Appendices

Appendix A

Phytoforensic (Tree Core) Delineation Report

Phytoforensic Pollution Delineation - Montague DuPont Site.

Training Materials & Collaborative Site Sampling and Analysis Plans

Presented to:

George Gregory
George.Gregory@urs.com

Subcontracting to DuPont

Not to be shared or distributed beyond collaborative partners
with URS and DuPont personnel

SUBMITTED AS A FIXED PRICE PROPOSAL

Joel G. Burken, PhD, PE, BCEE
Missouri S&T
Missouri University of Science and Technology
Phone: 573-201-9106
Burken@mst.edu

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Tree Core Collection and Analysis Protocol

Joel G. Burken, PhD, PE, BCEE

This document is meant for the sole purpose of conferring methods, sampling plans and analytical procedures to URS and DuPont personnel. Methods and details herein are not for dissemination other than to the involved URS and DuPont personnel.

Plant sampling methods have been developed at the Missouri S&T laboratories that are not accepted and applied as site assessment tool (Vroblesky 2008). Plant sampling for a rapid delineation of subsurface contamination has been termed 'Phytoscreening' and is part of a variety of methods grouped to be known as "Phytoforensics" (Burken et al. 2011). Phytoforensic methods have been accepted in the US and by the European Union (Trapp et al, 2008).

Below is a summary of work to be done and that has been completed to determine partitioning coefficients that will be use and details on how the cores are collected and analyzed. Slight variation from these experiments may be utilized to optimize the analysis. Using a combination of novel analytic methods for CFCs and established site investigation tools for chlorinated solvents, Missouri S&T plans to carry out analysis of approximately 60-70 tree cores from the contaminated site for each CFCs and chlorinated solvents (hereafter "VOCs") analysis from a targeted 60 individual trees (approximate, can be adjusted.). Samples will be collected by Missouri S&T personnel and equipment will be supplied by Missouri S&T. On-site support to be provided by URS/DuPont. Specific tasks proposed and separately priced are listed below, including 1) sample collection, and 2) VOCs analysis on cores. Missouri S&T will offer reduced data (to give *in planta* concentrations) data to URS/DuPont for mapping concentrations and developing the site assessment report and including the coordinated groundwater analysis (provided by URS). Missouri S&T can provide additional services in the mapping and data analysis if requested.

Proposed cost by task

1)	Site trip and Sampling	(approximately 60 samples)	$ 6,130
2)	Cl-VOC analysis	@ Missouri S&T	$ 11,000
	Total for all three priced options		$ 17,130
	Estimates are inclusive of all overhead and F&A.		

The proposal is offered as a Fixed Price proposal.

All contracting will be through the Missouri S&T Office of Sponsored Programs, the contracting authority of the university.

Please contact Mr. Kevin Stadler (573) 341-7272 (stadlerk@mst.edu)

Materials and Methods:

Sample Analysis to be done

Tree cores of approximately 2 inch length and 0.2 inch (0.5 cm) diameter will be taken with a 0.2 inch increment borer (Forestry Services Inc.). Duplicate samples are to be included in each vial, taken approximately 4 cm apart, 1.2 m above ground surface. The tree cores include both xylem and phloem tissues. Cores are collected by placing the coring end of the borer on the selected spot, then applying pressure to the borer, with the extraction rod removed. The increment borer can be difficult to start in hardwood trees. A good, clean start is critical to getting a continuous core. The borer is then screwed into the tree clock-wise, to an approximate depth of 5 cm. The extraction rod is then inserted fully. The borer is turned counter clockwise ¼ turn. The extraction rod is then removed, carefully to ensure the core remains intact. Core is then immediately placed in the vial, next paragraph has details on core handling. The borer does not need to be rinsed before collecting a new core in earlier tests on Cl-VOCs. Each tree core is put in a 20 ml vial, using a forceps. The vials will be closed immediately with a Teflon rubber septum and sealed with crimp top seal. After sealing cores, then GPS location can be logged if GPS is desired (to be provided by URS/DuPont personnel). Upon sample collection completion, labeled vials should be refrigerated or stored on ice until they are transported to Missouri S&T for analysis. Should Missouri S&T personnel not be present, greater detail will be shared.

Analytic methods Cl-VOCs

Upon arrival, all biomass samples are allowed to equilibrate with the headspace for at least 48 hours. Solid Phase Microextraction (SPME) headspace will be completed on an Agilent 6890 gas chromatograph or Agilent 5890II GC-Mass Spectrometer for unknown peaks. Peak areas are compared to 5 point standard curves that bracket the measured concentration. Headspace standards are prepared with known aqueous concentrations in the identical vials and headspace concentrations are calculated with published (EPA) Henry's partition coefficients. SPME headspace analytics is the standard analytical tool for the chlorinated VOCs anticipated. Details are outlined int eh attached publication (Limmer et al 2011) Post chemical analysis, the vials are weighed, and opened. The opened vials are vented in a fume hood, and later dried at 103C overnight. The dry mass is recorded (mass lost is the moisture content) and the dried core biomass is recorded. Exact lengths of the tree cores is also recorded and diameter is controlled by the increment borer, 0.2 inch diameter.

This will result in a headspace concentration for the sample. Reported as μg/l and normalized for the biomass of the core. Resulting units presented are $\mu g/l/mg_{biomass}$. For compounds with a known partition coefficients (TCE, PCE, DCE, BTEX, Carbon Tetrachloride, MTBE) will be applied to calculate the initial biomass concentrations (*in-situ* concentration) (Baduru et al, 2008). This procedure can be performed post analysis and used to convert the $\mu g/l/mg_{biomass}$ (normalized concentrations) to actual concentrations, $\mu g/g_{biomass}$, $\mu g/g_{dry\ biomass}$, $\mu g/ml_{xylem\ flow}$. The procedure for calculating the partitioning coefficients is listed below and further outlined in the initial journal article that accompanied this document (Ma and Burken; 2002, Sheehan et al. 2011; Vroblesky 2008)). For this case, data will be reported to URS/DuPont personnel as equilibrated aqueous concentrations $\mu g/ml_{xylem\ flow}$. Tabled raw data (peak areas) and calculated concentrations will be sent to URS/DuPont within 10 days of executing the sampling.

References and Supporting Documents

Baduru, K.K., S.T. Trapp, and J.G. Burken (2008) Direct Measurement of VOC Diffusivities in Tree Tissues: Impacts on Tree-based Phytoremediation. *Environmental Science and Technology,* 42(4); 1268-1275

Burken, J.G., D. Vroblesky, J.C. Balouet (2011) Phytoforensics, Dendrochemistry, and Phytoscreening: New Green Tools for Delineating Contaminants from Past and Present (feature) *Environmental Science and Technology* 45(15) pp 6218–6226.

Limmer, M; J.C. Balouet; F. Karg; D.A. Vroblesky; J.G. Burken, (2011) Phytoscreening for Chlorinated Solvents Using Rapid In-Vitro SPME Sampling: Application to Urban Plume in Verl, Germany. *Environmental Science and Technology*;45(19):8276-82

Ma, X. and J.G. Burken (2002) VOCs Fate and Partitioning in Vegetation: Use of Tree Cores in Groundwater Analysis. *Environmental Science and Technology,*36 (21) 4663 – 4668.

Patent: Assemblies for Use In Delineating Subsurface Contamination, and Related Methods: Serial No. 12/463,163 (Missouri S&T – Burken) Posted for publication August 2012

Sheehan, E., Burken, J.G., Limmer, M.A., Mayer, P, Karlson, U.G. (2012) Time Weighted Average SPME Analysis For *In planta* Determination of cVOCs, *Environmental Science and Technology,* 46(6), pp 3319–3325

Trapp S., M. Larsen, C. Legind, J.G. Burken, J. Machackova, and U. Gosewinkel Karlson (2008) A Guide to Vegetation Sampling for Screening Subsurface Pollution. BIOTOOL Project GOCE003998, European Union Publication, 5 pages http://www.gbf.de/biotools/Biotool/GuidetoVegetationSampling.pdf

Vroblesky, D. A. *User's Guide to the Collection and Analysis of Tree Cores to Assess the Distribution of Subsurface Volatile Organic Compounds*; U.S. Geological Survey 2008; p 59.

All referenced papers and greater detail are available upon request.

Information Regarding Worksheet Tabs

SUMMARY

Purpose: This tab summarizes all the data gathered.

Columns

- Tree #: Trees are assigned unique numbers
- Vial #: An individual sample, which may be a tree sample or blank
- Type: Type of sample; generally a core or type of blank
- Air Blank: Is sample a blank?
- Duplicate: Is the sample a duplicate measurement from the same tree (and same side)
- Core Concentrations: Analyte core concentrations, generally in part per trillion (ppt) (i.e., ng analyte/L sap water)
  - Core concentrations are mass corrected
  - Concentrations below the method detection limit (MDL) are shown as "ND"
  - Concentrations above the MDL, but below the method quantitation limit (MQL) are shown as "NQ"
  - The MQL is defined as 10x the MDL
  - MDLs are listed in the Core Data tab, to the right of the main tables
  - If a calibration is unavailable, compounds will be listed as "ND" or "Detected"
- Sampling Date: Date tree core was removed from tree
- Sampling Time: Time tree core was removed from tree
- Diameter: Tree diameter at breast height (DBH) in listed units (tree trunk assumed cylindrical)
- Tree Type: Genus and species of tree
- Notes: Any relevant notes

SUMMARY (tree avg)

Purpose: This tab summarizes, by tree, all the data gathered. The spreadsheet is also used to generate 'tree chart'. A bar chart of contaminants by tree.

Tree Chart

Purpose: A visual display of the data by tree

- Data are aggregated by tree. Error bars denote the max and min values when available

HISTOGRAM

Purpose: A visual display of the data

- Data are aggregated into logarithmic bins to easily examine the spread of the data

CORE DATA

Purpose: This tab contains raw GC data, conversion to concentrations, and calibration data

- This tab is generally only of interest to the instrument technician

CORE MASS

Purpose: This tab contains core mass data to be used for mass correction calculations

- Wet and dry masses and %water are shown
- The mass correction factors are multiplied by the concentrations in the Core Data tab to obtain the concentrations in the Summary tab
- Factors used in the calculation, such as wood-water partitioning and henry's constant are shown to the right

0					Core Concentrations											
Tree #	Vial #	Type	Air Blank?	Duplicate?	CFC 113	?	CF	1,1,1-TCA	CT	TCE	PCE (PDMS)	Extrapolation?	Sampling Date	Sampling Time	Diameter (in)	Tree Type
					ppt	ppt	ppt	ppt	ppt	ppt	ppt					
		Blank Max			-	-	-	-	-	-	-					
		Blank Average			-	-	-	-	-	-	-					
	1	Field Blank	Yes		ND	ND	ND	ND	ND	ND	NQ	CFC 113 Low;PCE (PDMS) Low	9/20/2012	8:30		
4	2	Core			NQ	ND	82.3	ND	NQ	ND	105	CFC 113 Low;CF Low;1,1,1-TC/	9/20/2012		7 1/4	Oak
3	3	Core			NQ	ND	33.7	NQ	NQ	ND	4,458	CFC 113 Low;CF Low;1,1,1-TC/	9/20/2012		6 1/4	Poplar
2	4	Core			ND	Detected	ND	ND	ND	NQ	2,395	CFC 113 Low;? High;1,1,1-TCA	9/20/2012		9	Oak
1	5	Core			NQ	Detected	2,209.9	40.9	ND	307	860	CFC 113 Low;? High;PCE High;	9/20/2012		7	Oak
6	6	Core			ND	Detected	254.0	ND	ND	483	1,548	CFC 113 Low;? High;PCE High;	9/20/2012		8	Oak
45	7	Core			ND	ND	ND	ND	ND	ND	2,115	PCE High;	9/20/2012		11	White Pine
10	8	Core			ND	ND	48.1	NQ	ND	ND	847	CFC 113 Low;CF Low;1,1,1-TC/	9/20/2012		21	Hemlock
10	9	Core		Yes	ND	ND	45.6	ND	ND	ND	690	CF Low;1,1,1-TCA Low;PCE Hig	9/20/2012		21	Hemlock
9	10	Core			ND	ND	441.1	22.3	ND	53	1,077	CFC 113 Low;PCE High;	9/20/2012		18 1/4	Poplar
8	11	Core			ND	ND	21.4	ND	ND	ND	12	CF Low;	9/20/2012		12	Oak
7	12	Core			ND	ND	ND	ND	ND	ND	14,034	PCE High;PCE (PDMS) High;	9/20/2012		22 1/4	White Pine
13	13	Core			ND	ND	NQ	ND	ND	ND	50	CF Low;	9/20/2012		14 1/2	Hemlock
5	14	Core			ND	Detected	30.0	ND	ND	ND	190	? High;CF Low;PCE High;	9/20/2012		25 3/4	Hemlock
12	15	Core			ND	Detected	ND	ND	ND	ND	NQ	? High;	9/20/2012		28 3/4	Hemlock
46	16	Directional Core			ND	Detected	ND	ND	ND	ND	142	? High;PCE High;	9/20/2012		17 1/4	Oak
46	17	Directional Core		Yes	ND	Detected	ND	ND	ND	ND	550	? High;PCE High;	9/20/2012		17 1/4	Oak
47	18	Directional Core			ND	Detected	ND	ND	ND	ND	NQ	? High;	9/20/2012		17 3/4	Oak
47	19	Directional Core		Yes	ND	Detected	ND	ND	ND	ND	ND	? High;PCE Low;	9/20/2012		17 3/4	Oak
11	20	Core			ND	ND	ND	ND	ND	ND	ND	PCE Low;PCE (PDMS) Low;	9/20/2012		15 1/4	Maple
18	21	Core			ND	ND	ND	ND	ND	ND	283	1,1,1-TCA Low;PCE High;	9/20/2012		14 1/2	Hemlock
17	22	Core			ND	ND	ND	ND	ND	ND	91	1,1,1-TCA Low;	9/20/2012		12 3/4	Beech
16	23	Core			ND	ND	22.3	NQ	ND	ND	87	CFC 113 Low;CF Low;1,1,1-TC/	9/20/2012		16 3/4	Beech
15	24	Core			ND	ND	ND	ND	ND	ND	239	1,1,1-TCA Low;PCE High;	9/20/2012		9 1/4	Hemlock
14	25	Core			ND	ND	ND	ND	ND	ND	52		9/20/2012		17 1/4	Hemlock
14	26	Core		Yes	ND	ND	19.3	ND	ND	ND	66	CF Low;	9/20/2012		17 1/4	Hemlock
21	27	Core			ND	Detected	26.6	ND	ND	ND	22	? High;CF Low;	9/20/2012		21 1/2	Hemlock
25	28	Core			ND	Detected	NQ	ND	ND	ND	NQ	? High;CF Low;PCE Low;	9/20/2012		22	Hemlock
26	29	Core			ND	ND	21.5	NQ	ND	ND	1,194	CFC 113 Low;CF Low;1,1,1-TC/	9/20/2012		14 1/2	Poplar
27	30	Core			ND	ND	NQ	ND	NQ	ND	NQ	CF Low;CT Low;PCE (PDMS) Lo	9/20/2012		15 3/4	Beech
34	31	Core			ND	ND	27.0	ND	NQ	ND	NQ	CF Low;1,1,1-TCA Low;CT Low	9/20/2012		9	Hemlock
33	32	Core			ND	ND	31.9	ND	NQ	ND	NQ	CF Low;CT Low;PCE Low;PCE (	9/20/2012		15 1/2	Ash
40	33	Core			ND	ND	NQ	ND	NQ	ND	NQ	CF Low;1,1,1-TCA Low;CT Low	9/20/2012		13 3/4	Ash
41	34	Core			ND	Detected	NQ	ND	NQ	ND	NQ	? High;CF Low;CT Low;PCE Lo	9/20/2012		9 1/4	Ash
	35	Field Blank	Yes		ND	Detected	NQ	ND	NQ	ND	NQ	? High;CF Low;CT Low;PCE Lo	9/20/2012	14:00		
43	36	Core			ND	ND	NQ	ND	NQ	ND	NQ	CF Low;CT Low;PCE Low;PCE (	9/20/2012		12 1/4	Ash
35	37	Core			ND	ND	NQ	ND	NQ	ND	NQ	CF Low;CT Low;PCE Low;PCE (	9/20/2012		18 1/2	Poplar
28	38	Core			ND	ND	21.9	ND	NQ	ND	NQ	CF Low;CT Low;	9/20/2012		28 3/4	Beech
28	39	Core		Yes	ND	ND	21.9	ND	NQ	ND	NQ	CF Low;CT Low;	9/20/2012		28 3/4	Beech
19	40	Core			ND	Detected	NQ	ND	NQ	ND	12	? High;CF Low;CT Low;	9/20/2012		12	Hemlock
20	41	Core			ND	ND	NQ	ND	NQ	ND	699	CF Low;1,1,1-TCA Low;CT Low	9/20/2012		15 1/4	Beech
29	42	Core			ND	Detected	ND	ND	NQ	ND	NQ	? High;CT Low;	9/20/2012		15 3/4	Hemlock
36	43	Core			ND	ND	24.4	ND	NQ	16	32	CF Low;1,1,1-TCA Low;CT Low	9/20/2012		16 3/4	Ash
30	44	Core			ND	ND	56.1	ND	NQ	NQ	NQ	CF Low;CT Low;	9/20/2012		18 1/4	Hemlock
37	45	Core			ND	Detected	53.0	ND	ND	NQ	ND	? High;CF Low;TCE Low;PCE Lo	9/20/2012		19 1/4	Hemlock
44	46	Core			ND	Detected	18.3	ND	NQ	ND	NQ	? High;CF Low;CT Low;PCE Lo	9/20/2012		6 1/2	Ash
31	47	Core			ND	ND	48.9	ND	NQ	ND	NQ	CF Low;CT Low;PCE Low;PCE (	9/20/2012		9 1/4	Ash
38	48	Core			ND	Detected	23.3	ND	NQ	ND	ND	? High;CF Low;CT Low;PCE Lo	9/20/2012		16 3/4	Oak
32	49	Core			ND	ND	37.0	ND	NQ	ND	NQ	CF Low;CT Low;PCE Low;PCE (	9/20/2012		18 3/4	Ash
39	50	Core			ND	ND	NQ	ND	NQ	ND	NQ	CF Low;CT Low;PCE Low;PCE (	9/20/2012		16 1/4	Hemlock
22	51	Core			ND	ND	26.2	ND	NQ	ND	NQ	CF Low;CT Low;PCE (PDMS) Lo	9/20/2012		13	Beech
	52	Field Blank	Yes		ND	ND	NQ	ND	NQ	ND	NQ	CF Low;CT Low;PCE Low;PCE (	9/21/2012			
11	53	Core		Yes	ND	ND	NQ	ND	NQ	ND	NQ	CF Low;1,1,1-TCA Low;CT Low	9/21/2012			
10	54	Core		Yes	ND	ND	47.5	NQ	NQ	ND	993	CFC 113 Low;CF Low;1,1,1-TC/	9/21/2012			
9	55	Core		Yes	ND	ND	344.2	NQ	NQ	46	4,922	CFC 113 Low;CT Low;PCE High	9/21/2012			

0					Core Concentrations								Sampling Date	Sampling Time	Diameter (in)	Tree Type
Tree #	Vial #	Type	Air Blank?	Duplicate?	CFC 113	?	CF	1,1,1-TCA	CT	TCE	PCE (PDMS)	Extrapolation?				
					ppt	ppt	ppt	ppt	ppt	ppt	ppt					
		Blank Max			-	-	-	-	-	-	-					
		Blank Average			-	-	-	-	-	-	-					
8	56	Core		Yes	ND	ND	16.9	ND	NQ	ND	16	CFC 113 Low;CF Low;CT Low;	9/21/2012			
7	57	Core		Yes	ND	ND	NQ	ND	ND	ND	13,800	CF Low;PCE High;PCE (PDMS)	9/21/2012			
5	58	Core		Yes	ND	ND	25.0	ND	NQ	ND	274	CF Low;CT Low;PCE High;	9/21/2012			
12	59	Core		Yes	ND	ND	NQ	ND	ND	ND	NQ	CF Low;	9/21/2012			
13	60	Core		Yes	ND	ND	NQ	ND	NQ	ND	42	CF Low;CT Low;	9/21/2012			
14	61	Core		Yes	ND	ND	NQ	ND	NQ	ND	52	CF Low;CT Low;	9/21/2012			
15	62	Core		Yes	ND	ND	NQ	ND	NQ	ND	209	CFC 113 Low;CF Low;1,1,1-TC	9/21/2012			
16	63	Core		Yes	ND	ND	18.4	ND	NQ	ND	59	CFC 113 Low;CF Low;1,1,1-TC	9/21/2012			
17	64	Core		Yes	ND	ND	NQ	ND	NQ	ND	94	CFC 113 Low;CF Low;1,1,1-TC	9/21/2012			
18	65	Core		Yes	ND	ND	NQ	ND	NQ	ND	401	CFC 113 Low;CF Low;1,1,1-TC	9/21/2012			
34	66	Core		Yes	ND	ND	20.5	ND	NQ	ND	NQ	CF Low;CT Low;PCE Low;PCE (	9/21/2012			
27	67	Core		Yes	ND	Detected	NQ	ND	NQ	ND	NQ	CFC 113 Low;? High;CF Low;C	9/21/2012			
26	68	Core		Yes	ND	ND	24.3	NQ	NQ	ND	1,340	CFC 113 Low;CF Low;1,1,1-TC	9/21/2012			
25	69	Core		Yes	ND	ND	15.5	ND	NQ	ND	NQ	CF Low;CT Low;	9/21/2012			
22	70	Core		Yes	ND	ND	29.8	ND	NQ	ND	NQ	CF Low;1,1,1-TCA Low;CT Low	9/21/2012			
21	71	Core		Yes	ND	Detected	ND	ND	ND	ND	38	? High;	9/21/2012			
36	72	Core		Yes	ND	ND	23.0	ND	NQ	23	54	CF Low;CT Low;	9/21/2012			
29	73	Core		Yes	ND	Detected	ND	ND	NQ	ND	NQ	? High;CT Low;	9/21/2012			
20	74	Core		Yes	ND	ND	NQ	ND	NQ	14	1,078	CF Low;1,1,1-TCA Low;CT Low	9/21/2012			
19	75	Core		Yes	ND	ND	ND	ND	NQ	ND	NQ	CT Low;	9/21/2012			
28	76	Core		Yes	ND	ND	29.1	ND	NQ	ND	NQ	CF Low;CT Low;PCE (PDMS) L	9/21/2012			
35	77	Core		Yes	ND	ND	NQ	ND	NQ	ND	ND	CF Low;CT Low;PCE Low;	9/21/2012			
37	78	Core		Yes	ND	Detected	73.5	ND	NQ	NQ	NQ	? High;CF Low;CT Low;TCE Lo	9/21/2012			
30	79	Core		Yes	ND	ND	62.0	ND	NQ	NQ	NQ	CF Low;CT Low;	9/21/2012			
31	80	Core		Yes	ND	ND	42.2	ND	NQ	ND	ND	CF Low;CT Low;PCE Low;	9/21/2012			
32	81	Core		Yes	ND	Detected	45.5	ND	NQ	ND	ND	? High;CF Low;CT Low;PCE Lo	9/21/2012			
33	82	Core		Yes	ND	ND	35.8	ND	NQ	ND	ND	CF Low;CT Low;PCE Low;	9/21/2012			
4	83	Core		Yes	NQ	ND	76.2	ND	NQ	ND	73	CFC 113 Low;CF Low;1,1,1-TC	9/21/2012			
3	84	Core		Yes	ND	ND	27.0	NQ	NQ	ND	3,352	CFC 113 Low;CF Low;1,1,1-TC	9/21/2012			
45	85	Core		Yes	ND	ND	NQ	ND	NQ	ND	1,994	CFC 113 Low;CF Low;1,1,1-TC	9/21/2012			
2	86	Core		Yes	ND	Detected	50.7	ND	NQ	NQ	2,460	CFC 113 Low;? High;CF Low;1,	9/21/2012			
6	87	Core		Yes	ND	Detected	52.2	ND	NQ	443	1,643	CFC 113 Low;? High;CF Low;C	9/21/2012			
1	88	Core		Yes	ND	Detected	1,577.6	17.9	ND	152	725	CFC 113 Low;? High;PCE High;	9/21/2012			
48	89	Core			ND	Detected	44.9	ND	NQ	ND	153	? High;CF Low;CT Low;PCE Hi	9/21/2012		16 1/2	Hemlock
48	90	Core		Yes	ND	ND	62.3	ND	NQ	ND	146	CF Low;CT Low;PCE High;	9/21/2012			
49	91	Core			ND	Detected	ND	ND	NQ	ND	ND	? High;CT Low;PCE Low;	9/21/2012		18	Oak
49	92	Core		Yes	ND	Detected	ND	ND	NQ	ND	ND	? High;CT Low;PCE Low;	9/21/2012			
	93	Field Blank	Yes		ND	ND	NQ	ND	NQ	ND	ND	CFC 113 Low;CF Low;CT Low;	9/21/2012			
	94	Trip Blank	Yes		ND	ND	ND	ND	NQ	ND	ND	CT Low;				

0				log Core Concentrations									
Tree #	Vial #	Type	Notes	CFC 113	?	cDCE	CF	1,1,1-TCA	CT	TCE	PCE	PCE (PDMS	TCEOH
		Blank Max											
		Blank Average											
	1	Field Blank		ND	ND	ND	ND	ND	ND	ND	(3)	NQ	ND
4	2	Core		NQ	ND	ND	(1)	ND	NQ	ND	(1)	(1.0)	ND
3	3	Core		NQ	ND	ND	(1)	NQ	NQ	ND	(0)	0.6	ND
2	4	Core		ND	Detected	ND	ND	ND	ND	NQ	(0)	0.4	ND
1	5	Core		NQ	Detected	ND	0	(1)	ND	(1)	(0)	(0.1)	ND
6	6	Core		ND	Detected	ND	(1)	ND	ND	(0)	(0)	0.2	ND
45	7	Core		ND	ND	ND	ND	ND	ND	ND	(0)	0.3	ND
10	8	Core		ND	ND	ND	(1)	NQ	ND	ND	(0)	(0.1)	ND
10	9	Core		ND	ND	ND	(1)	ND	ND	ND	(0)	(0.2)	ND
9	10	Core		ND	ND	ND	(0)	(2)	ND	(1)	(0)	0.0	ND
8	11	Core		ND	ND	ND	(2)	ND	ND	ND	(2)	(1.9)	ND
7	12	Core		ND	ND	ND	ND	ND	ND	ND	(0)	1.1	ND
13	13	Core		ND	ND	ND	NQ	ND	ND	ND	(1)	(1.3)	ND
5	14	Core		ND	Detected	ND	(2)	ND	ND	ND	(1)	(0.7)	ND
12	15	Core		ND	Detected	ND	ND	ND	ND	ND	(3)	NQ	ND
46	16	Directional Core	Away from landfill	ND	Detected	ND	ND	ND	ND	ND	(1)	(0.8)	ND
46	17	Directional Core	Towards landfill	ND	Detected	ND	ND	ND	ND	ND	(0)	(0.3)	ND
47	18	Directional Core	Away from landfill	ND	Detected	ND	ND	ND	ND	ND	(2)	NQ	ND
47	19	Directional Core	Towards landfill	ND	Detected	ND	ND	ND	ND	ND	(3)	ND	ND
11	20	Core		ND	ND	ND	ND	ND	ND	ND	(3)	ND	ND
18	21	Core		ND	ND	ND	ND	ND	ND	ND	(1)	(0.5)	ND
17	22	Core		ND	ND	ND	ND	ND	ND	ND	(1)	(1.0)	ND
16	23	Core		ND	ND	ND	(2)	NQ	ND	ND	(1)	(1.1)	ND
15	24	Core		ND	ND	ND	ND	ND	ND	ND	(1)	(0.6)	ND
14	25	Core		ND	ND	ND	ND	ND	ND	ND	(1)	(1.3)	ND
14	26	Core		ND	ND	ND	(2)	ND	ND	ND	(1)	(1.2)	ND
21	27	Core		ND	Detected	ND	(2)	ND	ND	ND	(2)	(1.7)	ND
25	28	Core		ND	Detected	ND	NQ	ND	ND	ND	(3)	NQ	ND
26	29	Core		ND	ND	ND	(2)	NQ	ND	ND	(0)	0.1	ND
27	30	Core		ND	ND	ND	NQ	ND	NQ	ND	(3)	NQ	ND
34	31	Core		ND	ND	ND	(2)	ND	NQ	ND	(3)	NQ	ND
33	32	Core		ND	ND	ND	(1)	ND	NQ	ND	(3)	NQ	ND
40	33	Core		ND	ND	ND	NQ	ND	NQ	ND	(3)	NQ	ND
41	34	Core		ND	Detected	ND	NQ	ND	NQ	ND	(3)	NQ	ND
	35	Field Blank		ND	Detected	ND	NQ	ND	NQ	ND	(3)	NQ	ND
43	36	Core		ND	ND	ND	NQ	ND	NQ	ND	(3)	NQ	ND
35	37	Core		ND	ND	ND	NQ	ND	NQ	ND	(3)	NQ	ND
28	38	Core		ND	ND	ND	(2)	ND	NQ	ND	(3)	NQ	ND
28	39	Core		ND	ND	ND	(2)	ND	NQ	ND	(3)	NQ	ND
19	40	Core		ND	Detected	ND	NQ	ND	NQ	ND	(2)	(1.9)	ND
20	41	Core	1 of 2 trunks	ND	ND	ND	NQ	ND	NQ	ND	(0)	(0.2)	ND
29	42	Core		ND	Detected	ND	ND	ND	NQ	ND	(2)	NQ	ND
36	43	Core		ND	ND	ND	(2)	ND	NQ	(2)	(1)	(1.5)	ND
30	44	Core		ND	ND	ND	(1)	ND	NQ	NQ	(2)	NQ	ND
37	45	Core		ND	Detected	ND	(1)	ND	NQ	NQ	(3)	ND	ND
44	46	Core		ND	Detected	ND	(2)	ND	NQ	ND	(3)	NQ	ND
31	47	Core		ND	ND	ND	(1)	ND	NQ	ND	(3)	NQ	ND
38	48	Core		ND	Detected	ND	(2)	ND	NQ	ND	(3)	ND	ND
32	49	Core		ND	ND	ND	(1)	ND	NQ	ND	(3)	NQ	ND
39	50	Core		ND	ND	ND	NQ	ND	NQ	ND	(3)	NQ	ND
22	51	Core		ND	ND	ND	(2)	ND	NQ	ND	(3)	NQ	ND
	52	Field Blank		ND	ND	ND	NQ	ND	NQ	ND	(3)	NQ	ND
11	53	Core		ND	ND	ND	NQ	ND	NQ	ND	(3)	NQ	ND
10	54	Core		ND	ND	ND	(1)	NQ	NQ	ND	(0)	(0.0)	ND
9	55	Core		ND	ND	ND	(0)	NQ	NQ	(1)	(0)	0.7	ND

0				log Core Concentrations									
Tree #	Vial #	Type	Notes	CFC 113	?	cDCE	CF	1,1,1-TCA	CT	TCE	PCE	PCE (PDMS	TCEOH
		Blank Max											
		Blank Average											
8	56	Core		ND	ND	ND	(2)	ND	NQ	ND	(2)	(1.8)	ND
7	57	Core		ND	ND	ND	NQ	ND	ND	ND	(0)	1.1	ND
5	58	Core		ND	ND	ND	(2)	ND	NQ	ND	(1)	(0.6)	ND
12	59	Core		ND	ND	ND	NQ	ND	ND	ND	(2)	NQ	ND
13	60	Core		ND	ND	ND	NQ	ND	NQ	ND	(2)	(1.4)	ND
14	61	Core		ND	ND	ND	NQ	ND	NQ	ND	(1)	(1.3)	ND
15	62	Core		ND	ND	ND	NQ	ND	NQ	ND	(1)	(0.7)	ND
16	63	Core		ND	ND	ND	(2)	ND	NQ	ND	(1)	(1.2)	ND
17	64	Core		ND	ND	ND	NQ	ND	NQ	ND	(1)	(1.0)	ND
18	65	Core		ND	ND	ND	NQ	ND	NQ	ND	(0)	(0.4)	ND
34	66	Core		ND	ND	ND	(2)	ND	NQ	ND	(3)	NQ	ND
27	67	Core		ND	Detected	ND	NQ	ND	NQ	ND	(3)	NQ	ND
26	68	Core		ND	ND	ND	(2)	NQ	NQ	ND	(0)	.1	ND
25	69	Core		ND	ND	ND	(2)	ND	NQ	ND	(2)	NQ	ND
22	70	Core		ND	ND	ND	(2)	ND	NQ	ND	(3)	NQ	ND
21	71	Core		ND	Detected	ND	ND	ND	ND	ND	(2)	(1.4)	ND
36	72	Core		ND	ND	ND	(2)	ND	NQ	(2)	(1)	(1.3)	ND
29	73	Core		ND	Detected	ND	ND	ND	NQ	ND	(2)	NQ	ND
20	74	Core		ND	ND	ND	NQ	ND	NQ	(2)	(0)	.0	ND
19	75	Core		ND	ND	ND	ND	ND	NQ	ND	(2)	NQ	ND
28	76	Core		ND	ND	ND	(2)	ND	NQ	ND	(3)	NQ	ND
35	77	Core		ND	ND	ND	NQ	ND	NQ	ND	(3)	ND	ND
37	78	Core		ND	Detected	ND	(1)	ND	NQ	NQ	(3)	NQ	ND
30	79	Core		ND	ND	ND	(1)	ND	NQ	NQ	(2)	NQ	ND
31	80	Core		ND	ND	ND	(1)	ND	NQ	ND	(3)	ND	ND
32	81	Core		ND	Detected	ND	(1)	ND	NQ	ND	(3)	ND	ND
33	82	Core		ND	ND	ND	(1)	ND	NQ	ND	(3)	ND	ND
4	83	Core		NQ	ND	ND	(1)	ND	NQ	ND	(1)	(1.1)	ND
3	84	Core		ND	ND	ND	(2)	NQ	NQ	ND	(0)	0.5	ND
45	85	Core		ND	ND	ND	NQ	ND	NQ	ND	(0)	0.3	ND
2	86	Core		ND	Detected	ND	(1)	ND	NQ	NQ	(0)	0.4	ND
6	87	Core		ND	Detected	ND	(1)	ND	NQ	(0)	(0)	0.2	ND
1	88	Core		ND	Detected	ND	0	(2)	ND	(1)	(0)	(0.1)	ND
48	89	Core		ND	Detected	ND	(1)	ND	NQ	ND	(0)	(0.8)	ND
48	90	Core		ND	ND	ND	(1)	ND	NQ	ND	(1)	(0.8)	ND
49	91	Core		ND	Detected	ND	ND	ND	NQ	ND	(3)	ND	ND
49	92	Core		ND	Detected	ND	ND	ND	NQ	ND	(3)	ND	ND
	93	Field Blank		ND	ND	ND	NQ	ND	NQ	ND	(3)	ND	ND
	94	Trip Blank		ND	ND	ND	ND	ND	NQ	ND	(3)	ND	ND

Summary (tree avg)

0	Core Concentrations								Diameter (in)	Tree Type
Tree #	CFC 113	?	CF	1,1,1-TCA	CT	TCE	PCE (PDMS)	Extrapolation?		
	ppt	ppt	ppt	ppt	ppt	ppt	ppt			
1	<MQL	<MQL	1,893.7	29.4	<MQL	230	792	CFC 113 Low;PCE (PDMS) Low	7	Oak
2	<MQL	<MQL	50.7	<MQL	<MQL	<MQL	2,427	CFC 113 Low;CF Low;1,1,1-TC/	9	Oak
3	<MQL	<MQL	30.3	<MQL	<MQL	<MQL	3,905	CFC 113 Low;CF Low;1,1,1-TC/	6 1/4	Poplar
4	<MQL	<MQL	79.2	<MQL	<MQL	<MQL	89	CFC 113 Low;? High;1,1,1-TCA	7 1/4	Oak
5	<MQL	<MQL	27.5	<MQL	<MQL	<MQL	232	CFC 113 Low;? High;PCE High;	25 3/4	Hemlock
6	<MQL	<MQL	153.1	<MQL	<MQL	463	1,595	CFC 113 Low;? High;PCE High;	8	Oak
7	<MQL	<MQL	<MQL	<MQL	<MQL	<MQL	13,917	PCE High;	22 1/4	White Pine
8	<MQL	<MQL	19.2	<MQL	<MQL	<MQL	14	CFC 113 Low;CF Low;1,1,1-TC/	12	Oak
9	<MQL	<MQL	392.6	22.3	<MQL	50	2,999	CF Low;1,1,1-TCA Low;PCE Hig	18 1/4	Poplar
10	<MQL	<MQL	47.1	<MQL	<MQL	<MQL	844	CFC 113 Low;PCE High;	21	Hemlock
11	<MQL	<MQL	<MQL	<MQL	<MQL	<MQL	<MQL	CF Low;	15 1/4	Maple
12	<MQL	<MQL	<MQL	<MQL	<MQL	<MQL	<MQL	PCE High;PCE (PDMS) High;	28 3/4	Hemlock
13	<MQL	<MQL	<MQL	<MQL	<MQL	<MQL	46	CF Low;	14 1/2	Hemlock
14	<MQL	<MQL	19.3	<MQL	<MQL	<MQL	57	? High;CF Low;PCE High;	17 1/4	Hemlock
15	<MQL	<MQL	<MQL	<MQL	<MQL	<MQL	224	? High;	9 1/4	Hemlock
16	<MQL	<MQL	20.4	<MQL	<MQL	<MQL	73	? High;PCE High;	16 3/4	Beech
17	<MQL	<MQL	<MQL	<MQL	<MQL	<MQL	92	? High;PCE High;	12 3/4	Beech
18	<MQL	<MQL	<MQL	<MQL	<MQL	<MQL	342	? High;	14 1/2	Hemlock
19	<MQL	<MQL	<MQL	<MQL	<MQL	<MQL	12	? High;PCE Low;	12	Hemlock
20	<MQL	<MQL	<MQL	<MQL	<MQL	14	888	PCE Low;PCE (PDMS) Low;	15 1/4	Beech
21	<MQL	<MQL	26.6	<MQL	<MQL	<MQL	30	1,1,1-TCA Low;PCE High;	21 1/2	Hemlock
22	<MQL	<MQL	28.0	<MQL	<MQL	<MQL	<MQL	1,1,1-TCA Low;	13	Beech
25	<MQL	<MQL	15.5	<MQL	<MQL	<MQL	<MQL		22	Hemlock
26	<MQL	<MQL	22.9	<MQL	<MQL	<MQL	1,267	CF Low;	14 1/2	Poplar
27	<MQL	<MQL	<MQL	<MQL	<MQL	<MQL	<MQL	? High;CF Low;	15 3/4	Beech
28	<MQL	<MQL	24.3	<MQL	<MQL	<MQL	<MQL	? High;CF Low;PCE Low;	28 3/4	Beech
29	<MQL	<MQL	<MQL	<MQL	<MQL	<MQL	<MQL	CFC 113 Low;CF Low;1,1,1-TC/	15 3/4	Hemlock
30	<MQL	<MQL	59.1	<MQL	<MQL	<MQL	<MQL	CF Low;CT Low;PCE (PDMS) Lo	18 1/4	Hemlock
31	<MQL	<MQL	45.6	<MQL	<MQL	<MQL	<MQL	CF Low;1,1,1-TCA Low;CT Low	9 1/4	Ash
32	<MQL	<MQL	41.3	<MQL	<MQL	<MQL	<MQL	CF Low;CT Low;PCE Low;PCE (	18 3/4	Ash
33	<MQL	<MQL	33.8	<MQL	<MQL	<MQL	<MQL	CF Low;1,1,1-TCA Low;CT Low	15 1/2	Ash
34	<MQL	<MQL	23.8	<MQL	<MQL	<MQL	<MQL	? High;CF Low;CT Low;PCE Lov	9	Hemlock
35	<MQL	<MQL	<MQL	<MQL	<MQL	<MQL	<MQL	? High;CF Low;CT Low;PCE Lov	18 1/2	Poplar
36	<MQL	<MQL	23.7	<MQL	<MQL	19	43	CF Low;CT Low;PCE Low;PCE (	16 3/4	Ash
37	<MQL	<MQL	63.2	<MQL	<MQL	<MQL	<MQL	CF Low;CT Low;PCE Low;PCE (	19 1/4	Hemlock
38	<MQL	<MQL	23.3	<MQL	<MQL	<MQL	<MQL	CF Low;CT Low;	16 3/4	Oak

Summary (tree avg)

0	Core Concentrations								Diameter (in)	Tree Type
Tree #	CFC 113	?	CF	1,1,1-TCA	CT	TCE	PCE (PDMS)	Extrapolation?		
	ppt	ppt	ppt	ppt	ppt	ppt	ppt			
39	<MQL	<MQL	<MQL	<MQL	<MQL	<MQL	<MQL	CF Low;CT Low;	16 1/4	Hemlock
40	<MQL	<MQL	<MQL	<MQL	<MQL	<MQL	<MQL	? High;CF Low;CT Low;	13 3/4	Ash
41	<MQL	<MQL	<MQL	<MQL	<MQL	<MQL	<MQL	CF Low;1,1,1-TCA Low;CT Low	9 1/4	Ash
43	<MQL	<MQL	<MQL	<MQL	<MQL	<MQL	<MQL	CF Low;1,1,1-TCA Low;CT Low	12 1/4	Ash
44	<MQL	<MQL	18.3	<MQL	<MQL	<MQL	<MQL	CF Low;CT Low;	6 1/2	Ash
45	<MQL	<MQL	<MQL	<MQL	<MQL	<MQL	2,054	? High;CF Low;TCE Low;PCE Lo	11	White Pine
46	<MQL	<MQL	<MQL	<MQL	<MQL	<MQL	346	? High;CF Low;CT Low;PCE Lov	17 1/4	Oak
47	<MQL	<MQL	<MQL	<MQL	<MQL	<MQL	<MQL	CF Low;CT Low;PCE Low;PCE (	17 3/4	Oak
48	<MQL	<MQL	53.6	<MQL	<MQL	<MQL	149	? High;CF Low;CT Low;PCE Lov	16 1/2	Hemlock
49	<MQL	<MQL	<MQL	<MQL	<MQL	<MQL	<MQL	CF Low;CT Low;PCE Low;PCE (	18	Oak

0					Core Concentrations											
Tree #	Vial #	Type	Air Blank?	Duplicate?	CFC 113	?	CF	1,1,1-TCA	CT	TCE	PCE (PDMS)	Extrapolation?	Sampling Date	Sampling Time	Diameter (in)	Tree Type
					ppt	ppt	ppt	ppt	ppt	ppt	ppt					
		Blank Max			-	-	-	-	-	-	-					
		Blank Average			-	-	-	-	-	-	-					
	1	Field Blank	Yes		ND	ND	ND	ND	ND	ND	NQ	CFC 113 Low;PCE (PDMS) Low	9/20/2012	8:30		
4	2	Core			NQ	ND	82.3	ND	NQ	ND	105	CFC 113 Low;CF Low;1,1,1-TC	9/20/2012		7 1/4	Oak
3	3	Core			NQ	ND	33.7	NQ	NQ	ND	4,458	CFC 113 Low;CF Low;1,1,1-TC	9/20/2012		6 1/4	Poplar
2	4	Core			ND	Detected	ND	ND	ND	NQ	2,395	CFC 113 Low;? High;1,1,1-TCA	9/20/2012		9	Oak
1	5	Core			NQ	Detected	2,209.9	40.9	ND	307	860	CFC 113 Low;? High;PCE High;	9/20/2012		7	Oak
6	6	Core			ND	Detected	254.0	ND	ND	483	1,548	CFC 113 Low;? High;PCE High;	9/20/2012		8	Oak
45	7	Core			ND	ND	ND	ND	ND	ND	2,115	PCE High;	9/20/2012		11	White Pine
10	8	Core			ND	ND	48.1	NQ	ND	ND	847	CFC 113 Low;CF Low;1,1,1-TC	9/20/2012		21	Hemlock
10	9	Core		Yes	ND	ND	45.6	ND	ND	ND	690	CF Low;1,1,1-TCA Low;PCE Hi	9/20/2012		21	Hemlock
9	10	Core			ND	ND	441.1	22.3	ND	53	1,077	CFC 113 Low;PCE High;	9/20/2012		18 1/4	Poplar
8	11	Core			ND	ND	21.4	ND	ND	ND	12	CF Low;	9/20/2012		12	Oak
7	12	Core			ND	ND	ND	ND	ND	ND	14,034	PCE High;PCE (PDMS) High;	9/20/2012		22 1/4	White Pine
13	13	Core			ND	ND	NQ	ND	ND	ND	50	CF Low;	9/20/2012		14 1/2	Hemlock
5	14	Core			ND	Detected	30.0	ND	ND	ND	190	? High;CF Low;PCE High;	9/20/2012		25 3/4	Hemlock
12	15	Core			ND	Detected	ND	ND	ND	ND	NQ	? High;	9/20/2012		28 3/4	Hemlock
46	16	Directional Core			ND	Detected	ND	ND	ND	ND	142	? High;PCE High;	9/20/2012		17 1/4	Oak
46	17	Directional Core		Yes	ND	Detected	ND	ND	ND	ND	550	? High;PCE High;	9/20/2012		17 1/4	Oak
47	18	Directional Core			ND	Detected	ND	ND	ND	ND	NQ	? High;	9/20/2012		17 3/4	Oak
47	19	Directional Core		Yes	ND	Detected	ND	ND	ND	ND	ND	? High;PCE Low;	9/20/2012		17 3/4	Oak
11	20	Core			ND	ND	ND	ND	ND	ND	ND	PCE Low;PCE (PDMS) Low;	9/20/2012		15 1/4	Maple
18	21	Core			ND	ND	ND	ND	ND	ND	283	1,1,1-TCA Low;PCE High;	9/20/2012		14 1/2	Hemlock
17	22	Core			ND	ND	ND	ND	ND	ND	91	1,1,1-TCA Low;	9/20/2012		12 3/4	Beech
16	23	Core			ND	ND	22.3	NQ	ND	ND	87	CFC 113 Low;CF Low;1,1,1-TC	9/20/2012		16 3/4	Beech
15	24	Core			ND	ND	ND	ND	ND	ND	239	1,1,1-TCA Low;PCE High;	9/20/2012		9 1/4	Hemlock
14	25	Core			ND	ND	ND	ND	ND	ND	52		9/20/2012		17 1/4	Hemlock
14	26	Core		Yes	ND	ND	19.3	ND	ND	ND	66	CF Low;	9/20/2012		17 1/4	Hemlock
21	27	Core			ND	Detected	26.6	ND	ND	ND	22	? High;CF Low;	9/20/2012		21 1/2	Hemlock
25	28	Core			ND	Detected	NQ	ND	ND	ND	NQ	? High;CF Low;PCE Low;	9/20/2012		22	Hemlock
26	29	Core			ND	ND	21.5	NQ	ND	ND	1,194	CFC 113 Low;CF Low;1,1,1-TC	9/20/2012		14 1/2	Poplar
27	30	Core			ND	ND	NQ	ND	NQ	ND	NQ	CF Low;CT Low;PCE (PDMS) Lo	9/20/2012		15 3/4	Beech
34	31	Core			ND	ND	27.0	ND	NQ	ND	NQ	CF Low;1,1,1-TCA Low;CT Low	9/20/2012		9	Hemlock
33	32	Core			ND	ND	31.9	ND	NQ	ND	NQ	CF Low;CT Low;PCE Low;PCE (	9/20/2012		15 1/2	Ash
40	33	Core			ND	ND	NQ	ND	NQ	ND	NQ	CF Low;1,1,1-TCA Low;CT Low	9/20/2012		13 3/4	Ash
41	34	Core			ND	Detected	NQ	ND	NQ	ND	NQ	? High;CF Low;CT Low;PCE Lo	9/20/2012		9 1/4	Ash
	35	Field Blank	Yes		ND	Detected	NQ	ND	NQ	ND	NQ	? High;CF Low;CT Low;PCE Lo	9/20/2012	14:00		
43	36	Core			ND	ND	NQ	ND	NQ	ND	NQ	CF Low;CT Low;PCE Low;PCE (	9/20/2012		12 1/4	Ash
35	37	Core			ND	ND	NQ	ND	NQ	ND	NQ	CF Low;CT Low;PCE Low;PCE (	9/20/2012		18 1/2	Poplar
28	38	Core			ND	ND	21.9	ND	NQ	ND	NQ	CF Low;CT Low;	9/20/2012		28 3/4	Beech
28	39	Core		Yes	ND	ND	21.9	ND	NQ	ND	NQ	CF Low;CT Low;	9/20/2012		28 3/4	Beech
19	40	Core			ND	Detected	NQ	ND	NQ	ND	12	? High;CF Low;CT Low;	9/20/2012		12	Hemlock
20	41	Core			ND	ND	NQ	ND	NQ	ND	699	CF Low;1,1,1-TCA Low;CT Low	9/20/2012		15 1/4	Beech
29	42	Core			ND	Detected	ND	ND	NQ	ND	NQ	? High;CT Low;	9/20/2012		15 3/4	Hemlock
36	43	Core			ND	ND	24.4	ND	NQ	16	32	CF Low;1,1,1-TCA Low;CT Low	9/20/2012		16 3/4	Ash
30	44	Core			ND	ND	56.1	ND	NQ	NQ	NQ	CF Low;CT Low;	9/20/2012		18 1/4	Hemlock
37	45	Core			ND	Detected	53.0	ND	ND	NQ	ND	? High;CF Low;TCE Low;PCE Lo	9/20/2012		19 1/4	Hemlock
44	46	Core			ND	Detected	18.3	ND	NQ	ND	NQ	? High;CF Low;CT Low;PCE Lo	9/20/2012		6 1/2	Ash
31	47	Core			ND	ND	48.9	ND	NQ	ND	NQ	CF Low;CT Low;PCE Low;PCE (	9/20/2012		9 1/4	Ash
38	48	Core			ND	Detected	23.3	ND	NQ	ND	ND	? High;CF Low;CT Low;PCE Lo	9/20/2012		16 3/4	Oak
32	49	Core			ND	ND	37.0	ND	NQ	ND	NQ	CF Low;CT Low;PCE Low;PCE (	9/20/2012		18 3/4	Ash
39	50	Core			ND	ND	NQ	ND	NQ	ND	NQ	CF Low;CT Low;PCE Low;PCE (	9/20/2012		16 1/4	Hemlock
22	51	Core			ND	ND	26.2	ND	NQ	ND	NQ	CF Low;CT Low;PCE (PDMS) Lo	9/20/2012		13	Beech
	52	Field Blank	Yes		ND	ND	NQ	ND	NQ	ND	NQ	CF Low;CT Low;PCE Low;PCE (	9/21/2012			
11	53	Core		Yes	ND	ND	NQ	ND	NQ	ND	NQ	CF Low;1,1,1-TCA Low;CT Low	9/21/2012			
10	54	Core		Yes	ND	ND	47.5	NQ	NQ	ND	993	CFC 113 Low;CF Low;1,1,1-TC	9/21/2012			
9	55	Core		Yes	ND	ND	344.2	NQ	NQ	46	4,922	CFC 113 Low;CT Low;PCE High	9/21/2012			

0					Core Concentrations											
Tree #	Vial #	Type	Air Blank?	Duplicate?	CFC 113	?	CF	1,1,1-TCA	CT	TCE	PCE (PDMS)	Extrapolation?	Sampling Date	Sampling Time	Diameter (in)	Tree Type
					ppt	ppt	ppt	ppt	ppt	ppt	ppt					
		Blank Max			-	-	-	-	-	-	-					
		Blank Average			-	-	-	-	-	-	-					
8	56	Core		Yes	ND	ND	16.9	ND	NQ	ND	16	CFC 113 Low;CF Low;CT Low;	9/21/2012			
7	57	Core		Yes	ND	ND	NQ	ND	ND	ND	13,800	CF Low;PCE High;PCE (PDMS)	9/21/2012			
5	58	Core		Yes	ND	ND	25.0	ND	NQ	ND	274	CF Low;CT Low;PCE High;	9/21/2012			
12	59	Core		Yes	ND	ND	NQ	ND	ND	ND	NQ	CF Low;	9/21/2012			
13	60	Core		Yes	ND	ND	NQ	ND	NQ	ND	42	CF Low;CT Low;	9/21/2012			
14	61	Core		Yes	ND	ND	NQ	ND	NQ	ND	52	CF Low;CT Low;	9/21/2012			
15	62	Core		Yes	ND	ND	NQ	ND	NQ	ND	209	CFC 113 Low;CF Low;1,1,1-TC/	9/21/2012			
16	63	Core		Yes	ND	ND	18.4	ND	NQ	ND	59	CFC 113 Low;CF Low;1,1,1-TC/	9/21/2012			
17	64	Core		Yes	ND	ND	NQ	ND	NQ	ND	94	CFC 113 Low;CF Low;1,1,1-TC/	9/21/2012			
18	65	Core		Yes	ND	ND	NQ	ND	NQ	ND	401	CFC 113 Low;CF Low;1,1,1-TC/	9/21/2012			
34	66	Core		Yes	ND	ND	20.5	ND	NQ	ND	NQ	CF Low;CT Low;PCE Low;PCE (	9/21/2012			
27	67	Core		Yes	ND	Detected	NQ	ND	NQ	ND	NQ	CFC 113 Low;? High;CF Low;C	9/21/2012			
26	68	Core		Yes	ND	ND	24.3	NQ	NQ	ND	1,340	CFC 113 Low;CF Low;1,1,1-TC/	9/21/2012			
25	69	Core		Yes	ND	ND	15.5	ND	NQ	ND	NQ	CF Low;CT Low;	9/21/2012			
22	70	Core		Yes	ND	ND	29.8	ND	NQ	ND	NQ	CF Low;1,1,1-TCA Low;CT Low	9/21/2012			
21	71	Core		Yes	ND	Detected	ND	ND	ND	ND	38	? High;	9/21/2012			
36	72	Core		Yes	ND	ND	23.0	ND	NQ	23	54	CF Low;CT Low;	9/21/2012			
29	73	Core		Yes	ND	Detected	ND	ND	NQ	ND	NQ	? High;CT Low;	9/21/2012			
20	74	Core		Yes	ND	ND	NQ	ND	NQ	14	1,078	CF Low;1,1,1-TCA Low;CT Low	9/21/2012			
19	75	Core		Yes	ND	ND	ND	ND	NQ	ND	NQ	CT Low;	9/21/2012			
28	76	Core		Yes	ND	ND	29.1	ND	NQ	ND	NQ	CF Low;CT Low;PCE (PDMS) Lo	9/21/2012			
35	77	Core		Yes	ND	ND	NQ	ND	NQ	ND	ND	CF Low;CT Low;PCE Low;	9/21/2012			
37	78	Core		Yes	ND	Detected	73.5	ND	NQ	NQ	NQ	? High;CF Low;CT Low;TCE Lov	9/21/2012			
30	79	Core		Yes	ND	ND	62.0	ND	NQ	NQ	NQ	CF Low;CT Low;	9/21/2012			
31	80	Core		Yes	ND	ND	42.2	ND	NQ	ND	ND	CF Low;CT Low;PCE Low;	9/21/2012			
32	81	Core		Yes	ND	Detected	45.5	ND	NQ	ND	ND	? High;CF Low;CT Low;PCE Lov	9/21/2012			
33	82	Core		Yes	ND	ND	35.8	ND	NQ	ND	ND	CF Low;CT Low;PCE Low;	9/21/2012			
4	83	Core		Yes	NQ	ND	76.2	ND	NQ	ND	73	CFC 113 Low;CF Low;1,1,1-TC/	9/21/2012			
3	84	Core		Yes	ND	ND	27.0	NQ	NQ	ND	3,352	CFC 113 Low;CF Low;1,1,1-TC/	9/21/2012			
45	85	Core		Yes	ND	ND	NQ	ND	NQ	ND	1,994	CFC 113 Low;CF Low;1,1,1-TC/	9/21/2012			
2	86	Core		Yes	ND	Detected	50.7	ND	NQ	NQ	2,460	CFC 113 Low;? High;CF Low;1,	9/21/2012			
6	87	Core		Yes	ND	Detected	52.2	ND	NQ	443	1,643	CFC 113 Low;? High;CF Low;C	9/21/2012			
1	88	Core		Yes	ND	Detected	1,577.6	17.9	ND	152	725	CFC 113 Low;? High;PCE High;	9/21/2012			
48	89	Core			ND	Detected	44.9	ND	NQ	ND	153	? High;CF Low;CT Low;PCE Hig	9/21/2012		16 1/2	Hemlock
48	90	Core		Yes	ND	ND	62.3	ND	NQ	ND	146	CF Low;CT Low;PCE High;	9/21/2012			
49	91	Core			ND	Detected	ND	ND	NQ	ND	ND	? High;CT Low;PCE Low;	9/21/2012		18	Oak
49	92	Core		Yes	ND	Detected	ND	ND	NQ	ND	ND	? High;CT Low;PCE Low;	9/21/2012			
	93	Field Blank	Yes		ND	ND	NQ	ND	NQ	ND	ND	CFC 113 Low;CF Low;CT Low;	9/21/2012			
	94	Trip Blank	Yes		ND	ND	ND	ND	NQ	ND	ND	CT Low;				

0				log Core Concentrations									
Tree #	Vial #	Type	Notes	CFC 113	?	cDCE	CF	1,1,1-TCA	CT	TCE	PCE	CE (PDMS	TCEOH
		Blank Max											
		Blank Average											
	1	Field Blank		ND	ND	ND	ND	ND	ND	ND	(3)	NQ	ND
4	2	Core		NQ	ND	ND	(1)	ND	NQ	ND	(1)	(1.0)	ND
3	3	Core		NQ	ND	ND	(1)	NQ	NQ	ND	(0)	0.6	ND
2	4	Core		ND	Detected	ND	ND	ND	ND	NQ	(0)	0.4	ND
1	5	Core		NQ	Detected	ND	0	(1)	ND	(1)	(0)	(0.1)	ND
6	6	Core		ND	Detected	ND	(1)	ND	ND	(0)	(0)	0.2	ND
45	7	Core		ND	ND	ND	ND	ND	ND	ND	(0)	0.3	ND
10	8	Core		ND	ND	ND	(1)	NQ	ND	ND	(0)	(0.1)	ND
10	9	Core		ND	ND	ND	(1)	ND	ND	ND	(0)	(0.2)	ND
9	10	Core		ND	ND	ND	(0)	(2)	ND	(1)	(0)	0.0	ND
8	11	Core		ND	ND	ND	(2)	ND	ND	ND	(2)	(1.9)	ND
7	12	Core		ND	ND	ND	ND	ND	ND	ND	(0)	1.1	ND
13	13	Core		ND	ND	ND	NQ	ND	ND	ND	(1)	(1.3)	ND
5	14	Core		ND	Detected	ND	(2)	ND	ND	ND	(1)	(0.7)	ND
12	15	Core		ND	Detected	ND	ND	ND	ND	ND	(3)	NQ	ND
46	16	Directional Core	Away from landfill	ND	Detected	ND	ND	ND	ND	ND	(1)	(0.8)	ND
46	17	Directional Core	Towards landfill	ND	Detected	ND	ND	ND	ND	ND	(0)	(0.3)	ND
47	18	Directional Core	Away from landfill	ND	Detected	ND	ND	ND	ND	ND	(2)	NQ	ND
47	19	Directional Core	Towards landfill	ND	Detected	ND	ND	ND	ND	ND	(3)	ND	ND
11	20	Core		ND	ND	ND	ND	ND	ND	ND	(3)	ND	ND
18	21	Core		ND	ND	ND	ND	ND	ND	ND	(1)	(0.5)	ND
17	22	Core		ND	ND	ND	ND	ND	ND	ND	(1)	(1.0)	ND
16	23	Core		ND	ND	ND	(2)	NQ	ND	ND	(1)	(1.1)	ND
15	24	Core		ND	ND	ND	ND	ND	ND	ND	(1)	(0.6)	ND
14	25	Core		ND	ND	ND	ND	ND	ND	ND	(1)	(1.3)	ND
14	26	Core		ND	ND	ND	(2)	ND	ND	ND	(1)	(1.2)	ND
21	27	Core		ND	Detected	ND	(2)	ND	ND	ND	(2)	(1.7)	ND
25	28	Core		ND	Detected	ND	NQ	ND	ND	ND	(3)	NQ	ND
26	29	Core		ND	ND	ND	(2)	NQ	ND	ND	(0)	0.1	ND
27	30	Core		ND	ND	ND	NQ	ND	NQ	ND	(3)	NQ	ND
34	31	Core		ND	ND	ND	(2)	ND	NQ	ND	(3)	NQ	ND
33	32	Core		ND	ND	ND	(1)	ND	NQ	ND	(3)	NQ	ND
40	33	Core		ND	ND	ND	NQ	ND	NQ	ND	(3)	NQ	ND
41	34	Core		ND	Detected	ND	NQ	ND	NQ	ND	(3)	NQ	ND
	35	Field Blank		ND	Detected	ND	NQ	ND	NQ	ND	(3)	NQ	ND
43	36	Core		ND	ND	ND	NQ	ND	NQ	ND	(3)	NQ	ND
35	37	Core		ND	ND	ND	NQ	ND	NQ	ND	(3)	NQ	ND
28	38	Core		ND	ND	ND	(2)	ND	NQ	ND	(3)	NQ	ND
28	39	Core		ND	ND	ND	(2)	ND	NQ	ND	(3)	NQ	ND
19	40	Core		ND	Detected	ND	NQ	ND	NQ	ND	(2)	(1.9)	ND
20	41	Core	1 of 2 trunks	ND	ND	ND	NQ	ND	NQ	ND	(0)	(0.2)	ND
29	42	Core		ND	Detected	ND	ND	ND	NQ	ND	(2)	NQ	ND
36	43	Core		ND	ND	ND	(2)	ND	NQ	(2)	(1)	(1.5)	ND
30	44	Core		ND	ND	ND	(1)	ND	NQ	NQ	(2)	NQ	ND
37	45	Core		ND	Detected	ND	(1)	ND	ND	NQ	(3)	ND	ND
44	46	Core		ND	Detected	ND	(2)	ND	NQ	ND	(3)	NQ	ND
31	47	Core		ND	ND	ND	(1)	ND	NQ	ND	(3)	NQ	ND
38	48	Core		ND	Detected	ND	(2)	ND	NQ	ND	(3)	ND	ND
32	49	Core		ND	ND	ND	(1)	ND	NQ	ND	(3)	NQ	ND
39	50	Core		ND	ND	ND	NQ	ND	NQ	ND	(3)	NQ	ND
22	51	Core		ND	ND	ND	(2)	ND	NQ	ND	(3)	NQ	ND
	52	Field Blank		ND	ND	ND	NQ	ND	NQ	ND	(3)	NQ	ND
11	53	Core		ND	ND	ND	NQ	ND	NQ	ND	(3)	NQ	ND
10	54	Core		ND	ND	ND	(1)	NQ	NQ	ND	(0)	(0.0)	ND
9	55	Core		ND	ND	ND	(0)	NQ	NQ	(1)	(0)	0.7	ND

0				log Core Concentrations									
Tree #	Vial #	Type	Notes	CFC 113	?	cDCE	CF	1,1,1-TCA	CT	TCE	PCE	PCE (PDMS	TCEOH
		Blank Max											
		Blank Average											
8	56	Core		ND	ND	ND	(2)	ND	NQ	ND	(2)	(1.8)	ND
7	57	Core		ND	ND	ND	NQ	ND	ND	ND	(0)	1.1	ND
5	58	Core		ND	ND	ND	(2)	ND	NQ	ND	(1)	(0.6)	ND
12	59	Core		ND	ND	ND	NQ	ND	NQ	ND	(2)	NQ	ND
13	60	Core		ND	ND	ND	NQ	ND	NQ	ND	(2)	(1.4)	ND
14	61	Core		ND	ND	ND	NQ	ND	NQ	ND	(1)	(1.3)	ND
15	62	Core		ND	ND	ND	NQ	ND	NQ	ND	(1)	(0.7)	ND
16	63	Core		ND	ND	ND	(2)	ND	NQ	ND	(1)	(1.2)	ND
17	64	Core		ND	ND	ND	NQ	ND	NQ	ND	(1)	(1.0)	ND
18	65	Core		ND	ND	ND	NQ	ND	NQ	ND	(0)	(0.4)	ND
34	66	Core		ND	ND	ND	(2)	ND	NQ	ND	(3)	NQ	ND
27	67	Core		ND	Detected	ND	NQ	ND	NQ	ND	(3)	NQ	ND
26	68	Core		ND	ND	ND	(2)	NQ	NQ	ND	(0)	0.1	ND
25	69	Core		ND	ND	ND	(2)	ND	NQ	ND	(2)	NQ	ND
22	70	Core		ND	ND	ND	(2)	ND	NQ	ND	(3)	NQ	ND
21	71	Core		ND	Detected	ND	ND	ND	ND	ND	(2)	(1.4)	ND
36	72	Core		ND	ND	ND	(2)	ND	NQ	(2)	(1)	(1.3)	ND
29	73	Core		ND	Detected	ND	ND	ND	NQ	ND	(2)	NQ	ND
20	74	Core		ND	ND	ND	NQ	ND	NQ	(2)	(0)	0.0	ND
19	75	Core		ND	ND	ND	ND	ND	NQ	ND	(2)	NQ	ND
28	76	Core		ND	ND	ND	(2)	ND	NQ	ND	(3)	NQ	ND
35	77	Core		ND	ND	ND	NQ	ND	NQ	ND	(3)	ND	ND
37	78	Core		ND	Detected	ND	(1)	ND	NQ	NQ	(3)	NQ	ND
30	79	Core		ND	ND	ND	(1)	ND	NQ	NQ	(2)	NQ	ND
31	80	Core		ND	ND	ND	(1)	ND	NQ	ND	(3)	ND	ND
32	81	Core		ND	Detected	ND	(1)	ND	NQ	ND	(3)	ND	ND
33	82	Core		ND	ND	ND	(1)	ND	NQ	ND	(3)	ND	ND
4	83	Core		NQ	ND	ND	(1)	ND	NQ	ND	(1)	(1.1)	ND
3	84	Core		ND	ND	ND	(2)	NQ	NQ	ND	(0)	0.5	ND
45	85	Core		ND	ND	ND	NQ	ND	NQ	ND	(0)	0.3	ND
2	86	Core		ND	Detected	ND	(1)	ND	NQ	NQ	(0)	0.4	ND
6	87	Core		ND	Detected	ND	(1)	ND	NQ	(0)	(0)	0.2	ND
1	88	Core		ND	Detected	ND	0	(2)	ND	(1)	(0)	(0.1)	ND
48	89	Core		ND	Detected	ND	(1)	ND	NQ	ND	(0)	(0.8)	ND
48	90	Core		ND	ND	ND	(1)	ND	NQ	ND	(1)	(0.8)	ND
49	91	Core		ND	Detected	ND	ND	ND	NQ	ND	(3)	ND	ND
49	92	Core		ND	Detected	ND	ND	ND	NQ	ND	(3)	ND	ND
	93	Field Blank		ND	ND	ND	NQ	ND	NQ	ND	(3)	ND	ND
	94	Trip Blank		ND	ND	ND	ND	ND	NQ	ND	(3)	ND	ND

Vial Number	Wet Mass (g)	Dry Mass (g)	Water Mass (g)	Vial Mass (g)	Wet Wood Mass (g)	Dry Wood Mass (g)	Percent Water (%)	Volume of air (L)	Mass Correction Factors										Mass In Air					
									CFC 113	?	cDCE	CF	1,1,1-TCA	CT	TCE	PCE	PCE (PDMS)	TCEOH	CFC 113	?	cDCE	CF	1,1,1-TCA	CT
1			-		-	-		0.02	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	100%	#DIV/0!	100%	100%	100%	100%
2	16.706	16.080	0.626	15.245	1.461	0.835	42.8%	0.02	4.97	1.00	1.37	1.34	1.72	1.52	1.24	1.36	1.36	1.00	80%	0%	27%	25%	42%	34%
3	16.525	16.013	0.512	15.450	1.075	0.563	47.6%	0.02	7.02	1.00	1.55	1.51	2.09	1.79	1.37	1.55	1.55	1.00	86%	0%	35%	34%	52%	44%
4	17.414	16.661	0.753	15.732	1.682	0.929	44.8%	0.02	4.51	1.00	1.32	1.30	1.64	1.46	1.22	1.32	1.32	1.00	78%	0%	24%	23%	39%	32%
5	17.122	16.417	0.705	15.508	1.615	0.909	43.7%	0.02	4.61	1.00	1.33	1.31	1.66	1.48	1.22	1.33	1.33	1.00	78%	0%	25%	24%	40%	32%
6	17.533	16.756	0.777	15.783	1.750	0.974	44.4%	0.02	4.34	1.00	1.31	1.29	1.61	1.44	1.20	1.30	1.30	1.00	77%	0%	23%	22%	38%	31%
7	17.306	16.231	1.075	15.713	1.593	0.517	67.5%	0.02	7.24	1.00	1.52	1.49	2.10	1.82	1.38	1.56	1.56	1.00	86%	0%	34%	33%	52%	45%
8	17.042	16.237	0.805	15.565	1.477	0.672	54.5%	0.02	5.90	1.00	1.43	1.41	1.88	1.65	1.30	1.44	1.44	1.00	83%	0%	30%	29%	47%	39%
9	16.971	16.160	0.811	15.470	1.501	0.690	54.0%	0.02	5.76	1.00	1.42	1.40	1.86	1.63	1.29	1.43	1.43	1.00	83%	0%	30%	28%	46%	39%
10	16.493	16.028	0.465	15.322	1.171	0.706	39.7%	0.02	5.79	1.00	1.45	1.41	1.87	1.63	1.29	1.43	1.43	1.00	83%	0%	31%	29%	47%	39%
11	16.845	16.385	0.460	15.477	1.368	0.908	33.6%	0.02	4.69	1.00	1.35	1.32	1.67	1.49	1.23	1.34	1.34	1.00	79%	0%	26%	24%	40%	33%
12	16.993	16.191	0.802	15.536	1.457	0.655	55.0%	0.02	6.03	1.00	1.45	1.42	1.90	1.66	1.31	1.46	1.46	1.00	83%	0%	31%	29%	47%	40%
13	16.913	16.238	0.675	15.584	1.329	0.654	50.8%	0.02	6.10	1.00	1.46	1.43	1.92	1.67	1.31	1.46	1.46	1.00	84%	0%	31%	30%	48%	40%
14	17.820	16.654	1.166	15.846	1.974	0.808	59.1%	0.02	4.93	1.00	1.34	1.32	1.70	1.52	1.24	1.36	1.36	1.00	80%	0%	25%	24%	41%	34%
15	16.999	16.371	0.628	15.554	1.445	0.818	43.4%	0.02	5.06	1.00	1.37	1.35	1.74	1.54	1.25	1.37	1.37	1.00	80%	0%	27%	26%	42%	35%
16	17.205	16.591	0.614	15.744	1.461	0.846	42.1%	0.02	4.92	1.00	1.36	1.34	1.71	1.52	1.24	1.36	1.36	1.00	80%	0%	27%	25%	42%	34%
17	16.844	16.178	0.665	15.267	1.576	0.911	42.2%	0.02	4.61	1.00	1.33	1.31	1.66	1.48	1.22	1.33	1.33	1.00	78%	0%	25%	24%	40%	32%
18	17.254	16.420	0.834	15.561	1.693	0.859	49.3%	0.02	4.79	1.00	1.34	1.32	1.68	1.50	1.23	1.34	1.34	1.00	79%	0%	26%	24%	41%	33%
19	17.239	16.520	0.719	15.626	1.613	0.894	44.6%	0.02	4.67	1.00	1.34	1.31	1.67	1.48	1.23	1.33	1.33	1.00	79%	0%	25%	24%	40%	33%
20	16.994	16.493	0.501	15.625	1.369	0.868	36.6%	0.02	4.85	1.00	1.36	1.34	1.70	1.51	1.24	1.35	1.35	1.00	79%	0%	27%	25%	41%	34%
21	17.085	16.157	0.928	15.505	1.580	0.652	58.7%	0.02	6.00	1.00	1.44	1.41	1.89	1.66	1.30	1.45	1.45	1.00	83%	0%	30%	29%	47%	40%
22	17.151	16.493	0.658	15.532	1.620	0.961	40.6%	0.02	4.42	1.00	1.32	1.30	1.62	1.45	1.21	1.31	1.31	1.00	77%	0%	24%	23%	38%	31%
23	17.181	16.602	0.579	15.639	1.542	0.963	37.6%	0.02	4.43	1.00	1.32	1.30	1.63	1.45	1.21	1.31	1.31	1.00	77%	0%	24%	23%	39%	31%
24	16.846	16.200	0.646	15.544	1.302	0.656	49.6%	0.02	6.09	1.00	1.46	1.43	1.92	1.67	1.31	1.46	1.46	1.00	84%	0%	32%	30%	48%	40%
25	16.686	16.008	0.678	15.440	1.246	0.567	54.5%	0.02	6.89	1.00	1.52	1.49	2.06	1.78	1.36	1.53	1.53	1.00	85%	0%	34%	33%	51%	44%
26	17.013	16.276	0.737	15.659	1.354	0.616	54.5%	0.02	6.38	1.00	1.48	1.45	1.97	1.71	1.33	1.49	1.49	1.00	84%	0%	32%	31%	49%	42%
27	16.641	16.001	0.640	15.361	1.280	0.640	50.0%	0.02	6.23	1.00	1.47	1.44	1.94	1.69	1.32	1.47	1.47	1.00	84%	0%	32%	31%	49%	41%
28	16.663	16.155	0.508	15.546	1.117	0.609	45.5%	0.02	6.56	1.00	1.51	1.47	2.01	1.73	1.34	1.50	1.50	1.00	85%	0%	34%	32%	50%	42%
29	16.916	16.425	0.491	15.697	1.219	0.728	40.3%	0.02	5.63	1.00	1.43	1.40	1.84	1.61	1.28	1.42	1.42	1.00	82%	0%	30%	29%	46%	38%
30	17.361	16.750	0.611	15.752	1.609	0.998	38.0%	0.02	4.30	1.00	1.31	1.29	1.60	1.44	1.20	1.30	1.30	1.00	77%	0%	24%	22%	38%	30%
31	16.398	15.806	0.592	15.258	1.140	0.548	51.9%	0.02	7.15	1.00	1.55	1.52	2.11	1.81	1.38	1.56	1.56	1.00	86%	0%	36%	34%	53%	45%
32	16.801	16.402	0.399	15.545	1.256	0.857	31.8%	0.02	4.93	1.00	1.37	1.35	1.72	1.52	1.24	1.36	1.36	1.00	80%	0%	27%	26%	42%	34%
33	16.790	16.373	0.417	15.464	1.327	0.909	31.5%	0.02	4.69	1.00	1.35	1.32	1.68	1.49	1.23	1.34	1.34	1.00	79%	0%	26%	25%	40%	33%
34	16.635	16.130	0.505	15.362	1.273	0.768	39.7%	0.02	5.37	1.00	1.41	1.38	1.80	1.58	1.27	1.40	1.40	1.00	81%	0%	29%	27%	44%	37%
35			-		-	-		0.02	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	100%	#DIV/0!	100%	100%	100%	100%
36	16.483	16.117	0.366	15.419	1.064	0.698	34.4%	0.02	5.88	1.00	1.46	1.43	1.89	1.64	1.30	1.44	1.44	1.00	83%	0%	31%	30%	47%	39%
37	17.147	16.652	0.495	15.765	1.383	0.887	35.8%	0.02	4.76	1.00	1.35	1.33	1.69	1.50	1.23	1.34	1.34	1.00	79%	0%	26%	25%	41%	33%
38	17.472	16.639	0.833	15.593	1.879	1.047	44.3%	0.02	4.08	1.00	1.28	1.26	1.56	1.41	1.19	1.28	1.28	1.00	75%	0%	22%	21%	36%	29%
39	16.804	16.153	0.651	15.051	1.753	1.103	37.1%	0.02	3.96	1.00	1.28	1.26	1.54	1.39	1.18	1.27	1.27	1.00	75%	0%	22%	20%	35%	28%
40	17.085	16.173	0.912	15.543	1.542	0.630	59.1%	0.02	6.18	1.00	1.45	1.42	1.92	1.68	1.32	1.47	1.47	1.00	84%	0%	31%	30%	48%	41%
41	17.407	16.721	0.686	15.748	1.660	0.973	41.4%	0.02	4.36	1.00	1.31	1.29	1.61	1.44	1.21	1.31	1.31	1.00	77%	0%	24%	23%	38%	31%
42	16.832	15.910	0.922	15.275	1.557	0.635	59.2%	0.02	6.14	1.00	1.45	1.42	1.92	1.68	1.31	1.47	1.47	1.00	84%	0%	31%	30%	48%	40%
43	16.510	16.092	0.418	15.373	1.138	0.720	36.7%	0.02	5.71	1.00	1.44	1.41	1.86	1.62	1.29	1.43	1.43	1.00	82%	0%	31%	29%	46%	38%
44	16.608	16.092	0.516	15.345	1.263	0.747	40.8%	0.02	5.50	1.00	1.42	1.39	1.82	1.59	1.28	1.41	1.41	1.00	82%	0%	29%	28%	45%	37%
45	17.115	16.406	0.709	15.654	1.461	0.753	48.5%	0.02	5.39	1.00	1.40	1.37	1.79	1.58	1.27	1.40	1.40	1.00	81%	0%	29%	27%	44%	37%
46	16.835	16.427	0.409	15.576	1.259	0.851	32.4%	0.02	4.96	1.00	1.37	1.35	1.73	1.52	1.24	1.36	1.36	1.00	80%	0%	27%	26%	42%	34%
47	17.037	16.603	0.434	15.601	1.435	1.002	30.2%	0.02	4.33	1.00	1.32	1.29	1.61	1.44	1.21	1.30	1.30	1.00	77%	0%	24%	23%	38%	31%
48	17.057	16.345	0.712	15.411	1.646	0.934	43.3%	0.02	4.51	1.00	1.32	1.30	1.64	1.46	1.22	1.32	1.32	1.00	78%	0%	24%	23%	39%	32%
49	16.753	16.316	0.437	15.443	1.310	0.873	33.4%	0.02	4.85	1.00	1.36	1.34	1.70	1.51	1.24	1.35	1.35	1.00	79%	0%	27%	25%	41%	34%
50	16.660	16.053	0.608	15.401	1.260	0.652	48.2%	0.02	6.14	1.00	1.47	1.44	1.93	1.68	1.31	1.47	1.47	1.00	84%	0%	32%	30%	48%	40%
51	17.483	16.691	0.792	15.751	1.732	0.940	45.7%	0.02	4.46	1.00	1.32	1.30	1.63	1.46	1.21	1.31	1.31	1.00	78%	0%	24%	23%	39%	31%
52			-		-	-		0.02	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	100%	#DIV/0!	100%	100%	100%	100%
53	16.722	16.299	0.423	15.453	1.269	0.846	33.4%	0.02	4.98	1.00	1.38	1.35	1.73	1.53	1.25	1.36	1.36	1.00	80%	0%	27%	26%	42%	34%
54	16.595	15.854	0.741	15.335	1.260	0.519	58.8%	0.02	7.41	1.00	1.56	1.52	2.14	1.84	1.39	1.58	1.58	1.00	87%	0%	36%	34%	53%	46%
55	16.817	16.378	0.439	15.708	1.109	0.671	39.5%	0.02	6.06	1.00	1.47	1.44	1.92	1.67	1.31	1.46	1.46	1.00	83%	0%	32%	30%	48%	40%
56	16.994	16.561	0.434	15.652	1.342	0.908	32.3%	0.02	4.69	1.00	1.35	1.32	1.68	1.49	1.23	1.34	1.34	1.00	79%	0%	26%	24%	40%	33%
57	16.829	16.117	0.712	15.505	1.324	0.611	53.8%	0.02	6.44	1.00	1.48	1.45	1.98	1.72	1.33	1.49	1.49	1.00	84%	0%	33%	31%	49%	42%
58	16.776	16.033	0.743	15.513	1.263	0.520	58.8%	0.02	7.40	1.00	1.56	1.52	2.14	1.84	1.39	1.58	1.58	1.00	86%	0%	36%	34%	53%	46%
59	16.199	15.569	0.630	14.923	1.276	0.646	49.4%	0.02	6.18	1.00	1.47	1.44	1.93	1.68	1.32	1.47	1.47	1.00	84%	0%	32%	30%	48%	41%
60	16.747	15.968	0.779	15.367	1.380	0.601	56.4%	0.02	6.50	1.00	1.48	1.45	1.99	1.73	1.34	1.50	1.50	1.00	85%	0%	33%	31%	50%	42%
61	16.861	16.074	0.787	15.489	1.372	0.585	57.4%	0.02	6.65	1.00	1.50	1.46	2.01	1.74	1.34	1.51	1.51	1.00	85%	0%	33%	32%	50%	43%
62	16.495	15.938	0.556	15.461	1.034	0.477	53.8%	0.02	8.10	1.00	1.63	1.59	2.28	1.94	1.43	1.64	1.64	1.00	88%	0%	39%	37%	56%	48%
63	16.984	16.452	0.531	15.499	1.485	0.953	35.8%	0.02	4.48	1.00	1.33	1.30	1.64	1.46	1.21	1.32	1.32	1.00	78%	0%	25%	23%	39%	32%
64	16.938	16.357	0.581	15.384	1.554	0.973	37.4%	0.02	4.39	1.00	1.32	1.30	1.62	1.45	1.21	1.31	1.31	1.00	77%	0%	24%	23%	38%	31%
65	16.921	16.148	0.773	15.565	1.356	0.583	57.0%	0.02	6.68	1.00	1.50	1.47	2.02	1.75	1.35	1.51	1.51	1.00	85%	0%	33%	32%	50%	43%
66	16.828	16.091	0.736	15.494	1.334	0.597	55.2%	0.02	6.56	1.00	1.49	1.46	2.00	1.73	1.34	1.50	1.50	1.00	85%	0%	33%	32%	50%	42%
67	16.728	16.334	0.394	15.558	1.171	0.777	33.7%	0.02	5.36	1.00	1.41	1.38	1.80	1.58	1.27	1.40	1.40	1.00	81%	0%	29%	28%	44%	37%
68	16.803	16.360	0.443	15.678	1.125	0.682	39.4%	0.02	5.97	1.00	1.46	1.43	1.91	1.66	1.31	1.45	1.45	1.00	83%	0%	32%	30%	48%	40%
69	16.598	16.050	0.548	15.427	1.171	0.623	46.8%	0.02	6.41	1.00	1.49	1.46	1.98	1.71	1.33	1.49	1.49	1.00	84%	0%	33%	32%	49%	42%
70	17.294	16.624	0.670	15.680	1.614	0.944	41.5%	0.02	4.48	1.00	1.32	1.30	1.63	1.46	1.21	1.32	1.32	1.00	78%	0%	24%	23%	39%	31%
71	16.468	15.824	0.644	15.187	1.281	0.637	50.3%	0.02	6.25	1.00	1.47	1.44	1.95	1.69	1.32	1.48	1.48	1.00	84%	0%	32%	31%	49%	41%

Vial Number	Wet Mass (g)	Dry Mass (g)	Water Mass (g)	Vial Mass (g)	Wet Wood Mass (g)	Dry Wood Mass (g)	Percent Water (%)	Volume of air (L)	Mass Correction Factors										Mass In Air					
									CFC 113	?	cDCE	CF	1,1,1-TCA	CT	TCE	PCE	PCE (PDMS)	TCEOH	CFC 113	?	cDCE	CF	1,1,1-TCA	CT
72	16.858	16.410	0.448	15.634	1.224	0.776	36.6%	0.02	5.35	1.00	1.41	1.38	1.79	1.57	1.27	1.40	1.40	1.00	81%	0%	29%	27%	44%	36%
73	16.769	15.893	0.876	15.289	1.480	0.604	59.2%	0.02	6.43	1.00	1.47	1.44	1.97	1.72	1.33	1.49	1.49	1.00	84%	0%	32%	31%	49%	42%
74	16.875	16.433	0.442	15.485	1.390	0.948	31.8%	0.02	4.53	1.00	1.33	1.31	1.65	1.47	1.22	1.32	1.32	1.00	78%	0%	25%	24%	39%	32%
75	16.977	16.167	0.810	15.627	1.350	0.540	60.0%	0.02	7.12	1.00	1.53	1.50	2.09	1.81	1.37	1.55	1.55	1.00	86%	0%	35%	33%	52%	45%
76	16.911	16.362	0.549	15.448	1.463	0.914	37.5%	0.02	4.63	1.00	1.34	1.32	1.66	1.48	1.22	1.33	1.33	1.00	78%	0%	25%	24%	40%	32%
77	16.497	16.010	0.487	15.084	1.413	0.926	34.4%	0.02	4.60	1.00	1.34	1.32	1.66	1.48	1.22	1.33	1.33	1.00	78%	0%	25%	24%	40%	32%
78	16.533	15.958	0.575	15.398	1.135	0.560	50.7%	0.02	7.02	1.00	1.54	1.51	2.09	1.79	1.37	1.55	1.55	1.00	86%	0%	35%	34%	52%	44%
79	17.099	16.498	0.601	15.768	1.331	0.730	45.1%	0.02	5.57	1.00	1.42	1.39	1.83	1.60	1.28	1.42	1.42	1.00	82%	0%	30%	28%	45%	38%
80	16.885	16.507	0.377	15.637	1.248	0.870	30.3%	0.02	4.88	1.00	1.37	1.34	1.71	1.51	1.24	1.35	1.35	1.00	80%	0%	27%	25%	42%	34%
81	16.985	16.545	0.440	15.670	1.315	0.875	33.5%	0.02	4.84	1.00	1.36	1.34	1.70	1.51	1.24	1.35	1.35	1.00	79%	0%	27%	25%	41%	34%
82	16.777	16.381	0.396	15.531	1.246	0.850	31.8%	0.02	4.97	1.00	1.38	1.35	1.73	1.52	1.24	1.36	1.36	1.00	80%	0%	27%	26%	42%	34%
83	17.253	16.566	0.687	15.676	1.577	0.890	43.6%	0.02	4.70	1.00	1.34	1.32	1.67	1.49	1.23	1.34	1.34	1.00	79%	0%	25%	24%	40%	33%
84	16.090	15.691	0.399	15.113	0.977	0.578	40.8%	0.02	6.92	1.00	1.55	1.51	2.08	1.78	1.36	1.54	1.54	1.00	86%	0%	35%	34%	52%	44%
85	17.074	16.113	0.961	15.629	1.445	0.484	66.5%	0.02	7.74	1.00	1.56	1.53	2.19	1.89	1.41	1.61	1.61	1.00	87%	0%	36%	35%	54%	47%
86	17.359	16.668	0.691	15.773	1.586	0.895	43.6%	0.02	4.67	1.00	1.34	1.32	1.67	1.48	1.23	1.33	1.33	1.00	79%	0%	25%	24%	40%	33%
87	17.412	16.669	0.743	15.713	1.699	0.957	43.7%	0.02	4.41	1.00	1.31	1.29	1.62	1.45	1.21	1.31	1.31	1.00	77%	0%	24%	23%	38%	31%
88	17.396	16.675	0.721	15.755	1.641	0.920	43.9%	0.02	4.56	1.00	1.33	1.31	1.65	1.47	1.22	1.32	1.32	1.00	78%	0%	25%	23%	39%	32%
89	16.845	16.098	0.747	15.528	1.317	0.570	56.7%	0.02	6.83	1.00	1.51	1.48	2.04	1.77	1.36	1.53	1.53	1.00	85%	0%	34%	32%	51%	43%
90	16.835	16.110	0.725	15.536	1.299	0.573	55.8%	0.02	6.80	1.00	1.51	1.48	2.04	1.76	1.35	1.53	1.53	1.00	85%	0%	34%	32%	51%	43%
91	17.237	16.451	0.786	15.520	1.717	0.931	45.8%	0.02	4.50	1.00	1.32	1.30	1.63	1.46	1.21	1.32	1.32	1.00	78%	0%	24%	23%	39%	32%
92	17.441	16.658	0.783	15.710	1.731	0.948	45.2%	0.02	4.43	1.00	1.31	1.29	1.62	1.45	1.21	1.31	1.31	1.00	77%	0%	24%	23%	38%	31%

				Mass in Water										Mass in Wood									
TCE	PCE	PCE (PDMS)	TCEOH	CFC 113	?	cDCE	CF	1,1,1-TCA	CT	TCE	PCE	PCE (PDMS)	TCEOH	CFC 113	?	cDCE	CF	1,1,1-TCA	CT	TCE	PCE	PCE (PDMS)	TCEOH
100%	100%	100%	100%	0%	#DIV/0!	0%	0%	0%	0%	0%	0%	0%	0%	0%	#DIV/0!	0%	0%	0%	0%	0%	0%	0%	0%
20%	26%	26%	0%	0%	100%	6%	5%	2%	1%	2%	1%	1%	14%	20%	0%	68%	69%	56%	65%	79%	72%	72%	86%
27%	35%	35%	0%	0%	100%	6%	5%	2%	1%	2%	1%	1%	17%	14%	0%	59%	61%	46%	55%	71%	64%	64%	83%
18%	24%	24%	0%	0%	100%	6%	6%	2%	1%	2%	1%	1%	15%	22%	0%	69%	71%	59%	67%	81%	75%	75%	85%
18%	25%	25%	0%	0%	100%	6%	5%	2%	1%	2%	1%	1%	15%	21%	0%	69%	71%	59%	67%	80%	74%	74%	85%
17%	23%	23%	0%	0%	100%	6%	6%	2%	1%	2%	1%	1%	15%	23%	0%	70%	72%	60%	68%	81%	76%	76%	85%
27%	36%	36%	0%	0%	100%	12%	11%	4%	2%	4%	3%	3%	31%	13%	0%	54%	56%	44%	53%	69%	61%	61%	68%
23%	31%	31%	0%	0%	100%	8%	7%	3%	1%	2%	2%	2%	21%	17%	0%	62%	64%	51%	60%	75%	68%	68%	79%
23%	30%	30%	0%	0%	100%	8%	7%	3%	1%	2%	2%	2%	21%	17%	0%	62%	64%	51%	60%	75%	68%	68%	79%
23%	30%	30%	0%	0%	100%	5%	4%	1%	1%	1%	1%	1%	13%	17%	0%	65%	66%	52%	61%	76%	69%	69%	87%
19%	25%	25%	0%	0%	100%	4%	4%	1%	1%	1%	1%	1%	10%	21%	0%	70%	72%	58%	67%	80%	74%	74%	90%
23%	31%	31%	0%	0%	100%	8%	8%	3%	1%	2%	2%	2%	21%	16%	0%	61%	63%	50%	59%	74%	67%	67%	79%
24%	32%	32%	0%	0%	100%	7%	6%	2%	1%	2%	1%	1%	19%	16%	0%	62%	64%	50%	59%	74%	67%	67%	81%
19%	26%	26%	0%	0%	100%	10%	9%	3%	2%	3%	2%	2%	24%	20%	0%	64%	66%	55%	64%	78%	72%	72%	76%
20%	27%	27%	0%	0%	100%	6%	5%	2%	1%	2%	1%	1%	15%	20%	0%	67%	69%	56%	64%	78%	72%	72%	85%
19%	26%	26%	0%	0%	100%	5%	5%	2%	1%	1%	1%	1%	14%	20%	0%	68%	70%	57%	65%	79%	73%	73%	86%
18%	25%	25%	0%	0%	100%	6%	5%	2%	1%	2%	1%	1%	14%	21%	0%	69%	71%	59%	67%	80%	74%	74%	86%
19%	26%	26%	0%	0%	100%	7%	7%	2%	1%	2%	1%	1%	18%	21%	0%	67%	69%	57%	66%	79%	73%	73%	82%
18%	25%	25%	0%	0%	100%	6%	6%	2%	1%	2%	1%	1%	15%	21%	0%	69%	71%	58%	66%	80%	74%	74%	85%
19%	26%	26%	0%	0%	100%	4%	4%	1%	1%	1%	1%	1%	11%	20%	0%	69%	71%	57%	66%	80%	73%	73%	89%
23%	31%	31%	0%	0%	100%	9%	9%	3%	1%	3%	2%	2%	24%	16%	0%	60%	62%	50%	59%	74%	67%	67%	76%
17%	24%	24%	0%	0%	100%	5%	5%	2%	1%	1%	1%	1%	13%	22%	0%	71%	72%	60%	68%	81%	75%	75%	87%
17%	24%	24%	0%	0%	100%	5%	4%	2%	1%	1%	1%	1%	12%	22%	0%	71%	73%	60%	68%	81%	75%	75%	88%
24%	32%	32%	0%	0%	100%	7%	6%	2%	1%	2%	1%	1%	18%	16%	0%	62%	64%	50%	59%	74%	67%	67%	82%
26%	35%	35%	0%	0%	100%	8%	7%	2%	1%	2%	1%	1%	21%	14%	0%	58%	60%	46%	55%	71%	64%	64%	79%
25%	33%	33%	0%	0%	100%	8%	7%	2%	1%	2%	2%	2%	21%	15%	0%	60%	62%	48%	57%	73%	66%	66%	79%
24%	32%	32%	0%	0%	100%	7%	6%	2%	1%	2%	1%	1%	18%	16%	0%	61%	63%	49%	58%	74%	67%	67%	82%
25%	34%	34%	0%	0%	100%	6%	5%	2%	1%	2%	1%	1%	16%	15%	0%	61%	63%	48%	57%	73%	65%	65%	84%
22%	30%	30%	0%	0%	100%	5%	4%	1%	1%	1%	1%	1%	13%	18%	0%	65%	67%	53%	61%	77%	69%	69%	87%
17%	23%	23%	0%	0%	100%	5%	4%	2%	1%	1%	1%	1%	12%	23%	0%	72%	73%	61%	69%	82%	76%	76%	88%
27%	36%	36%	0%	0%	100%	7%	6%	2%	1%	2%	1%	1%	19%	14%	0%	58%	60%	45%	54%	71%	63%	63%	81%
20%	26%	26%	0%	0%	100%	4%	3%	1%	1%	1%	1%	1%	9%	20%	0%	69%	71%	57%	65%	80%	73%	73%	91%
19%	25%	25%	0%	0%	100%	4%	3%	1%	1%	1%	1%	1%	9%	21%	0%	71%	72%	59%	67%	81%	74%	74%	91%
21%	28%	28%	0%	0%	100%	5%	4%	1%	1%	1%	1%	1%	13%	18%	0%	66%	68%	54%	63%	77%	71%	71%	87%
100%	100%	100%	100%	0%	#DIV/0!	0%	0%	0%	0%	0%	0%	0%	0%	0%	#DIV/0!	0%	0%	0%	0%	0%	0%	0%	0%
23%	31%	31%	0%	0%	100%	4%	3%	1%	1%	1%	1%	1%	10%	17%	0%	65%	67%	52%	60%	76%	69%	69%	90%
19%	25%	25%	0%	0%	100%	4%	4%	1%	1%	1%	1%	1%	11%	21%	0%	70%	71%	58%	66%	80%	74%	74%	89%
16%	22%	22%	0%	0%	100%	6%	6%	2%	1%	2%	1%	1%	15%	24%	0%	72%	73%	62%	70%	82%	77%	77%	85%
15%	21%	21%	0%	0%	100%	5%	4%	2%	1%	1%	1%	1%	12%	25%	0%	74%	75%	63%	71%	83%	78%	78%	88%
24%	32%	32%	0%	0%	100%	9%	9%	3%	1%	3%	2%	2%	24%	16%	0%	60%	62%	49%	58%	73%	66%	66%	76%
17%	23%	23%	0%	0%	100%	5%	5%	2%	1%	1%	1%	1%	13%	23%	0%	71%	72%	60%	68%	81%	76%	76%	87%
24%	32%	32%	0%	0%	100%	9%	9%	3%	1%	3%	2%	2%	24%	16%	0%	60%	62%	49%	58%	73%	66%	66%	76%
22%	30%	30%	0%	0%	100%	4%	4%	1%	1%	1%	1%	1%	11%	17%	0%	65%	67%	52%	61%	76%	69%	69%	89%
22%	29%	29%	0%	0%	100%	5%	5%	2%	1%	1%	1%	1%	13%	18%	0%	66%	67%	53%	62%	77%	70%	70%	87%
21%	28%	28%	0%	0%	100%	7%	6%	2%	1%	2%	1%	1%	17%	18%	0%	65%	67%	54%	62%	77%	70%	70%	83%
20%	26%	26%	0%	0%	100%	4%	3%	1%	1%	1%	1%	1%	10%	20%	0%	69%	71%	57%	65%	79%	73%	73%	90%
17%	23%	23%	0%	0%	100%	3%	3%	1%	1%	1%	1%	1%	9%	23%	0%	73%	74%	61%	69%	82%	76%	76%	91%
18%	24%	24%	0%	0%	100%	6%	5%	2%	1%	2%	1%	1%	14%	22%	0%	70%	72%	59%	67%	81%	75%	75%	86%
19%	26%	26%	0%	0%	100%	4%	3%	1%	1%	1%	1%	1%	10%	20%	0%	70%	71%	57%	66%	80%	73%	73%	90%
24%	32%	32%	0%	0%	100%	6%	6%	2%	1%	2%	1%	1%	17%	16%	0%	62%	64%	50%	59%	74%	67%	67%	83%
18%	24%	24%	0%	0%	100%	6%	6%	2%	1%	2%	1%	1%	16%	22%	0%	70%	71%	59%	68%	81%	75%	75%	84%
100%	100%	100%	100%	0%	#DIV/0!	0%	0%	0%	0%	0%	0%	0%	0%	0%	#DIV/0!	0%	0%	0%	0%	0%	0%	0%	0%
20%	27%	27%	0%	0%	100%	4%	3%	1%	1%	1%	1%	1%	10%	20%	0%	69%	71%	57%	65%	79%	73%	73%	90%
28%	37%	37%	0%	0%	100%	9%	8%	3%	1%	3%	2%	2%	24%	13%	0%	56%	58%	44%	53%	69%	62%	62%	76%
24%	31%	31%	0%	0%	100%	5%	4%	1%	1%	1%	1%	1%	13%	16%	0%	63%	65%	51%	59%	75%	68%	68%	87%
19%	25%	25%	0%	0%	100%	4%	3%	1%	1%	1%	1%	1%	10%	21%	0%	70%	72%	59%	67%	80%	74%	74%	90%
25%	33%	33%	0%	0%	100%	8%	7%	2%	1%	2%	1%	1%	20%	15%	0%	60%	62%	48%	57%	73%	65%	65%	80%
28%	37%	37%	0%	0%	100%	9%	8%	3%	1%	3%	2%	2%	24%	13%	0%	56%	58%	44%	53%	69%	62%	62%	76%
24%	32%	32%	0%	0%	100%	7%	6%	2%	1%	2%	1%	1%	18%	16%	0%	62%	63%	50%	58%	74%	67%	67%	82%
25%	33%	33%	0%	0%	100%	8%	8%	3%	1%	2%	2%	2%	22%	15%	0%	59%	61%	48%	57%	72%	65%	65%	78%
26%	34%	34%	0%	0%	100%	9%	8%	3%	1%	3%	2%	2%	23%	15%	0%	58%	60%	47%	56%	72%	64%	64%	77%
30%	39%	39%	0%	0%	100%	7%	6%	2%	1%	2%	1%	1%	21%	12%	0%	54%	56%	42%	51%	68%	59%	59%	79%
18%	24%	24%	0%	0%	100%	4%	4%	1%	1%	1%	1%	1%	11%	22%	0%	71%	73%	60%	68%	81%	75%	75%	89%
17%	24%	24%	0%	0%	100%	5%	4%	2%	1%	1%	1%	1%	12%	23%	0%	71%	73%	60%	68%	81%	76%	76%	88%
26%	34%	34%	0%	0%	100%	8%	8%	3%	1%	2%	2%	2%	23%	15%	0%	58%	60%	47%	56%	72%	64%	64%	77%
25%	33%	33%	0%	0%	100%	8%	7%	2%	1%	2%	2%	2%	21%	15%	0%	59%	61%	48%	57%	72%	65%	65%	79%
21%	28%	28%	0%	0%	100%	4%	3%	1%	1%	1%	1%	1%	10%	19%	0%	67%	69%	54%	63%	78%	71%	71%	90%
23%	31%	31%	0%	0%	100%	5%	4%	1%	1%	1%	1%	1%	13%	17%	0%	64%	66%	51%	60%	75%	68%	68%	87%
25%	33%	33%	0%	0%	100%	6%	5%	2%	1%	2%	1%	1%	16%	15%	0%	61%	63%	49%	57%	73%	66%	66%	84%
18%	24%	24%	0%	0%	100%	5%	5%	2%	1%	1%	1%	1%	14%	22%	0%	70%	72%	59%	68%	81%	75%	75%	86%
24%	32%	32%	0%	0%	100%	7%	6%	2%	1%	2%	1%	1%	18%	16%	0%	61%	63%	49%	58%	74%	66%	66%	82%

Core Mass

				Mass in Water										Mass in Wood									
TCE	PCE	PCE (PDMS)	TCEOH	CFC 113	?	cDCE	CF	1,1,1-TCA	CT	TCE	PCE	PCE (PDMS)	TCEOH	CFC 113	?	cDCE	CF	1,1,1-TCA	CT	TCE	PCE	PCE (PDMS)	TCEOH
21%	28%	28%	0%	0%	100%	4%	4%	1%	1%	1%	1%	1%	11%	19%	0%	67%	69%	54%	63%	78%	71%	71%	89%
25%	33%	33%	0%	0%	100%	9%	9%	3%	1%	3%	2%	2%	24%	15%	0%	59%	61%	48%	57%	72%	65%	65%	76%
18%	24%	24%	0%	0%	100%	4%	3%	1%	1%	1%	1%	1%	9%	22%	0%	71%	73%	60%	68%	81%	75%	75%	91%
27%	36%	36%	0%	0%	100%	9%	9%	3%	1%	3%	2%	2%	25%	14%	0%	56%	58%	45%	54%	70%	63%	63%	75%
18%	25%	25%	0%	0%	100%	5%	4%	1%	1%	1%	1%	1%	12%	21%	0%	70%	72%	59%	67%	80%	74%	74%	88%
18%	25%	25%	0%	0%	100%	4%	4%	1%	1%	1%	1%	1%	10%	22%	0%	71%	72%	59%	67%	81%	75%	75%	90%
27%	35%	35%	0%	0%	100%	7%	6%	2%	1%	2%	1%	1%	19%	14%	0%	58%	60%	46%	55%	71%	63%	63%	81%
22%	29%	29%	0%	0%	100%	6%	5%	2%	1%	2%	1%	1%	15%	18%	0%	65%	67%	53%	62%	76%	70%	70%	85%
19%	26%	26%	0%	0%	100%	3%	3%	1%	0%	1%	1%	1%	9%	20%	0%	70%	71%	57%	66%	80%	73%	73%	91%
19%	26%	26%	0%	0%	100%	4%	4%	1%	1%	1%	1%	1%	10%	21%	0%	70%	71%	58%	66%	80%	73%	73%	90%
20%	27%	27%	0%	0%	100%	4%	3%	1%	1%	1%	1%	1%	9%	20%	0%	69%	71%	57%	65%	79%	73%	73%	91%
18%	25%	25%	0%	0%	100%	6%	5%	2%	1%	2%	1%	1%	15%	21%	0%	69%	71%	58%	66%	80%	74%	74%	85%
27%	35%	35%	0%	0%	100%	5%	4%	1%	1%	1%	1%	1%	13%	14%	0%	60%	62%	47%	55%	72%	64%	64%	87%
29%	38%	38%	0%	0%	100%	11%	11%	4%	2%	3%	2%	2%	31%	13%	0%	53%	55%	42%	51%	68%	60%	60%	69%
18%	25%	25%	0%	0%	100%	6%	5%	2%	1%	2%	1%	1%	15%	21%	0%	69%	71%	58%	66%	80%	74%	74%	85%
17%	24%	24%	0%	0%	100%	6%	5%	2%	1%	2%	1%	1%	15%	22%	0%	70%	72%	60%	68%	81%	75%	75%	85%
18%	24%	24%	0%	0%	100%	6%	5%	2%	1%	2%	1%	1%	15%	22%	0%	69%	71%	59%	67%	80%	74%	74%	85%
26%	35%	35%	0%	0%	100%	8%	8%	3%	1%	2%	2%	2%	22%	14%	0%	58%	60%	46%	55%	71%	64%	64%	78%
26%	34%	34%	0%	0%	100%	8%	7%	2%	1%	2%	2%	2%	22%	14%	0%	58%	60%	47%	55%	72%	64%	64%	78%
18%	24%	24%	0%	0%	100%	6%	6%	2%	1%	2%	1%	1%	16%	22%	0%	69%	71%	59%	67%	81%	75%	75%	84%
17%	24%	24%	0%	0%	100%	6%	6%	2%	1%	2%	1%	1%	15%	22%	0%	70%	72%	60%	68%	81%	75%	75%	85%

Results from Tree Core Sampling
Pierson Creek Landfill Area
DuPont Montague Site
Montague, Michigan

Location ID	X-coord	Y-coord	Tree #	CFC 113	cDCE	CF	1,1,1-TCA	CT	TCE
2012TC-01	12577024	696687	1	17	<MQL	1,894	29	<MQL	230
2012TC-02	12576974	696620	2	<MQL	<MQL	51	<MQL	0.146	5
2012TC-03	12576989	696526	3	15	<MQL	30	3	0.265	<MQL
2012TC-04	12576975	696430	4	13	<MQL	79	<MQL	0.220	<MQL
2012TC-05	12576913	696862	5	<MQL	<MQL	27	<MQL	0.127	<MQL
2012TC-06	12576882	696780	6	<MQL	<MQL	153	<MQL	0.136	463
2012TC-07	12576823	696700	7	<MQL	<MQL	4	<MQL	<MQL	<MQL
2012TC-08	12576827	696603	8	<MQL	<MQL	19	<MQL	0.165	<MQL
2012TC-09	12576785	696499	9	<MQL	<MQL	393	19	0.330	50
2012TC-10	12576921	696378	10	<MQL	<MQL	47	4	0.185	<MQL
2012TC-11	12576925	696263	11	<MQL	<MQL	8	<MQL	0.141	<MQL
2012TC-12	12576855	696974	12	<MQL	<MQL	7	<MQL	<MQL	<MQL
2012TC-13	12576759	696835	13	<MQL	<MQL	4	<MQL	0.020	<MQL
2012TC-14	12576704	696726	14	<MQL	<MQL	14	<MQL	0.065	<MQL
2012TC-15	12576681	696555	15	<MQL	<MQL	12	<MQL	0.305	<MQL
2012TC-16	12576689	696451	16	<MQL	<MQL	20	2	0.213	<MQL
2012TC-17	12576715	696341	17	<MQL	<MQL	8	<MQL	0.214	<MQL
2012TC-18	12576825	696277	18	<MQL	<MQL	7	<MQL	0.158	<MQL
2012TC-19	12576695	696921	19	<MQL	<MQL	8	<MQL	0.091	<MQL
2012TC-20	12576711	696810	20	<MQL	<MQL	10	<MQL	0.218	14
2012TC-21	12576601	696759	21	<MQL	<MQL	27	<MQL	<MQL	<MQL
2012TC-22	12576556	696589	22	<MQL	<MQL	28	<MQL	0.246	<MQL
2012TC-25	12576558	696463	25	<MQL	<MQL	14	<MQL	0.049	<MQL
2012TC-26	12576633	696324	26	<MQL	<MQL	23	2	0.257	<MQL
2012TC-27	12576692	696207	27	<MQL	<MQL	8	<MQL	0.187	<MQL
2012TC-28	12576624	696950	28	<MQL	<MQL	24	<MQL	0.216	<MQL
2012TC-29	12576641	696810	29	<MQL	<MQL	<MQL	<MQL	0.162	<MQL
2012TC-30	12576536	696758	30	<MQL	<MQL	59	<MQL	0.020	9
2012TC-31	12576442	696661	31	<MQL	<MQL	46	<MQL	0.249	<MQL
2012TC-32	12576443	696421	32	<MQL	<MQL	41	<MQL	0.235	<MQL

Analyte core concentrations are in part per trillion (ppt) (i.e., ng analyte/L sap water).

L:\PUBLIC\Shared\Montague, Michigan\2012 Tree Core sampling\DuPont - Montague rev 10-1-12 (data from Misouri UST)

Results from Tree Core Sampling
Pierson Creek Landfill Area
DuPont Montague Site
Montague, Michigan

Location ID	X-coord	Y-coord	Tree #	CFC 113	cDCE	CF	1,1,1-TCA	CT	TCE
2012TC-33	12576535	696191	33	<MQL	<MQL	34	<MQL	0.230	<MQL
2012TC-34	12576664	696096	34	<MQL	<MQL	24	<MQL	0.120	<MQL
2012TC-35	12576392	697013	35	<MQL	<MQL	11	<MQL	0.241	<MQL
2012TC-36	12576589	696853	36	<MQL	<MQL	24	<MQL	0.220	19
2012TC-37	12576408	696785	37	<MQL	<MQL	63	<MQL	0.082	2
2012TC-38	12576365	696625	38	<MQL	<MQL	23	<MQL	0.177	<MQL
2012TC-39	12576338	696411	39	<MQL	<MQL	14	<MQL	0.180	<MQL
2012TC-40	12576504	696140	40	<MQL	<MQL	12	<MQL	0.223	<MQL
2012TC-41	12576567	696002	41	<MQL	<MQL	10	<MQL	0.172	<MQL
2012TC-43	12576210	697020	43	<MQL	<MQL	7	<MQL	0.211	<MQL
2012TC-44	12576291	696773	44	<MQL	<MQL	18	<MQL	0.197	<MQL
2012TC-45	12576982	696574	45	<MQL	<MQL	8	<MQL	0.022	<MQL
2012TC-46	12577119	696677	46	<MQL	<MQL	<MQL	<MQL	<MQL	<MQL
2012TC-47	12577174	696454	47	<MQL	<MQL	<MQL	<MQL	<MQL	<MQL
2012TC-48	12577073	696861	48	<MQL	<MQL	54	<MQL	0.282	<MQL
2012TC-49	12577066	697009	49	<MQL	<MQL	<MQL	<MQL	0.175	<MQL

Analyte core concentrations are in part per trillion (ppt) (i.e., ng analyte/L sap water).

L:\PUBLIC\Shared\Montague, Michigan\2012 Tree Core sampling\DuPont - Montague rev 10-1-12 (data from Misouri UST)

Results from Tree Core Sampling
Pierson Creek Landfill Area
DuPont Montague Site
Montague, Michigan

Location ID	X-coord	Y-coord	Tree #	PCE	PCE (PDMS)	TCEOH	Diameter (in)	Tree Type
2012TC-01	12577024	696687	1	528	792	<MQL	7	Oak
2012TC-02	12576974	696620	2	587	2,427	<MQL	9	Oak
2012TC-03	12576989	696526	3	699	3,905	<MQL	6.25	Poplar
2012TC-04	12576975	696430	4	114	89	<MQL	7.25	Oak
2012TC-05	12576913	696862	5	226	232	<MQL	25.75	Hemlock
2012TC-06	12576882	696780	6	544	1,595	<MQL	8	Oak
2012TC-07	12576823	696700	7	674	13,917	<MQL	22.25	White Pine
2012TC-08	12576827	696603	8	14	14	<MQL	12	Oak
2012TC-09	12576785	696499	9	654	2,999	<MQL	18.25	Poplar
2012TC-10	12576921	696378	10	506	844	<MQL	21	Hemlock
2012TC-11	12576925	696263	11	0.58	0.68	<MQL	15.25	Maple
2012TC-12	12576855	696974	12	4.31	5.15	<MQL	28.75	Hemlock
2012TC-13	12576759	696835	13	42	46	<MQL	14.5	Hemlock
2012TC-14	12576704	696726	14	53	57	<MQL	17.25	Hemlock
2012TC-15	12576681	696555	15	262	224	<MQL	9.25	Hemlock
2012TC-16	12576689	696451	16	59	73	<MQL	16.75	Beech
2012TC-17	12576715	696341	17	74	92	<MQL	12.75	Beech
2012TC-18	12576825	696277	18	318	342	<MQL	14.5	Hemlock
2012TC-19	12576695	696921	19	10	9.26	<MQL	12	Hemlock
2012TC-20	12576711	696810	20	446	888	<MQL	15.25	Beech
2012TC-21	12576601	696759	21	17	30	<MQL	21.5	Hemlock
2012TC-22	12576556	696589	22	2.24	2.14	<MQL	13	Beech
2012TC-25	12576558	696463	25	3.07	3.68	<MQL	22	Hemlock
2012TC-26	12576633	696324	26	477	1,267	<MQL	14.5	Poplar
2012TC-27	12576692	696207	27	1.47	1.25	<MQL	15.75	Beech
2012TC-28	12576624	696950	28	2.03	2.23	<MQL	28.75	Beech
2012TC-29	12576641	696810	29	5.39	5.24	<MQL	15.75	Hemlock
2012TC-30	12576536	696758	30	3.96	4.46	<MQL	18.25	Hemlock
2012TC-31	12576442	696661	31	0.69	0.98	<MQL	9.25	Ash
2012TC-32	12576443	696421	32	0.97	1.16	<MQL	18.75	Ash

Analyte core concentrations are in part per trillion (ppt) (i.e., ng analyte/L sap water).

L:\PUBLIC\Shared\Montague, Michigan\2012 Tree Core sampling\DuPont - Montague rev 10-1-12 (data from Misouri UST)

Results from Tree Core Sampling
Pierson Creek Landfill Area
DuPont Montague Site
Montague, Michigan

Location ID	X-coord	Y-coord	Tree #	PCE	PCE (PDMS)	TCEOH	Diameter (in)	Tree Type
2012TC-33	12576535	696191	33	0.59	1.00	<MQL	15.5	Ash
2012TC-34	12576664	696096	34	1.07	2.70	<MQL	9	Hemlock
2012TC-35	12576392	697013	35	0.49	0.74	<MQL	18.5	Poplar
2012TC-36	12576589	696853	36	37	43.03	<MQL	16.75	Ash
2012TC-37	12576408	696785	37	0.61	2.11	<MQL	19.25	Hemlock
2012TC-38	12576365	696625	38	0.85	<MQL	<MQL	16.75	Oak
2012TC-39	12576338	696411	39	0.49	0.77	<MQL	16.25	Hemlock
2012TC-40	12576504	696140	40	0.54	1.38	<MQL	13.75	Ash
2012TC-41	12576567	696002	41	0.51	1.25	<MQL	9.25	Ash
2012TC-43	12576210	697020	43	0.67	1.64	<MQL	12.25	Ash
2012TC-44	12576291	696773	44	0.65	0.77	<MQL	6.5	Ash
2012TC-45	12576982	696574	45	566	2,054	<MQL	11	White Pine
2012TC-46	12577119	696677	46	283	346	<MQL	17.25	Oak
2012TC-47	12577174	696454	47	2.88	5.85	<MQL	17.75	Oak
2012TC-48	12577073	696861	48	325	149	<MQL	16.5	Hemlock
2012TC-49	12577066	697009	49	0.66	<MQL	<MQL	18	Oak

Analyte core concentrations are in part per trillion (ppt) (i.e., ng analyte/L sap water).

L:\PUBLIC\Shared\Montague, Michigan\2012 Tree Core sampling\DuPont - Montague rev 10-1-12 (data from Misouri UST)

Appendix B

Surveyors Report from Driesenga

DRIESENGA & ASSOCIATES, INC.
Engineering · Surveying · Testing

455 East 8th Street, Suite 100
Holland, Michigan 49423
Ph. (616) 396-0255 • Fax (616) 396-0100
www.driesenga.com

December 2, 2013
JOB No. 1310131.5A

E.I. DU PONT DE NEMOURS AND COMPANY, MONTAGUE PLANT GROUND WATER SAMPLING LOCATIONS (MONTAGUE, MICHIGAN).
LOCATED IN SECTIONS 35 & 36, TOWN 12 NORTH, RANGE 18 WEST, WHITE RIVER TOWNSHIP & SECTION 1, TOWN 11 NORTH, RANGE 18 WEST WHITE RIVER TOWNSHIP, MUSKEGON COUNTY, MICHIGAN.

STATE PLANE COORDINATES BASIS OBTAINED APRIL 2005, UTILIZING MICHIGAN DEPARTMENT OF TRANSPORTATION CONSTANTLY OPERATING REFERENCE STATION (CORS) "MIMK" LOCATED IN MUSKEGON HEIGHTS MICHIGAN. CORS STATION DATA VERIFIED UTILIZING FOLLOWING MUSKEGON COUNTY ROAD COMMISSION (MCRC) CONTROL POINT:

DESIGNATION	MSPC NORTHING	MSPC EASTING	DATUM	UNITS	ELEVATION (NAVD 88)
LAMOS	698480.8871	12583945.75	SPC MI S	IFT	638.59'

ELEVATIONS FOR GROUND WATER SAMPLING LOCATIONS OBTAINED USING TRIGONOMETRIC LEVELING UTILIZING MICHIGAN STATE PLANE COORDINATE (SOUTH) CONTROL ESTABLISHED IN 2005 AND VERIFIED IN MAY OF 2013.

DESCRIPTION	**MSPC NORTHING**	**MSPC EASTING**	**GROUND ELEVATION (NAVD 88)**	**TOP OF CASING ELEVATION (NAVD 88)**
SWPCK 01 (WATER)	697192.2936'	12576450.2435'	585.54'	
IW-08-142 (CUT "X" IN NORTH NORTHEAST CORNER FLANGE BOLT)	693160.2675'	12583820.5960'	627.56'	629.63'
GW 13 (MUD)	696504.5319'	12576544.5885'	583.79'	
GW 12 (MUD)	696499.9093'	12576490.5772'	582.53'	
GW 10 (WATER)	697053.6643'	12576535.6926'	587.79'	
GW 09 (MUD)	696956.1018'	12576578.7815'	588.83'	
GW 08 (MUD)	696680.4058'	12576547.2990'	583.98'	
GW 07 (MUD)	696355.7551'	12576283.0378'	584.03'	
GW 06 (MUD)	696796.1598'	12576596.5643'	589.56'	
GW 05 (MUD)	696068.4740'	12576274.5068'	583.60'	
GW 03 (MUD)	696668.7379'	12576210.2224'	583.54'	
GW 02 (MUD)	696590.1795'	12576539.0544'	583.88'	
GW 01 (WATER)	696178.8391'	12576625.2044'	581.27'	
SBPC 01 (DIRT)	696403.8308'	12576718.9207'	617.41'	

Appendix C

Photographs of Groundwater Sampling Locations

PHOTOGRAPHIC LOG

Client Name:	Site Location:	Project No.
DuPont	Montague Michigan	18984840

Photo No. 1 **Date:** 06/18/2013

Direction Photo Taken:

~North

Description:

2013GW-01. Note sandy bottom of tributary formed by this spring.

Photo No. 2 **Date:** 06/18/2013

Direction Photo Taken:

~West

Description:

2013GW-01. Main channel of Pierson Creek visible in background.

PHOTOGRAPHIC LOG

Client Name:	Site Location:	Project No.
DuPont	Montague Michigan	18984840

Photo No. 3 **Date:** 06/19/2013

Direction Photo Taken:

North

Description:

2013GW-02.
Ground wet, very slight seep.
At base of hill, west of Pierson Creek Landfill.

Photo No. 4 **Date:** 06/20/2013

Direction Photo Taken:

~South

Description:

2013GW-03. West side of Pierson Creek. Groundwater visibly seeping from hillside.

URS

PHOTOGRAPHIC LOG

Client Name:	Site Location:	Project No.
DuPont	Montague Michigan	18984840

Photo No. 5 **Date:** 06/18/2013

Direction Photo Taken:

~West

Description:

2013GW-04.
Ground was wet, no apparent seep.

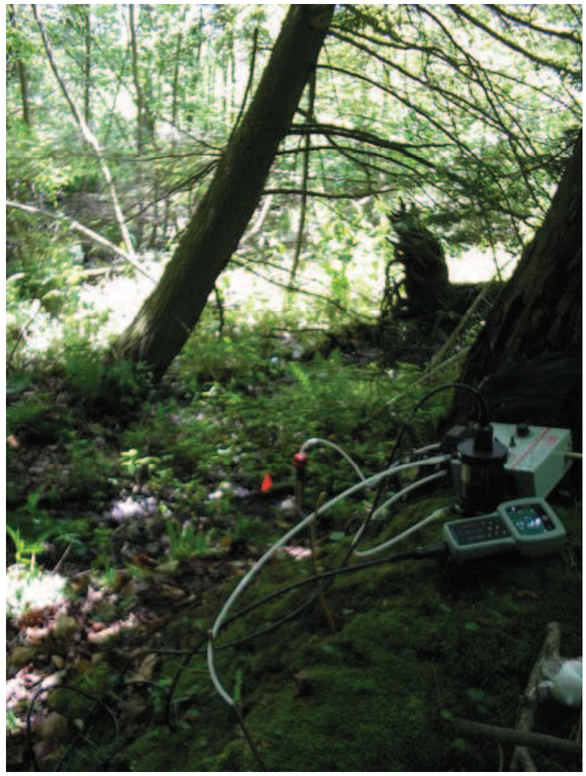


Photo No. 6 **Date:** 06/20/2013

Direction Photo Taken:

~North

Description:

2013GW-05. West of Pierson Creek. Ground elevation increases to the left of this photograph.

PHOTOGRAPHIC LOG

Client Name:	Site Location:	Project No.
DuPont	Montague Michigan	18984840

Photo No.	Date:
7	06/19/2013

Direction Photo Taken:

~South.

Description:

2013GW-06

Photo No.	Date:
8	06/19/2013

Direction Photo Taken:

~Southwest

Description:

2013GW-06.
Wet ground slopes to upper left in photograph.

URS

PHOTOGRAPHIC LOG

Client Name:	Site Location:	Project No.
DuPont	Montague Michigan	18984840

Photo No.	Date:
9	06/20/2013

Direction Photo Taken:

~Northwest

Description:

2013GW-07.
Ground wet.

Photo No.	Date:
10	06/19/2013

Direction Photo Taken:

~South

Description:

2013GW-08.
Collected from low spot exposed by fallen tree. At base of hill, west of Pierson Creek Landfill.

URS	**PHOTOGRAPHIC LOG**

Client Name:	**Site Location:**	**Project No.**
DuPont	Montague Michigan	18984840

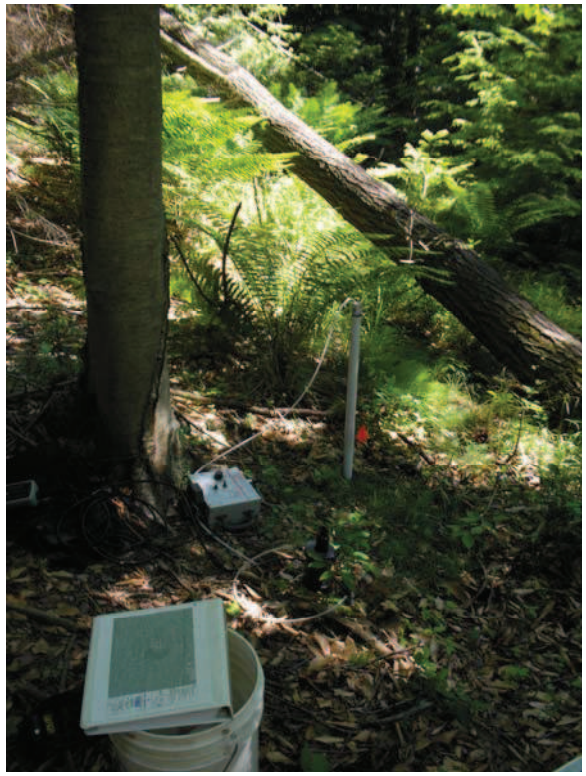
Photo No. 11	**Date:** 06/19/2013	
Direction Photo Taken: ~Southwest		
Description: 2013GW-09. Ground wet at foot of hill. Slopes upward behind view of this photograph		

Photo No. 12	**Date:** 06/19/2013	
Direction Photo Taken: ~Northwest		
Description: 2013GW-10 Collected from low spot exposed by fallen tree.		

URS

PHOTOGRAPHIC LOG

Client Name:	Site Location:	Project No.
DuPont	Montague Michigan	18984840

Photo No.	Date:
13	06/18/2013

Direction Photo Taken:

~Northwest

Description:

2013GW-11.
Ground wet, no apparent seep.

Photo No.	Date:
14	6/20/2013

Direction Photo Taken:

~Northwest

Description:

2013GW-12.
Slight seep out between tributary and main channel of Pierson Creek.

PHOTOGRAPHIC LOG

Client Name:	Site Location:	Project No.
DuPont	Montague Michigan	18984840

Photo No.	Date:
15	06/19/2013

Direction Photo Taken:

~North

Description:

2013GW-13.
At base of hill, west of Pierson Creek Landfill.

Photo No.	Date:
16	06/20/2013

Direction Photo Taken:

~Northwest

Description:

2013GW-14.
Ground wet. No apparent seep.