



Quality Assurance Project Plan

Section A: Planning Elements		
A1. Title (Project Name):	Stony Hill Road TCE Site	
EPA ID#:	NCN000410857	
Project Location:	Wake Forest, Wake Co., NC	
Project Requestor and Organization:	Harry Zinn, NC Superfund Section	
Project Manager's Name, Position, and Organization:	Harry Zinn, Environmental Engineer, Site Evaluation and Removal Branch, NC Superfund, 1646 Mail Service Center, Raleigh, NC, 27699-1646. (919) 707-8374. harry.zinn@ncdenr.gov	
Project Manager's Signature:		Date: 3/21/2013
Technical Reviewer's Name and Position:	Melanie Bartlett, Quality Assurance Manager, NC Superfund	
Technical Reviewer's Signature:		Date: 3/21/2013
QA Reviewer's Name and Position:	Jim Bateson, Section Chief, NC Superfund	
QA Reviewer's Signature:		Date: 3/21/2013
DAO's Name, Position, and Organization:	Jennifer Wendel, Superfund Site Evaluation Section, EPA Region 4	
DAO's Signature:		Date:
A2. Table of Contents	<ul style="list-style-type: none"> • Page i of the NC generic QAPP • Section No. TOC of NC Superfund Section Health and Safety SOP Manual (http://portal.ncdenr.org/web/wm/div/safety/program) 	
A3. Distribution List	Jennifer Wendel, US EPA Jim Bateson, NC Superfund Scott Ross (File Room), NC Superfund Harry Zinn, NC Superfund Section	
A4. Project Personnel	Organization	Responsibilities
Harry Zinn,	NC Superfund	<i>Project Lead/Sampler/GPS 919-810-9637</i>



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Engineer		
Stuart Parker, Hydrogeologist	NC Superfund	<i>Sampler/GPS</i>
Jeanette Stanley, Chemist	NC Superfund	<i>Sampler/Scribe</i>
Melanie Bartlett, Engineer	NC Superfund	<i>Sampler</i>

Comments: The NC Superfund Section organizational chart and delegation of duties can be found in Section 3.1 and Appendix A of the NC generic QAPP.

A5. Background:

The site is located along Stony Hill Road, Bud Morris Road, Bent Road and Churchill Drive approximately 0.5 miles north of the intersection of Stony Hill Road and NC Highway 98. This is located approximately 3.75 miles west of Wake Forest. The coordinates of the site are 35.9895° north latitude and -78.6080° west longitude. They are based on the location of the shed that used degreasers during the operation of a circuit board assembling operation at 7303 Stony Hill Road.

In August, 2005, Charles Arnold (7305 Stony Hill Road) contacted Mr. Greg Bright of Wake County Environmental Services Department to report a petroleum smell in his water. The sample collected on August 25, 2005 from his well documented well contamination with tetrachloroethylene (PCE 39 microgram per liter (ug/l)); trichloroethylene (TCE 110 ug/l); 111- trichloroethane (1,1,1-TCA 19.2 ug/l) and 1,1-dichloroethene (1,1-DCE 7.7 ug/l) (Ref. 1). NC Division of Water Quality (NC DWQ) was contacted (Ref. 2) and re-sampled this well plus two other wells immediately south of the impacted well. The two new wells were not impacted. Four additional wells across Stony Hill Road (SHR) were sampled but no detections were documented. The house on the property at 7305 SHR was hooked up to the well serving 7303 SHR which was documented to be clean. Soil samples collected from the areas within 7303 and 7305 SHR properties were shown to be contaminated with PCE at level between 13 and 32 ug/kg and a trace amount of TCE.. Additional soil sampling by a contractor for the owner of 7303 SHR in June 2006 verified low levels of PCE and TCE in the soils around the building on 7303 SHR.

With no additional wells being impacted and the single affected house being supplied alternate water, efforts were made from 2006 until 2007 to identify all potentially responsible parties (PRPs) and have a Required Action Plan performed by those parties. In 2007 the site was transferred from NC DWQ to NC Division of Waste Management (NC DWM) Inactive Hazardous Sites Branch (IHSB). From 2007 until 2012 NC DWM continued to try to identify PRPs and have them develop a Site Assessment. In June, 2012, IHSB personnel contacted 10 residences within 1000 feet of the site to obtain access to sample their wells. Three of the resident granted access (7303, 7305 and 7333 SHR). Wells at 7305 and 7333 SHR have been impacted by PCE and TCE above the current MCL (5 ug/l).



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	<p>On July 10, 2012 Jim Bateson of NC DWM referred the site to EPA Region 4 Emergency Response and Removal Branch (ERRB) via telephone and e-mail. Since that time ERRB has sampled over 100 residences in the area around the site, including 11 community wells. Of these, 10 private wells have TCE above it's Maximum Contaminant Level (MCL) of 5 ug/l. Currently, four filter systems have been installed and bottled water is being supplied to the remaining private wells with TCE or PCE levels close to or above their MCL. To date, 21 private wells have detections of TCE and/or PCE, 11 of which are above EPA's Removal Management Level (RML) Three additional wells have detections of TCE just under the MCL. Water line hookups to these 14 residences have occurred or are currently ongoing.</p> <p>On December 10 and 11, 2012 NC DWM sampled 90 residences within ¾ mile of the site. GPS readings will be collected at locations that have not been previously located. This was a seasonally adjusted follow-up sampling of wells previously sampled during the Removal Action at this site. All potable wells were sampled for TVOA analysis plus SIMS for 1,1,2-TCA and Vinyl Chloride. In addition, all wells that had previous detections were sampled for SVOAs and the 8 RCRA metals. No significant changes to the plume boundaries were observed.</p>
<p>A6. Project Description:</p>	<p>During Phase 2 of the SI Investigation, we propose to install 7 temporary monitoring wells in areas where the surface water drainage pathway may be gaining from the fractured bedrock aquifer. Also, a series of up to twelve Henry samplers will be installed along stream segments in these areas to document if groundwater is discharging to surface water.</p>
<p>Decision(s) to be made based on data:</p>	<p>Based on findings, a decision will be made as to whether further action is needed under CERCLA. Data will be used to document a groundwater to surface water interface and to determine if the more toxic degradation products are present in these areas.</p> <p>The primary decisions in the DQO process for the site relating to monitoring well water are: are site-related contaminants found in shallow groundwater along suspected preferential pathways in the fractured bedrock and is degradation occurring in areas where the groundwater is discharging into the surface water pathway?</p> <p>All monitoring well water samples and Henry Sampler samples will be submitted to a CLP laboratory for routine analytical services (RAS) for VOCs plus special analytical services (SAS) for VOCs plus SIMS (specifically, Tetrachloroethene and vinyl chloride at a detection level of 0.015 ug/l) in accordance with the CLP Statement of Work (SOW) for Organics Analysis (SOM01.2). Analytical results will be compared to the associated federal drinking water Maximum Contaminant Levels (MCLs), Region 4 Regional Screening Levels (RSLs), SCDM values, NC 2L groundwater standards and NC 2B surface water standards. All data will be reviewed by the NC Project Manager.</p>
<p>Applicable regulatory information, action levels, etc.</p>	<p>Data will be compared with regulatory benchmarks, including NC Surface Water Standards (15A NCAC 2B), http://portal.ncdenr.org/c/document_library/get_file?uuid=90e20026-1d67-45e0-90cc-a212707e79a3&groupId=38364) and SCDM values (http://www.epa.gov/superfund/sites/npl/hrsres/tools/scdm.htm). The Contract Required Quantitation Limits for Volatile Organics on the Target Compound List</p>



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	<p>using the Trace Water analysis is 0.5 ug/L for most compounds. These quantitation limits will determine if any known or suspected contaminants exceed the Maximum Contaminant Levels (MCLs) for drinking water. Refer to CRQL Table attached to this QAPP.</p> <p>Analytical data results will be compared with the following comparison criteria:</p> <ol style="list-style-type: none"> 1) Non-detects of background concentrations; 2) Three times detectable background concentrations; 3) Sample quantitation limits (SQLs) or minimum reporting limits (MRLs) which are sample specific and correspond to the lowest quantitative point on the calibration curve. 4) NC 2L Groundwater Standards (http://portal.ncdenr.org/web/wq/ps/csu/gwstandards) 5) NC 2B Surface Water Standards (http://portal.ncdenr.org/web/wq/ps/csu/swstandards) 6) Maximum Contaminant Levels (MCLs); http://water.epa.gov/drink/contaminants/index.cfm#List) 7) US EPA Regional Screening Levels (RSLs); http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/
Field Study Date:	April 29, 2013 through May 31, 2013
Projected Lab Completion Date:	July 2013
Final Report Completion Date:	September, 2013
<p>A7. Quality Objectives and Criteria:</p>	<p>Identification of the seven steps of the data quality objectives (DQO) process: DQOs were established for the Stony Hill Road Site to define the quantity and quality of data to be collected to support the objectives of the sampling event. DQOs were developed using the seven-step process outlines in the following EPA guidance documents: “Guidance on Systematic Planning using the Data Quality Objectives Process,” EPA QA/G-4 (http://www.epa.gov/quality/qs-docs/g4-final.pdf), February 2006; “Guidance for Quality Assurance Project Plans,” EPA QA/G-5 (http://www.epa.gov/quality/qs-docs/g5-final.pdf), December 2002; and “EPA Requirements for Quality Assurance Project Plans,” EPA QA/R-5 (http://www.epa.gov/region8/qa/QAEPAr5-final.pdf), March 2001.</p> <p>Step 1: State the Problem</p> <p>Previous sampling by various parties, including NC Superfund, NC Department of Environmental Management (NC Division of Water Quality), Wake County Department of Environmental Services, US EPA, and community water system owners, has documented the presence on contaminants in groundwater at and near the site. Soil vapor sampling has demonstrated impacts to the soils under several residences located above the contaminated groundwater. Crawlspace sampling has documented that no residences have been impacted. Limited surface water sampling has documented possible impact from the contaminated groundwater to the surface water pathway.</p>



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Step 2: Identify the Goals of the Study

The goal of this study is to determine the nature and extent of shallow groundwater contamination at the site, in order to determine if vapor intrusion is a widespread threat from the site. Also, sampling of the groundwater to surface water interface will document the threat to the surface water pathway from the contaminated groundwater plume.

Evaluate analytical data for groundwater samples to identify the level of contamination in private and community drinking water wells and determine whether concentrations are present above the comparison criteria (backgroundlevels).

Analytical data results will be compared with the following comparison criteria:

- 1) Non-detects of background concentrations;
- 2) Three times detectable background concentrations;
- 3) Sample quantitation limits (SQLs) or minimum reporting limits (MRLs) which are sample specific and correspond to the lowest quantitative point on the calibration curve.
- 4) NC 2L Groundwater Standards
(<http://portal.ncdenr.org/web/wq/ps/csu/gwstandards>)
- 5) NC 2B Groundwater Standards
(<http://portal.ncdenr.org/web/wq/ps/csu/swstandards>)
- 6) Maximum Contaminant Levels (MCLs;
<http://water.epa.gov/drink/contaminants/index.cfm#List>)
- 7) US EPA Regional Screening Levels (RSLs;
http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/)

US EPA Region 4 will be notified of all exceedences of MCL or RSL values in any of the sample results.

Step 3: Identify Information Inputs

The primary inputs needed to support the decision making process are contaminant levels in shallow monitoring well water samples collected from the groundwater in the vicinity of the site. Analytical results used in the decision-making process will come from laboratory analyses by a CLP laboratory for routine TCL VOC parameters. Trace-level and Trace by Selective Ion Method (SIM) (specifically for tetrachloroethene and vinyl chloride at a detection level of 0.015 ug/l) TCL VOC contract required quantitation limits (CRQLs) will be requested for the water samples analyzed by the CLP laboratories.

See Section A6. Project Description

See Section A5. Background of this Quality Assurance Project Plan.

Step 4: Define the Boundaries of the Study

TCE and PCE have been documented in the regional groundwater. Two parcels have been identified as suspect source areas. The primary media of interest is shallow groundwater from monitoring wells located in areas where groundwater discharge may be occurring. The study boundaries include the study area, well depths, temporal boundaries such as field investigation dates and turnaround times on analytical results, and physical boundaries.



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Each monitoring well will be sampled immediately after development. Temperature, pH, conductivity, and turbidity readings will be collected a minimum of three times prior to sample collections.

Henry samplers will be used to collect pore water samples along several unnamed tributary segments. These samples will document if the surface water pathway is being impacted by the contaminated groundwater.

Sampling is scheduled for May, 2013. Field investigation activities are expected to take four days. A turnaround time of 21 days from sample submittal to a CLP laboratory will be requested. An additional turnaround time of approximately 30 days from receipt of laboratory results by SESD is expected for data validation.

Step 5: Develop the Analytic Approach

Sample Collection Guidance for VOC's							
Matrix	Sample Type	Container Type	Bottle Count	Minimum Volume	Important Notes	Preservative	Holding Time
Water	VOA Sample	40mL glass vial, 24 mm neck finish	3	Fill to capacity	Vials must be filled to capacity with no headspace or air bubbles.	Preserve to a pH of 2 with HCL and cool to 4°C (+/- 2°C) immediately after collection.	14 Days
	VOA Sample with MS/MS D		6				
	VOA Sample with SIM		6				

<http://www.epa.gov/superfund/programs/clp/download/sampler/CLPSamp-01-2011.pdf>

Laboratory analysis will include: Target Compound List (TCL) volatile organic compounds (VOCs) using the EPA Contract Laboratory Program (CLP) Statement of Work (SOW) for Trace Water, “Multi-Media, Multi-Concentration Organics Analysis” (SOM01.2), June 2007 (<http://www.epa.gov/superfund/programs/clp/som1.htm>) or comparable methods. SIM analysis will be requested for tetrachloroethene and vinyl chloride.

Step 6: Specify Performance or Acceptance Criteria

Analytical results for initial acceptance will be assessed during validation performed by US EPA Region 4 Science and Ecosystem Support Division (SESD) that evaluates the usability of the data defined. Any rejected data and the reasons for rejection will be summarized in the data validation report.



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	<p>Step 7: Develop the Plan for Obtaining Data Proposed sampling includes up to 22 groundwater samples (including background and QA/QC samples). Access permission has been previously granted for the wells via email, phone calls, or in person.</p>
A8. Special Training/Certifications:	<ul style="list-style-type: none"> • Section 3.3 of the NC generic QAPP. • Section 2.1 and Appendix A of NC Superfund Section Health and Safety SOP Manual (http://www.wastenotnc.org/SAFETY/WebSite/SFSafety.HTM)
A9. Documents and Records:	Section 3.4 of the NC generic QAPP.

Section B: Data Generation and Acquisition

B1. Sampling Design	<p>An authoritative sampling design was chosen based on the data quality objectives of the study. Sample IDs, analysis, location and rationale can be found in Table 1 of the sampling plan.</p> <p>Volume, Holding time, and Preservation requirements are in accordance with: <i>SESD Analytical Support Branch Laboratory Operations and Quality Assurance Manual, Figure 3-1</i> (http://www.epa.gov/region4/sesd/asbsop/asb-logam.pdf)</p>
B2. Sampling Methods, General Procedures:	<p><i>SESD Field Branches Quality System and Technical Procedures</i> (http://www.epa.gov/region4/sesd/fbqstp/index.html)</p> <ul style="list-style-type: none"> • Field pH Measurement, January 29, 2013 • Field Specific Conductance Measurement, August 30, 2012 • Field Temperature Measurement, February 4, 2011 • Field Turbidity Measurement, January 29, 2013 • Global Positioning System, April 20, 2011 • Field Equipment Cleaning and Decontamination, December 20, 2011 • Packing, Marking, Labeling and Shipping of Environmental and Waste Samples, April 20, 2011 • Potable Water Supply Sampling, January 29, 2013 • Field Sampling and Measurement Procedures and Procedure Validation, August 30, 2012



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	<ul style="list-style-type: none"> • Field Sampling Quality Control, February 5, 2013 • Logbooks, October 8, 2010 • Groundwater Sampling, October 28, 2011 • Sample and Evidence Management, January 29, 2013 • Pore Water Sampling, January 29, 2013
B3. Sampling Handling and Custody:	All samples will be handled and custody maintained in accordance with <i>SESD Operating Procedures for Sample Evidence Management</i> , SESDPROC-005-R1. (http://www.epa.gov/region4/sesd/fbgstp/Sample-and-Evidence-Management.pdf)
B4. Analytical Methods:	
CLP:	Analytical methods for organic samples are in accordance with: <i>CLP Multi-Media, Multi-Concentration Organics Analysis, SOM01.2</i> (http://www.epa.gov/superfund/programs/clp/som1.htm)
SESD:	NA
B5. Quality Control:	
Field:	<ul style="list-style-type: none"> • Rinsate blanks are collected on a quarterly basis on equipment used for sampling during that calendar quarter. • Rinsate blanks are collected on a quarterly basis on gloves utilized for sampling during that calendar quarter. • Rinsate blanks are collected on a quarterly basis on the DI water system maintained and utilized by the NC Division of Waste Management for decontamination of sampling equipment. • Organic-free water is obtained from the NC Public Health lab for VOC water trip blanks. • A minimum of one duplicate per twenty samples per media will be collected. • A minimum of one trip blank per shipping container will be collected for VOC water samples. • Section 3.5 of the NC generic QAPP
Laboratory:	<ul style="list-style-type: none"> • A minimum of one MS/MSD sample per twenty samples per media will be collected. • Section 3.5 of the NC generic QAPP
B6. Instrument/Equipment Testing, Inspection and Maintenance:	<ul style="list-style-type: none"> • Section 3.4 and Appendix B of the NC generic QAPP • Section 6 of NC Superfund Section Health and Safety SOP Manual (http://www.wastenotnc.org/SAFETY/WebSite/SFSafety.HTM)
B7. Instrument/Equipment Calibration and Frequency:	All monitoring equipment and instruments are calibrated a minimum of once daily, at the start of the day, when field activities requiring use of the equipment occur. Serial numbers and calibration records are maintained in the field logbook for the project. Any inconsistencies and errors during calibration are also to be noted in the field logbook.



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	<p>Equipment to be used for this project and requiring calibration includes:</p> <ul style="list-style-type: none"> • pH/Conductivity/Temperature Meter(s): pH is calibrated to three standards (pH 7, pH4, pH10); Conductivity is calibrated to one standard (1413 uS) • Turbidity Meter(s): Turbidity is calibrated to three standards (Low, Medium, and High ntu) • GPS Trimble XT/XM Units: Used for geolocating sampling locations. GPS Units do not require calibration.
B8. Inspection/Acceptance for Supplies and Consumables:	All critical supplies and consumables for this field investigation are inspected and maintained by the QAO and designated staff, as discussed in Section 3.2 of the NC generic QAPP. A list of these supplies is included in Appendix B of the NC generic QAPP.
B9. Non-direct Measurements:	Not applicable.
B10. Data Management:	<p>The project manager will be responsible for ensuring that all requirements for data management are met. All data generated for this field investigation, whether hand-recorded or obtained using an electronic data logger, will be recorded, stored, and managed according to the following procedures:</p> <p><i>SESD Operating Procedure for Control of Records</i>, SESDPROC-002-R5. (http://www.epa.gov/region4/sesd/fbqstp/Control-of-Records.pdf)</p> <p><i>SESD Operating Procedures for Logbooks</i>, SESDPROC-010-R4. (http://www.epa.gov/region4/sesd/fbqstp/Logbooks.pdf)</p>

Section C: Assessment/Oversight

C1. Assessments and Response Actions:	<p>Assessments will be conducted during the field investigation according to <i>SESD Operating Procedure for Project Planning</i>, SESDPROC-016-R2 (http://www.epa.gov/region4/sesd/fbqstp/Project-Planning.pdf) to ensure the QAPP is being implemented as approved. The Project Manager is responsible for all corrective actions while in the field.</p> <p>Section 3.2.4 of the NC generic QAPP.</p>
C2. Reports to Management:	<p>The Project Manager will report to their immediate supervisor if any circumstances arise during the field investigation that may adversely impact the quality of the data collected. The Project Manager and/or their immediate supervisor will also be responsible for notifying the EPA Project Manager if any circumstances arise during the field investigation that may adversely impact the quality of the data collected.</p> <p>Section 3.2.4 of the NC generic QAPP</p>

Section D: Data Validation and Usability

D1. Data Review, Verification, and Validation:	Section 3.2.4 of the NC generic QAPP.
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D2. Verification and Validation Methods:	Section 3.2.4 of the NC generic QAPP.
D3. Reconciliation with User Requirements:	<p>Review of blanks is evaluated by the Project Manager using the following guidelines:</p> <ul style="list-style-type: none"> • <i>USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review, EPA-540-R-08-01, June 2008</i> (http://www.epa.gov/superfund/programs/clp/download/somnfg.pdf) <p>Review of data is evaluated by the Project Manager using the following guidelines:</p> <ul style="list-style-type: none"> • <i>USEPA Using Qualified Data to Document an Observed Release and Observed Contamination, EPA 540-F-94-028, Exhibit 3 and Tables 1-4</i> (http://www.epa.gov/superfund/sites/npl/hrsres/fact/docoroc.pdf) <p>Section 3.2 of the NC generic QAPP</p>



IF FOUND PLEASE RETURN TO:

NAME _____

COMPANY _____

STREET _____

CITY _____ STATE _____ ZIP _____

PHONE _____

JOB BOOK

PROJECT NAME Stony Hill Rd TCE

PROJECT NUMBER SESD # 13-0348

CREW Strigrow / Forts et

DATE 4-30-13 5-2-13 BOOK # 1 OF 2

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CURVE FORMULAS

$$T = R \tan \frac{1}{2} I$$

$$T = \frac{50 \tan \frac{1}{2} I}{\text{Sin. } \frac{1}{2} D}$$

$$\text{Sin. } \frac{1}{2} D = \frac{50}{R}$$

$$\text{Sin. } \frac{1}{2} D = \frac{50 \tan \frac{1}{2} I}{T}$$

$$R = T \cot. \frac{1}{2} I$$

$$R = \frac{50}{\text{Sin. } \frac{1}{2} D}$$

$$E = R \text{ ex. sec } \frac{1}{2} I$$

$$E = T \tan \frac{1}{2} I$$

$$\text{Chord def.} = \frac{\text{chord}^2}{R}$$

$$\text{No. chords} = \frac{I}{D}$$

$$\text{Tan. def.} = \frac{1}{2} \text{ chord def.}$$

The square of any distance, divided by twice the radius, will equal the distance from tangent to curve, very nearly.

To find angle for a given distance and deflection.

Rule 1. Multiply the given distance by .01745 (def. for 1° for 1 ft.) and divide given deflection by the product.

Rule 2. Multiply given deflection by 57.3, and divide the product by the given distance.

To find deflection for a given angle and distance. Multiply the angle by .01745, and the product by the distance.

GENERAL DATA

RIGHT ANGLE TRIANGLES. Square the altitude, divide by twice the base. Add quotient to base for hypotenuse.

Given Base 100, Alt. $10 \cdot 10^2 \div 200 = .5$. $100 + .5 = 100.5$ hyp.

Given Hyp. 100, Alt. $25 \cdot 25^2 \div 200 = 3.125$. $100 - 3.125 = 96.875 = \text{Base}$.

Error in first example, .002; in last, .045.

To find Tons of Rail in one mile of track: multiply weight per yard by 11, and divide by 7.

LEVELING. The correction for curvature and refraction, in feet and decimals of feet is equal to $0.574 d^2$, where d is the distance in miles. The correction for curvature alone is closely, $\frac{1}{3} d^2$. The combined correction is negative.

PROBABLE ERROR. If $d_1, d_2, d_3,$ etc. are the discrepancies of various results from the mean, and if $\sum d^2$ is the sum of the squares of these differences and n is the number of observations, then the probable error of the mean =

$$\pm 0.6745 \sqrt{\frac{\sum d^2}{n(n-1)}}$$

MINUTES IN DECIMALS OF A DEGREE

1'	.0167	11'	.1833	21'	.3500	31'	.5167	41'	.6833	51'	.8500
2	.0333	12	.2000	22	.3667	32	.5333	42	.7000	52	.8667
3	.0500	13	.2167	23	.3833	33	.5500	43	.7167	53	.8833
4	.0667	14	.2333	24	.4000	34	.5667	44	.7333	54	.9000
5	.0833	15	.2500	25	.4167	35	.5833	45	.7500	55	.9167
6	.1000	16	.2667	26	.4333	36	.6000	46	.7667	56	.9333
7	.1167	17	.2833	27	.4500	37	.6167	47	.7833	57	.9500
8	.1333	18	.3000	28	.4667	38	.6333	48	.8000	58	.9667
9	.1500	19	.3167	29	.4833	39	.6500	49	.8167	59	.9833
10	.1667	20	.3333	30	.5000	40	.6667	50	.8333	60	1.0000

INCHES IN DECIMALS OF A FOOT

1-16	3-32	$\frac{1}{8}$	3-16	$\frac{1}{4}$	5-16	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$
.0052	.0078	.0104	.0156	.0208	.0260	.0313	.0417	.0521	.0625	.0729
1	2	3	4	5	6	7	8	9	10	11
.0833	.1667	.2500	.3333	.4167	.5000	.5833	.6667	.7500	.8333	.9167

4-30-13

①

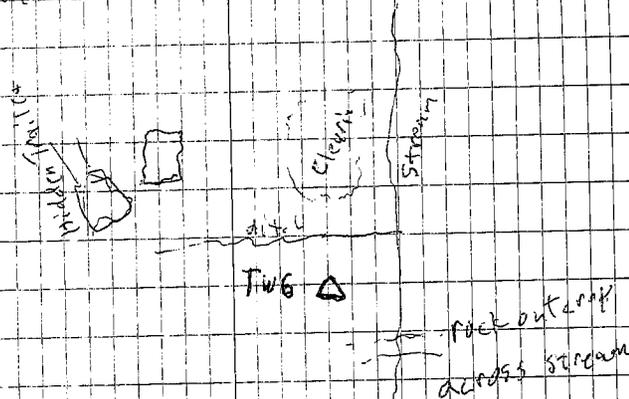
9:30 Establish TWG w/ 55 screened SPIF to 6' TD w/ 2' of exposed scenery. Slow to fill w/ water, but sounds in ~ 3.5' BBS SVL @ 30 min.

Tile Probe x 2 - 5' @ x 2 to 2'

Difficult to find area w/o refusal.

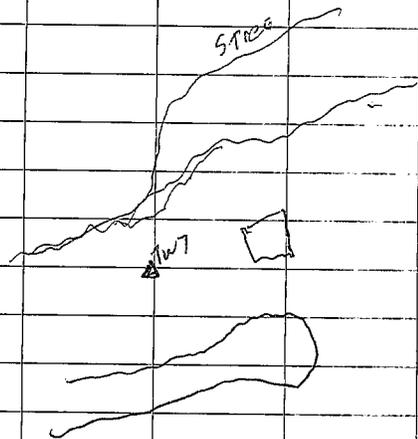
Cleared w/ Schonstadt & Pipelock.

Refusal @ 6'



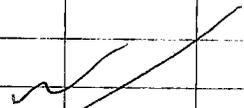
② 4-30-13

13:30 Establish TW7 @ location
mapped.



Location ~ 10' above stream. Clear of
Schensted & tile probe ^{at} Pipehorn
Establish SS screen SP15 screened 12'-16'
Initial SWL ^{at 30} BGS ~ 12.5 BGS
BGS.

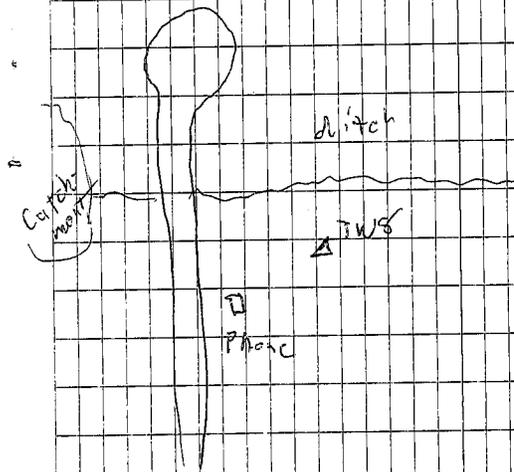
Some resistance 8-10' but otherwise easy
probing. SWL @ 14:10 12.2' BGS



4-30

③

15:00 TW-8 @ Hedford Grove Br



Tile Probe x4, Clear w/ Schensted &
Pipehorn

Install SP15 SS screen 16-20'. Dry
Resistance after 15'

Pull Reinsert to refusal @ 23'. Initially dry
Dry after 10 min.



④ 5-1-13

06:30 Sound TW 8, Water @

22.0' BGS. TD ~ 23.8 BSG, sur 22.9 BSG

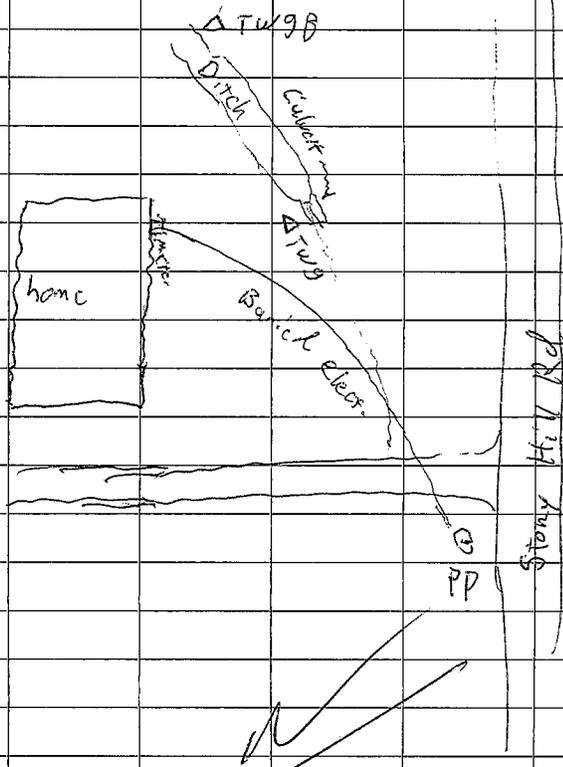
09:30 Setup @ TW 9 clear w/ Schonstadt,

Pipehorn & Tile Probe etc.

Establish SP15 SS screen screened ~ 15.5 - 11.5. Initially

dry. Resistance after 5' - very stiff,

after 12'. Very close to refusal @ 15.5



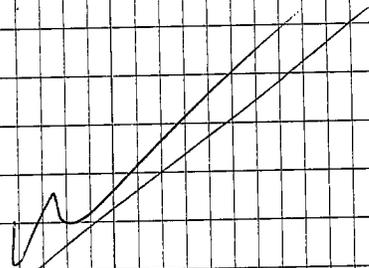
5-1-13

⑤

11:30 Clear TW-9 B w/ Schonstadt,
Pipehorn, & Tile Probe etc. Establish
SP15 w/ SS screen for 12-21' screened interval.
Well immediately fills w/ water to
7.5' BGS

~13:00 Pull both TW-9 wells
& pressure grout w/ high-solids
bentonite via tremie

~16:00 Pull TW-7 and pressure grout
w/ high solids bentonite grout via tremie

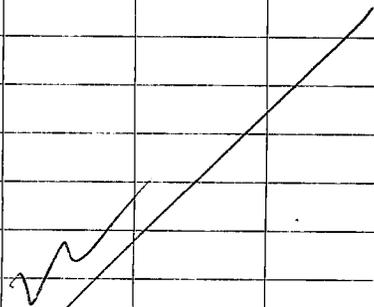


⑥ 5-2-13

9:00 Entire crew pulls & grouts
TW-6, TW-1, & TW-2. All pressure
grouted via tremie w/ high solids
bentonite grout.

11:00 Pull & Pressure grout TW-8
w/ high solids bentonite grout via
reentry grouting

14:00 Entire crew pulls & grouts TW-3.
Pressure grouted w/ high solids
bentonite grout via reentry grouting



⑦

F Helcat
Wayback



JOB BOOK

FROM BEN MEADOWS COMPANY

IF FOUND PLEASE RETURN TO:

NAME _____

COMPANY _____

STREET _____

CITY _____ STATE _____ ZIP _____

PHONE _____

PROJECT NAME Stony Hill Rd TCE

PROJECT NUMBER SESD 13-0348

CREW S. Camp B. Herndon

DATE 4/30/13 BOOK # 2 OF 2

WEATHER _____

Reorder part # 101650
Phone # 800-241-6401

FIELD BOOK
16 PAGE
8 LEAVES
50% RAG

CURVE FORMULAS

$T = R \tan \frac{1}{2} I$ $T = \frac{50 \tan \frac{1}{2} I}{\text{Sin. } \frac{1}{2} D}$ $\text{Sin. } \frac{1}{2} D = \frac{50}{R}$ $\text{Sin. } \frac{1}{2} D = \frac{50 \tan \frac{1}{2} I}{T}$	$R = T \cot. \frac{1}{2} I$ $R = \frac{50}{\text{Sin. } \frac{1}{2} D}$ $E = R \text{ ex. sec } \frac{1}{2} I$ $E = T \tan \frac{1}{4} I$	$\text{Chord def.} = \frac{\text{chord}^2}{R}$ $\text{No. chords} = \frac{I}{D}$ $\text{Tan. def.} = \frac{1}{2} \text{ chord def.}$
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6	.1000	16	.2667	26	.4333	36	.6000	46	.7667	56	.9333
7	.1167	17	.2833	27	.4500	37	.6167	47	.7833	57	.9500
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INCHES IN DECIMALS OF A FOOT

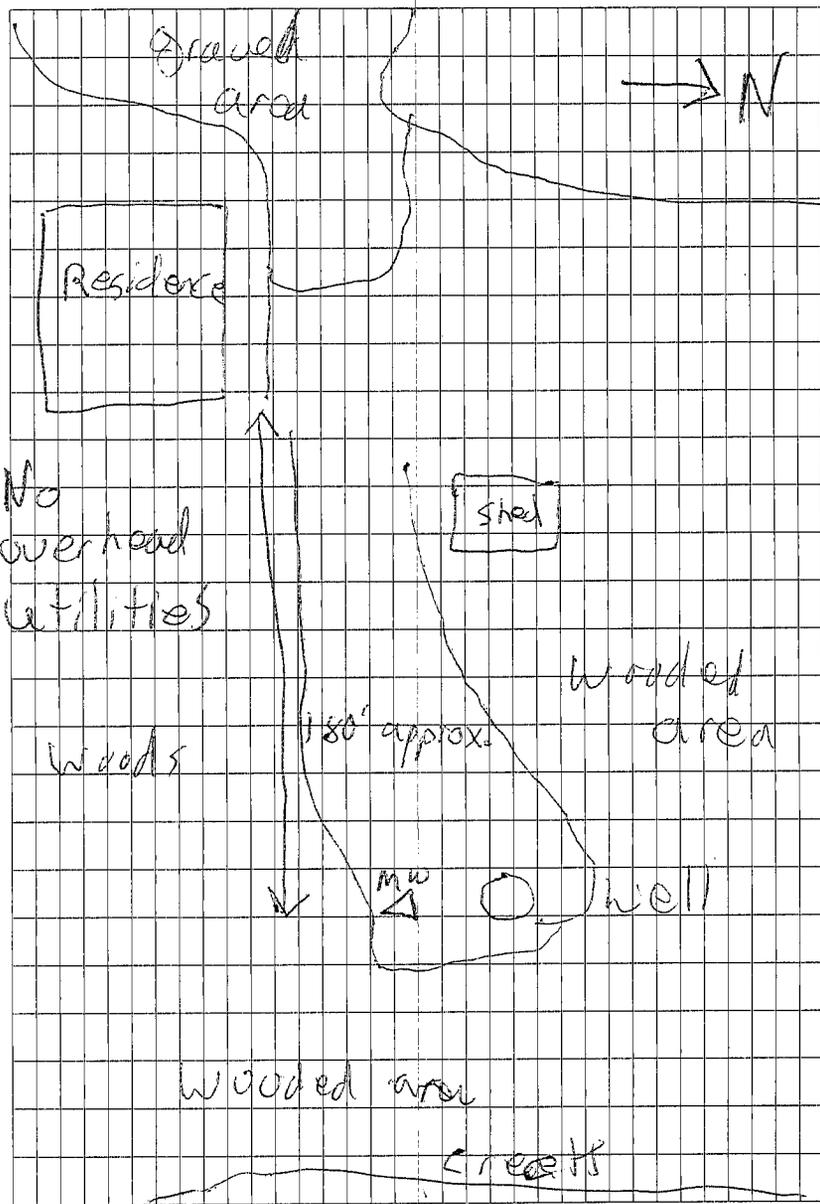
1-16	3-32	$\frac{1}{8}$	3-16	$\frac{1}{4}$	5-16	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$
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1	2	3	4	5	6	7	8	9	10	11
.0833	.1667	.2500	.3333	.4167	.5000	.5833	.6667	.7500	.8333	.9167

MW3

~~TW 370~~

4/30/13

①



1.

② ^{Je} MW 3 4/30/13

0-10' easy

10-14 some resistance

14-19 stiff the last foot

19-21 stiff

21-24 medium stiff

screen interval ~~+1.53~~ = 23.52 ⁵⁰/_{4/30}

water level 13.26 BGS

Coordinates N 35.99529
W 78.61414 ± 29'

Well string pulled and re-entered
then grouted with high solids
bentonite grout.

2.

SL

MW 4

4/30/13

③

0-9 medium

9-14 medium

14-19 medium

19-24 medium

Water level

12.55 BGS

Well string
pulled, re-driven
and grouted
with high solids
bentonite grout

▲
mw

Residents

→ N

3.

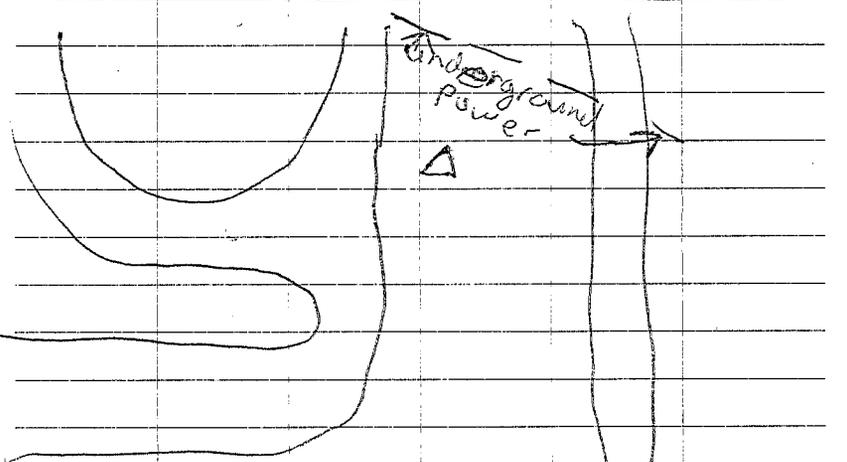
SL

④ MW 5

4/30/13

↓
N

Bud Morris Rd



Underground power
Δ

House well string pulled, re-entered and grouted with high solids bentonite

House

- 3-4 medium
- 4-9 stiff
- 9-29 stiff } consistent
- 29-40 stiff
- 40-44 Very stiff
- 44-46.5 Very stiff, refusal at 46.5

3. ll

MW 2

5/1/13

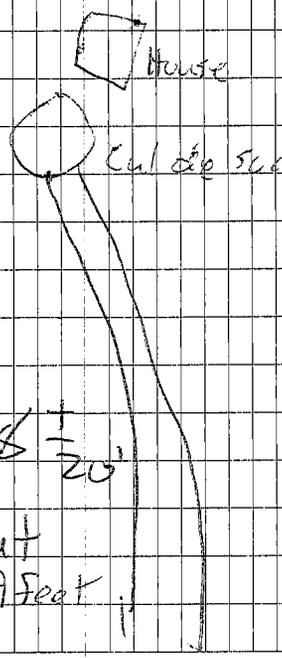
→ N ⑤

Stream

No utilities

- 0-4 easy Δ
- 4-5 Firm
- 5-6.5 stiff
- 6.5 refusal

Surrounding area newly wooded



Coords.

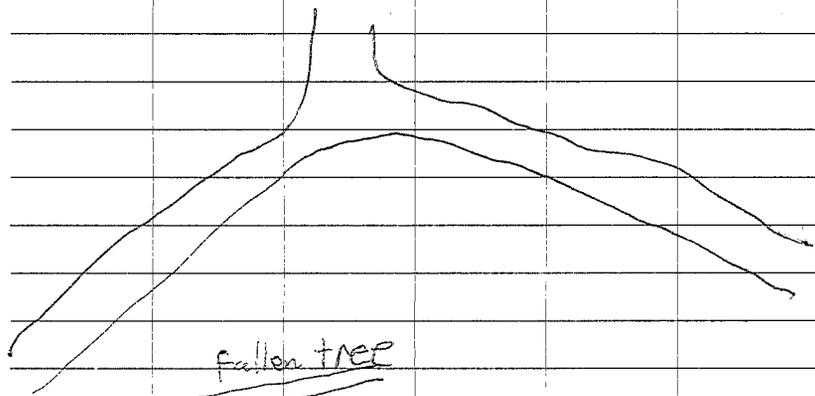
N 35.09345
 W 78.61478 ± 20'

Water level at 11:10 AM 0.9 feet of water and

rising

4. ll

⑥
mw1 5/1/13



fallen tree



0 - 4 easy to melt
4 - 9 stiff
9 - 10.5 very stiff

Surrounding
area
heavily
wooded

refusal at 10.5
water level 6.5 at 12:30
Cords:

~~N 35.5~~^{SE} 5/1/13

W 35.49213

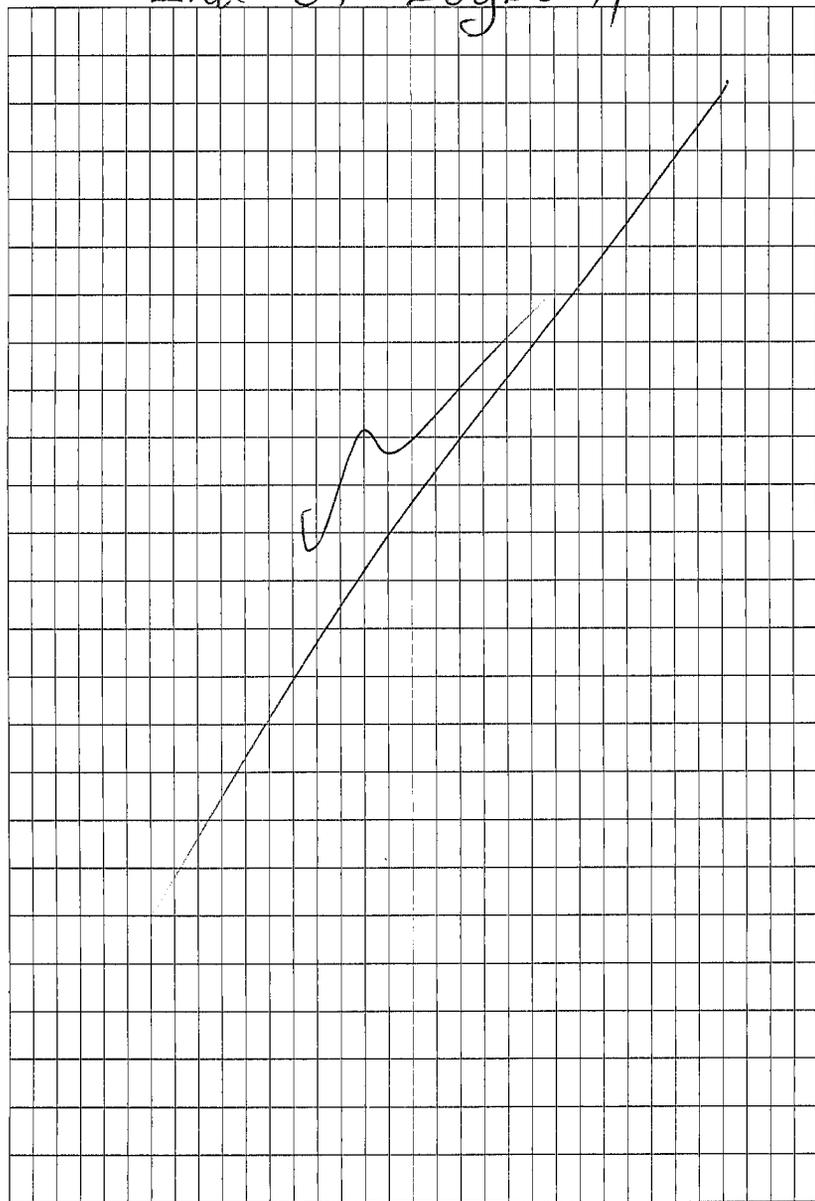
W 78.61483 ± 30'

5.

sl

End of Logbook

⑦



Stony Hill Road TCE Site
Monitor Well and Henry Sampler Resuklts from 4-30-to 5-2-13

Sample ID	Longitude	Latitude	HAE	Date	TCE	PCE	1,1-DCE	1,1,1-TCA	c-1,2-DCE	VC
shrhs9	-78.61529725	35.99179972	69.689	05/02/13 02:40:54pm						
shrmw4	-78.61287377	35.99676059	82.985	04/30/13 06:40:03pm						
shrmw5	-78.61109371	35.99842524	96.769	04/30/13 08:12:34pm	33					0.011J
shrmw2	-78.61482466	35.99351231	66.326	05/01/13 09:09:10pm						
shrhs8	-78.61520565	35.99193008	54.427	05/01/13 09:16:31pm	0.36J					
shrmw1	-78.61489598	35.99217773	67.07	05/01/13 09:27:28pm	11	0.027				
shrmw6	-78.61317393	35.99218826	77.977	04/30/13 03:31:38pm						
shrhs2	-78.61058004	35.99282101	72.28	04/30/13 05:50:36pm						
shrhs3	-78.61067783	35.99279579	79.807	04/30/13 06:30:18pm	9.8	3.8	0.54	0.57		
shrmw8	-78.60927576	35.98956842	87.598	05/01/13 01:33:40pm						
shrmw3	-78.61426039	35.99535272	85.517	05/01/13 03:04:37pm	18	0.055	0.30J	0.94		
shrhs10	-78.6142855	35.99476526	76.194	05/01/13 03:08:06pm	2.8					
shrhs11	-78.6136486	35.99592392	83.077	05/01/13 03:17:12pm						
shrhs12	-78.6133608	35.99635104	89.465	05/01/13 03:29:21pm						
shrmw7	-78.60988671	35.9923277	73.453	05/02/13 01:38:32pm	6.8	2.3	0.32J	0.37J		
shrhs1	-78.61058026	35.99288856	79.233	05/02/13 01:50:44pm	0.38J	0.17				
shrhs7	-78.61509278	35.9917841	67.035	05/02/13 02:11:36pm						
shrmw9	-78.60813114	35.99181476	83.643	05/01/13 09:22:55pm						
shrmw5	-78.61111662	35.99842403	97.31	05/01/13 09:27:13pm						

J is estimated value

CURVE FORMULAS

$$T = R \tan \frac{1}{2} I$$

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.0833	.1667	.2500	.3333	.4167	.5000	.5833	.6667	.7500	.8333	.9167

4-30-13

Arrive at Lab

Calibrate pH meters 485317 + 77858

MWB

Total Depth ~ 6'

DTW - 3.6'

DTW 3.45' at 10:25

1050 Began purging

Time Turb

1052 | 121

1053 purged dry

let well recharge

pull water into tube and decant into Vocs turbidity before sample 64

Collect 5 Vocs then take Turb + Parameters

pH 6.04 Temp 14.0 Cond 286 Turb 497

Sample collected at 11:20

total purge ~ 1 liter.

Tried to collect GPS data at MW6

collected 2 043011A with GNSS but

could not collect on units without GNSS

Melanie Bartlett

IF FOUND PLEASE RETURN TO:

NAME _____

COMPANY _____

STREET _____

CITY _____ STATE _____ ZIP _____

PHONE _____

JOB BOOK

PROJECT NAME Stony Hill Road TMW + HS

PROJECT NUMBER _____

CREW Bartlett + Ziwn

DATE 4-30-54-13 BOOK # 1 OF 1

WEATHER Overcast Showers High 60's



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Fax 1.800.543.4203

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Stock No. 49365

HS2

~20' upstream of confluence

1335 HS collected HS2

Parameters: Time 1340 Cond 50.8
pH 4.99 Turb 303
Temp 14.3

CPS Z043013A

HS3 set up approximately 15 ft
downstream of confluence

HS3 collected at 14:30

pH 5.32 Cond 127.4 Temp 15.2
Turb 378

Z043013B

Begin purge at MW 7

turbidity initially 164

turbidity at sampling 27

Sample collected at 15:15

pH 5.30 Temp 14.9 Cond 188.0

turb 118

Collect 10 vials for MS/MSD or Dup

~~Henry J.~~

Arrive at Lab

5-1-13

Calibrate pH meters (Same as Tuesday)

Locate MW 8

Depth to water not collected

Sounder too large. GPS 2 050109A

Collected 1st VOA from well at 9:30

let well develop VOA 2 10:45

VOA 3 12:00

VOA 4 14:00

VOA 5 17:00

Sound MW 8^{5#} Depth to water 40.3

total well depth 47.3

Prop test line tubing to bottom of well

run peristaltic pump for 1 minute

withdraw tubing and discard water into

2 Vials Repeat twice

Sample collected at 10:10

Locate HSI begin sampling at 12:00

pH 5.79 temp 15.4 Cond 172.2 turb 9.39

Collect Dip on MS MSD

[Signature]

MW 9 Depth to Water 10.8
Well depth \approx 20'

pH 5.41 Temp 15.0 Cond 108.8 Turb 226
pre-sample turb = 22.7
Sample collected 12007

Locate H59 Sample Collected
15:00

pH 5.56 Temp 14.8 Cond 96.8 Turb 125
Sample located 15 ft downstream of confluence

Locate H57 Sample Collected 15:15
pH 5.20 Temp 14.3 Cond 37.5 Turb 61.2
Sample located 25' upstream of
confluence

Locate H58 Sample Collected 15:45
pH ~~5.18~~^{5.96 H2} Temp 14.6 Cond 125.1 Turb 46.9
Sample located approx 15 ft upstream
of Confluence

IF FOUND PLEASE RETURN TO:

NAME _____

COMPANY _____

STREET _____

CITY _____ STATE _____ ZIP _____

PHONE _____

JOB BOOK

PROJECT NAME STONY HILL ROAD TCE

PROJECT NUMBER NCN 000 410 857

CREW J Stanley S Parker
APRIL 30 2013

DATE _____ BOOK # _____ OF _____

WEATHER _____



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1	2	3	4	5	6	7	8	9	10	11
.0833	.1667	.2500	.3333	.4167	.5000	.5833	.6667	.7500	.8333	.9167

STONY HILL ROAD TCE

NCN 000410857

GROUNDWATER SAMPLING

APRIL 22 4:30 2013

(CLOUDY, COOL 60)

Tues 4/30/13

0730

Arrived Stony Hill Fire Station

Stroyow gave safety briefing,

~ 10°F, 17. drizzle

0820 Stephen, Brian, Stu, Jennifer

& I arrived @ 7420 Churchill

+ selected location

0840 Stephen Affiliated Geoprobe

began installing MW3

w/o (Stu, Jennifer + I)

walked to HS12 location

problems w/ battery + Mastin Flex

tubing, HS location. After

New battery + Mastin Flex tubing

pump pulled water but poor yield

11:20 HS12 collected @ 15" depth

239 NTUS

11:25 HS11 located near confluence of 2 channels below treehouse

[Signature]

STONY HILL ROAD TCE
NCP 000 410 857

APR 30 2013

STONY HILL ROAD TCE
NCP 000 410 857

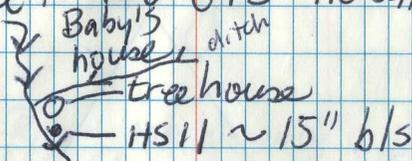
GROUNDWATER APRIL 30 - MAY 1, 2013
SAMPLING

MW 5 between driveway
7708 + 7648 Bmt
GPS = A043014B

= 5/1/13

arrived ~~at~~ Comm Ctr 0800

0845 Sta #1 arrived at location
HS 11 - under tree house below
confluence of Int Str & driveway
Channel. No GPS - no satellites

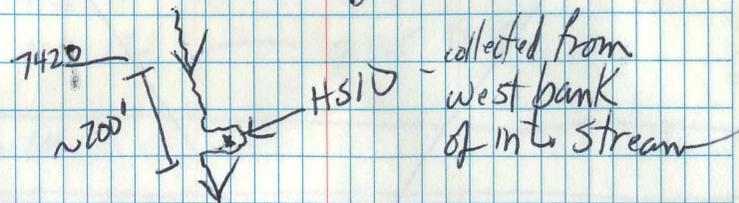


0910 HS 11 collected ~ 150' upstream
turbidity > 1000 } of 2nd
collected from east bank } property
of Int stream } stake

0930 HS 12 location
selected, ~ 200' below stream
access pt / MW 3 @ 7420

HS 10

0950 HS 10 collected
turbidity 59.7



Stu reattempted GPS @ locations
HS 12, HS 11 + HS 10, + MW 3 insufficient
satellite coverage

1613 Bmt Rd - potable well
missed last week - located well

1045 started purging from top @ house
no garden hose available to purge
from well head. DELAYED PURGE
Stu collected GPS @ wellhead -
205110A, 1613BR

1050 turned off top, returned to
HS 10, 11, 12 + MW 3 w/ new GPS
meter began attempt Reading

- MW 3 ——— 205110B
- HS 10 ——— 205111A
- HS 11 ——— 205111B
- HS 12 ——— 205111C

P6

LUNCH

#1613 BENT ROAD DOMESTIC WELL
 PUMP FROM HOUSE CORNER SPIGOT
 SAMPLE FROM WELL HEAD (TO RT WHEEL
 IN MIDDLE OF DRIVEWAY).

START	T	PH	Cond	Turb
13:05				
13:10	16.5	6.32	261	2.44
13:15	16.3	6.36	252	3.28
13:20	16.3	6.46	253	2.31

13:25 COLLECTED 1613 BT Domestic Sample

1420 MW1 arrived w/ equipment
 TO 10.15' b15
 depth to water = 4.40 b15
 1450 began pumping 1st turb. Ready
 407ntus

[Signature]

STONY Hill ROAD TCE
NCT 000 410 857

GROUNDWATER
SAMPLING

MAY 1
2013

AGP7

MW1	purged dry
1457	694 nTus
1501	278 nTus
1503	393 "
1507	96.1 "
1509	104
1512	33.2

1515 MW1 collected

1520 MW1 final turbidity 102

pH	temp	cond
5.13	14.5	172.7

1535 arrive MW2
depth to water 3.15' b/s
total depth 6.6' Total depth

1542 started purging
1544 - stopped to recharge
1553 155 nTus
1555 103 nTus
1600 58.7 nTus

1605 MW 2 collected
-1625

1627 final Turbidity 158 nTus

no other parameters collected,
too low flow

Returned equipment to EPA

1700 Sta Returned to MW1 + MW2
to get coordinates.

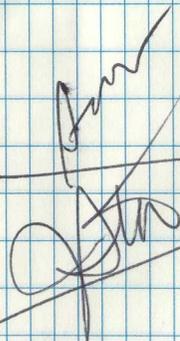
1730 Returned to OFFICE (Dep-Azi Site)

MW2 = A0501 17A

MW1 = A0501 17B

H58 = A0501 17C

~~H5~~



**STONY HILL ROAD TCE SITE
MONITORING WELL AND
HENRY SAMPLER RESULTS
APRIL 2013**

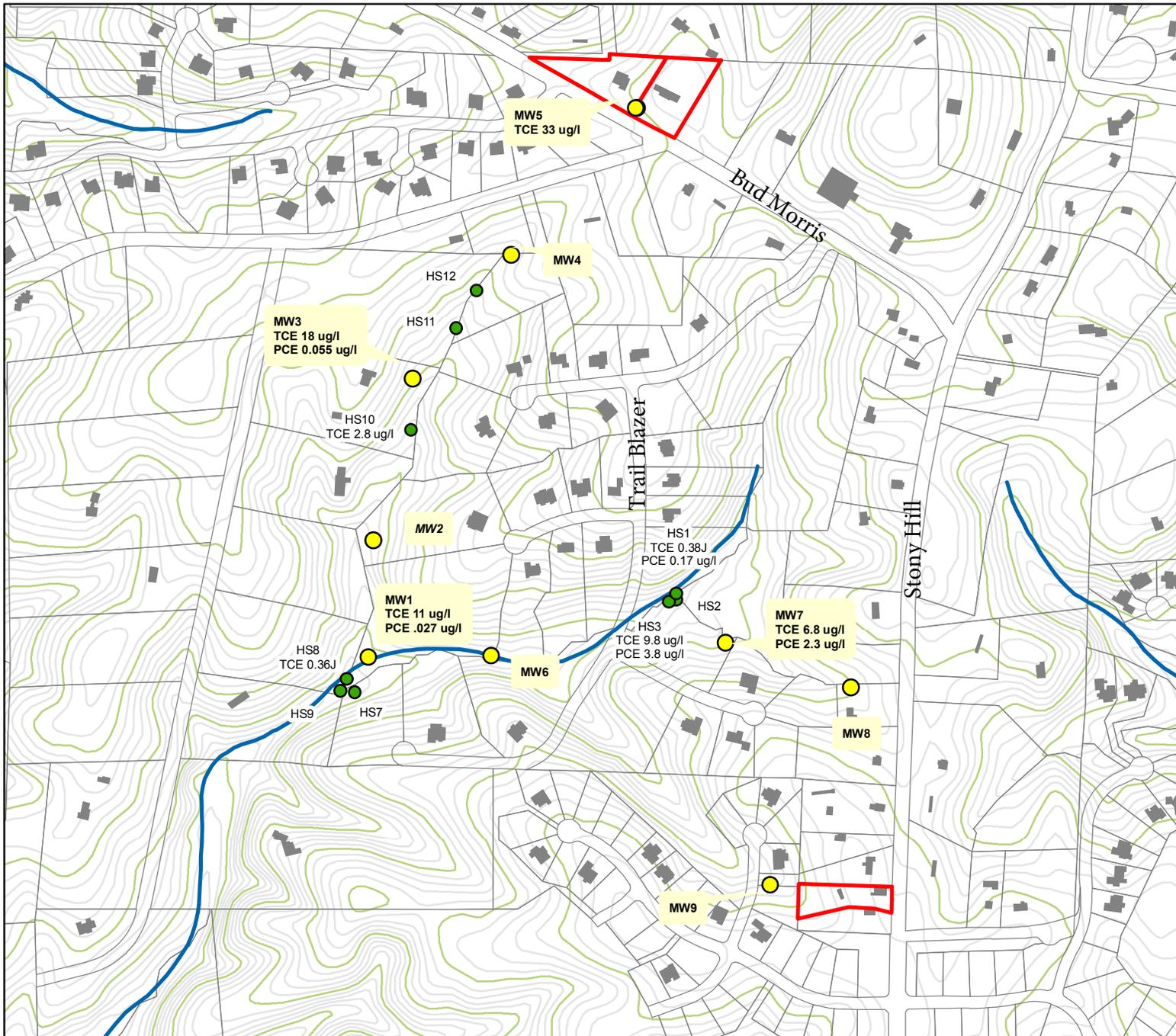
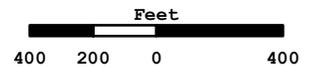
Fig:	1
Site:	NCN 000 410 857
City:	Wake Forest, NC
County:	Wake
Date:	05/20/2013
Drawn By:	SMM



- Henry Sampler
- Monitoring Well

Only Detections are Listed
TCE XX.X
PCE XX.X

North American Datum 1983
North Carolina State Plane (3200)
Contour Interval 4 Feet



Source: Wake County, Buildings; Well Sample Locations, NC Division of Waste Management; Contour, NC DOT (Derived from 2007 LIDAR)



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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 D.A.R.T. Id: 13-0091
 Project: 13-0341, Stony Hill Rd TCE - Reported by Kristin Trapp

May 15, 2013

4SESD-ASB

MEMORANDUM

SUBJECT: FINAL Analytical Report
 Project: 13-0341, Stony Hill Rd TCE
 Superfund Remedial

FROM: Kristin Trapp
 OCS Chemist

THRU: Sallie Hale, Chief
 ASB Organic Chemistry Section

TO: Carolyn Callihan

Attached are the final results for the analytical groups listed below. These analyses were performed in accordance with the Analytical Support Branch's (ASB) Laboratory Operations and Quality Assurance Manual (ASB LOQAM) found at www.epa.gov/region4/sesd/asbsop. Any unique project data quality objectives specified in writing by the data requestor have also been incorporated into the data unless otherwise noted in the Report Narrative. Chemistry data have been verified based on the ASB LOQAM specifications and have been qualified by this laboratory if the applicable quality control criteria were not met. Verification is defined in Section 5.2 of the ASB LOQAM. For a listing of specific data qualifiers and explanations, please refer to the Data Qualifier Definitions included in this report. The reported results are accurate within the limits of the method(s) and are representative only of the samples as received by the laboratory.

Analyses Included in this report:	Method Used:	Accreditations:
Volatile Organics (VOA)		
Volatile organic compounds	EPA 8260C (Water)	ISO



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Sample Disposal Policy

Because of the laboratory's limited space for long term sample storage, our policy is to dispose of samples on a periodic schedule. Please note that within 60 days of this memo, the original samples and all sample extracts and/or sample digestates will be disposed of in accordance with applicable regulations. The 60-day sample disposal policy does not apply to criminal samples which are held until the laboratory is notified by the criminal investigators that case development and litigation are complete.

These samples may be held in the laboratory's custody for a longer period of time if you have a special project need. If you wish for the laboratory to hold samples beyond the 60-day period, please contact our Sample Control Coordinator by e-mail at R4SampleCustody@epa.gov, and provide a reason for holding samples beyond 60 days

cc: Nardina Turner



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SAMPLES INCLUDED IN THIS REPORT

Project: 13-0341, Stony Hill Rd TCE

Sample ID	Laboratory ID	Matrix	Date Collected	Date Received
TMW100	E131807-01	Trip Blank - Water	4/30/13 07:00	5/3/13 10:32
TMW101	E131807-02	Trip Blank - Water	4/30/13 07:05	5/3/13 10:32
1613BRb	E131807-03	Groundwater	5/1/13 13:25	5/3/13 10:32
SHRHS1	E131807-04	Groundwater	5/1/13 12:00	5/3/13 10:32
SHRHS10	E131807-05	Groundwater	5/1/13 09:50	5/3/13 10:32
SHRHS11	E131807-06	Groundwater	5/1/13 09:10	5/3/13 10:32
SHRHS12	E131807-07	Groundwater	4/30/13 11:20	5/3/13 10:32
SHRHS2	E131807-08	Groundwater	4/30/13 13:35	5/3/13 10:32
SHRHS3	E131807-09	Groundwater	4/30/13 14:30	5/3/13 10:32
SHRHS7	E131807-10	Groundwater	5/1/13 14:30	5/3/13 10:32
SHRHS8	E131807-11	Groundwater	5/1/13 15:45	5/3/13 10:32
SHRHS9	E131807-12	Groundwater	5/1/13 15:00	5/3/13 10:32
SHRTMW1	E131807-13	Groundwater	5/1/13 15:15	5/3/13 10:32
SHRTMW2	E131807-14	Groundwater	5/1/13 16:05	5/3/13 10:32
SHRTMW3	E131807-15	Groundwater	4/30/13 12:22	5/3/13 10:32
SHRTMW4	E131807-16	Groundwater	4/30/13 14:45	5/3/13 10:32
SHRTMW5	E131807-17	Groundwater	5/1/13 10:10	5/3/13 10:32
SHRTMW6	E131807-18	Groundwater	4/30/13 11:20	5/3/13 10:32
SHRTMW17	E131807-19	Groundwater	4/30/13 15:15	5/3/13 10:32
SHRTMW7	E131807-20	Groundwater	4/30/13 15:15	5/3/13 10:32
SHRTMW8	E131807-21	Groundwater	5/1/13 09:30	5/3/13 10:32
SHRTMW9	E131807-22	Groundwater	5/1/13 12:07	5/3/13 10:32



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DATA QUALIFIER DEFINITIONS

- U The analyte was not detected at or above the reporting limit.
- J The identification of the analyte is acceptable; the reported value is an estimate.
- Q-2 Result greater than MDL but less than MRL.

ACRONYMS AND ABBREVIATIONS

- CAS Chemical Abstracts Service
Note: Analytes with no known CAS identifiers have been assigned codes beginning with "E", the EPA ID as assigned by the EPA Substance Registry System (www.epa.gov/srs), or beginning with "R4-", a unique identifier assigned by the EPA Region 4 laboratory.
- ISO The test, if analyzed after June 26, 2012, is accredited under the EPA Region 4 ASB's ISO/IEC 17025 accreditation issued by ANSI-ASQ National Accreditation Board/ACLASS. Refer to certificate and scope of accreditation AT-1691.
- MDL Method Detection Limit - The minimum concentration of a substance (an analyte) that can be measured and reported with a 99% confidence that the analyte concentration is greater than zero.
- MRL Minimum Reporting Limit - Analyte concentration that corresponds to the lowest demonstrated level of acceptable quantitation. The MRL is sample-specific and accounts for preparation weights and volumes, dilutions, and moisture content of soil/sediments.
- TIC Tentatively Identified Compound - An analyte identified based on a match with the instrument software's mass spectral library. A calibration standard has not been analyzed to confirm the compound's identification or the estimated concentration reported.



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Volatile Organics

Project: 13-0341, Stony Hill Rd TCE

Sample ID: TMW100

Lab ID: E131807-01

Station ID:

Matrix: Trip Blank - Water

Date Collected: 4/30/13 7:00

<i>CAS Number</i>	<i>Analyte</i>	<i>Results</i>	<i>Qualifiers</i>	<i>Units</i>	<i>MRL</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Method</i>
71-55-6	1,1,1-Trichloroethane	0.50	U	ug/L	0.50	5/06/13 11:13	5/06/13 12:37	EPA 8260C
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	0.50	U	ug/L	0.50	5/06/13 11:13	5/06/13 12:37	EPA 8260C
156-59-2	cis-1,2-Dichloroethene	0.50	U	ug/L	0.50	5/06/13 11:13	5/06/13 12:37	EPA 8260C
127-18-4	Tetrachloroethene (Tetrachloroethylene)	0.015	U	ug/L	0.015	5/03/13 14:20	5/03/13 17:15	EPA 8260C
79-01-6	Trichloroethene (Trichloroethylene)	0.50	U	ug/L	0.50	5/06/13 11:13	5/06/13 12:37	EPA 8260C
75-01-4	Vinyl chloride	0.015	U	ug/L	0.015	5/03/13 14:20	5/03/13 17:15	EPA 8260C



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D.A.R.T. Id: 13-0091

Project: 13-0341, Stony Hill Rd TCE - Reported by Kristin Trapp

Volatile Organics

Project: 13-0341, Stony Hill Rd TCE

Sample ID: TMW101

Lab ID: E131807-02

Station ID:

Matrix: Trip Blank - Water

Date Collected: 4/30/13 7:05

<i>CAS Number</i>	<i>Analyte</i>	<i>Results</i>	<i>Qualifiers</i>	<i>Units</i>	<i>MRL</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Method</i>
71-55-6	1,1,1-Trichloroethane	0.50	U	ug/L	0.50	5/06/13 11:13	5/06/13 13:03	EPA 8260C
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	0.50	U	ug/L	0.50	5/06/13 11:13	5/06/13 13:03	EPA 8260C
156-59-2	cis-1,2-Dichloroethene	0.50	U	ug/L	0.50	5/06/13 11:13	5/06/13 13:03	EPA 8260C
127-18-4	Tetrachloroethene (Tetrachloroethylene)	0.015	U	ug/L	0.015	5/03/13 14:20	5/03/13 17:43	EPA 8260C
79-01-6	Trichloroethene (Trichloroethylene)	0.50	U	ug/L	0.50	5/06/13 11:13	5/06/13 13:03	EPA 8260C
75-01-4	Vinyl chloride	0.015	U	ug/L	0.015	5/03/13 14:20	5/03/13 17:43	EPA 8260C



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Volatile Organics

Project: 13-0341, Stony Hill Rd TCE

Sample ID: 1613BRb

Lab ID: E131807-03

Station ID: 1613BR

Matrix: Groundwater

Date Collected: 5/1/13 13:25

<i>CAS Number</i>	<i>Analyte</i>	<i>Results</i>	<i>Qualifiers</i>	<i>Units</i>	<i>MRL</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Method</i>
71-55-6	1,1,1-Trichloroethane	0.50	U	ug/L	0.50	5/06/13 11:13	5/06/13 14:15	EPA 8260C
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	0.50	U	ug/L	0.50	5/06/13 11:13	5/06/13 14:15	EPA 8260C
156-59-2	cis-1,2-Dichloroethene	0.50	U	ug/L	0.50	5/06/13 11:13	5/06/13 14:15	EPA 8260C
127-18-4	Tetrachloroethene (Tetrachloroethylene)	0.015	U	ug/L	0.015	5/03/13 14:20	5/03/13 18:10	EPA 8260C
79-01-6	Trichloroethene (Trichloroethylene)	0.50	U	ug/L	0.50	5/06/13 11:13	5/06/13 14:15	EPA 8260C
75-01-4	Vinyl chloride	0.015	U	ug/L	0.015	5/03/13 14:20	5/03/13 18:10	EPA 8260C



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Volatile Organics

Project: 13-0341, Stony Hill Rd TCE

Sample ID: SHRHS1

Lab ID: E131807-04

Station ID: SHRHS1

Matrix: Groundwater

Date Collected: 5/1/13 12:00

<i>CAS Number</i>	<i>Analyte</i>	<i>Results</i>	<i>Qualifiers</i>	<i>Units</i>	<i>MRL</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Method</i>
71-55-6	1,1,1-Trichloroethane	0.50	U	ug/L	0.50	5/06/13 11:13	5/06/13 14:40	EPA 8260C
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	0.50	U	ug/L	0.50	5/06/13 11:13	5/06/13 14:40	EPA 8260C
156-59-2	cis-1,2-Dichloroethene	0.50	U	ug/L	0.50	5/06/13 11:13	5/06/13 14:40	EPA 8260C
127-18-4	Tetrachloroethene (Tetrachloroethylene)	0.17		ug/L	0.015	5/03/13 14:20	5/03/13 18:38	EPA 8260C
79-01-6	Trichloroethene (Trichloroethylene)	0.38	J, Q-2	ug/L	0.50	5/06/13 11:13	5/06/13 14:40	EPA 8260C
75-01-4	Vinyl chloride	0.015	U	ug/L	0.015	5/03/13 14:20	5/03/13 18:38	EPA 8260C



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Volatile Organics

Project: 13-0341, Stony Hill Rd TCE

Sample ID: SHRHS10

Lab ID: E131807-05

Station ID: SHRHS10

Matrix: Groundwater

Date Collected: 5/1/13 9:50

<i>CAS Number</i>	<i>Analyte</i>	<i>Results</i>	<i>Qualifiers</i>	<i>Units</i>	<i>MRL</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Method</i>
71-55-6	1,1,1-Trichloroethane	0.50	U	ug/L	0.50	5/07/13 13:49	5/07/13 15:59	EPA 8260C
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	0.50	U	ug/L	0.50	5/07/13 13:49	5/07/13 15:59	EPA 8260C
156-59-2	cis-1,2-Dichloroethene	0.50	U	ug/L	0.50	5/07/13 13:49	5/07/13 15:59	EPA 8260C
127-18-4	Tetrachloroethene (Tetrachloroethylene)	0.015	U	ug/L	0.015	5/06/13 11:11	5/06/13 20:56	EPA 8260C
79-01-6	Trichloroethene (Trichloroethylene)	2.8		ug/L	0.50	5/07/13 13:49	5/07/13 15:59	EPA 8260C
75-01-4	Vinyl chloride	0.015	U	ug/L	0.015	5/06/13 11:11	5/06/13 20:56	EPA 8260C



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Volatile Organics

Project: 13-0341, Stony Hill Rd TCE

Sample ID: SHRHS11

Lab ID: E131807-06

Station ID: SHRHS11

Matrix: Groundwater

Date Collected: 5/1/13 9:10

<i>CAS Number</i>	<i>Analyte</i>	<i>Results</i>	<i>Qualifiers</i>	<i>Units</i>	<i>MRL</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Method</i>
71-55-6	1,1,1-Trichloroethane	0.50	U	ug/L	0.50	5/06/13 11:13	5/06/13 15:05	EPA 8260C
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	0.50	U	ug/L	0.50	5/06/13 11:13	5/06/13 15:05	EPA 8260C
156-59-2	cis-1,2-Dichloroethene	0.50	U	ug/L	0.50	5/06/13 11:13	5/06/13 15:05	EPA 8260C
127-18-4	Tetrachloroethene (Tetrachloroethylene)	0.015	U	ug/L	0.015	5/06/13 11:11	5/06/13 14:35	EPA 8260C
79-01-6	Trichloroethene (Trichloroethylene)	0.50	U	ug/L	0.50	5/06/13 11:13	5/06/13 15:05	EPA 8260C
75-01-4	Vinyl chloride	0.015	U	ug/L	0.015	5/06/13 11:11	5/06/13 14:35	EPA 8260C



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Volatile Organics

Project: 13-0341, Stony Hill Rd TCE

Sample ID: SHRHS12

Lab ID: E131807-07

Station ID: SHRHS12

Matrix: Groundwater

Date Collected: 4/30/13 11:20

<i>CAS Number</i>	<i>Analyte</i>	<i>Results</i>	<i>Qualifiers</i>	<i>Units</i>	<i>MRL</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Method</i>
71-55-6	1,1,1-Trichloroethane	0.50	U	ug/L	0.50	5/06/13 11:13	5/06/13 15:54	EPA 8260C
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	0.50	U	ug/L	0.50	5/06/13 11:13	5/06/13 15:54	EPA 8260C
156-59-2	cis-1,2-Dichloroethene	0.50	U	ug/L	0.50	5/06/13 11:13	5/06/13 15:54	EPA 8260C
127-18-4	Tetrachloroethene (Tetrachloroethylene)	0.015	U	ug/L	0.015	5/06/13 11:11	5/06/13 15:00	EPA 8260C
79-01-6	Trichloroethene (Trichloroethylene)	0.50	U	ug/L	0.50	5/06/13 11:13	5/06/13 15:54	EPA 8260C
75-01-4	Vinyl chloride	0.015	U	ug/L	0.015	5/06/13 11:11	5/06/13 15:00	EPA 8260C



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Volatile Organics

Project: 13-0341, Stony Hill Rd TCE

Sample ID: SHRHS2

Lab ID: E131807-08

Station ID: SHRHS2

Matrix: Groundwater

Date Collected: 4/30/13 13:35

<i>CAS Number</i>	<i>Analyte</i>	<i>Results</i>	<i>Qualifiers</i>	<i>Units</i>	<i>MRL</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Method</i>
71-55-6	1,1,1-Trichloroethane	0.50	U	ug/L	0.50	5/06/13 11:13	5/06/13 16:19	EPA 8260C
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	0.50	U	ug/L	0.50	5/06/13 11:13	5/06/13 16:19	EPA 8260C
156-59-2	cis-1,2-Dichloroethene	0.50	U	ug/L	0.50	5/06/13 11:13	5/06/13 16:19	EPA 8260C
127-18-4	Tetrachloroethene (Tetrachloroethylene)	0.015	U	ug/L	0.015	5/06/13 11:11	5/06/13 15:25	EPA 8260C
79-01-6	Trichloroethene (Trichloroethylene)	0.50	U	ug/L	0.50	5/06/13 11:13	5/06/13 16:19	EPA 8260C
75-01-4	Vinyl chloride	0.015	U	ug/L	0.015	5/06/13 11:11	5/06/13 15:25	EPA 8260C



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Volatile Organics

Project: 13-0341, Stony Hill Rd TCE

Sample ID: SHRHS3

Lab ID: E131807-09

Station ID: SHRHS3

Matrix: Groundwater

Date Collected: 4/30/13 14:30

<i>CAS Number</i>	<i>Analyte</i>	<i>Results</i>	<i>Qualifiers</i>	<i>Units</i>	<i>MRL</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Method</i>
71-55-6	1,1,1-Trichloroethane	0.57		ug/L	0.50	5/06/13 11:13	5/06/13 19:46	EPA 8260C
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	0.54		ug/L	0.50	5/06/13 11:13	5/06/13 19:46	EPA 8260C
156-59-2	cis-1,2-Dichloroethene	0.50	U	ug/L	0.50	5/06/13 11:13	5/06/13 19:46	EPA 8260C
127-18-4	Tetrachloroethene (Tetrachloroethylene)	3.8		ug/L	0.50	5/06/13 11:13	5/06/13 19:46	EPA 8260C
79-01-6	Trichloroethene (Trichloroethylene)	9.8		ug/L	0.50	5/06/13 11:13	5/06/13 19:46	EPA 8260C
75-01-4	Vinyl chloride	0.015	U	ug/L	0.015	5/06/13 11:11	5/06/13 18:25	EPA 8260C



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Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700

D.A.R.T. Id: 13-0091

Project: 13-0341, Stony Hill Rd TCE - Reported by Kristin Trapp

Volatile Organics

Project: 13-0341, Stony Hill Rd TCE

Sample ID: SHRHS7

Lab ID: E131807-10

Station ID: SHRHS7

Matrix: Groundwater

Date Collected: 5/1/13 14:30

<i>CAS Number</i>	<i>Analyte</i>	<i>Results</i>	<i>Qualifiers</i>	<i>Units</i>	<i>MRL</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Method</i>
71-55-6	1,1,1-Trichloroethane	0.50	U	ug/L	0.50	5/06/13 11:13	5/06/13 16:45	EPA 8260C
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	0.50	U	ug/L	0.50	5/06/13 11:13	5/06/13 16:45	EPA 8260C
156-59-2	cis-1,2-Dichloroethene	0.50	U	ug/L	0.50	5/06/13 11:13	5/06/13 16:45	EPA 8260C
127-18-4	Tetrachloroethene (Tetrachloroethylene)	0.015	U	ug/L	0.015	5/03/13 14:20	5/03/13 19:05	EPA 8260C
79-01-6	Trichloroethene (Trichloroethylene)	0.50	U	ug/L	0.50	5/06/13 11:13	5/06/13 16:45	EPA 8260C
75-01-4	Vinyl chloride	0.015	U	ug/L	0.015	5/03/13 14:20	5/03/13 19:05	EPA 8260C



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Project: 13-0341, Stony Hill Rd TCE - Reported by Kristin Trapp

Volatile Organics

Project: 13-0341, Stony Hill Rd TCE

Sample ID: SHRHS8

Lab ID: E131807-11

Station ID: SHRHS8

Matrix: Groundwater

Date Collected: 5/1/13 15:45

<i>CAS Number</i>	<i>Analyte</i>	<i>Results</i>	<i>Qualifiers</i>	<i>Units</i>	<i>MRL</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Method</i>
71-55-6	1,1,1-Trichloroethane	0.50	U	ug/L	0.50	5/06/13 11:13	5/06/13 17:11	EPA 8260C
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	0.50	U	ug/L	0.50	5/06/13 11:13	5/06/13 17:11	EPA 8260C
156-59-2	cis-1,2-Dichloroethene	0.50	U	ug/L	0.50	5/06/13 11:13	5/06/13 17:11	EPA 8260C
127-18-4	Tetrachloroethene (Tetrachloroethylene)	0.015	U	ug/L	0.015	5/03/13 14:20	5/03/13 19:32	EPA 8260C
79-01-6	Trichloroethene (Trichloroethylene)	0.36	J, Q-2	ug/L	0.50	5/06/13 11:13	5/06/13 17:11	EPA 8260C
75-01-4	Vinyl chloride	0.015	U	ug/L	0.015	5/03/13 14:20	5/03/13 19:32	EPA 8260C



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 Project: 13-0341, Stony Hill Rd TCE - Reported by Kristin Trapp

Volatile Organics

Project: 13-0341, Stony Hill Rd TCE

Sample ID: SHRHS9

Lab ID: E131807-12

Station ID: SHRHS9

Matrix: Groundwater

Date Collected: 5/1/13 15:00

<i>CAS Number</i>	<i>Analyte</i>	<i>Results</i>	<i>Qualifiers</i>	<i>Units</i>	<i>MRL</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Method</i>
71-55-6	1,1,1-Trichloroethane	0.50	U	ug/L	0.50	5/06/13 11:13	5/06/13 17:37	EPA 8260C
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	0.50	U	ug/L	0.50	5/06/13 11:13	5/06/13 17:37	EPA 8260C
156-59-2	cis-1,2-Dichloroethene	0.50	U	ug/L	0.50	5/06/13 11:13	5/06/13 17:37	EPA 8260C
127-18-4	Tetrachloroethene (Tetrachloroethylene)	0.015	U	ug/L	0.015	5/03/13 14:20	5/03/13 19:59	EPA 8260C
79-01-6	Trichloroethene (Trichloroethylene)	0.50	U	ug/L	0.50	5/06/13 11:13	5/06/13 17:37	EPA 8260C
75-01-4	Vinyl chloride	0.015	U	ug/L	0.015	5/03/13 14:20	5/03/13 19:59	EPA 8260C



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D.A.R.T. Id: 13-0091

Project: 13-0341, Stony Hill Rd TCE - Reported by Kristin Trapp

Volatile Organics

Project: 13-0341, Stony Hill Rd TCE

Sample ID: SHRTMW1

Lab ID: E131807-13

Station ID: SHRTMW1

Matrix: Groundwater

Date Collected: 5/1/13 15:15

<i>CAS Number</i>	<i>Analyte</i>	<i>Results</i>	<i>Qualifiers</i>	<i>Units</i>	<i>MRL</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Method</i>
71-55-6	1,1,1-Trichloroethane	0.50	U	ug/L	0.50	5/06/13 11:13	5/06/13 18:03	EPA 8260C
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	0.50	U	ug/L	0.50	5/06/13 11:13	5/06/13 18:03	EPA 8260C
156-59-2	cis-1,2-Dichloroethene	0.50	U	ug/L	0.50	5/06/13 11:13	5/06/13 18:03	EPA 8260C
127-18-4	Tetrachloroethene (Tetrachloroethylene)	0.027		ug/L	0.015	5/03/13 14:20	5/03/13 20:52	EPA 8260C
79-01-6	Trichloroethene (Trichloroethylene)	11		ug/L	0.50	5/06/13 11:13	5/06/13 18:03	EPA 8260C
75-01-4	Vinyl chloride	0.015	U	ug/L	0.015	5/03/13 14:20	5/03/13 20:52	EPA 8260C



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Project: 13-0341, Stony Hill Rd TCE - Reported by Kristin Trapp

Volatile Organics

Project: 13-0341, Stony Hill Rd TCE

Sample ID: SHRTMW2

Lab ID: E131807-14

Station ID: SHRTMW2

Matrix: Groundwater

Date Collected: 5/1/13 16:05

<i>CAS Number</i>	<i>Analyte</i>	<i>Results</i>	<i>Qualifiers</i>	<i>Units</i>	<i>MRL</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Method</i>
71-55-6	1,1,1-Trichloroethane	0.50	U	ug/L	0.50	5/06/13 11:13	5/06/13 18:29	EPA 8260C
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	0.50	U	ug/L	0.50	5/06/13 11:13	5/06/13 18:29	EPA 8260C
156-59-2	cis-1,2-Dichloroethene	0.50	U	ug/L	0.50	5/06/13 11:13	5/06/13 18:29	EPA 8260C
127-18-4	Tetrachloroethene (Tetrachloroethylene)	0.015	U	ug/L	0.015	5/03/13 14:20	5/03/13 20:26	EPA 8260C
79-01-6	Trichloroethene (Trichloroethylene)	0.50	U	ug/L	0.50	5/06/13 11:13	5/06/13 18:29	EPA 8260C
75-01-4	Vinyl chloride	0.015	U	ug/L	0.015	5/03/13 14:20	5/03/13 20:26	EPA 8260C



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Volatile Organics

Project: 13-0341, Stony Hill Rd TCE

Sample ID: SHRTMW3

Lab ID: E131807-15

Station ID: SHRTMW3

Matrix: Groundwater

Date Collected: 4/30/13 12:22

<i>CAS Number</i>	<i>Analyte</i>	<i>Results</i>	<i>Qualifiers</i>	<i>Units</i>	<i>MRL</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Method</i>
71-55-6	1,1,1-Trichloroethane	0.94		ug/L	0.50	5/07/13 13:49	5/07/13 17:13	EPA 8260C
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	0.30	J, Q-2	ug/L	0.50	5/07/13 13:49	5/07/13 17:13	EPA 8260C
156-59-2	cis-1,2-Dichloroethene	0.50	U	ug/L	0.50	5/07/13 13:49	5/07/13 17:13	EPA 8260C
127-18-4	Tetrachloroethene (Tetrachloroethylene)	0.055		ug/L	0.015	5/03/13 14:20	5/03/13 21:18	EPA 8260C
79-01-6	Trichloroethene (Trichloroethylene)	18		ug/L	0.50	5/07/13 13:49	5/07/13 17:13	EPA 8260C
75-01-4	Vinyl chloride	0.015	U	ug/L	0.015	5/03/13 14:20	5/03/13 21:18	EPA 8260C



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Volatile Organics

Project: 13-0341, Stony Hill Rd TCE

Sample ID: SHRTMW4

Lab ID: E131807-16

Station ID: SHRTMW4

Matrix: Groundwater

Date Collected: 4/30/13 14:45

<i>CAS Number</i>	<i>Analyte</i>	<i>Results</i>	<i>Qualifiers</i>	<i>Units</i>	<i>MRL</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Method</i>
71-55-6	1,1,1-Trichloroethane	0.50	U	ug/L	0.50	5/06/13 11:13	5/06/13 18:54	EPA 8260C
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	0.50	U	ug/L	0.50	5/06/13 11:13	5/06/13 18:54	EPA 8260C
156-59-2	cis-1,2-Dichloroethene	0.50	U	ug/L	0.50	5/06/13 11:13	5/06/13 18:54	EPA 8260C
127-18-4	Tetrachloroethene (Tetrachloroethylene)	0.015	U	ug/L	0.015	5/06/13 11:11	5/06/13 15:50	EPA 8260C
79-01-6	Trichloroethene (Trichloroethylene)	0.50	U	ug/L	0.50	5/06/13 11:13	5/06/13 18:54	EPA 8260C
75-01-4	Vinyl chloride	0.015	U	ug/L	0.015	5/06/13 11:11	5/06/13 15:50	EPA 8260C



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Volatile Organics

Project: 13-0341, Stony Hill Rd TCE

Sample ID: SHRTMW5

Lab ID: E131807-17

Station ID: SHRTMW5

Matrix: Groundwater

Date Collected: 5/1/13 10:10

<i>CAS Number</i>	<i>Analyte</i>	<i>Results</i>	<i>Qualifiers</i>	<i>Units</i>	<i>MRL</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Method</i>
71-55-6	1,1,1-Trichloroethane	0.50	U	ug/L	0.50	5/07/13 13:49	5/07/13 17:37	EPA 8260C
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	0.50	U	ug/L	0.50	5/07/13 13:49	5/07/13 17:37	EPA 8260C
156-59-2	cis-1,2-Dichloroethene	0.50	U	ug/L	0.50	5/07/13 13:49	5/07/13 17:37	EPA 8260C
127-18-4	Tetrachloroethene (Tetrachloroethylene)	0.015	U	ug/L	0.015	5/06/13 11:11	5/06/13 16:15	EPA 8260C
79-01-6	Trichloroethene (Trichloroethylene)	33		ug/L	0.50	5/07/13 13:49	5/07/13 17:37	EPA 8260C
75-01-4	Vinyl chloride	0.011	J, Q-2	ug/L	0.015	5/06/13 11:11	5/06/13 16:15	EPA 8260C



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Volatile Organics

Project: 13-0341, Stony Hill Rd TCE

Sample ID: SHRTMW6

Lab ID: E131807-18

Station ID: SHRTMW6

Matrix: Groundwater

Date Collected: 4/30/13 11:20

<i>CAS Number</i>	<i>Analyte</i>	<i>Results</i>	<i>Qualifiers</i>	<i>Units</i>	<i>MRL</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Method</i>
71-55-6	1,1,1-Trichloroethane	0.50	U	ug/L	0.50	5/06/13 11:13	5/06/13 19:20	EPA 8260C
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	0.50	U	ug/L	0.50	5/06/13 11:13	5/06/13 19:20	EPA 8260C
156-59-2	cis-1,2-Dichloroethene	0.50	U	ug/L	0.50	5/06/13 11:13	5/06/13 19:20	EPA 8260C
127-18-4	Tetrachloroethene (Tetrachloroethylene)	0.015	U	ug/L	0.015	5/06/13 11:11	5/06/13 16:41	EPA 8260C
79-01-6	Trichloroethene (Trichloroethylene)	0.50	U	ug/L	0.50	5/06/13 11:13	5/06/13 19:20	EPA 8260C
75-01-4	Vinyl chloride	0.015	U	ug/L	0.015	5/06/13 11:11	5/06/13 16:41	EPA 8260C



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Volatile Organics

Project: 13-0341, Stony Hill Rd TCE

Sample ID: SHRTMW17

Lab ID: E131807-19

Station ID: SHRTMW7

Matrix: Groundwater

Date Collected: 4/30/13 15:15

<i>CAS Number</i>	<i>Analyte</i>	<i>Results</i>	<i>Qualifiers</i>	<i>Units</i>	<i>MRL</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Method</i>
71-55-6	1,1,1-Trichloroethane	0.37	J, Q-2	ug/L	0.50	5/06/13 11:13	5/06/13 20:11	EPA 8260C
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	0.32	J, Q-2	ug/L	0.50	5/06/13 11:13	5/06/13 20:11	EPA 8260C
156-59-2	cis-1,2-Dichloroethene	0.50	U	ug/L	0.50	5/06/13 11:13	5/06/13 20:11	EPA 8260C
127-18-4	Tetrachloroethene (Tetrachloroethylene)	2.3		ug/L	0.50	5/06/13 11:13	5/06/13 20:11	EPA 8260C
79-01-6	Trichloroethene (Trichloroethylene)	6.8		ug/L	0.50	5/06/13 11:13	5/06/13 20:11	EPA 8260C
75-01-4	Vinyl chloride	0.015	U	ug/L	0.015	5/06/13 11:11	5/06/13 17:07	EPA 8260C



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Volatile Organics

Project: 13-0341, Stony Hill Rd TCE

Sample ID: SHRTMW7

Lab ID: E131807-20

Station ID: SHRTMW7

Matrix: Groundwater

Date Collected: 4/30/13 15:15

<i>CAS Number</i>	<i>Analyte</i>	<i>Results</i>	<i>Qualifiers</i>	<i>Units</i>	<i>MRL</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Method</i>
71-55-6	1,1,1-Trichloroethane	0.32	J, Q-2	ug/L	0.50	5/07/13 13:49	5/07/13 16:48	EPA 8260C
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	0.28	J, Q-2	ug/L	0.50	5/07/13 13:49	5/07/13 16:48	EPA 8260C
156-59-2	cis-1,2-Dichloroethene	0.50	U	ug/L	0.50	5/07/13 13:49	5/07/13 16:48	EPA 8260C
127-18-4	Tetrachloroethene (Tetrachloroethylene)	2.2		ug/L	0.50	5/07/13 13:49	5/07/13 16:48	EPA 8260C
79-01-6	Trichloroethene (Trichloroethylene)	5.6		ug/L	0.50	5/07/13 13:49	5/07/13 16:48	EPA 8260C
75-01-4	Vinyl chloride	0.015	U	ug/L	0.015	5/06/13 11:11	5/06/13 18:51	EPA 8260C



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Volatile Organics

Project: 13-0341, Stony Hill Rd TCE

Sample ID: SHRTMW8

Lab ID: E131807-21

Station ID: SHRTMW8

Matrix: Groundwater

Date Collected: 5/1/13 9:30

<i>CAS Number</i>	<i>Analyte</i>	<i>Results</i>	<i>Qualifiers</i>	<i>Units</i>	<i>MRL</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Method</i>
71-55-6	1,1,1-Trichloroethane	0.50	U	ug/L	0.50	5/07/13 13:49	5/07/13 16:24	EPA 8260C
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	0.50	U	ug/L	0.50	5/07/13 13:49	5/07/13 16:24	EPA 8260C
156-59-2	cis-1,2-Dichloroethene	0.50	U	ug/L	0.50	5/07/13 13:49	5/07/13 16:24	EPA 8260C
127-18-4	Tetrachloroethene (Tetrachloroethylene)	0.015	U	ug/L	0.015	5/06/13 11:11	5/06/13 17:33	EPA 8260C
79-01-6	Trichloroethene (Trichloroethylene)	0.50	U	ug/L	0.50	5/07/13 13:49	5/07/13 16:24	EPA 8260C
75-01-4	Vinyl chloride	0.015	U	ug/L	0.015	5/06/13 11:11	5/06/13 17:33	EPA 8260C



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Volatile Organics

Project: 13-0341, Stony Hill Rd TCE

Sample ID: SHRTMW9

Lab ID: E131807-22

Station ID: SHRTMW9

Matrix: Groundwater

Date Collected: 5/1/13 12:07

<i>CAS Number</i>	<i>Analyte</i>	<i>Results</i>	<i>Qualifiers</i>	<i>Units</i>	<i>MRL</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Method</i>
71-55-6	1,1,1-Trichloroethane	0.50	U	ug/L	0.50	5/07/13 13:49	5/07/13 15:10	EPA 8260C
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	0.50	U	ug/L	0.50	5/07/13 13:49	5/07/13 15:10	EPA 8260C
156-59-2	cis-1,2-Dichloroethene	0.50	U	ug/L	0.50	5/07/13 13:49	5/07/13 15:10	EPA 8260C
127-18-4	Tetrachloroethene (Tetrachloroethylene)	0.015	U	ug/L	0.015	5/06/13 11:11	5/06/13 17:59	EPA 8260C
79-01-6	Trichloroethene (Trichloroethylene)	0.50	U	ug/L	0.50	5/07/13 13:49	5/07/13 15:10	EPA 8260C
75-01-4	Vinyl chloride	0.015	U	ug/L	0.015	5/06/13 11:11	5/06/13 17:59	EPA 8260C



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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 D.A.R.T. Id: 13-0091
 Project: 13-0341, Stony Hill Rd TCE - Reported by Kristin Trapp

Volatile Organics (VOA) - Quality Control
US-EPA, Region 4, SESD

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 1305024 - V 5030B VOA Wtr Prep

Blank (1305024-BLK4)

Prepared & Analyzed: 05/03/13

EPA 8260C

Vinyl chloride	U	0.015	ug/L							U
Tetrachloroethene (Tetrachloroethylene)	0.0044900	0.015	"							B-3, Q-2, J

LCS (1305024-BS1)

Prepared & Analyzed: 05/03/13

EPA 8260C

Vinyl chloride	0.49368		ug/L	0.50000		98.7	70-130			
Tetrachloroethene (Tetrachloroethylene)	0.47466		"	0.50000		94.9	70-130			

Matrix Spike (1305024-MS1)

Source: E131807-04

Prepared & Analyzed: 05/03/13

EPA 8260C

Vinyl chloride	0.52603		ug/L	0.51163	0.0012500	103	70-130			
Tetrachloroethene (Tetrachloroethylene)	0.71509		"	0.51163	0.16982	107	70-130			

Matrix Spike Dup (1305024-MSD1)

Source: E131807-04

Prepared & Analyzed: 05/03/13

EPA 8260C

Vinyl chloride	0.56514		ug/L	0.51163	0.0012500	110	70-130	7.17	20	
Tetrachloroethene (Tetrachloroethylene)	0.73911		"	0.51163	0.16982	111	70-130	3.30	20	

MRL Verification (1305024-PS1)

Prepared & Analyzed: 05/03/13

EPA 8260C

Vinyl chloride	0.015730		ug/L	0.015000		105	50-150			MRL-2
Tetrachloroethene (Tetrachloroethylene)	0.020950		"	0.015000		140	50-150			MRL-2

Batch 1305028 - V 5030B VOA Wtr Prep

Blank (1305028-BLK1)

Prepared & Analyzed: 05/06/13

EPA 8260C

Vinyl chloride	U	0.50	ug/L							U
1,1-Dichloroethene (1,1-Dichloroethylene)	U	0.50	"							U
cis-1,2-Dichloroethene	U	0.50	"							U
1,1,1-Trichloroethane	U	0.50	"							U
Trichloroethene (Trichloroethylene)	U	0.50	"							U
Tetrachloroethene (Tetrachloroethylene)	U	0.50	"							U



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 Region 4 Science and Ecosystem Support Division
 980 College Station Road, Athens, Georgia 30605-2700
 D.A.R.T. Id: 13-0091
 Project: 13-0341, Stony Hill Rd TCE - Reported by Kristin Trapp

Volatile Organics (VOA) - Quality Control
US-EPA, Region 4, SESD

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 1305028 - V 5030B VOA Wtr Prep

LCS (1305028-BS1)

Prepared & Analyzed: 05/06/13

EPA 8260C

Vinyl chloride	20.050		ug/L	20.000		100	78.8-115			
1,1-Dichloroethene (1,1-Dichloroethylene)	20.690		"	20.000		103	85.4-116			
cis-1,2-Dichloroethene	21.030		"	20.000		105	87.6-115			
1,1,1-Trichloroethane	21.120		"	20.000		106	79.3-126			
Trichloroethene (Trichloroethylene)	20.610		"	20.000		103	87.8-114			
Tetrachloroethene (Tetrachloroethylene)	20.730		"	20.000		104	85.1-113			

Matrix Spike (1305028-MS1)

Source: E131807-04

Prepared & Analyzed: 05/06/13

EPA 8260C

Vinyl chloride	11.940		ug/L	10.233	U	117	84.5-135			
1,1-Dichloroethene (1,1-Dichloroethylene)	12.150		"	10.233	U	119	87.5-133			
cis-1,2-Dichloroethene	11.980		"	10.233	U	117	85.3-127			
1,1,1-Trichloroethane	11.630		"	10.233	U	114	85.6-137			
Trichloroethene (Trichloroethylene)	12.160		"	10.233	0.38000	115	87.2-128			
Tetrachloroethene (Tetrachloroethylene)	12.290		"	10.233	0.22000	118	66.4-149			

Matrix Spike Dup (1305028-MSD1)

Source: E131807-04

Prepared & Analyzed: 05/06/13

EPA 8260C

Vinyl chloride	11.730		ug/L	10.233	U	115	84.5-135	1.77	14.1	
1,1-Dichloroethene (1,1-Dichloroethylene)	11.870		"	10.233	U	116	87.5-133	2.33	12.8	
cis-1,2-Dichloroethene	11.590		"	10.233	U	113	85.3-127	3.31	10.8	
1,1,1-Trichloroethane	11.500		"	10.233	U	112	85.6-137	1.12	10.9	
Trichloroethene (Trichloroethylene)	11.760		"	10.233	0.38000	111	87.2-128	3.34	15	
Tetrachloroethene (Tetrachloroethylene)	11.830		"	10.233	0.22000	113	66.4-149	3.81	13.4	

MRL Verification (1305028-PS1)

Prepared & Analyzed: 05/06/13

EPA 8260C

Vinyl chloride	0.51000		ug/L	0.50000		102	58.8-135			MRL-2
1,1-Dichloroethene (1,1-Dichloroethylene)	0.47000		"	0.50000		94.0	65.4-136			MRL-2
cis-1,2-Dichloroethene	0.53000		"	0.50000		106	67.6-135			MRL-2
1,1,1-Trichloroethane	0.52000		"	0.50000		104	59.3-146			MRL-2
Trichloroethene (Trichloroethylene)	0.54000		"	0.50000		108	67.8-134			MRL-2
Tetrachloroethene (Tetrachloroethylene)	0.53000		"	0.50000		106	65.1-133			MRL-2



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Volatile Organics (VOA) - Quality Control
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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 1305030 - V 5030B VOA Wtr Prep

Blank (1305030-BLK1) Prepared & Analyzed: 05/06/13

EPA 8260C

Vinyl chloride	U	0.015	ug/L							U
Tetrachloroethene (Tetrachloroethylene)	0.0051000	0.015	"							B-3, Q-2, J

LCS (1305030-BS3) Prepared & Analyzed: 05/06/13

EPA 8260C

Vinyl chloride	0.42462		ug/L	0.50000		84.9	70-130			
Tetrachloroethene (Tetrachloroethylene)	0.40617		"	0.50000		81.2	70-130			

Matrix Spike (1305030-MS1) Source: E131807-06 Prepared & Analyzed: 05/06/13

EPA 8260C

Vinyl chloride	0.50824		ug/L	0.51163	U	99.3	70-130			
Tetrachloroethene (Tetrachloroethylene)	0.52152		"	0.51163	0.0026600	101	70-130			

Matrix Spike Dup (1305030-MSD1) Source: E131807-06 Prepared & Analyzed: 05/06/13

EPA 8260C

Vinyl chloride	0.51304		ug/L	0.51163	U	100	70-130	0.940	20	
Tetrachloroethene (Tetrachloroethylene)	0.48873		"	0.51163	0.0026600	95.0	70-130	6.49	20	

MRL Verification (1305030-PS1) Prepared & Analyzed: 05/06/13

EPA 8260C

Vinyl chloride	0.014870		ug/L	0.015000		99.1	50-150			MRL-2
Tetrachloroethene (Tetrachloroethylene)	0.012920		"	0.015000		86.1	50-150			MRL-2

Batch 1305033 - V 5030B VOA Wtr Prep

Blank (1305033-BLK1) Prepared & Analyzed: 05/07/13

EPA 8260C

Vinyl chloride	U	0.50	ug/L							U
1,1-Dichloroethene (1,1-Dichloroethylene)	U	0.50	"							U
cis-1,2-Dichloroethene	U	0.50	"							U
1,1,1-Trichloroethane	U	0.50	"							U
Trichloroethene (Trichloroethylene)	U	0.50	"							U
Tetrachloroethene (Tetrachloroethylene)	U	0.50	"							U



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Volatile Organics (VOA) - Quality Control
US-EPA, Region 4, SESD

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 1305033 - V 5030B VOA Wtr Prep

Blank (1305033-BLK2) Prepared & Analyzed: 05/07/13

EPA 8260C

Vinyl chloride	U	0.50	ug/L							U
1,1-Dichloroethene (1,1-Dichloroethylene)	U	0.50	"							U
cis-1,2-Dichloroethene	U	0.50	"							U
1,1,1-Trichloroethane	U	0.50	"							U
Trichloroethene (Trichloroethylene)	U	0.50	"							U
Tetrachloroethene (Tetrachloroethylene)	U	0.50	"							U

LCS (1305033-BS1) Prepared & Analyzed: 05/07/13

EPA 8260C

Vinyl chloride	19.810		ug/L	20.000		99.0	78.8-115			
1,1-Dichloroethene (1,1-Dichloroethylene)	20.190		"	20.000		101	85.4-116			
cis-1,2-Dichloroethene	21.320		"	20.000		107	87.6-115			
1,1,1-Trichloroethane	20.990		"	20.000		105	79.3-126			
Trichloroethene (Trichloroethylene)	20.740		"	20.000		104	87.8-114			
Tetrachloroethene (Tetrachloroethylene)	20.770		"	20.000		104	85.1-113			

LCS Dup (1305033-BSD1) Prepared & Analyzed: 05/07/13

EPA 8260C

Vinyl chloride	19.390		ug/L	20.000		97.0	78.8-115	2.14	10	
1,1-Dichloroethene (1,1-Dichloroethylene)	19.750		"	20.000		98.8	85.4-116	2.20	11	
cis-1,2-Dichloroethene	20.800		"	20.000		104	87.6-115	2.47	10	
1,1,1-Trichloroethane	20.480		"	20.000		102	79.3-126	2.46	10	
Trichloroethene (Trichloroethylene)	19.900		"	20.000		99.5	87.8-114	4.13	10	
Tetrachloroethene (Tetrachloroethylene)	20.130		"	20.000		101	85.1-113	3.13	10	

MRL Verification (1305033-PS1) Prepared & Analyzed: 05/07/13

EPA 8260C

Vinyl chloride	0.50000		ug/L	0.50000		100	58.8-135			MRL-2
1,1-Dichloroethene (1,1-Dichloroethylene)	0.43000		"	0.50000		86.0	65.4-136			MRL-2
cis-1,2-Dichloroethene	0.47000		"	0.50000		94.0	67.6-135			MRL-2
1,1,1-Trichloroethane	0.45000		"	0.50000		90.0	59.3-146			MRL-2
Trichloroethene (Trichloroethylene)	0.51000		"	0.50000		102	67.8-134			MRL-2
Tetrachloroethene (Tetrachloroethylene)	0.55000		"	0.50000		110	65.1-133			MRL-2



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Notes and Definitions for QC Samples

- U The analyte was not detected at or above the reporting limit.
- B-3 Level in blank does not impact data quality
- J The identification of the analyte is acceptable; the reported value is an estimate.
- MRL-2 MRL verification for Non-Potable Water matrix
- Q-2 Result greater than MDL but less than MRL.