



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: 12-6-12
Technical Reviewer's Name and Position:	Melanie Bartlett, Quality Assurance Manager, NC Superfund	
Technical Reviewer's Signature:		Date: 12/06/12
QA Reviewer's Name and Position:	Jim Bateson, Section Chief, NC Superfund	
QA Reviewer's Signature:		Date: 12/06/2012
DAO's Name, Position, and Organization:	Carolyn Callihan, 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	Carolyn Callihan, 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 919-218-0014</i>



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Engineer		
Stuart Parker, Hydrogeologist	NC Superfund	<i>Sampler/GPS</i>
Jeanette Stanley, Chemist	NC Superfund	<i>Sampler/Scribe</i>
Sue Murphy, Hydrogeologist	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 (WCESD) 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 12 community wells. Of these, 14 private residences have TCE above it's Maximum Contaminant Level (MCL) of 5 ug/l. Currently, seven 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 residences have detections of TCE and/or PCE, 14 of which are above EPA's Removal Management Level (RML). Seven additional wells have detections of TCE just under the MCL. Water line hookups to 9 residences have occurred.</p>
<p>A6. Project Description:</p>	<p>Collecting potable well samples from over 82 residences within ¾ mile of the site. GPS readings will be collected at locations that have not been previously located. This is a seasonally adjusted follow-up sampling of wells previously sampled during the Removal Action at this site. All potable wells will have samples collected for TVOA analysis plus SIMS for 1,1,2-TCA and Vinyl Chloride. In addition, all wells that had previous detections will be sampled for SVOAs and the 8 RCRA metals.</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 help characterize the nature and extent of groundwater contamination at the site, in order to determine which, if any, additional drinking water wells need to be replaced with alternative water, and to determine the scope of any needed additional future sampling of drinking water wells in neighborhoods surrounding the site.</p> <p>The primary decision in the DQO process for the site relating to potable well water is: are site-related contaminants found in private drinking water wells within three-quarter mile of the site at concentrations exceeding the associated health-based screening criteria?</p> <p>All potable well water 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, 1,1,2-TCA 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 Level (MCL), Region 4 Regional Screening Level (RSL), SCDM values, and NC 2L groundwater standards. All data will be reviewed by the NC Project Manager and the NC Industrial Hygienist. Any wells in use with values exceeding the MCL, RSL, or NC 2L values may be potentially recommended to the US EPA Region 4 Emergency Response and Removal Branch (ERRB) for further action. EPA Region 4 will be notified of all exceedences of both MCL and RSL values in any of the potable well sample results.</p>
<p>Applicable regulatory information, action levels, etc.</p>	<p>Data will be compared with regulatory benchmarks, including NC Groundwater Standards (15A NCAC 2L, 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</p>



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	<p>Required Quantitation Limits for Volatile Organics on the Target Compound List 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) Maximum Contaminant Levels (MCLs); http://water.epa.gov/drink/contaminants/index.cfm#List) 6) US EPA Regional Screening Levels (RSLs); http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/
Field Study Date:	December 10, 2012 through December 14, 2012
Projected Lab Completion Date:	8-10 weeks after sample submittal
Final Report Completion Date:	March, 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 Previous sampling by various parties, including NC Superfund, NC DEM (NC DWQ), WCESD, US EPA, and community water system owners, has documented the presence on contaminants in groundwater at and near the site. Groundwater is the only drinking water source within 3/4 mile of the site. This includes both private and community drinking water supply wells.</p> <p>Step 2: Identify the Goals of the Study The goal of this study is to determine the nature and extent of groundwater contamination at the site, in order to determine which, if any, residents are currently exposed to groundwater contaminants above federal and/or state health-based benchmarks, or could</p>



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be potentially exposed to such contaminants in the future.

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 (background levels).

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) Maximum Contaminant Levels (MCLs);
<http://water.epa.gov/drink/contaminants/index.cfm#List>)
- 6) 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 potable well sample results.

Step 3: Identify Information Inputs

The primary inputs needed to support the decision making process are contaminant levels in private drinking water 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 1,1,2-TCA 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 groundwater from residential drinking water wells located within a three-quarter mile radius of these parcels. 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. All individuals within 3/4 mile of these two parcels are supplied drinking water via groundwater wells—either community wells or privately-owned wells.

Community wells are currently on a quarterly sampling schedule by their operators.

Individual potable wells will be sampled at the wellhead when possible. If a wellhead is not accessible or no sample tap is available at the wellhead, the sample will be collected



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from an unfiltered tap closest to the wellhead. The collection point of each sample will be notated in the field logs (i.e. spigot on wellhead, spigot on front of house, etc.). Each potable well will be purged for at least 15 minutes prior to sample collection. Temperature, pH, conductivity, and turbidity readings will be collected a minimum of three times, at five-minute intervals, prior to sample collections.

Sampling is scheduled for the week of December 10, 2012. 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. Pre-review data 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.	Cool to 4oC (+/-2oC) immediately after collection.	72 Hours
	VOA Sample with SIM		4				
	VOA Sample with MS/MS D		8				

Sample Collection Guidance for SVOCs							
Matrix	Sample Type	Container Type	Bottle Count	Minimum Volume	Important Notes	Preservative	Holding Time
Water	Sample	1-Liter amber round Glass bottle with 33 mm pour-out neck finish	2	Fill to capacity	If amber containers are not available, samples should be protected from light	Cool samples to 4° C immediately after collection.	7 days
	Sample with MS/MSD		5				



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Sample Collection Guidance for Metals via ICP-MS and Mercury by CVAA							
Matrix	Sample Type	Container Type	Bottle Count	Minimum Volume	Important Notes	Preservation	Holding Time
Water	Sample	1 Liter high density Polyethylene	1	Fill to capacity	Do not freeze samples	Acidify to a pH <2 with HNO ₃ and cool to 4 ° C immediately after collection.	Six months for all metals except Hg (28 days).
	Sample with MS/MS Duplicate		2				

<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 vinyl chloride and 1,1,2-trichloroethane.

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.

Step 7: Develop the Plan for Obtaining Data

Proposed sampling includes up to 130 groundwater samples (including background and QA/QC samples). Access permission has been previously granted for the wells via email, phone calls, or in person.

A8. Special Training/Certifications:

- 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.



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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-loqam.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, June 13, 2008 • Field Specific Conductance Measurement, January 13, 2012 • Field Temperature Measurement, February 4, 2011 • Field Turbidity Measurement, June 13, 2008 • 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, (PDF, 10pp, 351K) • Potable Water Supply Sampling, November 1, • Field Sampling and Measurement Procedures and Procedure Validation, December 18, 2009, (PDF, 9pp, 586K) • Field Sampling Quality Control, October 15, 2010 • Logbooks, October 8, 2010 • Sample and Evidence Management, November 1, 2007
B3. Sampling Handling and Custody:	<p>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/fbqstp/Sample-and-Evidence-Management.pdf)</p>
B4. Analytical Methods:	
CLP:	<p>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)</p>
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.



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	<ul style="list-style-type: none"> • 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:	<p>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.</p> <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:	<p>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.</p>
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>



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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.
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</i>, EPA-540-R-08-01, June 2008 (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</i>, EPA 540-F-94-028, Exhibit 3 and Tables 1-4 (http://www.epa.gov/superfund/sites/npl/hrsres/fact/docoroc.pdf) <p>Section 3.2 of the NC generic QAPP</p>

Stony Hill Road TCE Site
EPA ID# NCN000410857
Wake Forest, Wake County, NC

SOM01.2 Volatile Target Compound List and Corresponding CRQLs

COMPOUND	CAS No.	SOM01.2 CONTRACT REQUIRED		Health-Based Screening Levels ug/L
		Trace Water By SIM (ug/L)	Trace Water (ug/L)	
Dichlorodifluoromethane	75-71-8		0.5	390 RSL
Chloromethane	74-87-3		0.5	190 RSL
Vinyl chloride	75-01-4	--	0.5	2 MCL
Bromomethane	74-83-9	--	0.5	8.7 RSL
Chloroethane	75-00-3	--	0.5	21000 RSL
Trichlorofluoromethane	75-69-4	--	0.5	1300 RSL
1,1-Dichloroethene	75-35-4	--	0.5	7 MCL
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	--	0.5	59000 RSL
Acetone	67-64-1	--	5	22000 RSL
Carbon disulfide	75-15-0	--	0.5	1000 RSL
Methyl acetate	79-20-9	--	0.5	37000 RSL
Methylene chloride	75-09-2	--	0.5	5 MCL
trans-1,2-Dichloroethene	156-60-5	--	0.5	100 MCL
Methyl tert-butyl ether	1634-04-4	--	0.5	12 MCL
1,1-Dichloroethane	75-34-3	--	0.5	2.4 RSL
cis-1,2-Dichloroethene	156-59-2	0.2	0.5	70 MCL
2-Butanone (methyl ethyl ketone)	78-93-3	--	5	7100 RSL
Bromochloromethane	74-97-5	--	0.5	NL
Chloroform	67-66-3	--	0.5	80*
1,1,1-Trichloroethane	71-55-6	--	0.5	200 MCL
Cyclohexane	110-82-7	--	0.5	13000 RSL
Carbon tetrachloride	56-23-5	--	0.5	5 MCL
Benzene	71-43-2	--	0.5	5 MCL
1,2-Dichloroethane	107-06-2	--	0.5	5 MCL
Trichloroethene	79-01-6	0.2	0.5	5 MCL
Methylcyclohexane	108-87-2	--	0.5	6300 RSL
1,2-Dichloropropane	78-87-5	--	0.5	5 MCL
Bromodichloromethane	75-27-4	--	0.5	80*
cis-1,3-Dichloropropene	10061-01-5	--	0.5	NL
4-Methyl-2-pentanone (Methyl isobutyl ketone)	108-10-1	--	5	2000 RSL
Toluene	108-88-3	--	0.5	1000 MCL
trans-1,3-Dichloropropene	10061-02-6	--	0.5	NL
1,1,2-Trichloroethane	79-00-5	--	0.5	5 MCL
Tetrachloroethene	127-18-4	0.2	0.5	5 MCL
2-Hexanone (methyl butyl ketone)	591-78-6	--	5	NL

Dibromochloromethane	124-48-1	--	0.5	80*
1,2-Dibromoethane	106-93-4	--	0.5	0.05 MCL
Chlorobenzene	108-90-7	--	0.5	100 MCL
Ethylbenzene	100-41-4	--	0.5	700 MCL
o-Xylene	95-47-6	--	0.5	1400 RSL
m,p-Xylene	179601-23-1	--	0.5	10000 MCL
Styrene	100-42-5	--	0.5	100 MCL
Bromoform	75-25-2	--	0.5	80*
Isopropylbenzene	98-82-8	--	0.5	680 RSL
1,1,2,2-Tetrachloroethane	79-34-5	--	0.5	0.067 RSL
1,3-Dichlorobenzene	541-73-1	--	0.5	NL
1,4-Dichlorobenzene	106-46-7	--	0.5	75 MCL
1,2-Dichlorobenzene	95-50-1	--	0.5	600 MCL
1,2-Dibromo-3-chloropropane	96-12-8	--	0.5	0.2 MCL
1,2,4-Trichlorobenzene	120-82-1	--	0.5	70 MCL
1,2,3-Trichlorobenzene	87-61-6	--	0.5	NL

Stony Hill Road TCE Site
EPA ID# NCN000410857
Wake Forest, Wake County, NC
as of 12-06-12

Address	Sample ID	VOC	SVOC	Metals	ACCESS	GPS
1016 FRANK BAILEY RD	1016FBRa	4			Y	Y
0 STONY HILL RD						
7021 STONY HILL RD	7021SHRa	4			y	Y
7025 STONY HILL RD	7025SHRa	4			Y	Y
7108 STONY HILL RD	7108SHRa	4			y	Y
7116 STONY HILL RD	7116SHRa	4			y	Y
7125 STONY HILL RD	7125SHRa	4				N
7133 STONY HILL RD	7133SHRa	4			Y	N
7301 STONY HILL RD	7301SHRa	4			Y	N
7303 STONY HILL RD	7303SHRa	4			Y	N
7305 STONY HILL RD	7305SHRa	4	2	1	Y	Y
7309 STONY HILL RD	7309SHRa	4	2	1	Y	Y
7317 STONY HILL RD	7317SHRa	4	2	1	Y	Y
7312 STONY HILL RD	7312SHRa	4			Y	N
7320 STONY HILL RD	7320SHRa	4			Y	Y
7324 STONY HILL RD	7324SHRa	4			Y	Y
7325 STONY HILL RD	7325SHRa	4	2	1	Y	Y
7327 STONY HILL RD	7327SHRa	4	2	1	Y	Y
7328 STONY HILL RD	7328SHRa	4			Y	Y
7333 STONY HILL RD	7333SHRa	4	2	1	Y	N
7409 STONY HILL RD	7409SHRa	4			Y	N
7421 STONY HILL RD	7421SHRa	4				N
7425 STONY HILL RD	7425SHRa	4			Y	N
7441 STONY HILL RD	7441SHRa	4				Y
7444 STONY HILL RD	7444SHRa	4				N
7453 STONY HILL RD	7453SHRa	4				N
7500 STONY HILL RD	7500SHRa	4				N
7502 STONY HILL RD	7502SHRa	4				N
7504 STONY HILL RD	7504SHRa	4			Y	N
7505 STONY HILL RD	7505SHRa	4				N
7508 STONY HILL RD	7508SHRa	4			Y	N
7512 STONY HILL RD	7512SHRa	4			Y	N
7517 STONY HILL RD	7517SHRa	4			Y	N
7520 STONY HILL RD	7520SHRa	4			Y	Y
7553 STONY HILL RD	7553SHRa	4			Y	Y
7601 STONY HILL RD	7601SHRa	4			Y	N
7649 STONY HILL RD	7649SHRa	4				N
7705 STONY HILL RD	7705SHRa	4				Y
1000 SETTLERS LANDING CT	1000SLCa	4			Y	N
1001 SETTLERS LANDING CT	1001SLCa	4			Y	N

1004 SETTLERS LANDING CT	1004SLCa	4			Y	N
1005 SETTLERS LANDING CT	1005SLCa	4				N
1013 SETTLERS LANDING CT	1013SLCa	4				N
1017 SETTLERS LANDING CT	1017SLCa	4			Y	N
1021 SETTLERS LANDING CT	1021SLCa	4			Y	N
1001 HIDDEN TRAIL CT	1001 HDTCa	4			Y	N
1004 HIDDEN TRAIL CT	1004HTCTa	4				N
1005 HIDDEN TRAIL CT	1005HTCTa	4			Y	N
1008 HIDDEN TRAIL CT	1008HTCTa	4			Y	N
1009 HIDDEN TRAIL CT	1009HTCTa	4				N
1012 HIDDEN TRAIL CT	1012HTCTa	4			Y	N
1008 HIGH TRAIL CT	1008HTCa	4	2	1	Y	N
1009 HIGH TRAIL CT	1009HTCa	4	2	1	Y	N
1012 HIGH TRAIL CT	1012HTCa	4	2	1	Y	N
1005 TRADERS TRL	1005TTa	4			Y	Y
1009 TRADERS TRL	1009TTa	4				Y
1012 TRADERS TRL	1012TTa	4				N
1013 TRADERS TRL	1013TTa	4			Y	Y
1017 TRADERS TRL	1017TTa	4			Y	Y
1020 TRADERS TRL	1020TTa	4			Y	Y
1021 TRADERS TRL	1021TTa	4			Y	Y
1025 TRADERS TRL	1025TTa	4			Y	N
1028 TRADERS TRL	1028TTa	4			Y	N
1032 TRADERS TRL	1032TTa	4				Y
7409 TRAIL BLAZER TRL	7409TBTa	4			Y	N
7417 TRAIL BLAZER TRL	7417TBTa	4			Y	N
7516 TRAIL BLAZER TRL	7516TBTa	4	2	1	Y	N
7600 TRAIL BLAZER TRL	7600TBTa	4			Y	N
7604 TRAIL BLAZER TRL	7604TBTa	4			Y	N
7605 TRAIL BLAZER TRL	7605TBTa	4			Y	N
7608 TRAIL BLAZER TRL	7608TBTa	4	2	1	Y	N
7613 TRAIL BLAZER TRL	7613TBTa	4			Y	N
1009 CEDAR KNOLL DR	1009CKDa	4			Y	N
1012 CEDAR KNOLL DR	1012CKDa	4			Y	Y
1017 CEDAR KNOLL DR	1017CKDa	4			Y	N
1020 CEDAR KNOLL DR	1020CKDa	4			Y	Y
1021 CEDAR KNOLL DR	1021CKDa	4			Y	N
1421 BENT RD	1421BRa	4	2	1	Y	N
1425 BENT RD	1425BRa	4			Y	N
1437 BENT RD	1437BRa	4			Y	N
1540 BENT RD	1540BRa	4				N
1548 BENT RD	1548BRa	4				Y
1601 BENT RD	1601BRa	4			Y	Y
1609 BENT RD	1609BRa	4			Y	N
1613 BENT RD	1613BRa	4				Y
1617 BENT RD	1617BRa	4				Y
1621 BENT RD	1621BRa	4			Y	Y

1625 BENT RD	1625BRa	4			Y	N
7701 BENTHILL CT	7701BHCa	4			Y	N
7720 BENTHILL CT	7720BHCa	4				N
7724 BENTHILL CT	7724BHCa	4			Y	N
7121 CHURCHILL DR	7121CDa	4				N
7217 CHURCHILL DR	7217CDa	4			Y	N
7220 CHURCHILL DR	7220CDa	4			Y	N
7225 CHURCHILL DR	7225CDa	4				N
7304 CHURCHILL DR	7304CDa	4			Y	N
7333 CHURCHILL DR	7333CDa	4			Y	N
7341 CHURCHILL DR	7341CDa	4				N
7412 CHURCHILL DR	7412CDa	4	2	1		N
7420 CHURCHILL DR	7420CDa	4	2	1	Y	N
2000 RUBICON LN	2000RLa	4			Y	Y
2012 RUBICON LN	2012RLa	4			Y	N
2020 RUBICON LN	2020RLa	4			Y	Y
2728 DURHAM RD	2728DRa	4				N
7605 BUD MORRIS RD	7605BMRa	4			Y	N
7625 BUD MORRIS RD	7625BMRa	4			Y	N
7636 BUD MORRIS RD	7636BMRa	4			Y	N
7645 BUD MORRIS RD	7645BMRa	4	2	1	Y	N
7644 BUD MORRIS RD	7644BMRa	4				N
7648 BUD MORRIS RD	7648BMRa	4	2	1	Y	Y
7708 BUD MORRIS RD	7708BMRa	4	2	1	Y	Y
7800 BUD MORRIS RD	7800BMRa	4				N
7804 BUD MORRIS RD	7804BMRa	4				Y
7808 BUD MORRIS RD	7808BMRa	4				N
7821 BUD MORRIS RD	7821BMRa	4				Y
7900 BUD MORRIS RD	7900BMRa	4			Y	N
7904 BUD MORRIS RD	7904BMRa	4				N
7908 BUD MORRIS RD	7908BMRa	4			Y	Y
7913 BUD MORRIS RD	7913BMRa	4			Y	Y
7921 BUD MORRIS RD	7921BMRa	4			Y	Y
7928 BUD MORRIS RD	7928BMRa	4				Y
7936 BUD MORRIS RD	7936BMRa	4				Y
7941 BUD MORRIS RD	794 BMRa	4			Y	N
8001 BUD MORRIS RD	8001BMRa	4			Y	N
8012 BUD MORRIS RD	8012BMRa	4			Y	N
1129 Moretz Creek Rd	1129MCRa	4			Y	



Quality Assurance Project Plan

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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, 14 private residences have TCE above it's Maximum Contaminant Level (MCL) of 5 ug/l. Currently, seven 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 residences have detections of TCE and/or PCE, 14 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 10 residences have occurred.</p>
<p>A6. Project Description:</p>	<p>Collecting potable well samples from over 82 residences within ¾ mile of the site. GPS readings will be collected at locations that have not been previously located. This is a seasonally adjusted follow-up sampling of wells previously sampled during the Removal Action at this site. All potable wells will have samples collected for TVOA analysis plus SIMS for 1,1,2-TCA and Vinyl Chloride. In addition, all wells that had previous detections will be sampled for SVOAs and the 8 RCRA metals.</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 help characterize the nature and extent of groundwater contamination at the site, in order to determine which, if any, additional drinking water wells need to be replaced with alternative water, and to determine the scope of any needed additional future sampling of drinking water wells in neighborhoods surrounding the site.</p> <p>The primary decision in the DQO process for the site relating to potable well water is: are site-related contaminants found in private drinking water wells within three-quarter mile of the site at concentrations exceeding the associated health-based screening criteria?</p> <p>All potable well water 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, 1,1,2-TCA 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 Level (MCL), Region 4 Regional Screening Level (RSL), SCDM values, and NC 2L groundwater standards. All data will be reviewed by the NC Project Manager and the NC Industrial Hygienist. Any wells in use with values exceeding the MCL, RSL, or NC 2L values may be potentially recommended to the US EPA Region 4 Emergency Response and Removal Branch (ERRB) for further action. EPA Region 4 will be notified of all exceedences of both MCL and RSL values in any of the potable well sample results.</p>
<p>Applicable regulatory information, action levels, etc.</p>	<p>Data will be compared with regulatory benchmarks, including NC Groundwater Standards (15A NCAC 2L, 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</p>

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