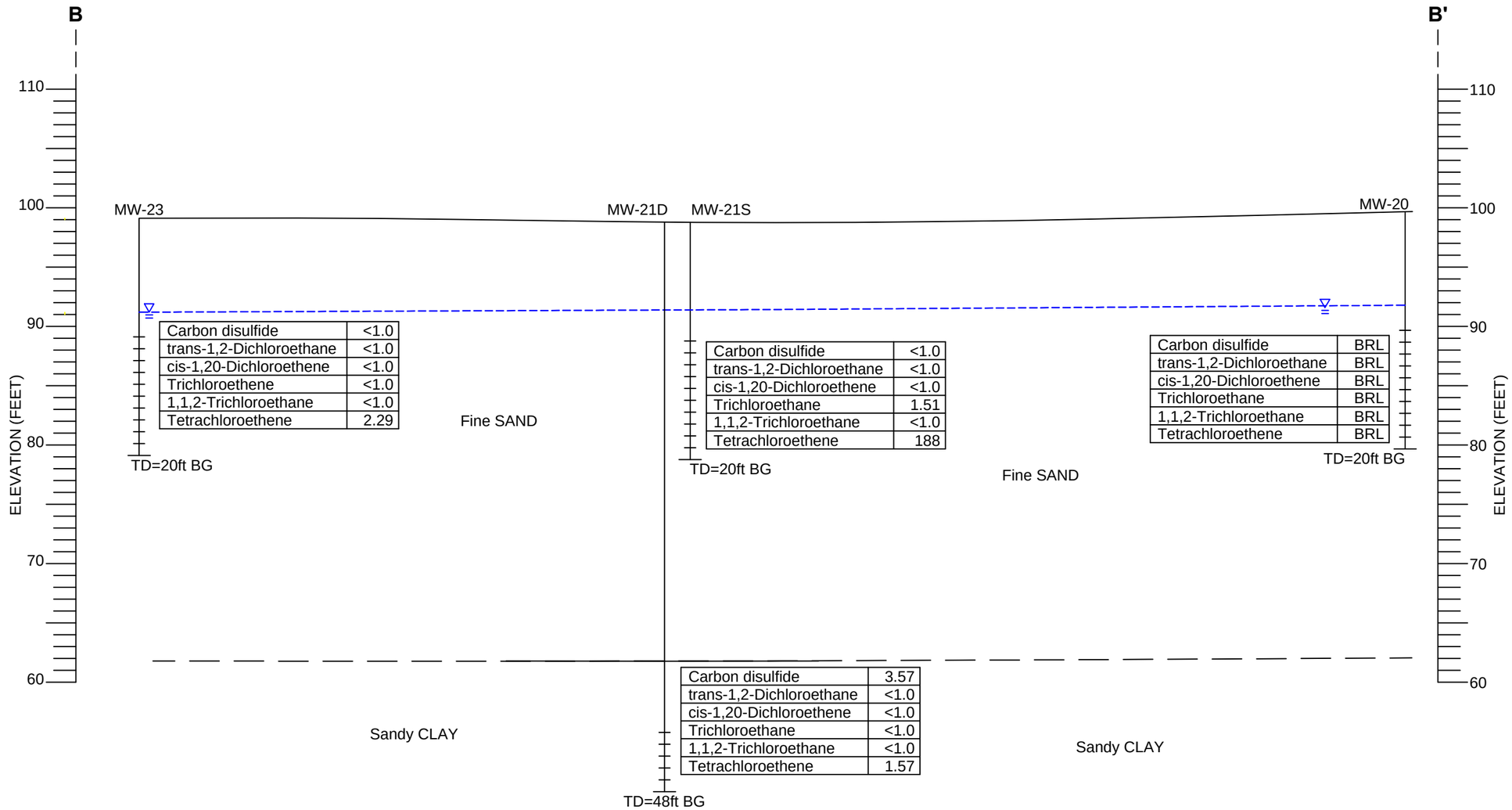
Project Mngr:	SAD
Drawn By:	SAD
Checked By:	WSA
Approved By:	WSA
Project No.	ES117125
Scale:	AS SHOWN
File No.	ES117125
Date:	February 2014

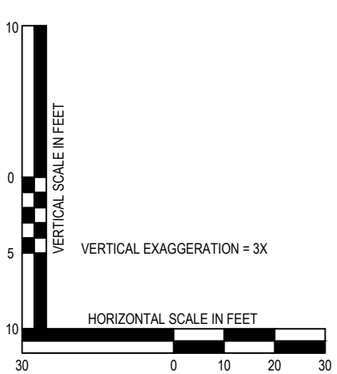
Terracon
Consulting Engineers and Scientists
2201 ROWLAND AVENUE SAVANNAH, GA 31404
PH. (912) 629-4000 FAX. (912) 629-4001

GEOLOGIC CROSS SECTION A-A'

MARTHA'S DRY CLEANER
4608 SKIDAWAY ROAD
SAVANNAH, CHATHAM COUNTY, GEORGIA
HSI NO. 10764

FIG. No.
7





LEGEND

MW-24
(MONITORING WELL)

WATER LEVEL

SCREEN INTERVAL

TD = TOTAL DEPTH (in feet)

10.2 CONCENTRATION IN µg/L - JANUARY 2014 DATA

BG BELOW GRADE

Project Mngr: SAD	Project No. ES117125	Terracon Consulting Engineers and Scientists	GEOLOGIC CROSS SECTION B-B'
Drawn By: SAD	Scale: AS SHOWN	2201 ROWLAND AVENUE SAVANNAH, GA 31404	MARTHA'S DRY CLEANER 4608 SKIDAWAY ROAD SAVANNAH, CHATHAM COUNTY, GEORGIA HSI NO. 10764
Checked By: WSA	File No. ES117125	PH. (912) 629-4000 FAX. (912) 629-4001	FIG. No. 8
Approved By: WSA	Date: February 2014		

APPENDIX B

DATA TABLES

Martha's Dry Cleaner

4608 Skidaway Road
Savannah, Chatham County, Georgia
HSI Site No. 10764

Table 1: SUMMARY OF WATER LEVEL DATA

Well Number	Date Measured	Top of Casing Elevation (feet)	Depth to Water (feet)	Groundwater Elevation (feet)
MW-19	18-Oct-2011	99.45	9.20	90.25
	1-Aug-2012		10.56	88.89
	27-Jan-2014		8.15	91.30
MW-20	18-Oct-2011	99.08	7.67	91.41
	1-Aug-2012		8.59	90.49
	27-Jan-2014		7.62	91.46
MW-21-S	18-Oct-2011	100.00	9.28	90.72
	1-Aug-2012		10.65	89.35
	27-Jan-2014		8.56	91.44
MW-21-D	18-Oct-2011	100.13	12.67	87.46
	1-Aug-2012		13.82	86.31
	27-Jan-2014		11.60	88.53
MW-22	18-Oct-2011	98.90	7.31	91.59
	1-Aug-2012		8.63	90.27
	27-Jan-2014		7.32	91.58
MW-23	18-Oct-2011	99.11	8.96	90.15
	1-Aug-2012		10.43	88.68
	27-Jan-2014		7.93	91.18
MW-24	1-Aug-2012	100.25	11.94	88.31
	27-Jan-2014		9.27	90.98

Prepared by	Stewart A. Dixon, P.G.	Date	2/10/14
Reviewed by	William S. Anderson, III, P.E.	Date	2/10/14

NOTES:

On-site benchmark of 100.00 feet

Martha's Dry Cleaner

4608 Skidaway Road
Savannah, Chatham County, Georgia
HSI Site No. 10764

Table 2 - SUMMARY OF GROUNDWATER TESTING DATA

Well Number	Date Sampled	Carbon disulfide µg/L	trans-1,2-Dichloroethene µg/L	cis-1,2-Dichloroethene µg/L	Trichloroethene µg/L	1,1,2-Trichloroethane µg/L	Tetrachloroethene µg/L
MW-19	9/23/2011	<1.0	<1.0	10.2	1.86	<1.0	**16.6**
	8/1/2012	<1.0	<1.0	1.96	<1.0	<1.0	3.39
	1/27/2014	<1.0	<1.0	<1.0	<1.0	<1.0	1.46
MW-20	9/23/2011	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	7/31/2012	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	1/27/2014	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MW-21-S	9/23/2011	<2.0	<2.0	7.96	4.28	<2.0	**270**
	8/1/2012	<2.0	<2.0	7.56	**6.35**	<2.0	**253**
	1/27/2014	<1.0	<1.0	<1.0	1.51	<1.0	**188**
D-MW-21-S*	9/23/2011	<2.0	<2.0	9.08	5	<2.0	**324**
MW-21-D	9/23/2011	<1.0	<1.0	<1.0	<1.0	<1.0	**10.5**
	8/1/2012	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	1/27/2014	3.57	<1.0	<1.0	<1.0	<1.0	1.57
MW-22	9/23/2011	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	8/1/2012	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	1/27/2014	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
DUP 1 (MW-22)*	1/27/2014	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MW-23	9/23/2011	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	8/1/2012	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	1/27/2014	<1.0	<1.0	<1.0	<1.0	<1.0	2.29
MW-24	8/1/2012	<1.0	<1.0	1.87	1.55	<1.0	**7.82**
	1/27/2014	<1.0	<1.0	6.2	1.24	<1.0	**6.82**
DUP-1 (MW-24)*	8/1/2012	<1.0	<1.0	1.65	1.36	<1.0	**6.61**
Applicable Standard**		4,000	100.00	70	5	5	5

NOTES:

BRL = Below Reporting Limit

BOLD = Concentration is above the Type I Risk Reduction Standard for the Site

* = Duplicate sample

** = Georgia EPD HSRA Appendix III

Prepared by: Stewart A. Dixon, P.G. Date: 02/10/2014

Reviewed by: William S. Anderson, III, P.E. Date: 02/10/2014

Martha's Dry Cleaner

4608 Skidaway Road
Savannah, Chatham County, Georgia
HSI Site No. 10764

Table 3 - SUMMARY OF NATURAL ATTENUATION PARAMETERS ANALYTICAL DATA

Well Number	Date Sampled	Alkalinity mg/L	Carbon Dioxide mg/L	Chloride mg/L	Nitrate (Nitrate as N) mg/L	Nitrite (Nitrite as N) mg/L	Sulfate mg/L	Sulfide mg/L	Ethane µg/L	Ethene µg/L	Methane µg/L	Dissolved Oxygen mg/L	Iron II mg/L	ORP ±mV
MW-19	8/1/2012	<20	232	3.52	<0.5	<0.02	3.39	0.800 J	<0.02	3.39	64	0.51	0.24	144.7
	1/27/2014	<20	<20	13	<0.5	<0.02	19.3	<1.1	<1.0	<1.0	2.2	1.43	0.06	-29.0
MW-20	7/31/2012	<20	173	2.61	<0.5	<0.02	<2.5	4.00	<2.0	<1.0	40	0.51	0.11	171.5
	1/27/2014	<20	111	3.08	0.543	<0.02	<5.00	<1.1	<1.1	<1.0	0.76	1.02	0.09	-64.6
MW-21-S	8/1/2012	35.6	333	15.0	<0.5	<0.02	16.2	<2.0	<2.0	<1.0	11	0.54	0.14	-20.3
	1/27/2014	26.8	338	13.7	0.695	<0.02	30.5	<1.1	<1.1	<1.0	0.88	1.20	0.09	-59.1
MW-21-D	8/1/2012	25.1	178	3.53	<0.5	<0.02	<2.5	2.40	<2.0	<1.0	1,300	0.09	0.49	-116.1
	1/27/2014	23.4	296	3.58	<0.5	<0.02	<5.00	<1.1	<1.1	<1.0	320	0.17	0.54	-64.8
MW-22	8/1/2012	21.2	137	6.63	2.11	<0.02	7.00	0.600 J	<2.0	<1.0	51	0.4	0.36	64.1
	1/27/2014	27.6	215	3.87	<0.5	<0.02	7.65	<1.1	<1.1	<1.0	0.59	0.26	0.06	-73.5
MW-23	8/1/2012	<20	318	10.7	<0.5	<0.02	140	0.600 J	<2.0	<1.0	6	0.17	1.35	93.8
	1/27/2014	<20	231	10.7	<0.5	<0.02	118	<1.1	<1.1	<1.0	0.63	0.21	0.41	-66.9
MW-24	8/1/2012	22.9	151	7.39	<0.5	<0.02	16	<2.0	<2.0	<1.0	29	2.22	0.17	121.1
	1/27/2014	<20	231	22.9	<0.5	<0.02	45.5	1.2	<1.1	<1.0	6.3	1.00	0.09	-60.5

Prepared by: Stewart A. Dixon, P.G. Date: 02/10/2014
Reviewed by: William S. Anderson, III, P.E. Date: 02/10/2014

Martha's Dry Cleaner

4608 Skidaway Road
Savannah, Chatham County, Georgia
HSI Site No. 10764

Table 4 - SOIL ANALYTICAL DATA

Sample Location	Sample Depth (Feet BGS)	VOCs	Total Organic Carbon mg/kg
SS-1	10.0	BRL	2,220
SS-2	10.0	BRL	679
SS-3	10.0	BRL	295 J

NOTES:
BRL = Below Reporting Limit
J = J-flagged result, estimated value reported
BGS = Below ground surface

Prepared by: Stewart A. Dixon, P.G. Date: 02/10/2014
Reviewed by: William S. Anderson, III, P.E. Date: 02/10/2014

APPENDIX C

GROUNDWATER LABORATORY ANALYTICAL DATA

RP14021103

Serial Number: 68343

Avery Laboratories & Environmental Services, LLC

Ship To: 101 B Estus Dr. Savannah, Ga. 31404
T 912 944-3748 F 912 234-9294
email: pgrimm@averylab.com

LAB NUMBER: 14013007

Client Information	
Customer:	Terracon
Address:	2201 Rowland Ave
City/State/Zip:	Savannah, GA 31404
Contact:	Stewart Dixon
Phone:	(912) 629-4000
Email:	SaDixon@Terracon.com
Purchase Order #:	ES117125
Project Manager:	Stewart Dixon

Page 1 of 1

Sampler:

Turn Around Time (Place X below)

24 Hours	
48 Hours	
72 Hours	
5 Working Days	
7 Working Days	X
Other:	

Project Name: Marthas Dry Cleaners

Project Number: ES117125

State where work originated: GA

Subcontract Laboratory: Name / Address/ Phone

N

A

P

Preservative

Sample Identification	Date	Time	Matrix	# of Containers	Carbon Disulfide	Trans-1,2-Dichloroethene	Cis-1,2-Dichloroethene	Trichloroethene	1,1,2-Trichloroethane	Tetrachloroethene	Nitrate	Sulfate	Sulfide	Methane	Chloride	Ethane + Ethene	Carbon Dioxide	Alkalinity	Nitrite					Remarks
					4	4	4	4	4	4	2	1	8	4	1	4	4	1	1					
MW-19	1/27/14	1520	W	9	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X					
MW-24	1/27/14	1640	W	9	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X					
MW-23	1/27/14	1740	W	9	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X					
MW-21D	1/28/14	1555	W	9	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X					
MW-21S	1/28/14	1700	W	9	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X					
MW-22	1/29/14	1440	W	9	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X					
MW-20	1/29/14	1600	W	9	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X					
DUP-1	1/29/14	1445	W	9	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X					
Field Blank	1/29/14	1640	W	9	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X					

Matrix Type: A = Air W = Water S= Solid N = Nonaqueous (solvent, acid, etc.)

Preservative: 1= None 2 = H2SO4 3 = HN03 4 = HCL 5 = MeOH 6 = NAHSO4 7 = Water 8 = Other

Instructions or Special Requirements:

Temperature: 2.75°C

Custody Seals: Yes No

Custody Seals Intact: Yes No

Relinquished by:	Date/Time:	Received by:	Date/Time:
Aaron Caldwell	1/30/14 913	Robert Pal	01/30/14 0913

F86-01

Effective Date: 09.11.08

Ref No: G 439101065

RP14021103

LABORATORY ANALYSIS REPORT

JobID: 14013007

Avery Laboratories & Environmental Services, LLC

101B Estus Road Savannah, Georgia 31404 tel: (912) 944-3748 Fax: (912) 234-9294

Client Project ID :
Martha Dry Cleaners

Report To : Client Name: Terracon
Client Address: 2201 Rowland Ave.
City, State, Zip: Savannah, GA, 31404

Attn: Stuart Dixon
P.O.#. : ES117125

Dear Stuart Dixon

The following test results meet all NELAC requirements for analytes for which certification is available. Any deviations from these quality systems will be noted in this case narrative. All analyses performed by Avery Laboratories & Environmental Services, LLC unless noted. Parameters not perfromed by Avery Laboratories will be listed on the Sample Summary section of the report.

For questions regarding this report, contact Robert Paul Grimm at (912)944-3748.

Sincerely,

Robert Paul Grimm Digitally signed by Robert Paul Grimm DN: C=US, E=pgrimm@averylab.com, O=Avery Laboratories, OU=Avery Laboratories, CN=Robert Paul Grimm Date: 2014.02.11 13:01:13-05'00'

[Robert Paul Grimm]
Technical Director

This Laboratory is NELAP accredited.

I am the laboratory manager, or his/her designee, and I am responsible for the release of this data package. This laboratory data package has been reviewed and is complete and technically compliant with the requirements of the methods used, except where noted in the attached exception reports. I affirm, to the best of my knowledge that all problems/anomalies observed by this laboratory (and if applicable, any and all laboratories subcontracted through this laboratory) that might affect the quality of the data, have been identified in the Laboratory Review Checklist, and that no information or data have been knowingly withheld that would affect the quality of the data.

RP14021103

CLIENT SAMPLE RESULTS

JobID: 14013007

Avery Laboratories & Environmental Services, LLC

101B Estus Road Savannah, Georgia 31404 tel: (912) 944-3748 Fax: (912) 234-9294

Client Name:	Terracon	Attn:	Stuart Dixon
Project Name:	Martha Dry Cleaners	Date:	02/11/2014

Job ID :	14013007	Sample Matrix:	Aqueous
Client Sample ID:	MW-19	Date Collected:	01/27/2014
Job Sample ID:	14013007.01	Time Collected:	15:20
Other Information:			

Test Method	Parameter/Test Description	Result	Units	DF	Rpt Limit	Reg Limit	Q	Date/Time Analyzed	Analyst
ASTM D516-90									
	Sulfate	19.3	mg/L	1	5.00			02/06/2014 09:33	JK
EPA 310.2									
	Alkalinity, as CaCO3	BRL	mg/L	1	20			02/03/2014 10:33	JK
EPA 310.2									
	Carbon Dioxide	BRL	mg/L	1	20			02/11/2014 11:04	RPG
SM4500-CL e									
	Chloride	13.0	mg/L	1	2.00			02/07/2014 08:16	JK
SM4500-NO2 b									
	Nitrite-N	BRL	mg/L	1	0.02		H	01/30/2014 15:33	JK
SM4500-NO3 h									
	Nitrate-N	BRL	mg/L	1	0.500			01/31/2014 15:24	JK
SW-846 8260B	Volatile Organic Compounds								
	1,1,2-Trichloroethane	BRL	ug/L	1	1			02/03/2014 18:32	BM
	Carbon disulfide	BRL	ug/L	1	1			02/03/2014 18:32	BM
	cis-1,2-Dichloroethylene	BRL	ug/L	1	1			02/03/2014 18:32	BM
	Tetrachloroethylene	1.46	ug/L	1	1			02/03/2014 18:32	BM
	trans-1,2-Dichloroethylene	BRL	ug/L	1	1			02/03/2014 18:32	BM
	Trichloroethylene	BRL	ug/L	1	1			02/03/2014 18:32	BM
	Dibromofluoromethane(surr)	112	%	1	63.4-152			02/03/2014 18:32	BM
	p-Bromofluorobenzene(surr)	116	%	1	78.7-145			02/03/2014 18:32	BM
	Toluene-d8(surr)	113	%	1	66.4-153			02/03/2014 18:32	BM

RP14021103

CLIENT SAMPLE RESULTS

JobID: 14013007

Avery Laboratories & Environmental Services, LLC

101B Estus Road Savannah, Georgia 31404 tel: (912) 944-3748 Fax: (912) 234-9294

Client Name:	Terracon	Attn:	Stuart Dixon
Project Name:	Martha Dry Cleaners	Date:	02/11/2014

Job ID :	14013007	Sample Matrix:	Aqueous
Client Sample ID:	MW-24	Date Collected:	01/27/2014
Job Sample ID:	14013007.02	Time Collected:	16:40
Other Information:			

Test Method	Parameter/Test Description	Result	Units	DF	Rpt Limit	Reg Limit	Q	Date/Time Analyzed	Analyst
ASTM D516-90									
	Sulfate	45.5	mg/L	2.00	10			02/06/2014 10:29	JK
EPA 310.2									
	Alkalinity, as CaCO3	BRL	mg/L	1	20			02/03/2014 10:33	JK
EPA 310.2									
	Carbon Dioxide	231	mg/L	1	20			02/11/2014 11:04	RPG
SM4500-CL e									
	Chloride	22.9	mg/L	1	2.00			02/07/2014 08:16	JK
SM4500-NO2 b									
	Nitrite-N	BRL	mg/L	1	0.02		H	01/30/2014 15:33	JK
SM4500-NO3 h									
	Nitrate-N	BRL	mg/L	1	0.500			01/31/2014 15:24	JK
SW-846 8260B	Volatile Organic Compounds								
	1,1,2-Trichloroethane	BRL	ug/L	1	1			02/03/2014 18:58	BM
	Carbon disulfide	BRL	ug/L	1	1			02/03/2014 18:58	BM
	cis-1,2-Dichloroethylene	6.20	ug/L	1	1			02/03/2014 18:58	BM
	Tetrachloroethylene	6.82	ug/L	1	1			02/03/2014 18:58	BM
	trans-1,2-Dichloroethylene	BRL	ug/L	1	1			02/03/2014 18:58	BM
	Trichloroethylene	1.24	ug/L	1	1			02/03/2014 18:58	BM
	Dibromofluoromethane(surr)	108	%	1	63.4-152			02/03/2014 18:58	BM
	p-Bromofluorobenzene(surr)	113	%	1	78.7-145			02/03/2014 18:58	BM
	Toluene-d8(surr)	109	%	1	66.4-153			02/03/2014 18:58	BM

RP14021103

CLIENT SAMPLE RESULTS

JobID: 14013007

Avery Laboratories & Environmental Services, LLC

101B Estus Road Savannah, Georgia 31404 tel: (912) 944-3748 Fax: (912) 234-9294

Client Name:	Terracon	Attn:	Stuart Dixon
Project Name:	Martha Dry Cleaners	Date:	02/11/2014

Job ID :	14013007	Sample Matrix:	Aqueous
Client Sample ID:	MW-23	Date Collected:	01/27/2014
Job Sample ID:	14013007.03	Time Collected:	17:40
Other Information:			

Test Method	Parameter/Test Description	Result	Units	DF	Rpt Limit	Reg Limit	Q	Date/Time Analyzed	Analyst
ASTM D516-90									
	Sulfate	118	mg/L	5.00	25			02/06/2014 10:29	JK
EPA 310.2									
	Alkalinity, as CaCO3	BRL	mg/L	1	20			02/03/2014 10:33	JK
EPA 310.2									
	Carbon Dioxide	231	mg/L	1	20			02/11/2014 11:04	RPG
SM4500-CL e									
	Chloride	10.7	mg/L	1	2.00			02/07/2014 08:16	JK
SM4500-NO2 b									
	Nitrite-N	BRL	mg/L	1	0.02		H	01/30/2014 15:33	JK
SM4500-NO3 h									
	Nitrate-N	BRL	mg/L	1	0.500			01/31/2014 15:24	JK
SW-846 8260B	Volatile Organic Compounds								
	1,1,2-Trichloroethane	BRL	ug/L	1	1			02/03/2014 19:24	BM
	Carbon disulfide	BRL	ug/L	1	1			02/03/2014 19:24	BM
	cis-1,2-Dichloroethylene	BRL	ug/L	1	1			02/03/2014 19:24	BM
	Tetrachloroethylene	2.29	ug/L	1	1			02/03/2014 19:24	BM
	trans-1,2-Dichloroethylene	BRL	ug/L	1	1			02/03/2014 19:24	BM
	Trichloroethylene	BRL	ug/L	1	1			02/03/2014 19:24	BM
	Dibromofluoromethane(surr)	107	%	1	63.4-152			02/03/2014 19:24	BM
	p-Bromofluorobenzene(surr)	112	%	1	78.7-145			02/03/2014 19:24	BM
	Toluene-d8(surr)	116	%	1	66.4-153			02/03/2014 19:24	BM

RP14021103

CLIENT SAMPLE RESULTS

JobID: 14013007

Avery Laboratories & Environmental Services, LLC

101B Estus Road ■ Savannah, Georgia 31404 ■ tel: (912) 944-3748 ■ Fax: (912) 234-9294 ■

Client Name:	Terracon	Attn:	Stuart Dixon
Project Name:	Martha Dry Cleaners	Date:	02/11/2014

Job ID :	14013007	Sample Matrix:	Aqueous
Client Sample ID:	MW-21D	Date Collected:	01/28/2014
Job Sample ID:	14013007.04	Time Collected:	15:55
Other Information:			

Test Method	Parameter/Test Description	Result	Units	DF	Rpt Limit	Reg Limit	Q	Date/Time Analyzed	Analyst
ASTM D516-90									
	Sulfate	BRL	mg/L	1	5.00			02/06/2014 12:19	JK
EPA 310.2									
	Alkalinity, as CaCO3	23.4	mg/L	1	20			02/03/2014 10:33	JK
EPA 310.2									
	Carbon Dioxide	296	mg/L	1	20			02/11/2014 11:04	RPG
SM4500-CL e									
	Chloride	3.58	mg/L	1	2.00			02/07/2014 08:16	JK
SM4500-NO2 b									
	Nitrite-N	BRL	mg/L	1	0.02			01/30/2014 15:33	JK
SM4500-NO3 h									
	Nitrate-N	BRL	mg/L	1	0.500			01/31/2014 15:25	JK
SW-846 8260B	Volatile Organic Compounds								
	1,1,2-Trichloroethane	BRL	ug/L	1	1			02/03/2014 19:50	BM
	Carbon disulfide	3.47	ug/L	1	1			02/03/2014 19:50	BM
	cis-1,2-Dichloroethylene	BRL	ug/L	1	1			02/03/2014 19:50	BM
	Tetrachloroethylene	1.57	ug/L	1	1			02/03/2014 19:50	BM
	trans-1,2-Dichloroethylene	BRL	ug/L	1	1			02/03/2014 19:50	BM
	Trichloroethylene	BRL	ug/L	1	1			02/03/2014 19:50	BM
	Dibromofluoromethane(surr)	109	%	1	63.4-152			02/03/2014 19:50	BM
	p-Bromofluorobenzene(surr)	113	%	1	78.7-145			02/03/2014 19:50	BM
	Toluene-d8(surr)	114	%	1	66.4-153			02/03/2014 19:50	BM

RP14021103

CLIENT SAMPLE RESULTS

JobID: 14013007

Avery Laboratories & Environmental Services, LLC

101B Estus Road ■ Savannah, Georgia 31404 ■ tel: (912) 944-3748 ■ Fax: (912) 234-9294 ■

Client Name:	Terracon	Attn:	Stuart Dixon
Project Name:	Martha Dry Cleaners	Date:	02/11/2014

Job ID :	14013007	Sample Matrix:	Aqueous
Client Sample ID:	MW-21S	Date Collected:	01/28/2014
Job Sample ID:	14013007.05	Time Collected:	17:00
Other Information:			

Test Method	Parameter/Test Description	Result	Units	DF	Rpt Limit	Reg Limit	Q	Date/Time Analyzed	Analyst
ASTM D516-90									
	Sulfate	30.5	mg/L	1	5.00			02/06/2014 10:29	JK
EPA 310.2									
	Alkalinity, as CaCO3	26.8	mg/L	1	20			02/03/2014 10:33	JK
EPA 310.2									
	Carbon Dioxide	338	mg/L	1	20			02/11/2014 11:04	RPG
SM4500-CL e									
	Chloride	13.7	mg/L	1	2.00			02/07/2014 08:16	JK
SM4500-NO2 b									
	Nitrite-N	BRL	mg/L	1	0.02			01/30/2014 15:33	JK
SM4500-NO3 h									
	Nitrate-N	0.695	mg/L	1	0.500			01/31/2014 15:25	JK
SW-846 8260B	Volatile Organic Compounds								
	1,1,2-Trichloroethane	BRL	ug/L	1	1			02/04/2014 20:12	BM
	Carbon disulfide	BRL	ug/L	1	1			02/04/2014 20:12	BM
	cis-1,2-Dichloroethylene	BRL	ug/L	1	1			02/04/2014 20:12	BM
	Tetrachloroethylene	188	ug/L	1	1			02/04/2014 20:12	BM
	trans-1,2-Dichloroethylene	BRL	ug/L	1	1			02/04/2014 20:12	BM
	Trichloroethylene	1.51	ug/L	1	1			02/04/2014 20:12	BM
	Dibromofluoromethane(surr)	103	%	1	63.4-152			02/04/2014 20:12	BM
	p-Bromofluorobenzene(surr)	110	%	1	78.7-145			02/04/2014 20:12	BM
	Toluene-d8(surr)	115	%	1	66.4-153			02/04/2014 20:12	BM

RP14021103

CLIENT SAMPLE RESULTS

JobID: 14013007

Avery Laboratories & Environmental Services, LLC

101B Estus Road Savannah, Georgia 31404 tel: (912) 944-3748 Fax: (912) 234-9294

Client Name:	Terracon	Attn:	Stuart Dixon
Project Name:	Martha Dry Cleaners	Date:	02/11/2014

Job ID :	14013007	Sample Matrix:	Aqueous
Client Sample ID:	MW-22	Date Collected:	01/29/2014
Job Sample ID:	14013007.06	Time Collected:	14:40
Other Information:			

Test Method	Parameter/Test Description	Result	Units	DF	Rpt Limit	Reg Limit	Q	Date/Time Analyzed	Analyst
ASTM D516-90									
	Sulfate	7.65	mg/L	1	5.00			02/06/2014 09:35	JK
EPA 310.2									
	Alkalinity, as CaCO3	27.6	mg/L	1	20			02/03/2014 10:33	JK
EPA 310.2									
	Carbon Dioxide	215	mg/L	1	20			02/11/2014 11:04	RPG
SM4500-CL e									
	Chloride	3.87	mg/L	1	2.00			02/07/2014 08:16	JK
SM4500-NO2 b									
	Nitrite-N	BRL	mg/L	1	0.02			01/30/2014 15:33	JK
SM4500-NO3 h									
	Nitrate-N	BRL	mg/L	1	0.500			01/31/2014 15:35	JK
SW-846 8260B	Volatile Organic Compounds								
	1,1,2-Trichloroethane	BRL	ug/L	1	1			02/03/2014 20:16	BM
	Carbon disulfide	BRL	ug/L	1	1			02/03/2014 20:16	BM
	cis-1,2-Dichloroethylene	BRL	ug/L	1	1			02/03/2014 20:16	BM
	Tetrachloroethylene	BRL	ug/L	1	1			02/03/2014 20:16	BM
	trans-1,2-Dichloroethylene	BRL	ug/L	1	1			02/03/2014 20:16	BM
	Trichloroethylene	BRL	ug/L	1	1			02/03/2014 20:16	BM
	Dibromofluoromethane(surr)	109	%	1	63.4-152			02/03/2014 20:16	BM
	p-Bromofluorobenzene(surr)	112	%	1	78.7-145			02/03/2014 20:16	BM
	Toluene-d8(surr)	117	%	1	66.4-153			02/03/2014 20:16	BM

RP14021103

CLIENT SAMPLE RESULTS

JobID: 14013007

Avery Laboratories & Environmental Services, LLC

101B Estus Road Savannah, Georgia 31404 tel: (912) 944-3748 Fax: (912) 234-9294

Client Name:	Terracon	Attn:	Stuart Dixon
Project Name:	Martha Dry Cleaners	Date:	02/11/2014

Job ID :	14013007	Sample Matrix:	Aqueous
Client Sample ID:	MW-20	Date Collected:	01/29/2014
Job Sample ID:	14013007.07	Time Collected:	16:00
Other Information:			

Test Method	Parameter/Test Description	Result	Units	DF	Rpt Limit	Reg Limit	Q	Date/Time Analyzed	Analyst
ASTM D516-90									
	Sulfate	BRL	mg/L	1	5.00			02/06/2014 09:35	JK
EPA 310.2									
	Alkalinity, as CaCO3	BRL	mg/L	1	20			02/03/2014 10:49	JK
EPA 310.2									
	Carbon Dioxide	111	mg/L	1	20			02/11/2014 11:04	RPG
SM4500-CL e									
	Chloride	3.08	mg/L	1	2.00			02/07/2014 08:16	JK
SM4500-NO2 b									
	Nitrite-N	BRL	mg/L	1	0.02			01/30/2014 15:35	JK
SM4500-NO3 h									
	Nitrate-N	0.543	mg/L	1	0.500			01/31/2014 15:35	JK
SW-846 8260B	Volatile Organic Compounds								
	1,1,2-Trichloroethane	BRL	ug/L	1	1			02/03/2014 20:42	BM
	Carbon disulfide	BRL	ug/L	1	1			02/03/2014 20:42	BM
	cis-1,2-Dichloroethylene	BRL	ug/L	1	1			02/03/2014 20:42	BM
	Tetrachloroethylene	BRL	ug/L	1	1			02/03/2014 20:42	BM
	trans-1,2-Dichloroethylene	BRL	ug/L	1	1			02/03/2014 20:42	BM
	Trichloroethylene	BRL	ug/L	1	1			02/03/2014 20:42	BM
	Dibromofluoromethane(surr)	106	%	1	63.4-152			02/03/2014 20:42	BM
	p-Bromofluorobenzene(surr)	114	%	1	78.7-145			02/03/2014 20:42	BM
	Toluene-d8(surr)	115	%	1	66.4-153			02/03/2014 20:42	BM

RP14021103

CLIENT SAMPLE RESULTS

JobID: 14013007

Avery Laboratories & Environmental Services, LLC

101B Estus Road Savannah, Georgia 31404 tel: (912) 944-3748 Fax: (912) 234-9294

Client Name:	Terracon	Attn:	Stuart Dixon
Project Name:	Martha Dry Cleaners	Date:	02/11/2014

Job ID :	14013007	Sample Matrix:	Aqueous
Client Sample ID:	DUP 1	Date Collected:	01/29/2014
Job Sample ID:	14013007.08	Time Collected:	14:45
Other Information:			

Test Method	Parameter/Test Description	Result	Units	DF	Rpt Limit	Reg Limit	Q	Date/Time Analyzed	Analyst
ASTM D516-90									
	Sulfate	6.71	mg/L	1	5.00			02/06/2014 09:35	JK
EPA 310.2									
	Alkalinity, as CaCO3	21.6	mg/L	1	20			02/03/2014 10:49	JK
EPA 310.2									
	Carbon Dioxide	168	mg/L	1	20			02/11/2014 11:04	RPG
SM4500-CL e									
	Chloride	3.97	mg/L	1	2.00			02/07/2014 08:16	JK
SM4500-NO2 b									
	Nitrite-N	BRL	mg/L	1	0.02			01/30/2014 15:35	JK
SM4500-NO3 h									
	Nitrate-N	BRL	mg/L	1	0.500			01/31/2014 15:35	JK
SW-846 8260B	Volatile Organic Compounds								
	1,1,2-Trichloroethane	BRL	ug/L	1	1			02/03/2014 21:08	BM
	Carbon disulfide	BRL	ug/L	1	1			02/03/2014 21:08	BM
	cis-1,2-Dichloroethylene	BRL	ug/L	1	1			02/03/2014 21:08	BM
	Tetrachloroethylene	BRL	ug/L	1	1			02/03/2014 21:08	BM
	trans-1,2-Dichloroethylene	BRL	ug/L	1	1			02/03/2014 21:08	BM
	Trichloroethylene	BRL	ug/L	1	1			02/03/2014 21:08	BM
	Dibromofluoromethane(surr)	105	%	1	63.4-152			02/03/2014 21:08	BM
	p-Bromofluorobenzene(surr)	114	%	1	78.7-145			02/03/2014 21:08	BM
	Toluene-d8(surr)	115	%	1	66.4-153			02/03/2014 21:08	BM

RP14021103

CLIENT SAMPLE RESULTS

JobID: 14013007

Avery Laboratories & Environmental Services, LLC

101B Estus Road Savannah, Georgia 31404 tel: (912) 944-3748 Fax: (912) 234-9294

Client Name:	Terracon	Attn:	Stuart Dixon
Project Name:	Martha Dry Cleaners	Date:	02/11/2014

Job ID :	14013007	Sample Matrix:	Aqueous
Client Sample ID:	FIELD BLANK	Date Collected:	01/29/2014
Job Sample ID:	14013007.09	Time Collected:	16:40
Other Information:			

Test Method	Parameter/Test Description	Result	Units	DF	Rpt Limit	Reg Limit	Q	Date/Time Analyzed	Analyst
ASTM D516-90									
	Sulfate	BRL	mg/L	1	5.00			02/06/2014 12:04	JK
EPA 310.2									
	Alkalinity, as CaCO3	BRL	mg/L	1	20			02/03/2014 10:49	JK
EPA 310.2									
	Carbon Dioxide	BRL	mg/L	1	20			02/11/2014 11:04	RPG
SM4500-CL e									
	Chloride	BRL	mg/L	1	2.00			02/07/2014 08:21	JK
SM4500-NO2 b									
	Nitrite-N	BRL	mg/L	1	0.02			01/30/2014 15:35	JK
SM4500-NO3 h									
	Nitrate-N	BRL	mg/L	1	0.500			01/31/2014 15:35	JK
SW-846 8260B	Volatile Organic Compounds								
	1,1,2-Trichloroethane	BRL	ug/L	1	1			02/03/2014 18:05	BM
	Carbon disulfide	BRL	ug/L	1	1			02/03/2014 18:05	BM
	cis-1,2-Dichloroethylene	BRL	ug/L	1	1			02/03/2014 18:05	BM
	Tetrachloroethylene	BRL	ug/L	1	1			02/03/2014 18:05	BM
	trans-1,2-Dichloroethylene	BRL	ug/L	1	1			02/03/2014 18:05	BM
	Trichloroethylene	BRL	ug/L	1	1			02/03/2014 18:05	BM
	Dibromofluoromethane(surr)	112	%	1	63.4-152			02/03/2014 18:05	BM
	p-Bromofluorobenzene(surr)	114	%	1	78.7-145			02/03/2014 18:05	BM
	Toluene-d8(surr)	113	%	1	66.4-153			02/03/2014 18:05	BM

QUALITY CONTROL DATA

JobID: 14013007

RP14021103

Avery Laboratories & Environmental Services, LLC

101B Estus Road Savannah, Georgia 31404 tel: (912) 944-3748 Fax: (912) 234-9294

Analysis : **Method : SM4500-NO3 h** **Reporting Units : mg/L**

QC Batch ID : Qb14013116 **Created Date :** 01/31/2014 **Created By :** JKitchings

Samples in This QC Batch : 14013007.01,02,03,04,05,06,07,08,09

QC Type: Method Blank

Parameter	CAS #	Result	Units	D.F.	RptLimit		Qual
Nitrate-N		BRL	mg/L	1	0.50		

QC Type: LCS and LCSD

Parameter	LCS Spk Added	LCS Result	LCS % Rec	LCSD Spk Added	LCSD Result	LCSD % Rec	%RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
Nitrate-N	2.5	2.735	109.40	2.5	2.699	107.96	1.32	20	80-120	

QC Type: MS and MSD
QC Sample ID: 14013007.06

Parameter	Sample Result	MS Spk Added	MS Result	MS % Rec	MSD Spk Added	MSD Result	MSD % Rec	%RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
Nitrate-N	BRL	2.5	2.637	93.60	2.5	2.662	94.60	1.06	20	80-120	

Refer to the Definition page for terms.

QUALITY CONTROL DATA

JobID: 14013007

RP14021103

Avery Laboratories & Environmental Services, LLC

101B Estus Road Savannah, Georgia 31404 tel: (912) 944-3748 Fax: (912) 234-9294

Analysis : **Method : SM4500-NO2 b** **Reporting Units : mg/L**

QC Batch ID : Qb14013117 **Created Date :** 01/31/2014 **Created By :** JKitchings

Samples in This QC Batch : 14013007.01,02,03,04,05,06,07,08,09

QC Type: Method Blank

Parameter	CAS #	Result	Units	D.F.	RptLimit		Qual
Nitrite-N		BRL	mg/L	1	0.020		

QC Type: LCS and LCSD

Parameter	LCS Spk Added	LCS Result	LCS % Rec	LCSD Spk Added	LCSD Result	LCSD % Rec	%RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
Nitrite-N	1.0	1.024	102.40	1.0	1.053	105.30	2.79	20	80-120	

QC Type: MS and MSD
QC Sample ID: 14013007.06

Parameter	Sample Result	MS Spk Added	MS Result	MS % Rec	MSD Spk Added	MSD Result	MSD % Rec	%RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
Nitrite-N	BRL	1.0	1.056	105.60	1.0	1.074	107.40	1.69	20	80-120	

Refer to the Definition page for terms.

QUALITY CONTROL DATA

JobID: 14013007

RP14021103

Avery Laboratories & Environmental Services, LLC

101B Estus Road Savannah, Georgia 31404 tel: (912) 944-3748 Fax: (912) 234-9294

Analysis : **Method : EPA 310.2** **Reporting Units : mg/L**

QC Batch ID : Qb14020305 **Created Date :** 02/03/2014 **Created By :** JKitchings

Samples in This QC Batch : 14013007.01,02,03,04,05,06,07,08,09

QC Type: Method Blank

Parameter	CAS #	Result	Units	D.F.	RptLimit		Qual
Alkalinity, as CaCO3		BRL	mg/L	1	20		

QC Type: LCS and LCSD

Parameter	LCS Spk Added	LCS Result	LCS % Rec	LCSD Spk Added	LCSD Result	LCSD % Rec	%RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
Alkalinity, as CaCO3	50	49.3	98.51	50	49.0	97.99	0.52	20	80-120	

QC Type: MS and MSD
QC Sample ID: 14013007.07

Parameter	Sample Result	MS Spk Added	MS Result	MS % Rec	MSD Spk Added	MSD Result	MSD % Rec	%RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
Alkalinity, as CaCO3	BRL	50	56.6	97.85	50	55.2	95.18	2.76	20	80-120	

Refer to the Definition page for terms.

QUALITY CONTROL DATA

JobID: 14013007

RP14021103

Avery Laboratories & Environmental Services, LLC

101B Estus Road Savannah, Georgia 31404 tel: (912) 944-3748 Fax: (912) 234-9294

Analysis : **Method : SM4500-CL e** **Reporting Units : mg/L**

QC Batch ID : Qb14020701 **Created Date :** 02/07/2014 **Created By :** JKitchings

Samples in This QC Batch : 14013007.01,02,03,04,05,06,07,08,09

QC Type: Method Blank

Parameter	CAS #	Result	Units	D.F.	RptLimit		Qual
Chloride		BRL	mg/L	1	2.00		

QC Type: LCS and LCSD

Parameter	LCS Spk Added	LCS Result	LCS % Rec	LCSD Spk Added	LCSD Result	LCSD % Rec	%RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
Chloride	25	25.681	102.72	25	26.085	104.34	1.56	20	80-120	

QC Type: MS and MSD
QC Sample ID: 14013007.01

Parameter	Sample Result	MS Spk Added	MS Result	MS % Rec	MSD Spk Added	MSD Result	MSD % Rec	%RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
Chloride	13.0	25	35.725	90.90	25	36.663	94.65	4.04	20	80-120	

Refer to the Definition page for terms.

QUALITY CONTROL DATA

JobID: 14013007

RP14021103

Avery Laboratories & Environmental Services, LLC

101B Estus Road Savannah, Georgia 31404 tel: (912) 944-3748 Fax: (912) 234-9294

Analysis : **Method : ASTM D516-90** **Reporting Units : mg/L**

QC Batch ID : Qb14020702 **Created Date :** 02/07/2014 **Created By :** JKitchings

Samples in This QC Batch : 14013007.01,02,03,04,05,06,07,08,09

QC Type: Method Blank

Parameter	CAS #	Result	Units	D.F.	RptLimit		Qual
Sulfate		BRL	mg/L	1	5.0		

QC Type: LCS and LCSD

Parameter	LCS Spk Added	LCS Result	LCS % Rec	LCSD Spk Added	LCSD Result	LCSD % Rec	%RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
Sulfate	20	17.944	89.72	20	18.625	93.13	3.72	20	80-120	

QC Type: MS and MSD
QC Sample ID: 14013007.04

Parameter	Sample Result	MS Spk Added	MS Result	MS % Rec	MSD Spk Added	MSD Result	MSD % Rec	%RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
Sulfate	7.65	20	17.803	80.11	20	17.415	78.17	2.45	20	80-120	J1

Refer to the Definition page for terms.

QUALITY CONTROL DATA

JobID: 14013007

RP14021103

Avery Laboratories & Environmental Services, LLC

101B Estus Road Savannah, Georgia 31404 tel: (912) 944-3748 Fax: (912) 234-9294

Analysis : **Volatile Organic Compounds** **Method :** **SW-846 8260B** **Reporting Units :** **ug/L**

QC Batch ID : Qb14021009 **Created Date :** 02/10/2014 **Created By :** BMullis

Samples in This QC Batch : 14013007.01,02,03,04,05,06,07,08,09

QC Type: Method Blank

Parameter	CAS #	Result	Units	D.F.	RptLimit		Qual
1,1,2-Trichloroethane	79-00-5	BRL	ug/L	1	1.0		
Carbon disulfide	75-15-0	BRL	ug/L	1	1.0		
cis-1,2-Dichloroethylene	156-59-2	BRL	ug/L	1	1.0		
Tetrachloroethylene	127-18-4	BRL	ug/L	1	1.0		
trans-1,2-Dichloroethylene	156-60-5	BRL	ug/L	1	1.0		
Trichloroethylene	79-01-6	BRL	ug/L	1	1.0		
Dibromofluoromethane (Surr)	1868-53-7	54.3	%	1	63.4-152		
Toluene-d8 (Surr)	2037-26-5	56.8	%	1	66.4-153		
p-Bromofluorobenzene (Surr)	460-00-4	56.6	%	1	78.7-145		

QC Type: LCS and LCSD

Parameter	LCS Spk Added	LCS Result	LCS % Rec	LCSD Spk Added	LCSD Result	LCSD % Rec	%RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
1,1,2-Trichloroethane	50	45.2	90.40	50	54.8	109.60	19.2	30	79.4-119	
Carbon disulfide	50	56.2	112.40	50	46.5	93.00	18.9	30	57.1-177	
cis-1,2-Dichloroethylene	50	61.3	122.60	50	51.5	103.00	17.4	30	67.2-132	
Tetrachloroethylene	50	50.2	100.40	50	52.6	105.20	4.7	30	63.8-141	
trans-1,2-Dichloroethylene	50	54.5	109.00	50	49.6	99.20	9.4	30	63.7-119	
Trichloroethylene	50	59.1	118.20	50	47.4	94.80	22	30	60.9-128	
Dibromofluoromethane (Surr)	100	74.9	74.90	100	102	102.00			63.4-152	
Toluene-d8 (Surr)	100	90	90.00	100	98.9	98.90			66.4-153	
p-Bromofluorobenzene (Surr)	100	116	116.00	100	109	109.00			78.7-145	

QC Type: MS and MSD
QC Sample ID: 14013007.04

Parameter	Sample Result	MS Spk Added	MS Result	MS % Rec	MSD Spk Added	MSD Result	MSD % Rec	%RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
1,1,2-Trichloroethane		50	55	110.00	50	54	108.00	2	30	79.4-119	
Carbon disulfide		50	48.3	89.66	50	48.1	89.26	0.4	30	57.1-177	
cis-1,2-Dichloroethylene		50	45.6	91.20	50	45.9	91.80	0.7	30	67.2-132	
Tetrachloroethylene		50	56.3	109.46	50	54.1	105.06	4.1	30	63.8-141	
trans-1,2-Dichloroethylene		50	45.2	90.40	50	44.9	89.80	0.7	30	63.7-119	
Trichloroethylene		50	45.6	91.20	50	46.9	93.80	2.8	30	60.9-128	
Dibromofluoromethane (Surr)		100	101	101.00	100	102	102.00			63.4-152	
Toluene-d8 (Surr)		100	110	110.00	100	107	107.00			66.4-153	
p-Bromofluorobenzene (Surr)		100	111	111.00	100	112	112.00			78.7-145	

Date: 02/11/2014 13:00

QUALITY CONTROL DATA

JobID: 14013007

RP14021103

Avery Laboratories & Environmental Services, LLC

101B Estus Road Savannah, Georgia 31404 tel: (912) 944-3748 Fax: (912) 234-9294

Analysis :	**Volatile Organic Compounds**	**Method :**	**SW-846 8260B**	**Reporting Units :**	**ug/L**
QC Batch ID :	Qb14021009	**Created Date :**	02/10/2014	**Created By :**	BMullis
Samples in This QC Batch :	14013007.01,02,03,04,05,06,07,08,09				

Refer to the Definition page for terms.

RP14021103

TERM AND QUALIFIER DEFINITION

JobID: 14013007

Avery Laboratories & Environmental Services, LLC

101B Estus Road Savannah, Georgia 31404 tel: (912) 944-3748 Fax: (912) 234-9294

General Term Definition	
Conc.	Concentration
DF	Dilution Factor - the factor applied to the reported data due to sample preparation, dilution, or moisture content
ND	Non Detect - Not Detected at or above adjusted reporting limit
J	Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit
RL	adjusted Reporting Limit (QL – Quantification Limit)
MDL	adjusted Method Detection Limit (LOD – Limit of Detection)
RegLimit	Regulatory Limit
mg/l	Milligrams per Liter
mg/kg	Milligrams per Kilogram
ppm	Parts per Million
µg/L	Micrograms per Liter
µg/g	Micrograms per Gram
ppb	Parts per Billion
gr/gal	Grains per Gallon
SU	Standard Units
CCU	Cobalt Color Units
NTU	Nephelometric Turbidity Units
µS/cm	Microsiemens per cm at 25C
P/A	Presence/Absence
CFU	Colony Forming Units
MPN	Most Probable Number
RB	Reagent Blank
MB	Method Blank
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LFM	Laboratory Fortified Matrix (MS – Matrix Spike)
LFMD	Laboratory Fortified Matrix Duplicate (MSD – Matrix Spike Duplicate)
DUP	Sample Duplicate
RPD	Relative Percent Difference
%Rec	Percent Recovery
TNTC	Too numerous to count
NC	Not Calculable
SG	Silica Gel - Clean-Up
BRL	Below Reporting Limit
BDL	Below Detection Limit

Qualifier Definition	
H	The parameter was analyzed outside the method specified holding time.
J1	Estimated value-The reported value failed the established quality control criteria for accuracy and /or precision.

RP14021103

CASE NARRATIVE

JobID: 14013007

Avery Laboratories & Environmental Services, LLC

101B Estus Road Savannah, Georgia 31404 tel: (912) 944-3748 Fax: (912) 234-9294

Client Name:	Terracon
Project Name:	Martha Dry Cleaners
Date Received:	01/30/2014,01/30/2014,01/30/2014,01/30/2014,01/30/2014,01/30/2014,01/30/2014,01/30/2014,01/30/2014
Collected By:	JC

Nitrite was analyzed outside the method holding requirements per client request.

Matrix Spikes
Method ASTM D516-90: The matrix spike/ matrix spike duplicate recoveries were outside the established laboratory control limits.The lab spike recoveries were inside acceptable limits, so the data was reported. The matrix spikes have been qualified accordingly.

Carbon Dioxide is not an analyte certified by The NELAC Institute (TNI).

Methane, Ethene, Ethane, and sulfide were subcontracted to Test America-Savannah. The data is on a separate report.

Released By: Robert Paul Grimm

Title: Technical Director

RP14021103

SAMPLE SUMMARY

JobID: 14013007

Avery Laboratories & Environmental Services, LLC

101B Estus Road Savannah, Georgia 31404 tel: (912) 944-3748 Fax: (912) 234-9294

Client Project ID :
Martha Dry Cleaners

Report To : Client Name: Terracon
Client Address: 2201 Rowland Ave.
City, State, Zip: Savannah, GA, 31404

Attn: Stuart Dixon
P.O.#. : ES117125

The laboratory has analyzed the following samples:

Client Sample ID	Matrix	Sample ID	Date Received	Date Collected	Collected by
MW-19	Aqueous	14013007.01	01/30/2014	01/27/2014	JC
MW-24	Aqueous	14013007.02	01/30/2014	01/27/2014	JC
MW-23	Aqueous	14013007.03	01/30/2014	01/27/2014	JC
MW-21D	Aqueous	14013007.04	01/30/2014	01/28/2014	JC
MW-21S	Aqueous	14013007.05	01/30/2014	01/28/2014	JC
MW-22	Aqueous	14013007.06	01/30/2014	01/29/2014	JC
MW-20	Aqueous	14013007.07	01/30/2014	01/29/2014	JC
DUP 1	Aqueous	14013007.08	01/30/2014	01/29/2014	JC
FIELD BLANK	Aqueous	14013007.09	01/30/2014	01/29/2014	JC

RP14021103

SAMPLE PREPARATION INFORMATION

JobID: 14013007

Avery Laboratories & Environmental Services, LLC

101B Estus Road Savannah, Georgia 31404 tel: (912) 944-3748 Fax: (912) 234-9294

Client Name:	Terracon	Attn:	Stuart Dixon
Project Name:	Martha Dry Cleaners	Date:	02/11/2014

Sample ID	Test	Prep method	Date Prepared	Analyst	Prep Batch ID
14013007.01	Alkalinity	EPA 310.2	02/03/2014 10:00 AM	JKitchings	PB14020305
14013007.01	Carbon Dioxide, Free	EPA 310.2	02/03/2014 09:45 AM	PGrimm	PB14021101
14013007.01	Chloride	SM4500-CL e	02/07/2014 08:00 AM	JKitchings	PB14020701
14013007.01	Nitrate	SM4500-NO3 h	01/31/2014 03:00 PM	JKitchings	PB14013117
14013007.01	Nitrite	SM4500-NO2 b	01/30/2014 03:30 PM	JKitchings	PB14013118
14013007.01	Sulfate	ASTM D516-90	02/06/2014 09:00 AM	JKitchings	PB14020702
14013007.01	VOC	SW5030b	02/03/2014 12:00 PM	BMullis	PB14021010
14013007.02	Alkalinity	EPA 310.2	02/03/2014 10:00 AM	JKitchings	PB14020305
14013007.02	Carbon Dioxide, Free	EPA 310.2	02/03/2014 09:45 AM	PGrimm	PB14021101
14013007.02	Chloride	SM4500-CL e	02/07/2014 08:00 AM	JKitchings	PB14020701
14013007.02	Nitrate	SM4500-NO3 h	01/31/2014 03:00 PM	JKitchings	PB14013117
14013007.02	Nitrite	SM4500-NO2 b	01/30/2014 03:30 PM	JKitchings	PB14013118
14013007.02	Sulfate	ASTM D516-90	02/06/2014 09:00 AM	JKitchings	PB14020702
14013007.02	VOC	SW5030b	02/03/2014 12:00 PM	BMullis	PB14021010
14013007.03	Alkalinity	EPA 310.2	02/03/2014 10:00 AM	JKitchings	PB14020305
14013007.03	Carbon Dioxide, Free	EPA 310.2	02/03/2014 09:45 AM	PGrimm	PB14021101
14013007.03	Chloride	SM4500-CL e	02/07/2014 08:00 AM	JKitchings	PB14020701
14013007.03	Nitrate	SM4500-NO3 h	01/31/2014 03:00 PM	JKitchings	PB14013117
14013007.03	Nitrite	SM4500-NO2 b	01/30/2014 03:30 PM	JKitchings	PB14013118
14013007.03	Sulfate	ASTM D516-90	02/06/2014 09:00 AM	JKitchings	PB14020702
14013007.03	VOC	SW5030b	02/03/2014 12:00 PM	BMullis	PB14021010
14013007.04	Alkalinity	EPA 310.2	02/03/2014 10:00 AM	JKitchings	PB14020305
14013007.04	Carbon Dioxide, Free	EPA 310.2	02/03/2014 09:45 AM	PGrimm	PB14021101
14013007.04	Chloride	SM4500-CL e	02/07/2014 08:00 AM	JKitchings	PB14020701
14013007.04	Nitrate	SM4500-NO3 h	01/31/2014 03:00 PM	JKitchings	PB14013117
14013007.04	Nitrite	SM4500-NO2 b	01/30/2014 03:30 PM	JKitchings	PB14013118
14013007.04	Sulfate	ASTM D516-90	02/06/2014 09:00 AM	JKitchings	PB14020702
14013007.04	VOC	SW5030b	02/03/2014 12:00 PM	BMullis	PB14021010
14013007.05	Alkalinity	EPA 310.2	02/03/2014 10:00 AM	JKitchings	PB14020305
14013007.05	Carbon Dioxide, Free	EPA 310.2	02/03/2014 09:45 AM	PGrimm	PB14021101
14013007.05	Chloride	SM4500-CL e	02/07/2014 08:00 AM	JKitchings	PB14020701
14013007.05	Nitrate	SM4500-NO3 h	01/31/2014 03:00 PM	JKitchings	PB14013117
14013007.05	Nitrite	SM4500-NO2 b	01/30/2014 03:30 PM	JKitchings	PB14013118
14013007.05	Sulfate	ASTM D516-90	02/06/2014 09:00 AM	JKitchings	PB14020702
14013007.05	VOC	SW5030b	02/04/2014 12:00 PM	BMullis	PB14021010

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SAMPLE PREPARATION INFORMATION

JobID: 14013007

Avery Laboratories & Environmental Services, LLC

101B Estus Road Savannah, Georgia 31404 tel: (912) 944-3748 Fax: (912) 234-9294

Client Name:	Terracon	Attn:	Stuart Dixon
Project Name:	Martha Dry Cleaners	Date:	02/11/2014

Sample ID	Test	Prep method	Date Prepared	Analyst	Prep Batch ID
14013007.06	Alkalinity	EPA 310.2	02/03/2014 10:00 AM	JKitchings	PB14020305
14013007.06	Carbon Dioxide, Free	EPA 310.2	02/03/2014 09:45 AM	PGrimm	PB14021101
14013007.06	Chloride	SM4500-CL e	02/07/2014 08:00 AM	JKitchings	PB14020701
14013007.06	Nitrate	SM4500-NO3 h	01/31/2014 03:00 PM	JKitchings	PB14013117
14013007.06	Nitrite	SM4500-NO2 b	01/30/2014 03:30 PM	JKitchings	PB14013118
14013007.06	Sulfate	ASTM D516-90	02/06/2014 09:00 AM	JKitchings	PB14020702
14013007.06	VOC	SW5030b	02/03/2014 12:00 PM	BMullis	PB14021010
14013007.07	Alkalinity	EPA 310.2	02/03/2014 10:00 AM	JKitchings	PB14020305
14013007.07	Carbon Dioxide, Free	EPA 310.2	02/03/2014 09:45 AM	PGrimm	PB14021101
14013007.07	Chloride	SM4500-CL e	02/07/2014 08:00 AM	JKitchings	PB14020701
14013007.07	Nitrate	SM4500-NO3 h	01/31/2014 03:00 PM	JKitchings	PB14013117
14013007.07	Nitrite	SM4500-NO2 b	01/30/2014 03:30 PM	JKitchings	PB14013118
14013007.07	Sulfate	ASTM D516-90	02/06/2014 09:00 AM	JKitchings	PB14020702
14013007.07	VOC	SW5030b	02/03/2014 12:00 PM	BMullis	PB14021010
14013007.08	Alkalinity	EPA 310.2	02/03/2014 10:00 AM	JKitchings	PB14020305
14013007.08	Carbon Dioxide, Free	EPA 310.2	02/03/2014 09:45 AM	PGrimm	PB14021101
14013007.08	Chloride	SM4500-CL e	02/07/2014 08:00 AM	JKitchings	PB14020701
14013007.08	Nitrate	SM4500-NO3 h	01/31/2014 03:00 PM	JKitchings	PB14013117
14013007.08	Nitrite	SM4500-NO2 b	01/30/2014 03:30 PM	JKitchings	PB14013118
14013007.08	Sulfate	ASTM D516-90	02/06/2014 09:00 AM	JKitchings	PB14020702
14013007.08	VOC	SW5030b	02/03/2014 12:00 PM	BMullis	PB14021010
14013007.09	Alkalinity	EPA 310.2	02/03/2014 10:00 AM	JKitchings	PB14020305
14013007.09	Carbon Dioxide, Free	EPA 310.2	02/03/2014 09:45 AM	PGrimm	PB14021101
14013007.09	Chloride	SM4500-CL e	02/07/2014 08:00 AM	JKitchings	PB14020701
14013007.09	Nitrate	SM4500-NO3 h	01/31/2014 03:00 PM	JKitchings	PB14013117
14013007.09	Nitrite	SM4500-NO2 b	01/30/2014 03:30 PM	JKitchings	PB14013118
14013007.09	Sulfate	ASTM D516-90	02/06/2014 09:00 AM	JKitchings	PB14020702
14013007.09	VOC	SW5030b	02/03/2014 12:00 PM	BMullis	PB14021010

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SAMPLE CONDITION CHECKLIST

JobID: 14013007

Avery Laboratories & Environmental Services, LLC

101B Estus Road Savannah, Georgia 31404 tel: (912) 944-3748 Fax: (912) 234-9294

Client Name : Terracon		**Contact :**	Stuart Dixon
Address : 2201 Rowland Ave.		**Contact Phone :**	912 629-4000
JobID : 14013007	**Date Received :** 01/30/2014	**Time Received :**	9:13AM
Temperature : 2.75	**Sample pH :** OK		
ThermometerID : 159553	**pH Meter :**		

Comments : Include actions taken to resolve discrepancies/Problem :

	Check Points	Yes	No	N/A
1	Cooler seal present and signed.	✔		
2	Sample(s) in a cooler.	✔		
3	Sample received at 6°C or Less	✔		
4	C-O-C signed and dated.	✔		
5	Sample containers arrived in tact. (if no, comment)	✔		
6	Sample(s) were received in appropriate contatiner. (If no, comment)	✔		
7	Samples received within holding time for analysis requested	✔		
8	Zero headspace in liquid VOA vials	✔		
9	Sample(s) were received at the proper pH.	✔		
10	Sample ID lables Match C-O-C ID's	✔		
11	Bottle count on C-O-C matches bottle found.	✔		
12	Sample amount is sufficient for analyses requested	✔		
13	If requested, sample(s) received with signed sample custody seal			✔
14	Samples accepted.	✔		

Check In By : PGrimm Check in date : 01/30/2014 12:00 AM

RP14021103

COMMERCIAL LABORATORY STIPULATION

Georgia Rules for Commercial Environmental Laboratory Accreditation
Chapter 391-3-26

JobID: 14013007

Avery Laboratories & Environmental Services, LLC

Avery Labs, Inc. ■ 101B Estus Road ■ Savannah, Georgia 31404 ■ tel: (912) 944-3748 ■ www.greenwayeng.com ■

Laboratory: Avery Laboratories and Environmental Services, LLC

Accreditor: NELAC: State of Florida, Department of Health, Bureau of Laboratories

Accreditation ID: E87941

Scope : NON-POTABLE WATER - EXTRACTABLE ORGANICS, NON-POTABLE WATER - GENERAL CHEMISTRY, NON-POTABLE WATER - METALS, NON-POTABLE WATER - PESTICIDES-HERBICIDES-PCB'S, NON-POTABLE WATER - VOLATILE ORGANICS, SOLID AND CHEMICAL MATERIALS - EXTRACTABLE ORGANICS, SOLID AND CHEMICAL MATERIALS - GENERAL CHEMISTRY, SOLID AND CHEMICAL MATERIALS - METALS, SOLID AND CHEMICAL MATERIALS - VOLATILE ORGANICS

Effective Date: July 1, 2013 **Expiration Date:** July 1, 2014

As per the Georgia EPD Rules and Regulations for Commercial Laboratories, Avery Laboratories and Environmental Services – Savannah is accredited by the Florida Department of Health under the National Environmental Laboratory Approval Program (NELAP). If you have any further questions regarding accreditation status for Avery Laboratories and Environmental Services, please contact: Paul Grimm.

Avery Laboratories and Environmental Services, LLC
101B Estus Drive
Savannah, Georgia 31404
Phone: (912) 944-3748
FAX: (912) 234-9294

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Savannah
5102 LaRoche Avenue
Savannah, GA 31404
Tel: (912)354-7858

TestAmerica Job ID: 680-98243-1
Client Project/Site: Martha's Dry Cleaners

For:
Avery Laboratories & Env. Services LLC
PO BOX 5340
Savannah, Georgia 31414

Attn: Mr. Paul Grimm

Authorized for release by:
2/10/2014 9:26:14 PM

Bernard Kirkland, Manager of Project Management
(912)354-7858 e.3238
bernard.kirkland@testamericainc.com

LINKS

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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Job ID: 680-98243-1

Laboratory: TestAmerica Savannah

Narrative

CASE NARRATIVE

Client: Avery Laboratories & Env. Services LLC

Project: Martha's Dry Cleaners

Report Number: 680-98243-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In the event of interference or analytes present at high concentrations, samples may be diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

RECEIPT
The samples were received on 01/31/2014; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 2.0 C.

DISSOLVED GASES
Samples MW-19 (680-98243-1), MW-24 (680-98243-2), MW-23 (680-98243-3), MW-21D (680-98243-4), MW-21S (680-98243-5), MW-22 (680-98243-6), MW-20 (680-98243-7), Dup-1 (680-98243-8) and Field Blank (680-98243-9) were analyzed for dissolved gases in accordance with RSK-175. The samples were analyzed on 02/10/2014.

The field blank associated with analytical batch 314606 has a detection for methane above the method detection limit. Re-analysis was conducted, confirming the detection; the data have been reported.

No difficulties were encountered during the dissolved gases analysis.

All quality control parameters were within the acceptance limits.

SULFIDE
Samples MW-19 (680-98243-1), MW-24 (680-98243-2), MW-23 (680-98243-3), MW-21D (680-98243-4), MW-21S (680-98243-5), MW-22 (680-98243-6), MW-20 (680-98243-7), Dup-1 (680-98243-8) and Field Blank (680-98243-9) were analyzed for sulfide in accordance with EPA Method 376.1. The samples were analyzed on 02/03/2014.

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate/sample duplicate (MS/MSD/DUP).

No difficulties were encountered during the sulfide analysis.

All quality control parameters were within the acceptance limits.

Sample Summary

Client: Avery Laboratories & Env. Services LLC
Project/Site: Martha's Dry Cleaners

TestAmerica Job ID: 680-98243-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
680-98243-1	MW-19	Water	01/27/14 15:20	01/31/14 15:10
680-98243-2	MW-24	Water	01/27/14 16:40	01/31/14 15:10
680-98243-3	MW-23	Water	01/27/14 17:40	01/31/14 15:10
680-98243-4	MW-21D	Water	01/28/14 15:55	01/31/14 15:10
680-98243-5	MW-21S	Water	01/28/14 17:00	01/31/14 15:10
680-98243-6	MW-22	Water	01/29/14 14:40	01/31/14 15:10
680-98243-7	MW-20	Water	01/29/14 16:00	01/31/14 15:10
680-98243-8	Dup-1	Water	01/29/14 14:45	01/31/14 15:10
680-98243-9	Field Blank	Water	01/29/14 16:40	01/31/14 15:10

Method Summary

Client: Avery Laboratories & Env. Services LLC
Project/Site: Martha's Dry Cleaners

TestAmerica Job ID: 680-98243-1

Method	Method Description	Protocol	Laboratory
RSK-175	Dissolved Gases (GC)	RSK	TAL SAV
376.1	Sulfide	MCAWW	TAL SAV

Protocol References:

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

RSK = Sample Prep And Calculations For Dissolved Gas Analysis In Water Samples Using A GC Headspace Equilibration Technique, RSKSOP-175, Rev. 0, 8/11/94, USEPA Research Lab

Laboratory References:

TAL SAV = TestAmerica Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

Definitions/Glossary

Client: Avery Laboratories & Env. Services LLC
Project/Site: Martha's Dry Cleaners

TestAmerica Job ID: 680-98243-1

Qualifiers

GC VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

General Chemistry

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Client Sample Results

Client: Avery Laboratories & Env. Services LLC
Project/Site: Martha's Dry Cleaners

TestAmerica Job ID: 680-98243-1

Client Sample ID: MW-19

Lab Sample ID: 680-98243-1
Date Collected: 01/27/14 15:20
Matrix: Water
Date Received: 01/31/14 15:10

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	**2.2**		0.58	0.29	ug/L			02/10/14 14:24	1
Ethylene	1.0	U	1.0	0.50	ug/L			02/10/14 14:24	1
Ethane	1.1	U	1.1	0.55	ug/L			02/10/14 14:24	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide as H2S	1.1	U	1.1	1.1	mg/L			02/03/14 13:22	1

Client Sample ID: MW-24

Lab Sample ID: 680-98243-2
Date Collected: 01/27/14 16:40
Matrix: Water
Date Received: 01/31/14 15:10

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	**6.3**		0.58	0.29	ug/L			02/10/14 14:37	1
Ethylene	1.0	U	1.0	0.50	ug/L			02/10/14 14:37	1
Ethane	1.1	U	1.1	0.55	ug/L			02/10/14 14:37	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide as H2S	**1.2**		1.1	1.1	mg/L			02/03/14 13:22	1

Client Sample ID: MW-23

Lab Sample ID: 680-98243-3
Date Collected: 01/27/14 17:40
Matrix: Water
Date Received: 01/31/14 15:10

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	**0.63**		0.58	0.29	ug/L			02/10/14 14:49	1
Ethylene	1.0	U	1.0	0.50	ug/L			02/10/14 14:49	1
Ethane	1.1	U	1.1	0.55	ug/L			02/10/14 14:49	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide as H2S	1.1	U	1.1	1.1	mg/L			02/03/14 13:22	1

Client Sample ID: MW-21D

Lab Sample ID: 680-98243-4
Date Collected: 01/28/14 15:55
Matrix: Water
Date Received: 01/31/14 15:10

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	**320**		0.58	0.29	ug/L			02/10/14 15:02	1
Ethylene	1.0	U	1.0	0.50	ug/L			02/10/14 15:02	1
Ethane	1.1	U	1.1	0.55	ug/L			02/10/14 15:02	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide as H2S	1.1	U	1.1	1.1	mg/L			02/03/14 13:22	1

Client Sample Results

Client: Avery Laboratories & Env. Services LLC
Project/Site: Martha's Dry Cleaners

TestAmerica Job ID: 680-98243-1

Client Sample ID: MW-21S

Lab Sample ID: 680-98243-5
Date Collected: 01/28/14 17:00
Matrix: Water
Date Received: 01/31/14 15:10

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	**0.88**		0.58	0.29	ug/L			02/10/14 15:15	1
Ethylene	1.0	U	1.0	0.50	ug/L			02/10/14 15:15	1
Ethane	1.1	U	1.1	0.55	ug/L			02/10/14 15:15	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide as H2S	1.1	U	1.1	1.1	mg/L			02/03/14 13:22	1

Client Sample ID: MW-22

Lab Sample ID: 680-98243-6
Date Collected: 01/29/14 14:40
Matrix: Water
Date Received: 01/31/14 15:10

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	**0.59**		0.58	0.29	ug/L			02/10/14 15:28	1
Ethylene	1.0	U	1.0	0.50	ug/L			02/10/14 15:28	1
Ethane	1.1	U	1.1	0.55	ug/L			02/10/14 15:28	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide as H2S	1.1	U	1.1	1.1	mg/L			02/03/14 13:22	1

Client Sample ID: MW-20

Lab Sample ID: 680-98243-7
Date Collected: 01/29/14 16:00
Matrix: Water
Date Received: 01/31/14 15:10

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	**0.76**		0.58	0.29	ug/L			02/10/14 15:41	1
Ethylene	1.0	U	1.0	0.50	ug/L			02/10/14 15:41	1
Ethane	1.1	U	1.1	0.55	ug/L			02/10/14 15:41	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide as H2S	1.1	U	1.1	1.1	mg/L			02/03/14 13:22	1

Client Sample ID: Dup-1

Lab Sample ID: 680-98243-8
Date Collected: 01/29/14 14:45
Matrix: Water
Date Received: 01/31/14 15:10

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	**0.67**		0.58	0.29	ug/L			02/10/14 15:53	1
Ethylene	1.0	U	1.0	0.50	ug/L			02/10/14 15:53	1
Ethane	1.1	U	1.1	0.55	ug/L			02/10/14 15:53	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide as H2S	1.1	U	1.1	1.1	mg/L			02/03/14 13:22	1

Client Sample Results

Client: Avery Laboratories & Env. Services LLC
Project/Site: Martha's Dry Cleaners

TestAmerica Job ID: 680-98243-1

Client Sample ID: Field Blank

Lab Sample ID: 680-98243-9

Date Collected: 01/29/14 16:40

Matrix: Water

Date Received: 01/31/14 15:10

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	**0.50**	**J**	0.58	0.29	ug/L			02/10/14 16:06	1
Ethylene	1.0	U	1.0	0.50	ug/L			02/10/14 16:06	1
Ethane	1.1	U	1.1	0.55	ug/L			02/10/14 16:06	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide as H2S	1.1	U	1.1	1.1	mg/L			02/03/14 13:22	1

QC Sample Results

Client: Avery Laboratories & Env. Services LLC
Project/Site: Martha's Dry Cleaners

TestAmerica Job ID: 680-98243-1

Method: RSK-175 - Dissolved Gases (GC)

Lab Sample ID: MB 680-314606/7 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 314606

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	0.58	U	0.58	0.29	ug/L			02/10/14 11:30	1
Ethylene	1.0	U	1.0	0.50	ug/L			02/10/14 11:30	1
Ethane	1.1	U	1.1	0.55	ug/L			02/10/14 11:30	1

Lab Sample ID: LCS 680-314606/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 314606

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Methane	154	151		ug/L		98	75 - 125
Ethylene	269	286		ug/L		106	75 - 125
Ethane	288	298		ug/L		103	75 - 125

Lab Sample ID: LCSD 680-314606/4 — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 314606

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Methane	154	152		ug/L		99	75 - 125	1	30
Ethylene	269	286		ug/L		106	75 - 125	0	30
Ethane	288	300		ug/L		104	75 - 125	1	30

Method: 376.1 - Sulfide

Lab Sample ID: MB 680-313985/1 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 313985

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide as H2S	1.1	U	1.1	1.1	mg/L			02/03/14 13:22	1

Lab Sample ID: LCS 680-313985/2 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 313985

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfide as H2S	10.0	11.0		mg/L		110	75 - 125

Lab Sample ID: LCSD 680-313985/3 — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 313985

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Sulfide as H2S	10.0	11.1		mg/L		111	75 - 125	0	30

QC Association Summary

Client: Avery Laboratories & Env. Services LLC
Project/Site: Martha's Dry Cleaners

TestAmerica Job ID: 680-98243-1

GC VOA

Analysis Batch: 314606

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-98243-1	MW-19	Total/NA	Water	RSK-175	
680-98243-2	MW-24	Total/NA	Water	RSK-175	
680-98243-3	MW-23	Total/NA	Water	RSK-175	
680-98243-4	MW-21D	Total/NA	Water	RSK-175	
680-98243-5	MW-21S	Total/NA	Water	RSK-175	
680-98243-6	MW-22	Total/NA	Water	RSK-175	
680-98243-7	MW-20	Total/NA	Water	RSK-175	
680-98243-8	Dup-1	Total/NA	Water	RSK-175	
680-98243-9	Field Blank	Total/NA	Water	RSK-175	
LCS 680-314606/3	Lab Control Sample	Total/NA	Water	RSK-175	
LCSD 680-314606/4	Lab Control Sample Dup	Total/NA	Water	RSK-175	
MB 680-314606/7	Method Blank	Total/NA	Water	RSK-175	

General Chemistry

Analysis Batch: 313985

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-98243-1	MW-19	Total/NA	Water	376.1	
680-98243-2	MW-24	Total/NA	Water	376.1	
680-98243-3	MW-23	Total/NA	Water	376.1	
680-98243-4	MW-21D	Total/NA	Water	376.1	
680-98243-5	MW-21S	Total/NA	Water	376.1	
680-98243-6	MW-22	Total/NA	Water	376.1	
680-98243-7	MW-20	Total/NA	Water	376.1	
680-98243-8	Dup-1	Total/NA	Water	376.1	
680-98243-9	Field Blank	Total/NA	Water	376.1	
LCS 680-313985/2	Lab Control Sample	Total/NA	Water	376.1	
LCSD 680-313985/3	Lab Control Sample Dup	Total/NA	Water	376.1	
MB 680-313985/1	Method Blank	Total/NA	Water	376.1	

Serial Number: 68385

Avery Laboratories & Environmental Services, LLC

Ship To: 101 B Estus Dr. Savannah, Ga. 31404
T 912 944-3748 F 912 234-9294
email: pgrimm@averylab.com

LAB NUMBER

Client Information	
Customer:	Avery Labs
Address:	101 B Estus Dr
City/State/Zip:	Savannah, GA 31404
Contact:	Paul Grimm
Phone:	912 944-3748
Email:	pgrimm@averylab.com
Purchase Order #:	
Project Manager:	

Page 1 of 1

Sampler:

Turn Around Time (Place X below)

24 Hours	
48 Hours	
72 Hours	
5 Working Days	
7 Working Days	X
Other:	

Project Name: Martha's Dry Cleaners

Project Number:

State where work originated: GA

Subcontract Laboratory

Name / Address/ Phone

N

A

P

Sample Identification	Date	Time	Matrix	# of Containers	Methane, Ethane, Ethene	Sulfide	Remarks
					Preservative 4	8	
MW-19	1/27/14	1520	W	3	X	X	
MW-24	1/27/14	1640	W	3	X	X	
MW-23	1/27/14	1740	W	3	X	X	
MW-21D	1/28/14	1555	W	3	X	X	
MW-21S	1/28/14	1700	W	3	X	X	
MW-22	1/29/14	1440	W	3	X	X	
MW-20	1/29/14	1600	W	3	X	X	
Dup-1	1/29/14	1445	W	3	X	X	
Field Blank	1/29/14	1640	W	3	X	X	

Matrix Type: A = Air W = Water S= Solid N = Nonaqueous (solvent, acid, etc.)

Preservative: 1= None 2 = H2SO4 3 = HN03 4 = HCL 5 = MeOH 6 = NAHSO4 7 = Water 8 = Other

Instructions or Special Requirements:

2.0°C

Temperature:

Custody Seals: Yes No

Custody Seals Intact: Yes No

Relinquished by:	Date/Time:	Received by:	Date/Time:
Robert Pal Jr	1/31/14 1425	[illegible]	01/31/14 14:25
[illegible]	01/31/15		

F86-01

Effective Date: 09.11.08

680-98243 Chain of Custody

Ref No 3 20101065

Login Sample Receipt Checklist

Client: Avery Laboratories & Env. Services LLC

Job Number: 680-98243-1

Login Number: 98243

List Source: TestAmerica Savannah

List Number: 1

Creator: Banda, Christy S

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Certification Summary

Client: Avery Laboratories & Env. Services LLC
Project/Site: Martha's Dry Cleaners

TestAmerica Job ID: 680-98243-1

Laboratory: TestAmerica Savannah

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
	AFCEE		SAVLAB	
A2LA	DoD ELAP		399.01	02-28-15
A2LA	ISO/IEC 17025		399.01	02-28-15
Alabama	State Program	4	41450	06-30-14
Arkansas DEQ	State Program	6	88-0692	02-01-15
California	NELAP	9	3217CA	07-31-14
Colorado	State Program	8	N/A	12-31-14
Connecticut	State Program	1	PH-0161	03-31-15
Florida	NELAP	4	E87052	06-30-14
GA Dept. of Agriculture	State Program	4	N/A	06-30-14
Georgia	State Program	4	N/A	06-30-14
Georgia	State Program	4	803	06-30-14
Guam	State Program	9	09-005r	04-17-14
Hawaii	State Program	9	N/A	06-30-14
Illinois	NELAP	5	200022	11-30-14
Indiana	State Program	5	N/A	06-30-14
Iowa	State Program	7	353	07-01-15
Kentucky (DW)	State Program	4	90084	12-31-14
Kentucky (UST)	State Program	4	18	06-30-14
Louisiana	NELAP	6	LA100015	12-31-14
Maine	State Program	1	GA00006	08-16-14
Maryland	State Program	3	250	12-31-14
Massachusetts	State Program	1	M-GA006	06-30-14
Michigan	State Program	5	9925	06-30-14
Mississippi	State Program	4	N/A	06-30-14
Montana	State Program	8	CERT0081	01-01-15
Nebraska	State Program	7	TestAmerica-Savannah	06-30-14
New Jersey	NELAP	2	GA769	06-30-14
New Mexico	State Program	6	N/A	06-30-14
New York	NELAP	2	10842	03-31-14
North Carolina DENR	State Program	4	269	12-31-14
North Carolina DHHS	State Program	4	13701	07-31-14
Oklahoma	State Program	6	9984	08-31-14
Pennsylvania	NELAP	3	68-00474	06-30-14
Puerto Rico	State Program	2	GA00006	01-01-14 *
South Carolina	State Program	4	98001	06-30-14
Tennessee	State Program	4	TN02961	06-30-14
Texas	NELAP	6	T104704185-08-TX	11-30-14
USDA	Federal		SAV 3-04	04-07-14
Virginia	NELAP	3	460161	06-14-14
Washington	State Program	10	C1794	06-10-14
West Virginia DEP	State Program	3	94	06-30-14
West Virginia DHHR	State Program	3	9950C	12-31-13 *
Wisconsin	State Program	5	999819810	08-31-14
Wyoming	State Program	8	8TMS-L	06-30-14

* Expired certification is currently pending renewal and is considered valid.

APPENDIX D

SOIL LABORATORY ANALYTICAL DATA

Serial Number: 68384

1401 2811
LAB NUMBER

Avery Laboratories & Environmental Services, LLC

Ship To: 101 B Estus Dr. Savannah, Ga. 31404
T 912 944-3748 F 912 234-9294
email: pgrimm@averylab.com

Client Information			
Customer:	Terracon	Page 1 of 1	
Address:	2201 Rowland Ave	Sampler: JHC	
City/State/Zip:	Savannah, GA 31404	Turn Around Time (Place X below)	
Contact:	Stewart Dixon	24 Hours	
Phone:	(912) 629-4000	48 Hours	
Email:	SaDixon@Terracon.com	72 Hours	
Purchase Order #:		5 Working Days	✓
Project Manager:	Stewart Dixon	7 Working Days	
		Other:	

Project Name: Marthas Dry Cleaners
Project Number:
State where work originated: GA

Subcontract Laboratory
Name / Address/ Phone
N
A
P

Preservative

Sample Identification	Date	Time	Matrix	# of Containers	VOCs	TOC	TOC		Remarks
SS-1	1/27/14	11:15	S	4	X	X	X		
SS-2	↓	12:00	↓	↓	X	X	X		
SS-3	↓	13:05	↓	↓	X	X	X		

Matrix Type: A = Air W = Water S= Solid N = Nonaqueous (solvent, acid, etc.)

Preservative: 1= None 2 = H2SO4 3 = HN03 4 = HCL 5 = MeOH 6 = NAHSO4 7 = Water 8 = Other

Instructions or Special Requirements:

Temperature: 2.5 Custody Seals: Yes No Custody Seals Intact: Yes No

Relinquished by:	Date/Time:	Received by:	Date/Time:
John Caldwell	1/28/14 1341		1-28 1413

Page 1 of 22

Ref No: G 439101065

RP14021105

LABORATORY ANALYSIS REPORT

JobID: 14012811

Avery Laboratories & Environmental Services, LLC

101B Estus Road Savannah, Georgia 31404 tel: (912) 944-3748 Fax: (912) 234-9294

Client Project ID :
Martha Dry Cleaners

Report To : Client Name: Terracon Attn: Stuart Dixon
Client Address: 2201 Rowland Ave. P.O.#. :
City, State, Zip: Savannah, GA, 31404

Dear Stuart Dixon

The following test results meet all NELAC requirements for analytes for which certification is available. Any deviations from these quality systems will be noted in this case narrative. All analyses performed by Avery Laboratories & Environmental Services, LLC unless noted. Parameters not perfromed by Avery Laboratories will be listed on the Sample Summary section of the report.

For questions regarding this report, contact Robert Paul Grimm at (912)944-3748.

Sincerely,

[Robert Paul Grimm]
Technical Director

This Laboratory is NELAP accredited.

I am the laboratory manager, or his/her designee, and I am responsible for the release of this data package. This laboratory data package has been reviewed and is complete and technically compliant with the requirements of the methods used, except where noted in the attached exception reports. I affirm, to the best of my knowledge that all problems/anomalies observed by this laboratory (and if applicable, any and all laboratories subcontracted through this laboratory) that might affect the quality of the data, have been identified in the Laboratory Review Checklist, and that no information or data have been knowingly withheld that would affect the quality of the data.

Date: 02/11/2014 16:22 Primary Lab Certification # NELAP: FL-E87941

LABORATORY TEST RESULTS

RP14021105

JobID: 14012811

Avery Laboratories & Environmental Services, LLC

101B Estus Road ■ Savannah, Georgia 31404 ■ tel: (912) 944-3748 ■ Fax: (912) 234-9294

Client Name:	Terracon	Attn:	Stuart Dixon
Project ID:	Martha Dry Cleaners	Date	02/11/2014

Client Sample ID:	SS-1	Job Sample ID:	14012811.01
Date Collected:	01/28/14	Sample Matrix	Soil
Time Collected:	11:15	% Moisture	25.0
Other Information:			

Test Method	Parameter/Test Description	Result	Units	DF	Rpt Limit	Reg Limit	Q	Date Time	Analyst
SM2540b									
	Moisture	25	%	1				01/30/14 10:00	JK
SW-846 8260B									
	1,1,1,2-Tetrachloroethane	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	1,1,1-Trichloroethane	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	1,1,2,2-Tetrachloroethane	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	1,1,2-Trichloroethane	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	1,1-Dichloroethane	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	1,1-Dichloroethylene	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	1,1-Dichloropropene	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	1,2,3-trichlorobenzene	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	1,2,3-Trichloropropane	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	1,2,4-Trichlorobenzene	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	1,2,4-Trimethylbenzene	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	1,2-Dibromo-3-chloropropane	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	1,2-Dibromoethane	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	1,2-Dichlorobenzene	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	1,2-Dichloroethane	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	1,2-Dichloropropane	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	1,3,5-Trimethylbenzene	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	1,3-Dichlorobenzene	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	1,4-Dichlorobenzene	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	2,2-Dichloropropane	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	2-Chlorotoluene	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	2-Hexanone	BRL	mg/kg dw	0.838	0.011			01/30/14 16:31	BM
	4-Chlorotoluene	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	4-Isopropyltoluene	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	Acetone	BRL	mg/kg dw	0.838	0.056			01/30/14 16:31	BM
	Benzene	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	Bromobenzene	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	Bromochloromethane	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM

Soil results reported on dry weight basis

LABORATORY TEST RESULTS

JobID: 14012811

Avery Laboratories & Environmental Services, LLC

101B Estus Road ■ Savannah, Georgia 31404 ■ tel: (912) 944-3748 ■ Fax: (912) 234-9294

Client Name:	Terracon	Attn:	Stuart Dixon
Project ID:	Martha Dry Cleaners	Date	02/11/2014

Client Sample ID:	SS-1	Job Sample ID:	14012811.01
Date Collected:	01/28/14	Sample Matrix	Soil
Time Collected:	11:15	% Moisture	25.0
Other Information:			

Test Method	Parameter/Test Description	Result	Units	DF	Rpt Limit	Reg Limit	Q	Date Time	Analyst
SW-846 8260B									
	Bromodichloromethane	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	Bromoform	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	Bromomethane	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	Carbon disulfide	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	Carbon tetrachloride	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	Chlorobenzene	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	Chloroethane	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	Chloroform	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	Chloromethane	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	cis-1,2-Dichloroethylene	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	cis-1,3-Dichloropropene	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	Dibromochloromethane	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	Dibromomethane	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	Dichlorodifluoromethane	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	Ethylbenzene	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	Hexachlorobutadiene	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	Isopropylbenzene	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	MEK (2-Butanone)	BRL	mg/kg dw	0.838	0.011			01/30/14 16:31	BM
	Methylene chloride	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	MIBK (Methyl Isobutyl Ketone)	BRL	mg/kg dw	0.838	0.011			01/30/14 16:31	BM
	MTBE	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	Naphthalene	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	n-Butylbenzene	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	n-Propylbenzene	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	sec-Butylbenzene	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	Styrene	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	t-butylbenzene	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	Tetrachloroethylene	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	Toluene	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	trans-1,2-Dichloroethylene	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	trans-1,3-Dichloropropene	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM

Soil results reported on dry weight basis

LABORATORY TEST RESULTS

JobID: 14012811

Avery Laboratories & Environmental Services, LLC

101B Estus Road ■ Savannah, Georgia 31404 ■ tel: (912) 944-3748 ■ Fax: (912) 234-9294 ■

Client Name:	Terracon	Attn:	Stuart Dixon
Project ID:	Martha Dry Cleaners	Date	02/11/2014

Client Sample ID:	SS-1	Job Sample ID:	14012811.01
Date Collected:	01/28/14	Sample Matrix	Soil
Time Collected:	11:15	% Moisture	25.0
Other Information:			

Test Method	Parameter/Test Description	Result	Units	DF	Rpt Limit	Reg Limit	Q	Date Time	Analyst
SW-846 8260B									
	Trichloroethylene	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	Trichlorofluoromethane	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	Vinyl Chloride	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	xylene-o	BRL	mg/kg dw	0.838	0.00559			01/30/14 16:31	BM
	xylenes (m&P)	BRL	mg/kg dw	0.838	0.011			01/30/14 16:31	BM
	xylenes (total)	BRL	mg/kg dw	0.838	0.017			01/30/14 16:31	BM
	Dibromofluoromethane(surr)	81	%	0.838	62.1-137			01/30/14 16:31	BM
	p-Bromofluorobenzene(surr)	117	%	0.838	47.0-155			01/30/14 16:31	BM
	Toluene-d8(surr)	114	%	0.838	64.0-143			01/30/14 16:31	BM

Soil results reported on dry weight basis

LABORATORY TEST RESULTS

RP14021105

JobID: 14012811

Avery Laboratories & Environmental Services, LLC

101B Estus Road ■ Savannah, Georgia 31404 ■ tel: (912) 944-3748 ■ Fax: (912) 234-9294

Client Name:	Terracon	Attn: Stuart Dixon	
Project ID:	Martha Dry Cleaners	Date	02/11/2014

Client Sample ID:	SS-2	Job Sample ID:	14012811.02
Date Collected:	01/28/14	Sample Matrix	Soil
Time Collected:	12:00	% Moisture	22.9
Other Information:			

Test Method	Parameter/Test Description	Result	Units	DF	Rpt Limit	Reg Limit	Q	Date Time	Analyst
SM2540b									
	Moisture	22.9	%	1				01/30/14 10:00	JK
SW-846 8260B									
	1,1,1,2-Tetrachloroethane	BRL	mg/kg dw	0.824	0.00534			01/30/14 16:56	BM
	1,1,1-Trichloroethane	BRL	mg/kg dw	0.824	0.00534			01/30/14 16:56	BM
	1,1,2,2-Tetrachloroethane	BRL	mg/kg dw	0.824	0.00534			01/30/14 16:56	BM
	1,1,2-Trichloroethane	BRL	mg/kg dw	0.824	0.00534			01/30/14 16:56	BM
	1,1-Dichloroethane	BRL	mg/kg dw	0.824	0.00534			01/30/14 16:56	BM
	1,1-Dichloroethylene	BRL	mg/kg dw	0.824	0.00534			01/30/14 16:56	BM
	1,1-Dichloropropene	BRL	mg/kg dw	0.824	0.00534			01/30/14 16:56	BM
	1,2,3-trichlorobenzene	BRL	mg/kg dw	0.824	0.00534			01/30/14 16:56	BM
	1,2,3-Trichloropropane	BRL	mg/kg dw	0.824	0.00534			01/30/14 16:56	BM
	1,2,4-Trichlorobenzene	BRL	mg/kg dw	0.824	0.00534			01/30/14 16:56	BM
	1,2,4-Trimethylbenzene	BRL	mg/kg dw	0.824	0.00534			01/30/14 16:56	BM
	1,2-Dibromo-3-chloropropane	BRL	mg/kg dw	0.824	0.00534			01/30/14 16:56	BM
	1,2-Dibromoethane	BRL	mg/kg dw	0.824	0.00534			01/30/14 16:56	BM
	1,2-Dichlorobenzene	BRL	mg/kg dw	0.824	0.00534			01/30/14 16:56	BM
	1,2-Dichloroethane	BRL	mg/kg dw	0.824	0.00534			01/30/14 16:56	BM
	1,2-Dichloropropane	BRL	mg/kg dw	0.824	0.00534			01/30/14 16:56	BM
	1,3,5-Trimethylbenzene	BRL	mg/kg dw	0.824	0.00534			01/30/14 16:56	BM
	1,3-Dichlorobenzene	BRL	mg/kg dw	0.824	0.00534			01/30/14 16:56	BM
	1,4-Dichlorobenzene	BRL	mg/kg dw	0.824	0.00534			01/30/14 16:56	BM
	2,2-Dichloropropane	BRL	mg/kg dw	0.824	0.00534			01/30/14 16:56	BM
	2-Chlorotoluene	BRL	mg/kg dw	0.824	0.00534			01/30/14 16:56	BM
	2-Hexanone	BRL	mg/kg dw	0.824	0.011			01/30/14 16:56	BM
	4-Chlorotoluene	BRL	mg/kg dw	0.824	0.00534			01/30/14 16:56	BM
	4-Isopropyltoluene	BRL	mg/kg dw	0.824	0.00534			01/30/14 16:56	BM
	Acetone	BRL	mg/kg dw	0.824	0.053			01/30/14 16:56	BM
	Benzene	BRL	mg/kg dw	0.824	0.00534			01/30/14 16:56	BM
	Bromobenzene	BRL	mg/kg dw	0.824	0.00534			01/30/14 16:56	BM
	Bromochloromethane	BRL	mg/kg dw	0.824	0.00534			01/30/14 16:56	BM

Soil results reported on dry weight basis

LABORATORY TEST RESULTS

JobID: 14012811

Avery Laboratories & Environmental Services, LLC

101B Estus Road ■ Savannah, Georgia 31404 ■ tel: (912) 944-3748 ■ Fax: (912) 234-9294

Client Name:	Terracon	Attn:	Stuart Dixon
Project ID:	Martha Dry Cleaners	Date	02/11/2014

Client Sample ID:	SS-2	Job Sample ID:	14012811.02
Date Collected:	01/28/14	Sample Matrix	Soil
Time Collected:	12:00	% Moisture	22.9
Other Information:			

Test Method	Parameter/Test Description	Result	Units	DF	Rpt Limit	Reg Limit	Q	Date Time	Analyst
SW-846 8260B									
	Bromodichloromethane	BRL	mg/kg dw	0.824	0.00534			01/30/14 16:56	BM
	Bromoform	BRL	mg/kg dw	0.824	0.00534			01/30/14 16:56	BM
	Bromomethane	BRL	mg/kg dw	0.824	0.00534			01/30/14 16:56	BM
	Carbon disulfide	BRL	mg/kg dw	0.824	0.00534			01/30/14 16:56	BM
	Carbon tetrachloride	BRL	mg/kg dw	0.824	0.00534			01/30/14 16:56	BM
	Chlorobenzene	BRL	mg/kg dw	0.824	0.00534			01/30/14 16:56	BM
	Chloroethane	BRL	mg/kg dw	0.824	0.00534			01/30/14 16:56	BM
	Chloroform	BRL	mg/kg dw	0.824	0.00534			01/30/14 16:56	BM
	Chloromethane	BRL	mg/kg dw	0.824	0.00534			01/30/14 16:56	BM
	cis-1,2-Dichloroethylene	BRL	mg/kg dw	0.824	0.00534			01/30/14 16:56	BM
	cis-1,3-Dichloropropene	BRL	mg/kg dw	0.824	0.00534			01/30/14 16:56	BM
	Dibromochloromethane	BRL	mg/kg dw	0.824	0.00534			01/30/14 16:56	BM
	Dibromomethane	BRL	mg/kg dw	0.824	0.00534			01/30/14 16:56	BM
	Dichlorodifluoromethane	BRL	mg/kg dw	0.824	0.00534			01/30/14 16:56	BM
	Ethylbenzene	BRL	mg/kg dw	0.824	0.00534			01/30/14 16:56	BM
	Hexachlorobutadiene	BRL	mg/kg dw	0.824	0.00534			01/30/14 16:56	BM
	Isopropylbenzene	BRL	mg/kg dw	0.824	0.00534			01/30/14 16:56	BM
	MEK (2-Butanone)	BRL	mg/kg dw	0.824	0.011			01/30/14 16:56	BM
	Methylene chloride	BRL	mg/kg dw	0.824	0.00534			01/30/14 16:56	BM
	MIBK (Methyl Isobutyl Ketone)	BRL	mg/kg dw	0.824	0.011			01/30/14 16:56	BM
	MTBE	BRL	mg/kg dw	0.824	0.00534			01/30/14 16:56	BM
	Naphthalene	BRL	mg/kg dw	0.824	0.00534			01/30/14 16:56	BM
	n-Butylbenzene	BRL	mg/kg dw	0.824	0.00534			01/30/14 16:56	BM
	n-Propylbenzene	BRL	mg/kg dw	0.824	0.00534			01/30/14 16:56	BM
	sec-Butylbenzene	BRL	mg/kg dw	0.824	0.00534			01/30/14 16:56	BM
	Styrene	BRL	mg/kg dw	0.824	0.00534			01/30/14 16:56	BM
	t-butylbenzene	BRL	mg/kg dw	0.824	0.00534			01/30/14 16:56	BM
	Tetrachloroethylene	BRL	mg/kg dw	0.824	0.00534			01/30/14 16:56	BM
	Toluene	BRL	mg/kg dw	0.824	0.00534			01/30/14 16:56	BM
	trans-1,2-Dichloroethylene	BRL	mg/kg dw	0.824	0.00534			01/30/14 16:56	BM
	trans-1,3-Dichloropropene	BRL	mg/kg dw	0.824	0.00534			01/30/14 16:56	BM

Soil results reported on dry weight basis

LABORATORY TEST RESULTS

JobID: 14012811

Avery Laboratories & Environmental Services, LLC

101B Estus Road ■ Savannah, Georgia 31404 ■ tel: (912) 944-3748 ■ Fax: (912) 234-9294 ■

Client Name:	Terracon	Attn:	Stuart Dixon
Project ID:	Martha Dry Cleaners	Date	02/11/2014

Client Sample ID:	SS-2	Job Sample ID:	14012811.02
Date Collected:	01/28/14	Sample Matrix	Soil
Time Collected:	12:00	% Moisture	22.9
Other Information:			

Test Method	Parameter/Test Description	Result	Units	DF	Rpt Limit	Reg Limit	Q	Date Time	Analyst
SW-846 8260B									
	Trichloroethylene	BRL	mg/kg dw	0.824	0.00534			01/30/14 16:56	BM
	Trichlorofluoromethane	BRL	mg/kg dw	0.824	0.00534			01/30/14 16:56	BM
	Vinyl Chloride	BRL	mg/kg dw	0.824	0.00534			01/30/14 16:56	BM
	xylene-o	BRL	mg/kg dw	0.824	0.00534			01/30/14 16:56	BM
	xylenes (m&P)	BRL	mg/kg dw	0.824	0.011			01/30/14 16:56	BM
	xylenes (total)	BRL	mg/kg dw	0.824	0.016			01/30/14 16:56	BM
	Dibromofluoromethane(surr)	80.5	%	0.824	62.1-137			01/30/14 16:56	BM
	p-Bromofluorobenzene(surr)	120	%	0.824	47.0-155			01/30/14 16:56	BM
	Toluene-d8(surr)	115	%	0.824	64.0-143			01/30/14 16:56	BM

Soil results reported on dry weight basis

LABORATORY TEST RESULTS

RP14021105

JobID: 14012811

Avery Laboratories & Environmental Services, LLC

101B Estus Road ■ Savannah, Georgia 31404 ■ tel: (912) 944-3748 ■ Fax: (912) 234-9294

Client Name:	Terracon	Attn: Stuart Dixon	
Project ID:	Martha Dry Cleaners	Date	02/11/2014

Client Sample ID:	SS-3	Job Sample ID:	14012811.03
Date Collected:	01/28/14	Sample Matrix	Soil
Time Collected:	13:05	% Moisture	21.3
Other Information:			

Test Method	Parameter/Test Description	Result	Units	DF	Rpt Limit	Reg Limit	Q	Date Time	Analyst
SM2540b									
	Moisture	21.3	%	1				01/30/14 10:00	JK
SW-846 8260B									
	1,1,1,2-Tetrachloroethane	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	BM
	1,1,1-Trichloroethane	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	BM
	1,1,2,2-Tetrachloroethane	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	BM
	1,1,2-Trichloroethane	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	BM
	1,1-Dichloroethane	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	BM
	1,1-Dichloroethylene	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	BM
	1,1-Dichloropropene	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	BM
	1,2,3-trichlorobenzene	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	BM
	1,2,3-Trichloropropane	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	BM
	1,2,4-Trichlorobenzene	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	BM
	1,2,4-Trimethylbenzene	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	BM
	1,2-Dibromo-3-chloropropane	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	BM
	1,2-Dibromoethane	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	BM
	1,2-Dichlorobenzene	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	BM
	1,2-Dichloroethane	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	BM
	1,2-Dichloropropane	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	BM
	1,3,5-Trimethylbenzene	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	BM
	1,3-Dichlorobenzene	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	BM
	1,4-Dichlorobenzene	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	BM
	2,2-Dichloropropane	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	BM
	2-Chlorotoluene	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	BM
	2-Hexanone	BRL	mg/kg dw	0.813	0.01			01/30/14 17:47	BM
	4-Chlorotoluene	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	BM
	4-Isopropyltoluene	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	BM
	Acetone	BRL	mg/kg dw	0.813	0.052			01/30/14 17:47	BM
	Benzene	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	BM
	Bromobenzene	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	BM
	Bromochloromethane	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	BM

Soil results reported on dry weight basis

LABORATORY TEST RESULTS

JobID: 14012811

Avery Laboratories & Environmental Services, LLC

101B Estus Road ■ Savannah, Georgia 31404 ■ tel: (912) 944-3748 ■ Fax: (912) 234-9294

Client Name:	Terracon	Attn:	Stuart Dixon
Project ID:	Martha Dry Cleaners	Date	02/11/2014

Client Sample ID:	SS-3	Job Sample ID:	14012811.03
Date Collected:	01/28/14	Sample Matrix	Soil
Time Collected:	13:05	% Moisture	21.3
Other Information:			

Test Method	Parameter/Test Description	Result	Units	DF	Rpt Limit	Reg Limit	Q	Date Time	Analyst
SW-846 8260B									
	Bromodichloromethane	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	BM
	Bromoform	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	BM
	Bromomethane	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	BM
	Carbon disulfide	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	BM
	Carbon tetrachloride	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	BM
	Chlorobenzene	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	BM
	Chloroethane	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	BM
	Chloroform	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	BM
	Chloromethane	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	BM
	cis-1,2-Dichloroethylene	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	BM
	cis-1,3-Dichloropropene	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	BM
	Dibromochloromethane	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	BM
	Dibromomethane	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	BM
	Dichlorodifluoromethane	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	BM
	Ethylbenzene	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	BM
	Hexachlorobutadiene	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	BM
	Isopropylbenzene	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	BM
	MEK (2-Butanone)	BRL	mg/kg dw	0.813	0.01			01/30/14 17:47	BM
	Methylene chloride	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	BM
	MIBK (Methyl Isobutyl Ketone)	BRL	mg/kg dw	0.813	0.01			01/30/14 17:47	BM
	MTBE	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	BM
	Naphthalene	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	BM
	n-Butylbenzene	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	BM
	n-Propylbenzene	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	BM
	sec-Butylbenzene	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	BM
	Styrene	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	BM
	t-butylbenzene	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	BM
	Tetrachloroethylene	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	BM
	Toluene	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	BM
	trans-1,2-Dichloroethylene	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	BM
	trans-1,3-Dichloropropene	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	BM

Soil results reported on dry weight basis

LABORATORY TEST RESULTS

JobID: 14012811

Avery Laboratories & Environmental Services, LLC

101B Estus Road Savannah, Georgia 31404 tel: (912) 944-3748 Fax: (912) 234-9294

Client Name:	Terracon	Attn: Stuart Dixon	
Project ID:	Martha Dry Cleaners	Date	02/11/2014

Client Sample ID:	SS-3	Job Sample ID:	14012811.03
Date Collected:	01/28/14	Sample Matrix	Soil
Time Collected:	13:05	% Moisture	21.3
Other Information:			

Test Method	Parameter/Test Description	Result	Units	DF	Rpt Limit	Reg Limit	Q	Date Time	Analyst
SW-846 8260B									
	Trichloroethylene	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	BM
	Trichlorofluoromethane	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	BM
	Vinyl Chloride	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	BM
	xylene-o	BRL	mg/kg dw	0.813	0.00517			01/30/14 17:47	BM
	xylenes (m&P)	BRL	mg/kg dw	0.813	0.01			01/30/14 17:47	BM
	xylenes (total)	BRL	mg/kg dw	0.813	0.015			01/30/14 17:47	BM
	Dibromofluoromethane(surr)	78	%	0.813	62.1-137			01/30/14 17:47	BM
	p-Bromofluorobenzene(surr)	117	%	0.813	47.0-155			01/30/14 17:47	BM
	Toluene-d8(surr)	110	%	0.813	64.0-143			01/30/14 17:47	BM

Soil results reported on dry weight basis

QUALITY CONTROL DATA

JobID: 14012811

RP14021105

Avery Laboratories & Environmental Services, LLC

101B Estus Road Savannah, Georgia 31404 tel: (912) 944-3748 Fax: (912) 234-9294

Analysis : **Method : SW-846 8260B** **Reporting Units : mg/kg dw**

QC Batch ID : Qb14013114 **Created Date :** 01/31/2014 **Created By :** PGrimm

Samples in This QC Batch : 14012811.01,02,03

QC Type: Method Blank

Parameter	CAS #	Result	Units	D.F.	RptLimit		Qual
1,1,1,2-Tetrachloroethane	630-20-6	BRL	mg/kg dw	1	0.0050		
1,1,1-Trichloroethane	71-55-6	BRL	mg/kg dw	1	0.0050		
1,1,2,2-Tetrachloroethane	79-34-5	BRL	mg/kg dw	1	0.0050		
1,1,2-Trichloroethane	79-00-5	BRL	mg/kg dw	1	0.0050		
1,1-Dichloroethane	75-34-3	BRL	mg/kg dw	1	0.0050		
1,1-Dichloroethylene	75-35-4	BRL	mg/kg dw	1	0.0050		
1,1-Dichloropropene	563-58-6	BRL	mg/kg dw	1	0.0050		
1,2,3-trichlorobenzene	87-61-6	BRL	mg/kg dw	1	0.0050		
1,2,3-Trichloropropane	96-18-4	BRL	mg/kg dw	1	0.0050		
1,2,4-Trichlorobenzene	120-82-1	BRL	mg/kg dw	1	0.0050		
1,2,4-Trimethylbenzene	95-63-6	BRL	mg/kg dw	1	0.0050		
1,2-Dibromo-3-chloropropane	96-12-8	BRL	mg/kg dw	1	0.0050		
1,2-Dibromoethane	106-93-4	BRL	mg/kg dw	1	0.0050		
1,2-Dichlorobenzene	95-50-1	BRL	mg/kg dw	1	0.0050		
1,2-Dichloroethane	107-06-2	BRL	mg/kg dw	1	0.0050		
1,2-Dichloropropane	78-87-5	BRL	mg/kg dw	1	0.0050		
1,3,5-Trimethylbenzene	108-67-8	BRL	mg/kg dw	1	0.0050		
1,3-Dichlorobenzene	541-73-1	BRL	mg/kg dw	1	0.0050		
1,4-Dichlorobenzene	106-46-7	BRL	mg/kg dw	1	0.0050		
2,2-Dichloropropane	594-20-7	BRL	mg/kg dw	1	0.0050		
2-Chlorotoluene	95-49-8	BRL	mg/kg dw	1	0.0050		
2-Hexanone	591-78-6	BRL	mg/kg dw	1	0.010		
4-Chlorotoluene	106-43-4	BRL	mg/kg dw	1	0.0050		
4-Isopropyltoluene	99-87-6	BRL	mg/kg dw	1	0.0050		
Acetone	67-64-1	BRL	mg/kg dw	1	0.050		
Benzene	71-43-2	BRL	mg/kg dw	1	0.0050		
Bromobenzene	108-86-1	BRL	mg/kg dw	1	0.0050		
Bromochloromethane	74-97-5	BRL	mg/kg dw	1	0.0050		
Bromodichloromethane	75-27-4	BRL	mg/kg dw	1	0.0050		
Bromoform	75-25-2	BRL	mg/kg dw	1	0.0050		
Bromomethane	74-83-9	BRL	mg/kg dw	1	0.0050		
Carbon disulfide	75-15-0	BRL	mg/kg dw	1	0.0050		
Carbon tetrachloride	56-23-5	BRL	mg/kg dw	1	0.0050		
Chlorobenzene	108-90-7	BRL	mg/kg dw	1	0.0050		
Chloroethane	75-00-3	BRL	mg/kg dw	1	0.0050		
Chloroform	67-66-3	BRL	mg/kg dw	1	0.0050		
Chloromethane	74-87-3	BRL	mg/kg dw	1	0.0050		
cis-1,2-Dichloroethylene	156-59-2	BRL	mg/kg dw	1	0.0050		
cis-1,3-Dichloropropene	10061-01-5	BRL	mg/kg dw	1	0.0050		
Dibromochloromethane	124-48-1	BRL	mg/kg dw	1	0.0050		
Dibromomethane	74-95-3	BRL	mg/kg dw	1	0.0050		

QUALITY CONTROL DATA

JobID: 14012811

RP14021105

Avery Laboratories & Environmental Services, LLC

101B Estus Road Savannah, Georgia 31404 tel: (912) 944-3748 Fax: (912) 234-9294

Analysis : **Method : SW-846 8260B** **Reporting Units : mg/kg dw**

QC Batch ID : Qb14013114 **Created Date :** 01/31/2014 **Created By :** PGrimm

Samples in This QC Batch : 14012811.01,02,03

QC Type: Method Blank

Parameter	CAS #	Result	Units	D.F.	RptLimit		Qual
Dichlorodifluoromethane	75-71-8	BRL	mg/kg dw	1	0.0050		
Ethylbenzene	100-41-4	BRL	mg/kg dw	1	0.0050		
Hexachlorobutadiene	87-68-3	BRL	mg/kg dw	1	0.0050		
Isopropylbenzene	98-82-8	BRL	mg/kg dw	1	0.0050		
MEK (2-Butanone)	78-93-3	BRL	mg/kg dw	1	0.010		
Methylene chloride	75-09-2	0.00551	mg/kg dw	1	0.010		
MIBK (Methyl Isobutyl Ketone)	108-10-1	BRL	mg/kg dw	1	0.010		
MTBE	1634-04-4	BRL	mg/kg dw	1	0.0050		
Naphthalene	91-20-3	BRL	mg/kg dw	1	0.0050		
n-Butylbenzene	104-51-8	BRL	mg/kg dw	1	0.0050		
n-Propylbenzene	103-65-1	BRL	mg/kg dw	1	0.0050		
sec-Butylbenzene	135-98-8	BRL	mg/kg dw	1	0.0050		
Styrene	100-42-5	BRL	mg/kg dw	1	0.0050		
t-butylbenzene	98-06-6	BRL	mg/kg dw	1	0.0050		
Tetrachloroethylene	127-18-4	BRL	mg/kg dw	1	0.0050		
Toluene	108-88-3	BRL	mg/kg dw	1	0.0050		
trans-1,2-Dichloroethylene	156-60-5	BRL	mg/kg dw	1	0.0050		
trans-1,3-Dichloropropene	10061-02-6	BRL	mg/kg dw	1	0.0050		
Trichloroethylene	79-01-6	BRL	mg/kg dw	1	0.0050		
Trichlorofluoromethane	75-69-4	BRL	mg/kg dw	1	0.0050		
Vinyl Chloride	75-01-4	BRL	mg/kg dw	1	0.0050		
xylene-o	95-47-6	BRL	mg/kg dw	1	0.0050		
xylenes (m&P)	108-38-3&106-42-3	BRL	mg/kg dw	1	0.010		
xylenes (total)	1330-20-7	BRL	mg/kg dw	1	0.015		
Dibromofluoromethane (Surr)	1868-53-7	0.0420	%	1	62.1-137		
p-Bromofluorobenzene (Surr)	460-00-4	0.0580	%	1	47.0-155		
Toluene-d8 (Surr)	2037-26-5	0.0550	%	1	64.0-143		

QC Type: LCS and LCSD

Parameter	LCS Spk Added	LCS Result	LCS % Rec	LCSD Spk Added	LCSD Result	LCSD % Rec	%RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
1,1,1,2-Tetrachloroethane	0.05	0.0580	116.00	0.05	0.0520	104.00	10.9	30	56.1-146	
1,1,1-Trichloroethane	0.05	0.0460	92.00	0.05	0.0450	90.00	2.19	30	69.4-139	
1,1,2,2-Tetrachloroethane	0.05	0.0550	110.00	0.05	0.0520	104.00	5.60	30	52.6-147	
1,1,2-Trichloroethane	0.05	0.0560	112.00	0.05	0.0550	110.00	1.80	30	67.7-138	
1,1-Dichloroethane	0.05	0.0450	90.00	0.05	0.0450	90.00	0.0000	30	66.9-136	
1,1-Dichloroethylene	0.05	0.0450	90.00	0.05	0.0440	88.00	2.24	30	52.5-139	
1,1-Dichloropropene	0.05	0.0510	102.00	0.05	0.0510	102.00	0.0000	30	64.1-137	
1,2,3-trichlorobenzene	0.05	0.0500	100.00	0.05	0.0480	96.00	4.08	30	64.2-129	

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QUALITY CONTROL DATA

JobID: 14012811

RP14021105

Avery Laboratories & Environmental Services, LLC

101B Estus Road Savannah, Georgia 31404 tel: (912) 944-3748 Fax: (912) 234-9294

Analysis : **Method : SW-846 8260B** **Reporting Units : mg/kg dw**

QC Batch ID : Qb14013114 **Created Date :** 01/31/2014 **Created By :** PGrimm

Samples in This QC Batch : 14012811.01,02,03

QC Type: LCS and LCSD

Parameter	LCS Spk Added	LCS Result	LCS % Rec	LCSD Spk Added	LCSD Result	LCSD % Rec	%RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
1,2,3-Trichloropropane	0.05	0.0700	140.00	0.05	0.0650	130.00	7.40	30	55.0-150	
1,2,4-Trichlorobenzene	0.05	0.0500	100.00	0.05	0.0450	90.00	10.5	30	67.8-129	
1,2,4-Trimethylbenzene	0.05	0.0570	114.00	0.05	0.0510	102.00	11.1	30	61.4-145	
1,2-Dibromo-3-chloropropane	0.05	0.0490	98.00	0.05	0.0480	96.00	2.06	30	25.0-147	
1,2-Dibromoethane	0.05	0.0540	108.00	0.05	0.0550	110.00	1.83	30	65.0-138	
1,2-Dichlorobenzene	0.05	0.0570	114.00	0.05	0.0560	112.00	1.76	30	68.6-129	
1,2-Dichloroethane	0.05	0.0500	100.00	0.05	0.0490	98.00	2.02	30	71.4-133	
1,2-Dichloropropane	0.05	0.0620	124.00	0.05	0.0620	124.00	0.0000	30	65.9-151	
1,3,5-Trimethylbenzene	0.05	0.0560	112.00	0.05	0.0510	102.00	9.34	30	59.1-144	
1,3-Dichlorobenzene	0.05	0.0600	120.00	0.05	0.0550	110.00	8.69	30	64.9-138	
1,4-Dichlorobenzene	0.05	0.0600	120.00	0.05	0.0560	112.00	6.89	30	65.7-145	
2,2-Dichloropropane	0.05	0.0470	94.00	0.05	0.0460	92.00	2.15	30	72.5-137	
2-Chlorotoluene	0.05	0.0590	118.00	0.05	0.0550	110.00	7.01	30	45.8-147	
2-Hexanone	0.1	0.102	102.00	0.1	0.100	100.00	1.98	30	39.8-174	
4-Chlorotoluene	0.05	0.0620	124.00	0.05	0.0580	116.00	6.66	30	66.6-140	
4-Isopropyltoluene	0.05	0.0570	114.00	0.05	0.0530	106.00	7.27	30	64.6-150	
Acetone	0.1	0.0580	58.00	0.1	0.0550	55.00	5.30	30	46.5-142	
Benzene	0.05	0.0440	88.00	0.05	0.0430	86.00	2.29	30	60.5-139	
Bromobenzene	0.05	0.0600	120.00	0.05	0.0570	114.00	5.12	30	67.0-135	
Bromochloromethane	0.05	0.0470	94.00	0.05	0.0470	94.00	0.0000	30	57.4-142	
Bromodichloromethane	0.05	0.0560	112.00	0.05	0.0570	114.00	1.76	30	65.5-140	
Bromoform	0.05	0.0250	66.00	0.05	0.0420	84.00	24.0	30	26.0-148	
Bromomethane	0.05	0.0360	72.00	0.05	0.0360	72.00	0.0000	30	47.5-174	
Carbon disulfide	0.05	0.0390	78.00	0.05	0.0380	76.00	2.59	30	26.6-186	
Carbon tetrachloride	0.05	0.0460	92.00	0.05	0.0450	90.00	2.19	30	64.0-139	
Chlorobenzene	0.05	0.0550	110.00	0.05	0.0530	106.00	3.70	30	71.6-130	
Chloroethane	0.05	0.0490	98.00	0.05	0.0480	96.00	2.06	30	37.5-156	
Chloroform	0.05	0.0470	94.00	0.05	0.0470	94.00	0.0000	30	69.3-139	
Chloromethane	0.05	0.0520	104.00	0.05	0.0520	104.00	0.0000	30	57.3-125	
cis-1,2-Dichloroethylene	0.05	0.0440	88.00	0.05	0.0420	84.00	4.65	30	68.7-136	
cis-1,3-Dichloropropene	0.05	0.0600	120.00	0.05	0.0590	118.00	1.68	30	58.8-144	
Dibromochloromethane	0.05	0.0500	100.00	0.05	0.0500	100.00	0.0000	30	51.4-148	
Dibromomethane	0.05	0.0600	120.00	0.05	0.0590	118.00	1.68	30	68.0-144	
Dichlorodifluoromethane	0.05	0.0680	136.00	0.05	0.0670	134.00	1.48	30	58.8-147	
Ethylbenzene	0.05	0.0590	118.00	0.05	0.0540	108.00	8.84	30	71.6-135	
Hexachlorobutadiene	0.05	0.0530	106.00	0.05	0.0470	94.00	12	30	59.6-142	
Isopropylbenzene	0.05	0.0580	116.00	0.05	0.0540	108.00	7.14	30	66.3-131	
MEK (2-Butanone)	0.1	0.0720	72.00	0.1	0.0710	71.00	1.39	30	45.8-147	
Methylene chloride	0.05	0.0590	118.00	0.05	0.0560	112.00	5.21	30	54.3-138	
MIBK (Methyl Isobutyl Ketone)	0.10	0.118	118.00	0.10	0.114	114.00	3.44	30	42.3-157	
MTBE	0.05	0.0440	88.00	0.05	0.0440	88.00	0.0000	30	53.0-133	

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QUALITY CONTROL DATA

JobID: 14012811

RP14021105

Avery Laboratories & Environmental Services, LLC

101B Estus Road Savannah, Georgia 31404 tel: (912) 944-3748 Fax: (912) 234-9294

Analysis : **Method : SW-846 8260B** **Reporting Units : mg/kg dw**

QC Batch ID : Qb14013114 **Created Date :** 01/31/2014 **Created By :** PGrimm

Samples in This QC Batch : 14012811.01,02,03

QC Type: LCS and LCSD

Parameter	LCS Spk Added	LCS Result	LCS % Rec	LCSD Spk Added	LCSD Result	LCSD % Rec	%RPD	RPD CtrlLimit	%Recovery CtrlLimit	Qual
Naphthalene	0.050	0.0480	96.00	0.050	0.0440	88.00	8.69	30	38.7-133	
n-Butylbenzene	0.05	0.0610	122.00	0.05	0.0560	112.00	8.54	30	58.7-150	
n-Propylbenzene	0.05	0.0620	124.00	0.05	0.0560	112.00	10.1	30	60.4-145	
sec-Butylbenzene	0.05	0.0600	120.00	0.05	0.0550	110.00	8.69	30	62.0-141	
Styrene	0.05	0.0570	114.00	0.05	0.0530	106.00	7.27	30	73.0-131	
t-butylbenzene	0.05	0.0580	116.00	0.05	0.0530	106.00	9.00	30	71.6-124	
Tetrachloroethylene	0.05	0.0540	108.00	0.05	0.0520	104.00	3.77	30	76.6-136	
Toluene	0.05	0.0550	110.00	0.05	0.0530	106.00	3.70	30	69.6-141	
trans-1,2-Dichloroethylene	0.05	0.0440	88.00	0.05	0.0430	86.00	2.29	30	61.1-134	
trans-1,3-Dichloropropene	0.05	0.0630	126.00	0.05	0.0620	124.00	1.6	30	54.4-149	
Trichloroethylene	0.05	0.0570	114.00	0.05	0.0560	112.00	1.76	30	65.8-141	
Trichlorofluoromethane	0.05	0.0530	106.00	0.05	0.0520	104.00	1.90	30	58.2-147	
Vinyl Chloride	0.05	0.0530	106.00	0.05	0.0530	106.00	0.0000	30	63.8-124	
xylene-o	0.05	0.0610	122.00	0.05	0.0560	112.00	8.54	30	67.5-131	
xylenes (m&P)	0.1	0.123	123.00	0.1	0.112	112.00	9.36	30	63.8-147	
xylenes (total)	0.15	0.184	122.67	0.15	0.169	112.67	8.49	30	63.8-147	
Dibromofluoromethane (Surr)	0.050	0.0420	84.00	0.050	0.0420	84.00			62.1-137	
p-Bromofluorobenzene (Surr)	0.050	0.0600	120.00	0.050	0.0590	118.00			47.0-155	
Toluene-d8 (Surr)	0.050	0.0550	110.00	0.050	0.0550	110.00			64.0-143	

QC Type: MS and MSD
QC Sample ID: 14012810.04

Parameter	Sample Result	MS Spk Added	MS Result	MS % Rec	MSD Spk Added	MSD Result	MSD % Rec	%RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
1,1,1,2-Tetrachloroethane		0.043	0.0360	83.72						56.1-146	
1,1,1-Trichloroethane		0.043	0.0360	83.72						69.4-139	
1,1,2,2-Tetrachloroethane		0.043	0.0370	86.05						52.6-147	
1,1,2-Trichloroethane		0.043	0.0360	83.72						67.7-138	
1,1-Dichloroethane		0.043	0.0340	79.07						66.9-136	
1,1-Dichloroethylene		0.043	0.0350	81.40						52.5-139	
1,1-Dichloropropene		0.043	0.0400	93.02						64.1-137	
1,2,3-trichlorobenzene		0.043	0.0270	62.79						64.2-129	J1
1,2,3-Trichloropropane		0.043	0.0430	100.00						55.0-150	
1,2,4-Trichlorobenzene		0.043	0.0260	60.47						67.8-129	J1
1,2,4-Trimethylbenzene		0.043	0.0370	86.05						61.4-145	
1,2-Dibromo-3-chloropropane		0.043	0.0310	72.09						25.0-147	
1,2-Dibromoethane		0.043	0.0360	83.72						65.0-138	
1,2-Dichlorobenzene		0.043	0.0360	83.72						68.6-129	
1,2-Dichloroethane		0.043	0.0320	74.42						71.4-133	

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QUALITY CONTROL DATA

JobID: 14012811

RP14021105

Avery Laboratories & Environmental Services, LLC

101B Estus Road Savannah, Georgia 31404 tel: (912) 944-3748 Fax: (912) 234-9294

Analysis : **Method :** **SW-846 8260B** **Reporting Units :** **mg/kg dw**

QC Batch ID : Qb14013114 **Created Date :** 01/31/2014 **Created By :** PGrimm

Samples in This QC Batch : 14012811.01,02,03

QC Type: MS and MSD
QC Sample ID: 14012810.04

Parameter	Sample Result	MS Spk Added	MS Result	MS % Rec	MSD Spk Added	MSD Result	MSD % Rec	%RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
1,2-Dichloropropane		0.043	0.0460	106.98						65.9-151	
1,3,5-Trimethylbenzene		0.043	0.0380	88.37						59.1-144	
1,3-Dichlorobenzene		0.043	0.0380	88.37						64.9-138	
1,4-Dichlorobenzene		0.043	0.0360	83.72						65.7-145	
2,2-Dichloropropane		0.043	0.0360	83.72						72.5-137	
2-Chlorotoluene		0.043	0.0410	95.35						45.8-147	
2-Hexanone		0.086	0.0700	81.40						39.8-174	
4-Chlorotoluene		0.043	0.0410	95.35						66.6-140	
4-Isopropyltoluene		0.043	0.0390	90.70						64.6-150	
Acetone		0.086	0.0420	48.84						46.5-142	
Benzene		0.043	0.0310	72.09						60.5-139	
Bromobenzene		0.043	0.0390	90.70						67.0-135	
Bromochloromethane		0.043	0.0300	69.77						57.4-142	
Bromodichloromethane		0.043	0.0420	97.67						65.5-140	
Bromoform		0.043	0.0140	32.56						26.0-148	
Bromomethane		0.043	0.0260	60.47						47.5-174	
Carbon disulfide		0.043	0.0290	67.44						26.6-186	
Carbon tetrachloride		0.043	0.0340	79.07						64.0-139	
Chlorobenzene		0.043	0.0380	88.37						71.6-130	
Chloroethane		0.043	0.0360	83.72						37.5-156	
Chloroform		0.043	0.0330	76.74						69.3-139	
Chloromethane		0.043	0.0380	88.37						57.3-125	
cis-1,2-Dichloroethylene		0.043	0.0300	69.77						68.7-136	
cis-1,3-Dichloropropene		0.043	0.0400	93.02						58.8-144	
Dibromochloromethane		0.043	0.0320	74.42						51.4-148	
Dibromomethane		0.043	0.0400	93.02						68.0-144	
Dichlorodifluoromethane		0.043	0.0540	125.58						58.8-147	
Ethylbenzene		0.043	0.0410	95.35						71.6-135	
Hexachlorobutadiene		0.043	0.0340	79.07						59.6-142	
Isopropylbenzene		0.043	0.0420	97.67						66.3-131	
MEK (2-Butanone)		0.086	0.0480	55.81						45.8-147	
Methylene chloride		0.043	0.0320	74.42						54.3-138	
MIBK (Methyl Isobutyl Ketone)		0.086	0.0910	105.81						42.3-157	
MTBE		0.043	0.0270	62.79						53.0-133	
Naphthalene		0.043	0.0300	69.77						38.7-133	
n-Butylbenzene		0.043	0.0420	97.67						58.7-150	
n-Propylbenzene		0.043	0.0430	100.00						60.4-145	
sec-Butylbenzene		0.043	0.0420	97.67						62.0-141	
Styrene		0.043	0.0370	86.05						73.0-131	
t-butylbenzene		0.043	0.0400	93.02						71.6-124	

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QUALITY CONTROL DATA

JobID: 14012811

RP14021105

Avery Laboratories & Environmental Services, LLC

101B Estus Road Savannah, Georgia 31404 tel: (912) 944-3748 Fax: (912) 234-9294

Analysis : **Method : SW-846 8260B** **Reporting Units : mg/kg dw**

QC Batch ID : Qb14013114 **Created Date :** 01/31/2014 **Created By :** PGrimm

Samples in This QC Batch : 14012811.01,02,03

QC Type: MS and MSD
QC Sample ID: 14012810.04

Parameter	Sample Result	MS Spk Added	MS Result	MS % Rec	MSD Spk Added	MSD Result	MSD % Rec	%RPD	RPD CtrlLimit	%Rec CtrlLimit	Qual
Tetrachloroethylene		0.043	0.0410	95.35						76.6-136	
Toluene		0.043	0.0410	95.35						69.6-141	
trans-1,2-Dichloroethylene		0.043	0.0320	74.42						61.1-134	
trans-1,3-Dichloropropene		0.043	0.0410	95.35						54.4-149	
Trichloroethylene		0.043	0.0440	102.33						65.8-141	
Trichlorofluoromethane		0.043	0.0410	95.35						58.2-147	
Vinyl Chloride		0.043	0.0410	95.35						63.8-124	
xylene-o		0.043	0.0410	95.35						67.5-131	
xylenes (m&P)		0.086	0.0870	101.16						63.8-147	
xylenes (total)		0.130	0.128	98.46						63.8-147	
Dibromofluoromethane (Surr)		0.043	0.0330	76.74						62.1-137	
p-Bromofluorobenzene (Surr)		0.043	0.0480	111.63						47.0-155	
Toluene-d8 (Surr)		0.043	0.0520	120.93						64.0-143	

Refer to the Definition page for terms.

RP14021105

SAMPLE PREPARATION INFORMATION

JobID: 14012811

Avery Laboratories & Environmental Services, LLC

101B Estus Road Savannah, Georgia 31404 tel: (912) 944-3748 Fax: (912) 234-9294

Client Name:	Terracon	Attn:	Stuart Dixon
Project Name:	Martha Dry Cleaners	Date:	02/11/2014

Sample ID	Test	Prep method	Date Prepared	Analyst	Prep Batch ID
14012811.01	Percent Solids	SM2540b	01/28/2014 02:00 PM	JKitchings	PB14013001
14012811.01	VOC-Terracon Soil	SW5035	01/30/2014 08:15 AM	BMullis	PB14013115
14012811.02	Percent Solids	SM2540b	01/28/2014 02:00 PM	JKitchings	PB14013001
14012811.02	VOC-Terracon Soil	SW5035	01/30/2014 08:15 AM	BMullis	PB14013115
14012811.03	Percent Solids	SM2540b	01/28/2014 02:00 PM	JKitchings	PB14013001
14012811.03	VOC-Terracon Soil	SW5035	01/30/2014 08:15 AM	BMullis	PB14013115

RP14021105

TERM AND QUALIFIER DEFINITION

JobID:

Avery Laboratories & Environmental Services, LLC

101B Estus Road Savannah, Georgia 31404 tel: (912) 944-3748 Fax: (912) 234-9294

General Term Definition	
Conc.	Concentration
DF	Dilution Factor - the factor applied to the reported data due to sample preparation, dilution, or moisture content
ND	Non Detect - Not Detected at or above adjusted reporting limit
J	Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit
RL	adjusted Reporting Limit (QL – Quantification Limit)
MDL	adjusted Method Detection Limit (LOD – Limit of Detection)
RegLimit	Regulatory Limit
mg/l	Milligrams per Liter
mg/kg	Milligrams per Kilogram
ppm	Parts per Million
µg/L	Micrograms per Liter
µg/g	Micrograms per Gram
ppb	Parts per Billion
gr/gal	Grains per Gallon
SU	Standard Units
CCU	Cobalt Color Units
NTU	Nephelometric Turbidity Units
µS/cm	Microsiemens per cm at 25C
P/A	Presence/Absence
CFU	Colony Forming Units
MPN	Most Probable Number
RB	Reagent Blank
MB	Method Blank
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LFM	Laboratory Fortified Matrix (MS – Matrix Spike)
LFMD	Laboratory Fortified Matrix Duplicate (MSD – Matrix Spike Duplicate)
DUP	Sample Duplicate
RPD	Relative Percent Difference
%Rec	Percent Recovery
TNTC	Too numerous to count
NC	Not Calculable
SG	Silica Gel - Clean-Up
BRL	Below Reporting Limit
BDL	Below Detection Limit

Qualifier Definition	
J1	Estimated value-The reported value failed the established quality control criteria for accuracy and /or precision.

RP14021105

CASE NARRATIVE

JobID: 14012811

Avery Laboratories & Environmental Services, LLC

101B Estus Road Savannah, Georgia 31404 tel: (912) 944-3748 Fax: (912) 234-9294

Client Name:	Terracon
Project Name:	Martha Dry Cleaners
Date Received:	01/28/2014,01/28/2014,01/28/2014
Collected By:	JHC

Matrix Spikes
Method SW8260b: The matrix spike/ matrix spike duplicate recoveries were outside the established laboratory control limits for several analytes. The lab spike recoveries were inside acceptable limits, so the data was reported. The matrix spikes have been qualified accordingly.

Total Organic Carbon was subcontracted to AES. The data is on a separate report.

Released By: Robert Paul Grimm

Title: Technical Director

RP14021105

SAMPLE SUMMARY

JobID: 14012811

Avery Laboratories & Environmental Services, LLC

101B Estus Road Savannah, Georgia 31404 tel: (912) 944-3748 Fax: (912) 234-9294

Client Project ID :
Martha Dry Cleaners

Report To : Client Name: Terracon
Client Address: 2201 Rowland Ave.
City, State, Zip: Savannah, GA, 31404

Attn: Stuart Dixon
P.O.#. :

The laboratory has analyzed the following samples:

Client Sample ID	Matrix	Sample ID	Date Received	Date Collected	Collected by
SS-1	Soil	14012811.01	01/28/2014	01/28/2014	JHC
SS-2	Soil	14012811.02	01/28/2014	01/28/2014	JHC
SS-3	Soil	14012811.03	01/28/2014	01/28/2014	JHC

RP14021105

SAMPLE CONDITION CHECKLIST

JobID: 14012811

Avery Laboratories & Environmental Services, LLC

101B Estus Road Savannah, Georgia 31404 tel: (912) 944-3748 Fax: (912) 234-9294

Client Name : Terracon		**Contact :**	Stuart Dixon
Address : 2201 Rowland Ave.		**Contact Phone :**	912 629-4000
JobID : 14012811	**Date Received :** 01/28/2014	**Time Received :**	1:41PM
Temperature : 2.5	**Sample pH :**		
ThermometerID : 15953	**pH Meter :**		

Comments : Include actions taken to resolve discrepancies/Problem :

	Check Points	Yes	No	N/A
1	Cooler seal present and signed.	✔		
2	Sample(s) in a cooler.	✔		
3	Sample received at 6°C or Less	✔		
4	C-O-C signed and dated.	✔		
5	Sample containers arrived in tact. (if no, comment)	✔		
6	Sample(s) were received in appropriate contatiner. (If no, comment)	✔		
7	Samples received within holding time for analysis requested	✔		
8	Zero headspace in liquid VOA vials			✔
9	Sample(s) were received at the proper pH.	✔		
10	All samples were logged or labeled.	✔		
11	Sample ID lables Match C-O-C ID's	✔		
12	Bottle count on C-O-C matches bottle found.	✔		
13	Sample amount is sufficient for analyses requested	✔		
14	If requested, sample(s) received with signed sample custody seal			✔
15	Samples accepted.	✔		

Check In By : EGrimm Check in date : 01/28/2014 12:00 AM

ANALYTICAL ENVIRONMENTAL SERVICES, INC.

AES

February 10, 2014

Robert Paul Grimm
Avery Laboratories & Environmental Services, LLC
101 B Estus Dr.
Savannah GA 31404

TEL: (912) 944-3748
FAX: (912) 234-9294

RE: Marthas Dry Cleaners

Dear Robert Paul Grimm: Order No: 1402270

Analytical Environmental Services, Inc. received 3 samples on 2/4/2014 12:40:00 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.

Nicole Jessup

Nicole Jessup
Project Manager

1402270

Serial Number: 68384

1401 2811
LAB NUMBER

Avery Laboratories & Environmental Services, LLC

Ship To: 101 B Estus Dr. Savannah, Ga. 31404
T 912 944-3748 F 912 234-9294
email: pgrimm@averylab.com

Client Information	
Customer:	Terracon
Address:	2201 Rowland Ave
City/State/Zip:	Savannah, GA 31404
Contact:	Stewart Dixon
Phone:	(912) 629-4000
Email:	sadixon@terracon.com
Purchase Order #:	
Project Manager:	Stewart Dixon

Page 1 of 1
Sampler: JHC

Turn Around Time (Place X below)

24 Hours	
48 Hours	
72 Hours	
5 Working Days	
7 Working Days	✓
Other:	

Project Name: Marthas Dry Cleaners
Project Number:
State where work originated: GA

Subcontract Laboratory
Name / Address/ Phone
N AES
A
P

Sample Identification	Date	Time	Matrix	# of Containers	VOCs	TOC	TOC															Remarks
					Preservative																	
SS-1	1/27/14	11:15	S	4	X	X	X															
SS-2	↓	12:00	↓	↓	X	X	X															
SS-3	↓	13:05	↓	↓	X	X	X															

Matrix Type: A = Air W = Water S= Solid N = Nonaqueous (solvent, acid, etc.)

Preservative: 1= None 2 = H2SO4 3 = HN03 4 = HCL 5 = MeOH 6 = NAHSO4 7 = Water 8 = Other

Instructions or Special Requirements:

Temperature: 2.5 Custody Seals: Yes No Custody Seals Intact: Yes No

Relinquished by:	Date/Time:	Received by:	Date/Time:
John Caldwell	1/28/14 1341	[signature]	1-28-14 B-4
[signature]	2/3/14 1412		
		Fed ex	2/4/14 12:40

F86-01

Effective Date: 09.11.08

Rev No: 0 439101065

Analytical Environmental Services, Inc

Date: 10-Feb-14

Client:	Avery Laboratories & Environmental Services, LLC	**Client Sample ID:**	SS-1
Project Name:	Marthas Dry Cleaners	**Collection Date:**	1/27/2014 11:15:00 AM
Lab ID:	1402270-001	**Matrix:**	Soil

Analyses	Result	Qual	MDL	Reporting Limit	Units	BatchID	DF	Date Analyzed	Analyst
Total Organic Carbon SW9060A Modified					**(SW9060 Modified)**				
Total Organic Carbon (TOC)	2220		102	500	mg/Kg-dry	186796	1	02/07/2014 12:40	GR

Qualifiers:

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

Analytical Environmental Services, Inc

Date: 10-Feb-14

Client:	Avery Laboratories & Environmental Services, LLC	**Client Sample ID:**	SS-2
Project Name:	Marthas Dry Cleaners	**Collection Date:**	1/27/2014 12:00:00 PM
Lab ID:	1402270-002	**Matrix:**	Soil

Analyses	Result	Qual	MDL	Reporting Limit	Units	BatchID	DF	Date Analyzed	Analyst
Total Organic Carbon SW9060A Modified					**(SW9060 Modified)**				
Total Organic Carbon (TOC)	679		102	500	mg/Kg-dry	186796	1	02/07/2014 13:39	GR

Qualifiers:

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

Analytical Environmental Services, Inc **Date:** 10-Feb-14

Client:	Avery Laboratories & Environmental Services, LLC	**Client Sample ID:**	SS-3
Project Name:	Marthas Dry Cleaners	**Collection Date:**	1/27/2014 1:05:00 PM
Lab ID:	1402270-003	**Matrix:**	Soil

Analyses	Result	Qual	MDL	Reporting Limit	Units	BatchID	DF	Date Analyzed	Analyst
Total Organic Carbon SW9060A Modified					**(SW9060 Modified)**				
Total Organic Carbon (TOC)	295	J	102	500	mg/Kg-dry	186796	1	02/07/2014 14:48	GR

Qualifiers:

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

Analytical Environmental Services, Inc.

Sample/Cooler Receipt Checklist

Client Avery Work Order Number 1402270

Checklist completed by [signature] 2/4/14
Signature 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 _____

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.

\L\Quality Assurance\Checklists Procedures Sign-Off Templates\Checklists\Sample Receipt Checklists\Sample_Cooler_Receipt_Checklist

Client: Avery Laboratories & Environmental Services, LLC
Project Name: Marthas Dry Cleaners
Workorder: 1402270

ANALYTICAL QC SUMMARY REPORT

BatchID: 186796

Sample ID: **MB-186796** Client ID: Units: **mg/Kg-dry** Prep Date: **02/05/2014** Run No: **260887**
SampleType: **MBLK** TestCode: **Total Organic Carbon SW9060A Modified** BatchID: **186796** Analysis Date: **02/07/2014** Seq No: **5483904**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Total Organic Carbon (TOC)	BRL	500									

Sample ID: **LCS-186796** Client ID: Units: **mg/Kg-dry** Prep Date: **02/05/2014** Run No: **260887**
SampleType: **LCS** TestCode: **Total Organic Carbon SW9060A Modified** BatchID: **186796** Analysis Date: **02/07/2014** Seq No: **5483907**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Total Organic Carbon (TOC)	2385	500	2610		91.4	70	130				

Sample ID: **1402270-001ADUP** Client ID: **SS-1** Units: **mg/Kg-dry** Prep Date: **02/05/2014** Run No: **260887**
SampleType: **DUP** TestCode: **Total Organic Carbon SW9060A Modified** BatchID: **186796** Analysis Date: **02/07/2014** Seq No: **5483951**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Total Organic Carbon (TOC)	2222	500						2224	0.090	50	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

APPENDIX E

MONITORING WELL FIELD SAMPLING DATA

Terracon

GROUNDWATER SAMPLING LOG

SITE NAME: MARTHA'S DRY CLEANER (HSI # 10764)

WELL NUMBER: MW-19

DATE: 08/1/2012

PROJECT NUMBER: ES117125

FIELD PERSONNEL: S. Dixon

Time	Depth to Water (Feet - TOC)	Well Diameter (Inches)	Total Depth (Feet - BTOC)	Water Column Thickness (Feet)	Single Purge Volume (Gallons)	Total Volume Purged (Gallons)	TOC Elevation (Feet)	Groundwater Elevation (Feet)
1506	10.56	2	19.75	9.19	1.5		99.45	88.89

PURGE METHOD: Low Flow / Low Stress Peristaltic - Teflon Tubing

SAMPLER TYPE: Peristaltic - Teflon Tubing VOC's - Straw Method

Time	Pumping Rate (L/min)	Water Level (Feet - TOC)	Dissolved Oxygen (mg/l)	ORP (mv)	Turbidity (NTU)	Specific Electrical Conductance (mS/cm)	pH	Temperature (Celsius)	Total Volume Pumped ~~(liters)~~ GALLONS
15:13	~~0.25~~ 0.9	10.74	2.49	172.4		0.072	5.34	20.58	~0.25
	~0.9	10.74	0.81	193.1	10.2	0.070	5.04	20.76	1.5 gal
15:24	~0.90	10.74	0.56	169.8	3.87	0.077	4.91	20.82	3.0 gal
1531	~0.90	10.74	0.53	160.0	2.32	0.078	4.91	20.85	4.5 gal
1538	~0.90	10.74	0.51	144.7	1.41	0.078	4.95	20.78	6.0 gal

Stabilization Criteria	
pH	+/- 0.1 unit
Electrical Conductance	+/- 5%
Turbidity	< 10 NTU
ORP	+/- 10 mV
Dissolved Oxygen	+/- 0.2 mg/l

NOTES: (Sample Numbers, Weather Conditions, Field Notes, and Deviations)

Purge Start - 15:11
End - 1538

Tubing Depth - 15'
Sample Time - 1539

Field Iron
Iron (II) - 0.24 mg/L
Hach DR 850 Ferrover

Weather - Cloudy, 34.5°C

CONTAINER TYPE	CONTAINER VOLUME	PRESERVATIVE/PREPARATION	NUMBER	FILTERING	ANALYSIS

For 2-inch wells: multiply the water column height by 0.1632 to get gallons for 1 casing volume

For 4-inch wells: multiply the water column height by 0.6528 to get gallons for 1 casing volume

Field Water Quality Meter IDs:

Terracon

GROUNDWATER SAMPLING LOG

SITE NAME: MARTHA'S DRY CLEANER (HSI # 10764)

WELL NUMBER: MW-24

DATE: 08/01/2012

PROJECT NUMBER: ES117125

FIELD PERSONNEL: S. DIXON

Time	Depth to Water (Feet - TOC)	Well Diameter (Inches)	Total Depth (Feet - BTOC)	Water Column Thickness (Feet)	Single Purge Volume (Gallons)	Total Volume Purged (Gallons)	TOC Elevation (Feet)	Groundwater Elevation (Feet)
12:15	11.94	2	19.81	7.87	1.3	8.0	100.25	88.31

PURGE METHOD: LOW FLOW / LOW STRESS PERISTALTIC - TEFLON TUBING

SAMPLER TYPE: TEFLON TUBING VOCs - STRAW METHOD

Time	Pumping Rate (L/min)	Water Level (Feet - TOC)	Dissolved Oxygen (mg/l)	ORP (mv)	Turbidity (NTU)	Specific Electrical Conductance (mS/cm)	pH	Temperature (Celsius)	Total Volume Pumped (liters) GALLONS
12:32	~0.85	12.13	—	—	—	—	—	—	—
12:34	~0.85	12.13	4.76	130.5	18.8	0.117	6.20	20.01	0.5
12:37	~0.85	12.13	4.21	133.3	16.5	0.114	5.88	19.92	1.3
12:43	~0.85	12.13	3.10	134.4	5.04	0.112	5.73	19.91	2.6
12:49	~0.85	12.13	2.90	134.0	5.11	0.110	5.66	19.91	3.9
12:55	~0.85	12.13	2.61	133.0	4.97	0.109	5.59	19.91	5.2
1301	~0.85	12.13	2.42	127.0	3.87	0.108	5.57	19.91	6.5
1307	~0.85	12.13	2.27	123.8	2.90	0.107	5.52	19.90	7.8
1309	~0.85	12.13	2.22	121.1	2.65	0.107	5.51	19.80	8.0

Stabilization Criteria (* REQUIRED)

pH *	+/- 0.1 unit
Electrical Conductance*	+/- 5%
Turbidity	< 10 NTU
ORP	+/- 10 mV
Dissolved Oxygen	+/- 0.2 mg/l

NOTES: (Sample Numbers, Weather Conditions, Field Notes, and Deviations)

START TIME - 12:31
END TIME -
TUBE DEPTH - 15.5'
SAMPLE TIME - 1310

FIELD IRON(II) - 0.17 mg/L
HACH D/R 850 Fe Ver

DUP-1 Collected - 1312

WEATHER - Cloudy, 32.5°C

CONTAINER TYPE	CONTAINER VOLUME	PRESERVATIVE/PREPARATION	NUMBER	FILTERING	ANALYSIS

For 2-inch wells: multiply the water column height by 0.1632 to get gallons for 1 casing volume

For 4-inch wells: multiply the water column height by 0.6528 to get gallons for 1 casing volume

Field Water Quality Meter IDs:

Terracon

GROUNDWATER SAMPLING LOG

SITE NAME: MARTHA'S DRY CLEANER (HSI # 10764)

WELL NUMBER: MW-20

DATE: 7/3/2012

PROJECT NUMBER: ES117125

FIELD PERSONNEL: S Dixon

Time	Depth to Water (Feet - TOC)	Well Diameter (Inches)	Total Depth (Feet - BTOC)	Water Column Thickness (Feet)	Single Purge Volume (Gallons)	Total Volume Purged (Gallons)	TOC Elevation (Feet)	Groundwater Elevation (Feet)
13:22	8.59	2	19.58	10.99	1.8	8.0	99.08	90.49

PURGE METHOD: Low Flow / Low Stress Peristaltic Pump - Teflon Tubing

SAMPLER TYPE: Peristaltic Pump

VOCs - Straw Method - Teflon Tubing

Time	Pumping Rate (L/min)	Water Level (Feet - TOC)	Dissolved Oxygen (mg/l)	ORP (mv)	Turbidity (NTU)	Specific Electrical Conductance (mS/cm)	pH	Temperature (Celsius)	Total Volume Pumped (liters)
13:39	~0.5	—	3.46	196.6	14.5	0.048	6.40	21.98	~1
13:43	~0.5	8.65	2.17	244.4	8.63	0.047	5.43	22.05	~2
13:54	~0.5	8.65	1.73	228.6	4.63	0.046	5.05	22.07	~7
14:10	~0.5	8.65	0.82	210.8	1.37	0.046	4.94	22.11	~14.5
14:29	~0.5	8.65	0.65	195.8	1.01	0.045	4.96	22.09	~22
14:47	~0.5	8.65	0.51	171.5	0.57	0.045	5.03	22.09	~30

Stabilization Criteria	
pH	+/- 0.1 unit
Electrical Conductance	+/- 5%
Turbidity	< 10 NTU
ORP	+/- 10 mV
Dissolved Oxygen	+/- 0.2 mg/l

NOTES: (Sample Numbers, Weather Conditions, Field Notes, and Deviations)

Purge Start - 13:37
Purge End - 14:47
Sample Time - 1448
Pumping Tubing Depth - 15 ft

Field Parameter:
Iron (II) - 0.11 mg/L
Hach DR 850 FerroVel

Weather Cloudy, 32.8°C

CONTAINER TYPE	CONTAINER VOLUME	PRESERVATIVE/PREPARATION	NUMBER	FILTERING	ANALYSIS
					Carbon Disulfide, 1,1,2 TCA, TCE, 1,1,2 DCE, Chloroform, 1,2 DCE, PCE, Methane, Ethane, Ethene, CO_2

For 2-inch wells: multiply the water column height by 0.1632 to get gallons for 1 casing volume

For 4-inch wells: multiply the water column height by 0.6528 to get gallons for 1 casing volume

Field Water Quality Meter IDs: YSI 556 MPS - 12315 Pine; Hach 2100Q 020132 Pine

Terracon

GROUNDWATER SAMPLING LOG

SITE NAME: MARTHA'S DRY CLEANER (HSI # 10764)

WELL NUMBER: MW-21S

DATE: 8/1/2012

PROJECT NUMBER: ES117125

FIELD PERSONNEL: S. Dixon

Time	Depth to Water (Feet - TOC)	Well Diameter (Inches)	Total Depth (Feet - BTOC)	Water Column Thickness (Feet)	Single Purge Volume (Gallons)	Total Volume Purged (Gallons)	TOC Elevation (Feet)	Groundwater Elevation (Feet)
18:40	10.65	2	19.75	9.1	1.5		100.00	89.35

PURGE METHOD: LOW FLOW Peristaltic Pump - Teflon Tubing

SAMPLER TYPE: Peristaltic Pump w/ Teflon Tubing VOCs - STRAW METHOD

Time	Pumping Rate (L/min)	Water Level (Feet - TOC)	Dissolved Oxygen (mg/l)	ORP (mv)	Turbidity (NTU)	Specific Electrical Conductance (mS/cm)	pH	Temperature (Celsius)	Total Volume Pumped ~~(liters)~~ GALLONS
18:49	~0.9	10.78	—	—	—	—	—	—	0.5
18:54	~0.9	10.78	0.71	-1.8	15.7	0.159	5.31	23.15	1.5
19:00	~0.9	10.78	0.54	-13.5	4.03	0.160	5.31	23.10	3.0
1906	~0.9	10.78	0.54	-20.3	1.76	0.160	5.33	23.07	4.5

Stabilization Criteria	
pH	+/- 0.1 unit
Electrical Conductance	+/- 5%
Turbidity	< 10 NTU
ORP	+/- 10 mV
Dissolved Oxygen	+/- 0.2 mg/l

NOTES: (Sample Numbers, Weather Conditions, Field Notes, and Deviations)

Purge Start - 1847
End -
Tubing depth - 15'
Sample Time - 1907

Field Iron
Iron (II) - 0.14 mg/L
HACH DR 850 FerroVer

Weather - Partly Cloudy, 35.0°C

CONTAINER TYPE	CONTAINER VOLUME	PRESERVATIVE/PREPARATION	NUMBER	FILTERING	ANALYSIS

For 2-inch wells: multiply the water column height by 0.1632 to get gallons for 1 casing volume

For 4-inch wells: multiply the water column height by 0.6528 to get gallons for 1 casing volume

Field Water Quality Meter IDs:

Terracon

GROUNDWATER SAMPLING LOG

SITE NAME: MARTHA'S DRY CLEANER (HSI # 10764)

WELL NUMBER: MW-21D

DATE: 8/1/2012

PROJECT NUMBER: ES117125

FIELD PERSONNEL: S. Dixon

Time	Depth to Water (Feet - TOC)	Well Diameter (Inches)	Total Depth (Feet - BTOC)	Water Column Thickness (Feet)	Single Purge Volume (Gallons)	Total Volume Purged (Gallons)	TOC Elevation (Feet)	Groundwater Elevation (Feet)
16:13	13.82	2	48.5	34.68	5.7		100.13	86.31

PURGE METHOD: Low Flow Peristaltic - Teflon Tubing

SAMPLER TYPE: Peristaltic - Teflon Tubing VOCs - Straw method

Time	Pumping Rate (L/min)	Water Level (Feet - TOC)	Dissolved Oxygen (mg/l)	ORP (mv)	Turbidity (NTU)	Specific Electrical Conductance (mS/cm)	pH	Temperature (Celsius)	Total Volume Pumped ~~(liters)~~ Gallons
16:30	~0.90	15.83	0.32	-86.7	43.0	0.052	5.69	22.70	1.0
1651	~0.70	15.76	0.32	-148.1	23.7	0.055	5.68	22.64	5.7
1736	~0.70	15.74	0.12	-159.6	5.04	0.054	5.50	22.35	13.7
1757	~0.70	15.74	0.12	-127.1	1.97	0.054	5.43	22.31	17.1
18:16	~0.70	15.74	0.09	-116.1	1.72	0.054	5.45	22.17	20.0

Stabilization Criteria	
pH	+/- 0.1 unit
Electrical Conductance	+/- 5%
Turbidity	< 10 NTU
ORP	+/- 10 mV
Dissolved Oxygen	+/- 0.2 mg/l

NOTES: (Sample Numbers, Weather Conditions, Field Notes, and Deviations)

Purge Start - 1624
End - 1816
Tubing Depth - 46'
Sample Time - 1817

Field Iron
Iron (II) - 0.49 mg/L
Hach D/R 850 FerroVer

Weather - Sunny, 40.6°C

CONTAINER TYPE	CONTAINER VOLUME	PRESERVATIVE/PREPARATION	NUMBER	FILTERING	ANALYSIS

For 2-inch wells: multiply the water column height by 0.1632 to get gallons for 1 casing volume

For 4-inch wells: multiply the water column height by 0.6528 to get gallons for 1 casing volume

Field Water Quality Meter IDs:

Terracon

GROUNDWATER SAMPLING LOG

SITE NAME: MARTHA'S DRY CLEANER (HSI # 10764)

WELL NUMBER: MW-22

DATE: 8/1/2012

PROJECT NUMBER: ES117125

FIELD PERSONNEL: S. Dixon

Time	Depth to Water (Feet - TOC)	Well Diameter (Inches)	Total Depth (Feet - BTOC)	Water Column Thickness (Feet)	Single Purge Volume (Gallons)	Total Volume Purged (Gallons)	TOC Elevation (Feet)	Groundwater Elevation (Feet)
1354	8.03	2	19.7	~~10.77~~ 11.05	1.8		98.90	90.27

PURGE METHOD:

SAMPLER TYPE:

Time	Pumping Rate (L/min)	Water Level (Feet - TOC)	Dissolved Oxygen (mg/l)	ORP (mv)	Turbidity (NTU)	Specific Electrical Conductance (mS/cm)	pH	Temperature (Celsius)	Total Volume Pumped ~~(liters)~~ GALLONS
1406	0.85	8.72	0.82	133.3		0.109	5.73	23.66	0.25
1414	~0.85	8.72	0.51	115.2	3.81	0.108	5.52	24.18	1.8
1422	~0.85	8.72	0.47	92.8	5.13	0.108	5.52	24.18	3.6
1430	~0.85	8.72	0.42	74.0	2.13	0.108	5.49	24.16	5.4
1438	~0.85	8.72	0.40	64.4	1.02	0.108	5.49	24.55	7.25

Stabilization Criteria	
pH	+/- 0.1 unit
Electrical Conductance	+/- 5%
Turbidity	< 10 NTU
ORP	+/- 10 mV
Dissolved Oxygen	+/- 0.2 mg/l

NOTES: (Sample Numbers, Weather Conditions, Field Notes, and Deviations)

Purge Start - 14:04
End - 14:38
Tubing Depth - 15'
Sample Time - 1439

Field Iron
Iron (II) - 0.36 mg/L
Hach DR 850 FerroVer

Weather - Sunny, 36.6°C

CONTAINER TYPE	CONTAINER VOLUME	PRESERVATIVE/PREPARATION	NUMBER	FILTERING	ANALYSIS

For 2-inch wells: multiply the water column height by 0.1632 to get gallons for 1 casing volume

For 4-inch wells: multiply the water column height by 0.6528 to get gallons for 1 casing volume

Field Water Quality Meter IDs:

Terracon

GROUNDWATER SAMPLING LOG

SITE NAME: MARTHA'S DRY CLEANER (HSI # 10764)

WELL NUMBER: MW-23

DATE: 7/31/2012

PROJECT NUMBER: ES117125

FIELD PERSONNEL:

Time	Depth to Water (Feet - TOC)	Well Diameter (Inches)	Total Depth (Feet - BTOC)	Water Column Thickness (Feet)	Single Purge Volume (Gallons)	Total Volume Purged (Gallons)	TOC Elevation (Feet)	Groundwater Elevation (Feet)
1531	10.43	2	19.61	9.18	1.5	5.0	99.11	88.68

PURGE METHOD: LOW FLOW / LOW STRESS
PERISTALTIC - TEFLON TUBING

SAMPLER TYPE: TEFLON ~~TUBING~~
VOC's - STRAW METHOD

Time	Pumping Rate (L/min)	Water Level (Feet - TOC)	Dissolved Oxygen (mg/l)	ORP (mv)	Turbidity (NTU)	Specific Electrical Conductance (mS/cm)	pH	Temperature (Celsius)	Total Volume Pumped ~~(liters)~~ gallons
15:42	~0.5	10.51	1.98	235.7	—	0.466	5.12	25.32	0.25
15:57	~0.5	10.54	0.28	124.4	1.93	0.472	5.00	25.09	1.5 gal
16:09	~0.5	10.54	0.21	101.0	0.94	0.474	4.99	25.05	3.0 gal
16:21	~0.5	10.54	0.17	96.5	0.94	0.470	4.99	25.01	4.5 gal
16:26	~0.5	10.54	0.17	93.8	0.94	0.470	4.99	25.02	5.0 gal

Stabilization Criteria	
pH	+/- 0.1 unit
Electrical Conductance	+/- 5%
Turbidity	< 10 NTU
ORP	+/- 10 mV
Dissolved Oxygen	+/- 0.2 mg/l

NOTES: (Sample Numbers, Weather Conditions, Field Notes, and Deviations)

Purge START - 1540
END - 16:24
TUBING DEPTH - 15'
SAMPLE TIME - 16:27

FIELD IRON
IRON(II) - 1.35 mg/L
HACH DR 850 FERROVER

WEATHER - CLOUDY, 32.8°C

CONTAINER TYPE	CONTAINER VOLUME	PRESERVATIVE/PREPARATION	NUMBER	FILTERING	ANALYSIS

For 2-inch wells: multiply the water column height by 0.1632 to get gallons for 1 casing volume

For 4-inch wells: multiply the water column height by 0.6528 to get gallons for 1 casing volume

Field Water Quality Meter IDs: YSI 556 MPS - 12315 PINK
HACH 2100Q 020132 PINK

Terracon

GROUNDWATER SAMPLING LOG

SITE NAME:

PROJECT NUMBER:

FIELD PERSONNEL:

WELL NUMBER: Equipment Blank

DATE: 8/1/2012

Time	Depth to Water (Feet - TOC)	Well Diameter (Inches)	Total Depth (Feet - BTOC)	Water Column Thickness (Feet)	Single Purge Volume (Gallons)	Total Volume Purged (Gallons)	TOC Elevation (Feet)	Groundwater Elevation (Feet)
—	—	—	—					

PURGE METHOD:

SAMPLER TYPE:

Time	Pumping Rate (L/min)	Water Level (Feet - TOC)	Dissolved Oxygen (mg/l)	ORP (mv)	Turbidity (NTU)	Specific Electrical Conductance (mS/cm)	pH	Temperature (Celsius)	Total Volume Pumped (liters)
1920	—	—	8.13	252.5	0.09	0.006	5.46	23.01	—

Stabilization Criteria	
pH	+/- 0.1 unit
Electrical Conductance	+/- 5%
Turbidity	< 10 NTU
ORP	+/- 10 mV
Dissolved Oxygen	+/- 0.2 mg/l

NOTES: (Sample Numbers, Weather Conditions, Field Notes, and Deviations)

Sample Time - 1920

CONTAINER TYPE	CONTAINER VOLUME	PRESERVATIVE/PREPARATION	NUMBER	FILTERING	ANALYSIS

For 2-inch wells: multiply the water column height by 0.1632 to get gallons for 1 casing volume

For 4-inch wells: multiply the water column height by 0.6528 to get gallons for 1 casing volume

Field Water Quality Meter IDs:

Terracon

GROUNDWATER SAMPLING LOG

SITE NAME: Martha's Dry Cleaner (HIS # 10764)

PROJECT NUMBER: ES117125

FIELD PERSONNEL: JHC

WELL NUMBER: MW-19

PURGE DATE: 1/27/14

SAMPLE DATE: 1/27/14

Time 1/27/14	Depth to Water (feet BTOC)	Well Diameter (inches)	Total Depth of Well (feet BTOC)	Water Column Thickness (feet)	Single Purge Volume (liters)	Total Liters Removed (during purging)	TOC Elev. (feet)	GW Elevation (feet)
1335	8.15	2	19.72	11.57	7	28		

PURGE METHOD: ~~Submersible Pump~~ Low Flow

Start: 1425 Stop: 1520

SAMPLE METHOD: Low Flow (peristaltic)

Start: 1425 Stop: 1520

Time	Pumping Rate (L / min)	Water Level (feet BTOC)	Temp. (° Celsius)	Specific Elec. Conduct. (mS / cm)	Dissolved Oxygen (mg / L)	pH (pH units)	ORP (mv)	Turbidity (NTU)	Total Liters Removed (during sampling)
1438	0.54	8.22	19.74	0.096	3.15	4.09	-23.5	5.1	7.02
1451	0.54	8.26	19.66	0.092	2.41	4.15	-22.1	3.1	14.04
15:03	0.54	8.26	19.63	0.097	1.74	4.19	-26.2	2.1	21.06
15:16	0.54	8.26	19.60	0.098	1.45	4.20	-29.0	1.8	28.08

EPA Stabilization Criteria ** = required !	
** pH	+/- 0.1 unit
** Spec. Cond.	+/- 5%
Turbidity	< 10 NTU
ORP	+/- 10 mV
Dissolved Oxygen	+/- 0.2 mg / L

NOTES (sample numbers, duplicate samples, weather conditions, field notes, deviations, etc.):

- Tube depth - 15'
- Sample Time - 1520
- weather - 71°, Sunny
- Drums on site - 2
- Field Iron
  Iron (II) - 0.06 mg/L
  HACH DR 850 Ferrover

Container Type	Container Volume	Preservative / Preparation	Number of Bottles	Filtered ? Filter Method	Analysis Requested

For 2-inch wells: multiply WCT by 0.1632; For 4-inch wells: multiply WCT by 0.6528

To convert gallons to liters, multiple number of gallons by 3.7854

Field Water Quality Meter IDs: YSI 556 MPS, 2020 LaMotte; Geopump, Solinst water level meter

Terracon

GROUNDWATER SAMPLING LOG

SITE NAME: Martha's Dry Cleaner (HIS # 10764)

PROJECT NUMBER: ES117125

FIELD PERSONNEL: JHC

WELL NUMBER: MW-24

PURGE DATE: 1/27/14

SAMPLE DATE: 1/27/14

Time 1/27/14	Depth to Water (feet BTOC)	Well Diameter (inches)	Total Depth of Well (feet BTOC)	Water Column Thickness (feet)	Single Purge Volume (liters)	Total Liters Removed (during purging)	TOC Elev. (feet)	GW Elevation (feet)
1338	9.27	2	19.75	10.48	6.5	32.5		

PURGE METHOD:	~~Submersible~~ Low Flow Pump		
Start: 1535	Stop: 1640		
SAMPLE METHOD:	Low Flow (peristaltic)		
Start: 1535	Stop: 1640		

Time	Pumping Rate (L / min)	Water Level (feet BTOC)	Temp. (° Celsius)	Specific Elec. Conduct. (mS / cm)	Dissolved Oxygen (mg / L)	pH (pH units)	ORP (mv)	Turbidity (NTU)	Total Liters Removed (during sampling)
1547	0.53	9.37	20.10	0.247	1.11	4.90	-58.7	1.9	6.5
1559	0.53	9.37	20.01	0.245	1.10	4.99	-61.9	1.7	13
1611	0.53	9.37	20.00	0.242	1.13	5.02	-61.6	1.2	19.5
1623	0.54	9.37	20.04	0.238	1.05	5.02	-60.9	1.4	26
1635	0.54	9.37	19.98	0.238	1.00	5.04	-60.5	1.3	32.5

EPA Stabilization Criteria ** = required !	
** pH	+/- 0.1 unit
** Spec. Cond.	+/- 5%
Turbidity	< 10 NTU
ORP	+/- 10 mV
Dissolved Oxygen	+/- 0.2 mg / L

NOTES (sample numbers, duplicate samples, weather conditions, field notes, deviations, etc.):

- Tube depth - 15'
- Sample Time - 1640
- weather - 71°, Sunny
- Drums on-site - 2
- Field Iron
  Iron (II) - 0.09 mg/L
  HACH DR 850 Ferrover

Container Type	Container Volume	Preservative / Preparation	Number of Bottles	Filtered ? Filter Method	Analysis Requested

For 2-inch wells: multiply WCT by 0.1632; For 4-inch wells: multiply WCT by 0.6528

To convert gallons to liters, multiple number of gallons by 3.7854

Field Water Quality Meter IDs: YSI 556 MPS, 2020 LaMotte; Geopump, Solinst water Level meter

Terracon

GROUNDWATER SAMPLING LOG

SITE NAME: Martha's Dry Cleaner (HIS # 10764)

PROJECT NUMBER: ES117125

FIELD PERSONNEL: JHC

WELL NUMBER: MW-23

PURGE DATE: 1/27/14

SAMPLE DATE: 1/27/14

Time 1/27/14	Depth to Water (feet BTOC)	Well Diameter (inches)	Total Depth of Well (feet BTOC)	Water Column Thickness (feet)	Single Purge Volume (liters)	Total Liters Removed (during purging)	TOC Elev. (feet)	GW Elevation (feet)
1340	7.93	2	19.54	11.61	7.5			

PURGE METHOD:	Submersible Pump		
Start: 1655	Stop: 1740		
SAMPLE METHOD:	Low Flow (peristaltic)		
Start: 1655	Stop: 1740		

Time	Pumping Rate (L / min)	Water Level (feet BTOC)	Temp. (° Celsius)	Specific Elec. Conduct. (mS / cm)	Dissolved Oxygen (mg / L)	pH (pH units)	ORP (mv)	Turbidity (NTU)	Total Liters Removed (during sampling)
1708	0.57	8.08	22.84	0.412	0.31	5.10	-68.1	1.6	7.5
1721	0.57	8.08	22.89	0.415	0.22	5.05	-67.2	1.4	15
1734	0.57	8.08	22.80	0.411	0.21	5.06	-66.9	1.2	22.5

EPA Stabilization Criteria ** = required !	
** pH	+/- 0.1 unit
** Spec. Cond.	+/- 5%
Turbidity	< 10 NTU
ORP	+/- 10 mV
Dissolved Oxygen	+/- 0.2 mg / L

NOTES (sample numbers, duplicate samples, weather conditions, field notes, deviations, etc.):

- Tube depth ~ 15'
- Sample Time - 1740
- weather - 71°, Sunny
- Drums on-site - 2
- Field Iron
  Iron (II) - 0.41 mg/L
  HACH D/R 850 Ferrove

Container Type	Container Volume	Preservative / Preparation	Number of Bottles	Filtered ? Filter Method	Analysis Requested

For 2-inch wells: multiply WCT by 0.1632; For 4-inch wells: multiply WCT by 0.6528

To convert gallons to liters, multiple number of gallons by 3.7854

Field Water Quality Meter IDs: YSI 556 MPS, 2020 LaMotte

Geopump, Solinst water Level meter

Terracon

GROUNDWATER SAMPLING LOG

SITE NAME: Martha's Dry Cleaner (HIS # 10764)

PROJECT NUMBER: ES117125

FIELD PERSONNEL: JHC

WELL NUMBER: MW-21D

PURGE DATE: 1/28/14

SAMPLE DATE: 1/28/14

Time 1/27/14	Depth to Water (feet BTOC)	Well Diameter (inches)	Total Depth of Well (feet BTOC)	Water Column Thickness (feet)	Single Purge Volume (liters)	Total Liters Removed (during purging)	TOC Elev. (feet)	GW Elevation (feet)
1344	11.60	2	48.46	36.86	23	70		

PURGE METHOD:	~~Submersible Pump~~ Low Flow		
Start: 1415	Stop: 1555		
SAMPLE METHOD:	Low Flow (peristaltic)		
Start:	Stop:		

Time	Pumping Rate (L / min)	Water Level (feet BTOC)	Temp. (° Celsius)	Specific Elec. Conduct. (mS / cm)	Dissolved Oxygen (mg / L)	pH (pH units)	ORP (mv)	Turbidity (NTU)	Total Liters Removed (during sampling)
1446	0.73	13.91	22.24	0.042	0.30	5.23	-71.4	5.7	23
1517	0.73	13.87	22.27	0.045	0.21	5.15	-65.5	2.5	46
1548	0.73	13.85	22.13	0.045	0.17	5.20	-64.8	1.3	69

EPA Stabilization Criteria ** = required !	
** pH	+/- 0.1 unit
** Spec. Cond.	+/- 5%
Turbidity	< 10 NTU
ORP	+/- 10 mV
Dissolved Oxygen	+/- 0.2 mg / L

NOTES (sample numbers, duplicate samples, weather conditions, field notes, deviations, etc.):
- Tube depth - 45'
- Sample Time - 1555
- weather - 40°, cloudy
- Drums on-site - 2
- Field Iron
  Iron (II) - 0.54 mg/L
  HACH DR 850 Ferrover

Container Type	Container Volume	Preservative / Preparation	Number of Bottles	Filtered ? Filter Method	Analysis Requested

For 2-inch wells: multiply WCT by 0.1632; For 4-inch wells: multiply WCT by 0.6528

To convert gallons to liters, multiple number of gallons by 3.7854

Field Water Quality Meter IDs: YSI 556 MPS, 2020 Lamotte

Geopump, Solinst water Level meter

Terracon

GROUNDWATER SAMPLING LOG

SITE NAME: Martha's Dry Cleaner (HIS # 10764)

PROJECT NUMBER: ES117125

FIELD PERSONNEL: JHC

WELL NUMBER: MW-21S

PURGE DATE: 1/28/14

SAMPLE DATE: 1/28/14

Time 1/27/14	Depth to Water (feet BTOC)	Well Diameter (inches)	Total Depth of Well (feet BTOC)	Water Column Thickness (feet)	Single Purge Volume (liters)	Total Liters Removed (during purging)	TOC Elev. (feet)	GW Elevation (feet)
1347	8.56	2	19.68	11.12	7	35		

PURGE METHOD:	~~Submersible~~ Pump low Flow
Start: 1605	Stop: 1700
SAMPLE METHOD:	Low Flow (peristaltic)
Start:	Stop:

Time	Pumping Rate (L / min)	Water Level (feet BTOC)	Temp. (° Celsius)	Specific Elec. Conduct. (mS / cm)	Dissolved Oxygen (mg / L)	pH (pH units)	ORP (mv)	Turbidity (NTU)	Total Liters Removed (during sampling)
1615	0.71	8.68	20.57	0.177	1.31	5.38	-67.0	1.1	7
1624	0.71	8.69	20.67	0.180	1.26	5.28	-63.8	1.8	14
1635	0.71	8.69	20.69	0.181	1.27	5.21	-59.9	1.2	21
1644	0.71	8.69	20.65	0.179	1.23	5.18	-58.7	0.95	28
1655	0.71	8.69	20.55	0.178	1.20	5.20	-59.1	1.1	35

EPA Stabilization Criteria ** = required !	
** pH	+/- 0.1 unit
** Spec. Cond.	+/- 5%
Turbidity	< 10 NTU
ORP	+/- 10 mV
Dissolved Oxygen	+/- 0.2 mg / L

NOTES (sample numbers, duplicate samples, weather conditions, field notes, deviations, etc.):

- Tube depth - 15'
- Sample Time - 1700
- weather - 37° cloudy light Rain
- Drums on-site - 2
- Field Iron
  Iron (II) - 0.09 mg/L
  HACH DR 850 Ferrover

Container Type	Container Volume	Preservative / Preparation	Number of Bottles	Filtered ? Filter Method	Analysis Requested

For 2-inch wells: multiply WCT by 0.1632; For 4-inch wells: multiply WCT by 0.6528

To convert gallons to liters, multiple number of gallons by 3.7854

Field Water Quality Meter IDs: YSI 556 MPS, 2020 LaMotte, Geopump, Solinst water Level meter

Terracon

GROUNDWATER SAMPLING LOG

SITE NAME: Martha's Dry Cleaner (HIS # 10764)

PROJECT NUMBER: ES117125

FIELD PERSONNEL: JHC

WELL NUMBER: MW-20

PURGE DATE: 1/29/14

SAMPLE DATE: 1/29/14

Time 1/27/14	Depth to Water (feet BTOC)	Well Diameter (inches)	Total Depth of Well (feet BTOC)	Water Column Thickness (feet)	Single Purge Volume (liters)	Total Liters Removed (during purging)	TOC Elev. (feet)	GW Elevation (feet)
1358	7.62	2	19.54	11.92	7.5			

PURGE METHOD:	~~Submersible Pump~~ Low Flow		
Start: 1505	Stop:		
SAMPLE METHOD:	Low Flow (peristaltic)		
Start: 1505	Stop:		

Time	Pumping Rate (L / min)	Water Level (feet BTOC)	Temp. (° Celsius)	Specific Elec. Conduct. (mS / cm)	Dissolved Oxygen (mg / L)	pH (pH units)	ORP (mv)	Turbidity (NTU)	Total Liters Removed (during sampling)
1515	0.75	7.68	19.90	0.038	1.28	5.43	-69.8	1.5	7.5
1525	0.75	7.68	19.92	0.037	1.20	5.21	-64.6	1.7	15
1535	0.75	7.69	19.93	0.037	1.09	5.17	-62.3	1.2	22.5
1545	0.75	7.69	19.93	0.036	1.08	5.14	-64.7	1.1	30
1555	0.75	7.69	19.88	0.036	1.02	5.14	-64.6	0.95	37.5

EPA Stabilization Criteria ** = required !	
** pH	+/- 0.1 unit
** Spec. Cond.	+/- 5%
Turbidity	< 10 NTU
ORP	+/- 10 mV
Dissolved Oxygen	+/- 0.2 mg / L

NOTES (sample numbers, duplicate samples, weather conditions, field notes, deviations, etc.):

- Tube depth - 15'
- Sample Time - 1600
- weather - 31°, cloudy
- Drums on-site - 2
- Field Iron
  Iron (II) - 0.09 mg/L
  HACH DR 850 Ferro Ver

Container Type	Container Volume	Preservative / Preparation	Number of Bottles	Filtered ? Filter Method	Analysis Requested

For 2-inch wells: multiply WCT by 0.1632; For 4-inch wells: multiply WCT by 0.6528

To convert gallons to liters, multiple number of gallons by 3.7854

Field Water Quality Meter IDs: YSI 556 MPS, 2020 LaMotte; Geopump, Solinst water level meter

Terracon

GROUNDWATER SAMPLING LOG

SITE NAME: Marthas Dry Cleaners (HIS # 10764)

WELL NUMBER: Field Blank

PROJECT NUMBER: ES117125

PURGE DATE: —

SAMPLE DATE: 1/29/14

FIELD PERSONNEL: JHC

Time	Depth to Water (feet BTOC)	Well Diameter (inches)	Total Depth of Well (feet BTOC)	Water Column Thickness (feet)	Single Purge Volume (liters)	Total Liters Removed (during purging)	TOC Elev. (feet)	GW Elevation (feet)
—	—	—	—	—	—	—	—	—

PURGE METHOD:	Submersible Pump		
Start: —	Stop: —		
SAMPLE METHOD:	Low Flow (peristaltic)		
Start: —	Stop: —		

Time	Pumping Rate (L / min)	Water Level (feet BTOC)	Temp. (° Celsius)	Specific Elec. Conduct. (mS / cm)	Dissolved Oxygen (mg / L)	pH (pH units)	ORP (mv)	Turbidity (NTU)	Total Liters Removed (during sampling)
1635	—	—	13.65	0.001	8.22	6.21	143.5	0.95	—

EPA Stabilization Criteria ** = required !	
** pH	+/- 0.1 unit
** Spec. Cond.	+/- 5%
Turbidity	< 10 NTU
ORP	+/- 10 mV
Dissolved Oxygen	+/- 0.2 mg / L

NOTES (sample numbers, duplicate samples, weather conditions, field notes, deviations, etc.):

- Sampled @ 1640

Container Type	Container Volume	Preservative / Preparation	Number of Bottles	Filtered ? Filter Method	Analysis Requested

For 2-inch wells: multiply WCT by 0.1632; For 4-inch wells: multiply WCT by 0.6528

To convert gallons to liters, multiple number of gallons by 3.7854

Field Water Quality Meter IDs:

Terracon

GROUNDWATER SAMPLING LOG

SITE NAME: Martha's Dry Cleaner (HIS # 10764)

PROJECT NUMBER: ES117125

FIELD PERSONNEL: JHC

WELL NUMBER: MW-22 + DUP

PURGE DATE: 1/29/14

SAMPLE DATE: 1/29/14

Time 1/27/14	Depth to Water (feet BTOC)	Well Diameter (inches)	Total Depth of Well (feet BTOC)	Water Column Thickness (feet)	Single Purge Volume (liters)	Total Liters Removed (during purging)	TOC Elev. (feet)	GW Elevation (feet)
1405	7.32	2	19.58	12.26	8	46.5		

PURGE METHOD:	Submersible Pump		
Start: 1340	Stop: 1345		
SAMPLE METHOD:	Low Flow (peristaltic)		
Start: 1340	Stop: 1345		

Time	Pumping Rate (L / min)	Water Level (feet BTOC)	Temp. (° Celsius)	Specific Elec. Conduct. (mS / cm)	Dissolved Oxygen (mg / L)	pH (pH units)	ORP (mv)	Turbidity (NTU)	Total Liters Removed (during sampling)
1352	0.71	7.43	21.38	0.072	1.55	5.70	-86.5	3.4	8
1403	0.71	7.44	21.46	0.073	0.55	5.50	-80.1	1.5	16
1414	0.71	7.44	21.47	0.073	0.31	5.44	-76.2	0.75	24
1425	0.71	7.45	21.37	0.072	0.26	5.40	-73.5	1.2	32
1436	0.71	7.45	21.43	0.073	0.26	5.41	-73.5	0.90	40
								+9 mins	-> 46.39

EPA Stabilization Criteria ** = required !	
** pH	+/- 0.1 unit
** Spec. Cond.	+/- 5%
Turbidity	< 10 NTU
ORP	+/- 10 mV
Dissolved Oxygen	+/- 0.2 mg / L

NOTES (sample numbers, duplicate samples, weather conditions, field notes, deviations, etc.):

- Tube depth - 15'
- Sample Time - 1440 DUP 1445
- weather - 31°, cloudy
- Drums on-site - 2
- Iron Test
  Iron (II) - 0.06 mg/L
  HACH DR 850 Ferrover

Container Type	Container Volume	Preservative / Preparation	Number of Bottles	Filtered ? Filter Method	Analysis Requested

For 2-inch wells: multiply WCT by 0.1632; For 4-inch wells: multiply WCT by 0.6528

To convert gallons to liters, multiple number of gallons by 3.7854

Field Water Quality Meter IDs: YSI 556 MPS, 2020 Lamotte, GroundUp, Solinst water level meter

APPENDIX F

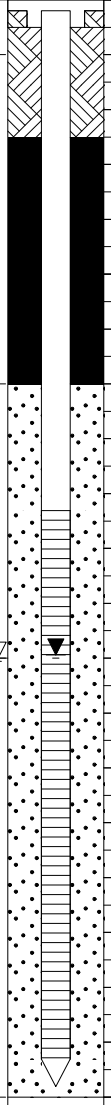
BORING LOGS / MONITORING WELL CONSTRUCTION DIAGRAM

Soil Boring Log / Well Construction Details

Terracon

Project: Martha's Dry Cleaner		Project Number: ES117125	Boring/Well: **MW-24**
		Well Construction Data	
Date Started: 7/31/12	Latitude: 32.025784	Screen: 0.010" Slotted PVC	From: 9.31 To: 19.31
Logged By: SAD	Longitude: -81.071477	Pack: 20/30 Filter Sand	From: 7 To: 20
Drilling Co.: Preferred Drilling	Driller: Ariel Torres	Seal: Hydrated Bentonite Chips	From: 2.5 To: 7
Method: HSA	Equipment: D-50 Turbo	Grout: Type 1-11 Portland Cement	From: 0.5 To: 2.5
Boring Depth (ft.): 20.0	Saturated Zone: 12.00 / Date: 7/31/2012	Inner Casing: 2" Threaded PVC	
Boring Diameter (in): 8.25	Static Water Level: 11.94 / Date: 7/31/2012	Notes: Well was secured with bolt-down manhole cover and locking cap.	

Depth	Sample	Sample Number	Blows/ 6 inches	PID (ppm)	Lithology	Description	Well Detail	Depth
						Poorly graded, fine **SAND**, subangular to subrounded, dark brown and gray, minor organic matter (leaves)		
						Poorly graded, fine **SAND**, subangular to subrounded, yellowish brown		
2								2
4								4
6								6
						Poorly graded, fine **SAND**, subangular to subrounded, white		
8								8
10								10
12						Poorly graded, fine **SAND**, subangular to subrounded, white, saturated		12
14								14
16								16
18								18
20						Borehole Terminated at 20 feet.		20



Terracon
2201 Rowland Avenue, Savannah, Georgia 31404
Phone: 912-629-4000, Fax: 912-629-4001

LOG OF BORING WELL ES117125 BORING LOGS (2014).GPJ GAGE_GRP.GDT 2/14/14

Soil Boring Log / Well Construction Details

Project: Martha's Dry Cleaner		Project Number: ES117125	Boring/Well: **SS-1**
		Well Construction Data	
Date Started: 1/27/14	Date Completed: 1/27/14		
Logged By: JHC	Latitude:		
Drilling Co.: Terracon	Longitude:		
Method: Hand Auger	Driller: JHC	***No well was constructed at this location.***	
Boring Depth (ft.): 10.0	Equipment: Standard Bucket	***Borehole backfilled with auger cuttings upon completion.***	
Boring Diameter (in): 4.25	GW Level: ▼ 9.5	Time/Date: 1/27/2014	

Depth	Sample	Sample Number	Blows/ 6 inches	PID (ppm)	Lithology	Description	Depth
						Ground surface composed of cedar mulch (playground area)	
						SAND, blackish gray, fine	
2						**SAND**, light brown, fine	2
						SAND, orangish brown, fine	
4							4
						SAND, dark brown, fine, highly compacted (hardpan)	
6							6
						SAND, brown, fine, compacted	
8						**SAND**, brown, fine, damp	8
						As above, saturated	
10						Borehole terminated at 10 feet.	10

Terracon
2201 Rowland Avenue, Savannah, Georgia 31404
Phone: 912-629-4000, Fax: 912-629-4001

LOG OF BORING WELL ES117125 BORING LOGS WITHOUT WELL(2014).GPJ GAGE_GRP.GDT 2/14/14

Soil Boring Log / Well Construction Details

Project: Martha's Dry Cleaner		Project Number: ES117125	Boring/Well: **SS-2**
		Well Construction Data	
Date Started: 1/27/14	Date Completed: 1/27/14		
Logged By: JHC	Latitude:		
Drilling Co.: Terracon	Longitude:		
Method: Hand Auger	Driller: JHC	***No well was constructed at this location.***	
Boring Depth (ft.): 10.0	Equipment: Standard Bucket	***Borehole backfilled with auger cuttings upon completion.***	
Boring Diameter (in): 4.25	GW Level: ▼ 9.5	Time/Date: 1/27/2014	

Depth	Sample	Sample Number	Blows/ 6 inches	PID (ppm)	Lithology	Description	Depth
						Ground surface composed of cedar mulch (playground area)	
						SAND, blackish gray, fine	
2						**SAND**, orangish light brown, fine	2
						SAND, orangish brown, fine	
4							4
						SAND, dark brown, fine, highly compacted (hardpan)	
6							6
						SAND, brown, fine, compacted	
8						**SAND**, brown, fine, damp	8
						As above, saturated	
10						Borehole terminated at 10 feet.	10

Terracon
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Phone: 912-629-4000, Fax: 912-629-4001

LOG OF BORING WELL ES117125 BORING LOGS WITHOUT WELL(2014).GPJ GAGE_GRP.GDT 2/14/14

Soil Boring Log / Well Construction Details

Project: Martha's Dry Cleaner		Project Number: ES117125	Boring/Well: **SS-3**
		Well Construction Data	
Date Started: 1/27/14	Date Completed: 1/27/14		
Logged By: JHC	Latitude:		
Drilling Co.: Terracon	Longitude:		
Method: Hand Auger	Driller: JHC	***No well was constructed at this location.***	
Boring Depth (ft.): 9.5	Equipment: Standard Bucket	***Borehole backfilled with auger cuttings upon completion.***	
Boring Diameter (in): 4.25	GW Level: ▼ 9.0	Time/Date: 1/27/2014	

Depth	Sample	Sample Number	Blows/ 6 inches	PID (ppm)	Lithology	Description	Depth
						Ground surface is grassy	
						SAND, blackish gray, fine	
2						**SAND**, light brown, fine	2
						SAND, orangish brown, fine	
4							4
						SAND, white, fine	
6							6
8						As above, damp	8
						As above, saturated	
						Borehole terminated at 9.5 feet	

Terracon
2201 Rowland Avenue, Savannah, Georgia 31404
Phone: 912-629-4000, Fax: 912-629-4001

LOG OF BORING WELL ES117125 BORING LOGS WITHOUT WELL(2014).GPJ GAGE_GRP.GDT 2/14/14

APPENDIX G

BIOCHLOR MODEL DATA

BIOCHLOR Natural Attenuation Decision Support System

Version 2.2
Excel 2000

Martha's Dry Cleaner
HSI Site No. 107764
Run Name

Data Input Instructions:

115 → 1. Enter value directly....or
↑ *or* 2. Calculate by filling in gray
0.02 cells. Press Enter, then (C)
(To restore formulas, hit "Restore Formulas" button)
Variable* → Data used directly in model.

Test if Biotransformation is Occurring → Natural Attenuation Screening Protocol

TYPE OF CHLORINATED SOLVENT: Ethenes ◉ Ethanes ○

1. ADVECTION

Seepage Velocity*	Vs	101.7	(ft/yr)
or			
Hydraulic Conductivity	K	3.3E-03	(cm/sec)
Hydraulic Gradient	i	0.006	(ft/ft)
Effective Porosity	n	0.2	(-)

2. DISPERSION

Alpha x*	13.971	(ft)
(Alpha y) / (Alpha x)*	0.1	(-)
(Alpha z) / (Alpha x)*	1.E-99	(-)

Calc. Alpha x

3. ADSORPTION

Retardation Factor* → R
or

Soil Bulk Density, rho	1.5	(kg/L)		
FractionOrganicCarbon, foc	1.4E-3	(-)		
Partition Coefficient	Koc			
PCE	95	(L/kg)	2.03	(-)
TCE	61	(L/kg)	1.66	(-)
DCE	40	(L/kg)	1.43	(-)
VC	22	(L/kg)	1.24	(-)
ETH	302	(L/kg)	4.28	(-)
Common R (used in model)* =			**1.66**	

4. BIOTRANSFORMATION -1st Order Decay Coefficient*

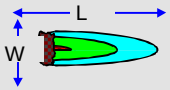
Zone 1	λ (1/yr)	half-life (yrs)	Yield
PCE → TCE	1.195	0.58	0.79
TCE → DCE	0.000		0.74
DCE → VC	0.000		0.64
VC → ETH	0.000		0.45

Zone 2	λ (1/yr)	half-life (yrs)
PCE → TCE	0.000	
TCE → DCE	0.000	
DCE → VC	0.000	
VC → ETH	0.000	

λ HELP

5. GENERAL

Simulation Time*	3	(yr)
Modeled Area Width*	400	(ft)
Modeled Area Length*	280	(ft)
Zone 1 Length*	280	(ft)
Zone 2 Length*	0	(ft)



Zone 2= L - Zone 1

6. SOURCE DATA

TYPE: Decaying
Single Planar

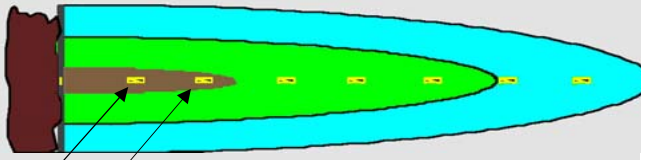
Source Options

Source Thickness in Sat. Zone* 13 (ft)

Width* (ft) Y1 90

Conc. (mg/L)*	C1	k_s* (1/yr)
PCE	.27	0.037
TCE	.004	0.037
DCE	.008	0.037
VC		0.037
ETH		0.037

Vertical Plane Source: Determine Source Well Location and Input Solvent Concentrations



View of Plume Looking Down

Observed Centerline Conc. at Monitoring Wells

7. FIELD DATA FOR COMPARISON

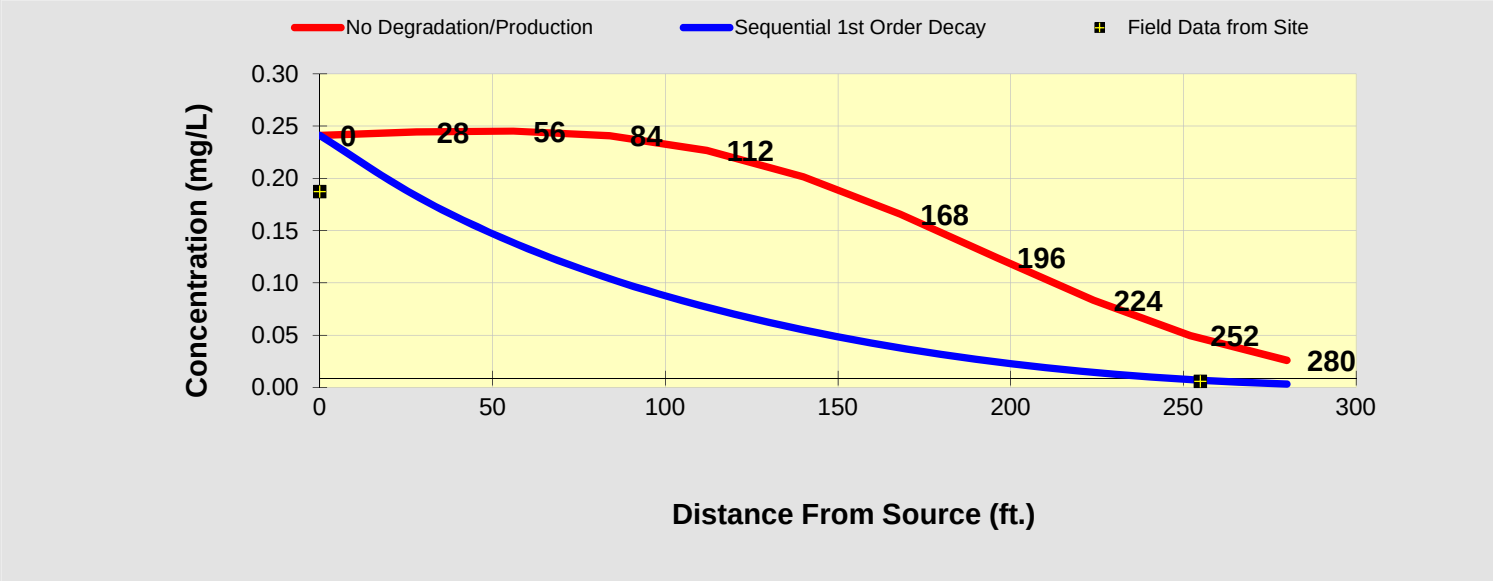
PCE Conc. (mg/L)	.188	.007									
TCE Conc. (mg/L)	.002	.001									
DCE Conc. (mg/L)	.001	.002									
VC Conc. (mg/L)											
ETH Conc. (mg/L)	0.0										
Distance from Source (ft)	0	255									
Date Data Collected	2014										

8. CHOOSE TYPE OF OUTPUT TO SEE:

RUN CENTERLINE | RUN ARRAY | Help | Restore | RESET | SEE OUTPUT | Paste

DISSOLVED CHLORINATED SOLVENT CONCENTRATIONS ALONG PLUME CENTERLINE (mg/L) at Z=0

PCE	Distance from Source (ft)										
	0	28	56	84	112	140	168	196	224	252	280
No Degradation	0.242	0.245	0.246	0.241	0.228	0.202	0.167	0.125	0.084	0.051	0.027
Biotransformation	0.2420	0.184	0.139	0.105	0.078	0.056	0.039	0.025	0.015	0.008	0.004
	Monitoring Well Locations (ft)										
	0	255									
Field Data from Site	0.188	0.007									



See PCE

See TCE

See DCE

See VC

See ETH

Prepare Animation

Time:

3.0 Years

Log ⟺ Linear

Return to Input

To All

To Array

Start Here → ◉ PCE
○ TCE
○ DCE
○ VC
○ ETH

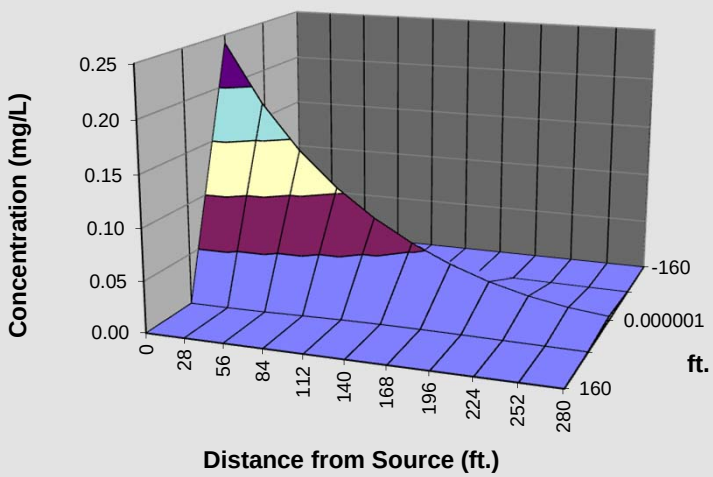
DISSOLVED SOLVENT CONCENTRATIONS IN PLUME

Transverse Distance (ft) ↓ / Distance from Source (ft) →	0	28	56	84	112	140	168	196	224	252	280
160	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
80	0.000	0.000	0.000	0.001	0.002	0.002	0.002	0.002	0.001	0.001	0.000
0	0.242	0.184	0.139	0.105	0.078	0.056	0.039	0.025	0.015	0.008	0.004
-80	0.000	0.000	0.000	0.001	0.002	0.002	0.002	0.002	0.001	0.001	0.000
-160	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
MASS RATE (mg/day)	4.5E+2	3.0E+2	2.3E+2	1.8E+2	1.3E+2	9.9E+1	7.1E+1	4.8E+1	3.0E+1	1.7E+1	8.5E+0

Show No

Show Biotransformation

Time: 3 yr Target Level: 0.005 mg/L Displayed Model: Biotransformation Displayed Compound: PCE



Plume Mass (Order-of-Magnitude Accuracy)

See Gallons

Plume Mass If No Degradation	0.5	(Kg)
- Plume Mass If Biotransformation/Production	0.2	(Kg)
Mass Removed	0.3	(Kg)
% Biotransformed =	**+56.5%**	
% Change in Mass Rate =	**98.1 %**	(source to edge)

If "Can't Calc.", make model area longer

See acre-ft

Current Volume of Ground Water in Plume	0.44	MGal
Flow Rate of Water Through Source Area	0.000	MGD

Compare to Pump and Treat

Pumping Rate		(gpm)
# Pore Volumes Removed Per Yr.	0.00	
# Pore Volumes to Clean-Up		
Clean-Up Time		(yr)

Plot All Data Plot Data > Target Mass HELP To Centerline Return to Input

BIOCHLOR Natural Attenuation Decision Support System

Version 2.2
Excel 2000

Martha's Dry Cleaner
HSI Site No. 107764
Run Name

Data Input Instructions:

115 → 1. Enter value directly....or
↑ *or* 2. Calculate by filling in gray
0.02 cells. Press Enter, then (C)
(To restore formulas, hit "Restore Formulas" button)
Variable* → Data used directly in model.

Test if Biotransformation is Occurring → Natural Attenuation Screening Protocol

TYPE OF CHLORINATED SOLVENT: Ethenes ◉ Ethanes ○

1. ADVECTION

Seepage Velocity*	Vs	101.7	(ft/yr)
or			
Hydraulic Conductivity	K	3.3E-03	(cm/sec)
Hydraulic Gradient	i	0.006	(ft/ft)
Effective Porosity	n	0.2	(-)

2. DISPERSION

Alpha x*	13.971	(ft)
(Alpha y) / (Alpha x)*	0.1	(-)
(Alpha z) / (Alpha x)*	1.E-99	(-)

Calc. Alpha x

3. ADSORPTION

Retardation Factor* → R
or

Soil Bulk Density, rho	1.5	(kg/L)		
FractionOrganicCarbon, foc	1.4E-3	(-)		
Partition Coefficient	Koc			
PCE	95	(L/kg)	2.03	(-)
TCE	61	(L/kg)	1.66	(-)
DCE	40	(L/kg)	1.43	(-)
VC	22	(L/kg)	1.24	(-)
ETH	302	(L/kg)	4.28	(-)
Common R (used in model)* =			**1.66**	

4. BIOTRANSFORMATION -1st Order Decay Coefficient*

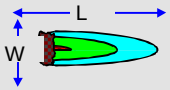
Zone 1	λ (1/yr)	half-life (yrs)	Yield
PCE → TCE	1.195	0.58	0.79
TCE → DCE	0.000		0.74
DCE → VC	0.000		0.64
VC → ETH	0.000		0.45

Zone 2	λ (1/yr)	half-life (yrs)
PCE → TCE	0.000	
TCE → DCE	0.000	
DCE → VC	0.000	
VC → ETH	0.000	

λ HELP

5. GENERAL

Simulation Time*	23	(yr)
Modeled Area Width*	400	(ft)
Modeled Area Length*	400	(ft)
Zone 1 Length*	400	(ft)
Zone 2 Length*	0	(ft)



Zone 2= L - Zone 1

6. SOURCE DATA

TYPE: Decaying
Single Planar

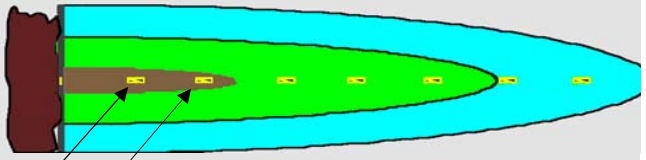
Source Options

Source Thickness in Sat. Zone* 13 (ft)

Width* (ft) Y1 90

Conc. (mg/L)*	C1	k_s* (1/yr)
PCE	.27	0.037
TCE	.004	0.037
DCE	.008	0.037
VC		0.037
ETH		0.037

Vertical Plane Source: Determine Source Well Location and Input Solvent Concentrations



View of Plume Looking Down

Observed Centerline Conc. at Monitoring Wells

7. FIELD DATA FOR COMPARISON

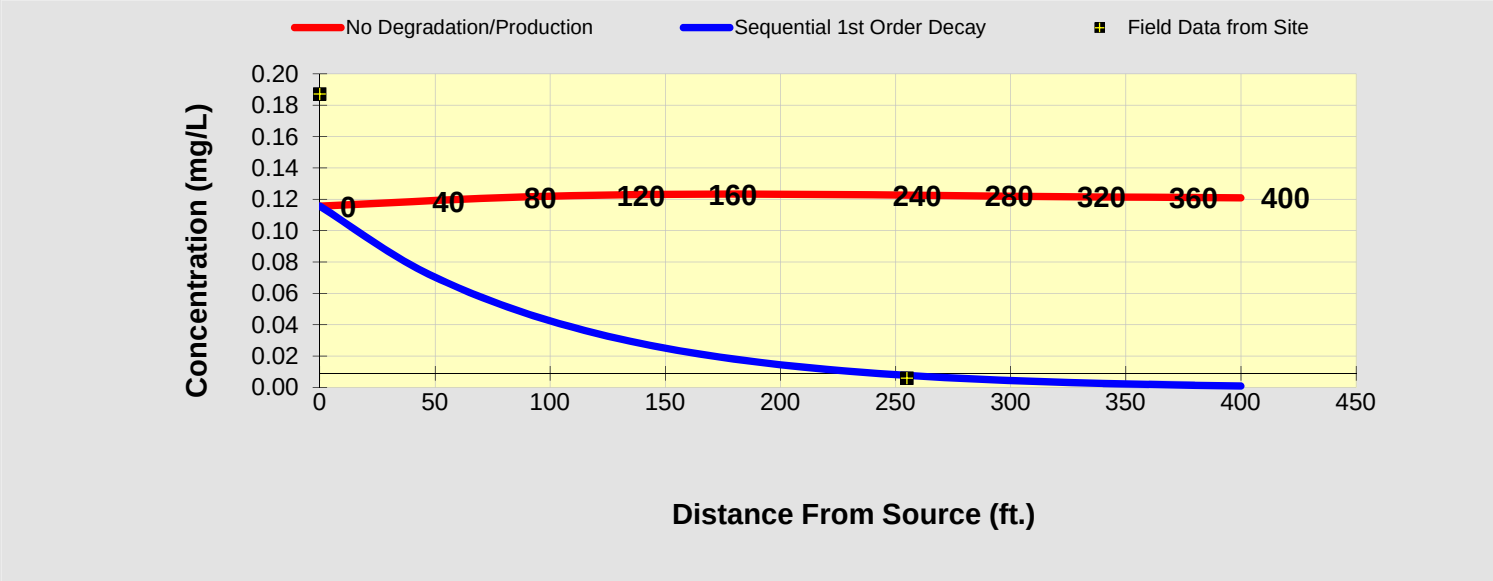
PCE Conc. (mg/L)	.188	.007									
TCE Conc. (mg/L)	.002	.001									
DCE Conc. (mg/L)	.001	.002									
VC Conc. (mg/L)											
ETH Conc. (mg/L)	0.0										
Distance from Source (ft)	0	255									
Date Data Collected	2014										

8. CHOOSE TYPE OF OUTPUT TO SEE:

RUN CENTERLINE | RUN ARRAY | Help | Restore | RESET | SEE OUTPUT | Paste

DISSOLVED CHLORINATED SOLVENT CONCENTRATIONS ALONG PLUME CENTERLINE (mg/L) at Z=0

PCE	Distance from Source (ft)										
	0	40	80	120	160	200	240	280	320	360	400
No Degradation	0.117	0.119	0.122	0.124	0.124	0.124	0.124	0.123	0.123	0.122	0.122
Biotransformation	0.1166	0.079	0.053	0.035	0.023	0.015	0.010	0.007	0.004	0.003	0.002
	Monitoring Well Locations (ft)										
	0	255									
Field Data from Site	0.188	0.007									



See PCE

See TCE

See DCE

See VC

See ETH

Prepare Animation

Time:

23.0 Years

Log ⟺ Linear

Return to Input

To All

To Array

Start Here → (•) PCE
( ) TCE
( ) DCE
( ) VC
( ) ETH

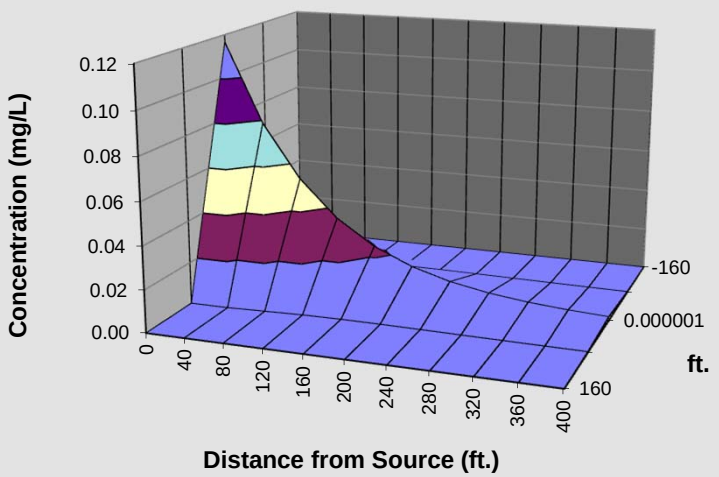
DISSOLVED SOLVENT CONCENTRATIONS IN PLUME

Transverse Distance (ft) ↓	*Distance from Source (ft)* 0	40	80	120	160	200	240	280	320	360	400
160	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
80	0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.000
0	0.117	0.079	0.053	0.035	0.023	0.015	0.010	0.007	0.004	0.003	0.002
-80	0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.000
-160	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
MASS RATE (mg/day)	2.2E+2	1.3E+2	8.9E+1	6.1E+1	4.2E+1	2.9E+1	2.0E+1	1.4E+1	9.2E+0	6.2E+0	4.2E+0

Show No

Show Biotransformation

Time: 23 yr Target Level: **0.005** mg/L Displayed Model: **Biotransformation** Displayed Compound: **PCE**



Plume Mass (Order-of-Magnitude Accuracy)

See Gallons

Plume Mass If No Degradation	0.6	*(Kg)*
- Plume Mass If Biotransformation/Production	0.1	*(Kg)*
Mass Removed	0.5	*(Kg)*
% Biotransformed =	**+79.6%**	
% Change in Mass Rate =	**98.0 %**	(source to edge)

If "Can't Calc.", make model area longer

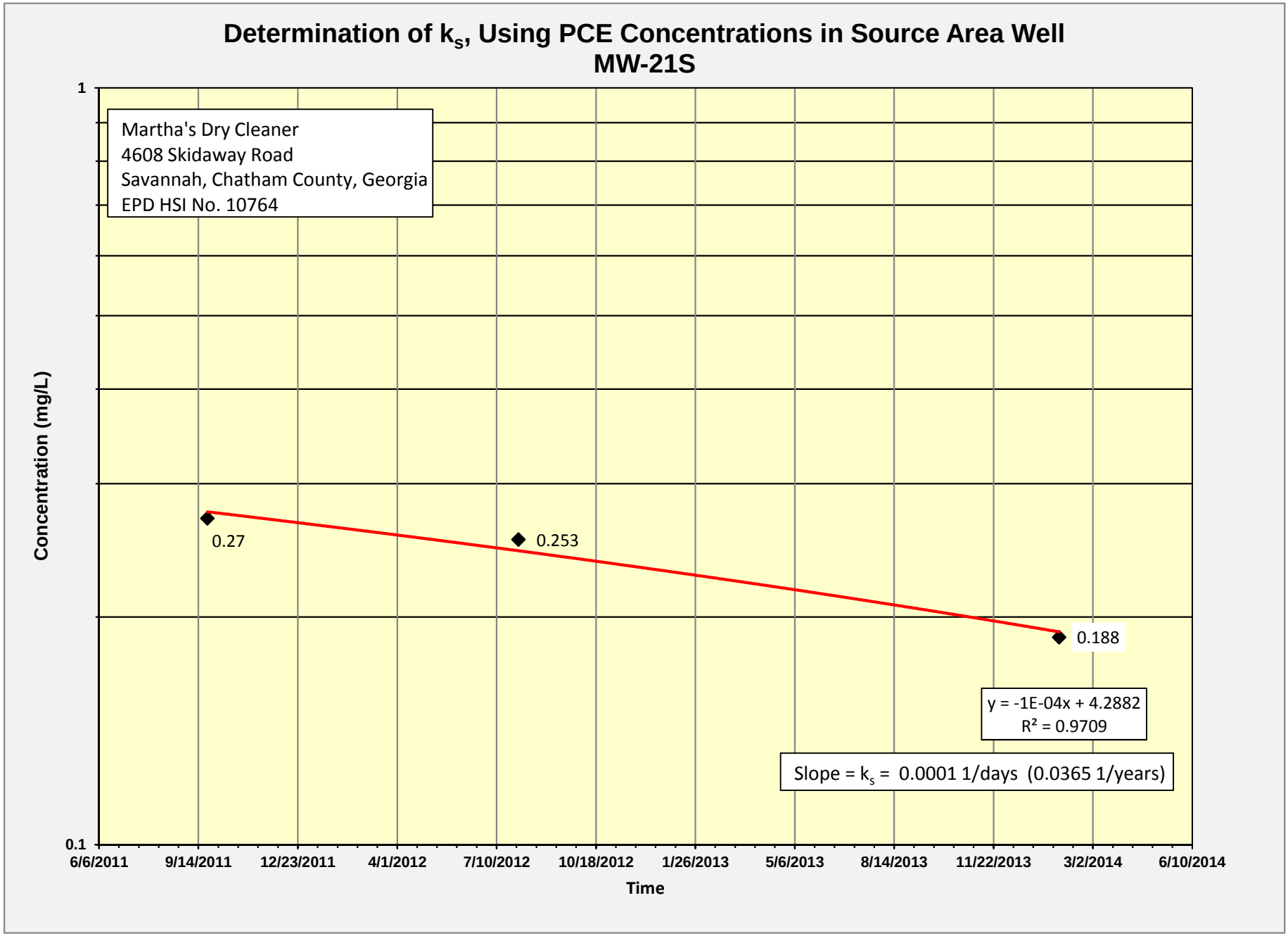
See acre-ft

Current Volume of Ground Water in Plume	0.50	*MGal*
Flow Rate of Water Through Source Area	0.000	*MGD*

Compare to Pump and Treat

Pumping Rate		*(gpm)*
# Pore Volumes Removed Per Yr.	0.00	
# Pore Volumes to Clean-Up		
Clean-Up Time		*(yr)*

Plot All Data Plot Data > Target Mass HELP To Centerline Return to Input


Determination of k_s, Using PCE Concentrations in Source Area Well MW-21S
Martha's Dry Cleaner
4608 Skidaway Road
Savannah, Chatham County, Georgia
EPD HSI No. 10764
Concentration (mg/L)
1
0.1
0.27
0.253
0.188
y = -1E-04x + 4.2882
R² = 0.9709
Slope = k_s = 0.0001 1/days (0.0365 1/years)
6/6/2011
9/14/2011
12/23/2011
4/1/2012
7/10/2012
10/18/2012
1/26/2013
5/6/2013
8/14/2013
11/22/2013
3/2/2014
6/10/2014
Time