# Long Term Groundwater monitoring Report March 6, 2013

ANDERSON CLEANERS
5 HUNT ROAD
JAMESTOWN, NEW YORK
BCP SITE #C907027

Prepared For: Anderson Cleaners, Inc.

5 Hunt Road

Jamestown, New York 14701

Prepared By: Day Environmental, Inc.

1563 Lyell Avenue

Rochester, New York 14606

Project No.: 3563S-04

Date: April 2013

**LOCATION:** Anderson Cleaners

BCP Site # C907027

5 Hunt Road

Jamestown, New York

See Figure 1 (Project Locus)

MONITORING DATE: March 6, 2013

**OBJECTIVE:** Measure groundwater levels and evaluate the presence of non-aqueous phase liquid (NAPL) in monitoring/extraction wells shown on the attached Site Plan (Figure 2); collect groundwater samples for in-situ testing of select field parameters and analytical laboratory testing of halogenated volatile organic compounds (VOCs) from monitoring wells included in the long term groundwater monitoring program for the site. These monitoring wells include:

Overburden/Top of Till: MW-07, MW-200, MW-201, CW-2, CW-3, and CW-4

Fractured Rock: BR-02FR, MW-04, and MW-06

Bedrock: BR-02R and BR-03R

Note: The long term monitoring events are conducted two times per year (i.e., tentatively in March and September). During the March monitoring event, samples are collected from each of the long term monitoring wells and tested for the in-situ parameters of groundwater levels, pH, DO, ORP, and specific conductance, however, only samples collected from the overburden/top of till monitoring wells are submitted to the analytical laboratory for testing of halogenated VOCs. During the September monitoring event, samples from each of the long term monitoring wells are evaluated for in-situ parameters and submitted to the analytical laboratory for testing of halogenated VOCs.

**GROUNDWATER SAMPLE LOGS:** Copies of the sampling logs prepared for the current monitoring event are presented in Attachment A. These logs also include the in-situ measurements of dissolved oxygen (DO), oxygen reduction potential (ORP), turbidity, conductivity, pH and temperature measured at the time of sampling.

GROUNDWATER ELEVATIONS, NAPL OBSERVATIONS AND IN-SITU MEASUREMENTS: Groundwater elevations calculated based on the measurements and in-situ water quality measurements are summarized on Table 1 Summary of Water Quality Parameters-Groundwater Samples. During the current monitoring event, evidence of NAPL was not detected in any of the long term monitoring wells evaluated.

**GROUNDWATER CONTOUR MAP:** A copy of the Potentiometric Groundwater Contour Map developed based upon depth to water measurements made on March 6, 2013 is presented as Figure 2.

**ANALYTICAL LABORATORY RESULTS:** A copy of the laboratory report prepared by Spectrum Analytical, Inc. and executed chain-of-custody documentation for the March 6, 2013 sample event are included in Attachment B. A summary of the halogenated VOCs historically detected

Day Environmental, Inc. Page 1 of 3 RLK4222 (3563S-04)

in the monitoring wells samples collected from this site is presented on Table 2 Summary of Analytical Laboratory Results Groundwater Samples.

### **DISCUSSION:**

- 1) As shown on Figure 2, groundwater flow within the overburden is predominately to the east away from the Anderson Cleaners building. However, it appears that groundwater flow is modified in proximity of monitoring well CW-4 suggesting discharge into a 21-inch storm sewer, or associated bedding material, that is located in this area. In addition, the groundwater elevations measured in monitoring/extraction wells MW-07 and MW-207, which are located near the southeastern corner of the Anderson Cleaners building, are lower than would be expected based on the elevations measured in downgradient monitoring wells. These lower groundwater elevations appear to be the result of pumping conducted as part of the operation of the DNAPL removal system. [Note: The DNAPL removal system began operation on August 17, 2012, and the system operated from start-up through March 6, 2013, pumping at rates of 0.3 to 0.5 gallons per minute (gpm). At the time of sampling on March 6, 2013, only one DNAPL extraction well (i.e., EW-2, which is located in the Garage Area of the Anderson Cleaners building) was operating.]
- 2) The in-situ dissolved oxygen measurements made during the March 6, 2013 monitoring event ranged from 0 mg/l (monitoring wells MW-06, BR-02R and BR-03R) to 4.24 mg/l (monitoring well MW-200). The dissolved oxygen measured in the overburden/top of till monitoring wells ranged between 0.10 mg/l (MW-07 to 4.24 mg/l (MW-200) with an average value of 1.26 mg/l. The dissolved oxygen levels measured in the fractured bedrock and bedrock monitoring wells were lower than those measured in the overburden/top of till monitoring wells (i.e., averaging 0.1 mg/l and 0 mg/l, respectively).
- 3) The ORP measurements made during the March 6, 2013 monitoring event were negative in monitoring wells MW-201 (-53 mV) and BR-02R (-164 mV) indicating reducing conditions, and positive in the remaining monitoring wells tested [i.e., ranging from 74 mV (BR-02R) and 310 mV (CW-3)] indicating an oxidizing condition.
- 4) The specific conductivity readings measured on March 6, 2013 varied for each zone monitored with average specific conductivity readings of 2.01 mS/cm measured within the overburden/top of till monitoring wells, 0.81 mS/cm measured in the fractured bedrock wells, and 0.56 mS/cm measured in the bedrock monitoring wells.
- 5) The stabilized pH measured in the samples collected during the March 6, 2013 ranged between 7.04 s.u. (MW-07) and 8.37 s.u. (MW-06), and the average pH values varied between each of the zones monitored [e.g., 7.73 s.u. (overburden/top of till), 7.93 s.u. (fractured rock), and 8.02 s.u. (bedrock)].
- 6) As shown on Table 2, halogentated VOCs were detected in each of the groundwater samples collected and tested during the March 6, 2013 sample event. With the exception of the sample collected from monitoring well MW-201, tetrachlorothene (PCE) was detected in each of the overburden/top of till samples tested. [Note: The analytical laboratory reported a detection limit of 186 ug/l for PCE in the sample from MW-201

Day Environmental, Inc. Page 2 of 3 RLK4222 (3563S-04)

that was tested.] Breakdown products of PCE including trichlorethene (TCE), cis 1,2-dichloroethene (cis 1,2-DCE) and vinyl chloride (VC) were detected in a least one of the monitoring well sampled on March 6, 2013. A comparison of the March 6, 2013 test results to previous data suggests the following trends:

- The PCE concentrations measured samples collected recently from monitoring well MW-07 suggest a decreasing trend. Specifically, a PCE concentration of 15,600 ug/l was measured in a sample collected on August 8, 2012 (i.e., prior to the start-up of the DNAPL collection system), and subsequently PCE concentrations of 6,410 ug/l and 2,140 were measured on November 16, 2012 and March 6, 2013 (i.e., with the DNAPL system operating). The PCE concentration measured in the sample collected on March 6, 2013 was the lowest concentration historically measured at this location. It is possible that the decreasing trend of PCE concentrations detected in the samples recently collected/tested from MW-07 could be indicative of the effectiveness of the DNAPL removal system in eliminating the DNAPL, which serves as a source of the dissolved PCE within the groundwater.
- The concentrations of halogenated VOCs measured in the samples collected from the downgradient overburden/top of till monitoring wells on March 6,2013 (i.e., monitoring wells MW-200, MW-201, and CW-2 through CW-4) were similar to those detected during previous monitoring events.
- The highest concentrations of halogentated VOCs detected in downgradient overburden/top of till locations were measured in monitoring wells located in proximity of the 21-inch storm sewer that appears to have impacted the groundwater flow patterns as discussed above. The elevated halogenated VOC concentrations and altered groundwater flow patterns suggest preferential flow along the storm sewer line (and possibly an adjacent sanitary sewer line).

**SCHEDULE:** The next long term groundwater monitoring event is scheduled for on, or about, September 4, 2013.

#### **List of Figures**

Figure 1 Project Locus Map

Figure 2 Potentiometric Overburden Groundwater Contour Map for March 6, 2013

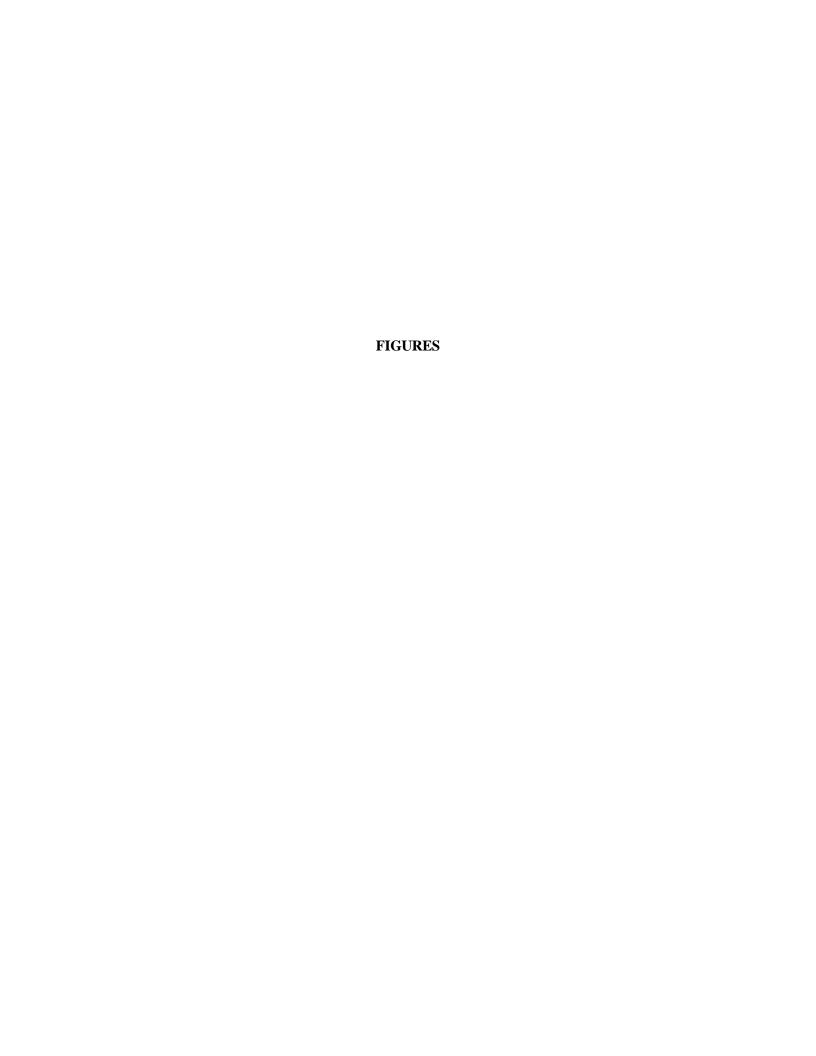
### **List of Tables**

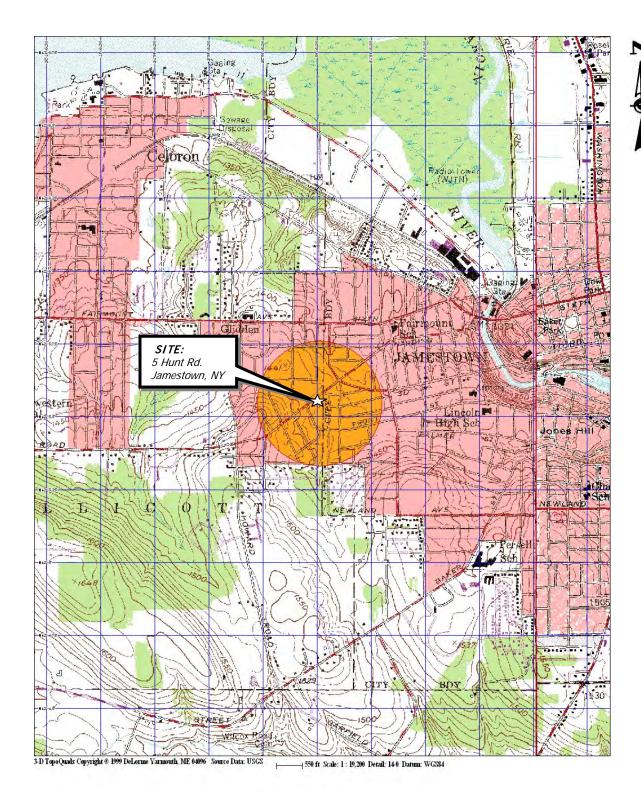
Table 1 Summary of Water Quality Parameters – Groundwater Samples
 Table 2 Summary of Analytical Laboratory Results – Groundwater Samples

#### **List of Attachments**

Attachment A Monitoring Well Sampling Logs for Samples Collected March 6, 2013

Attachment B Spectrum Analytical Inc. Laboratory Report and Chain-of-Custody Documentation





Drawing Produced From: 3-D TopoQuads, DeLorme Map Co., referencing USGS quad map Lakewood (NY) 1979 and Jamestown (NY) 1979. Site Lat/Long: N42°05.55'- W79°16.00'

04-23-2013

DRAWN BY **RJM** 

1" = 2000

DAY ENVIRONMENTAL, INC. ENVIRONMENTAL CONSULTANTS ROCHESTER, NEW YORK 14614-1008

PROJECT TITLE

**5 HUNT ROAD** JAMESTOWN, NEW YORK

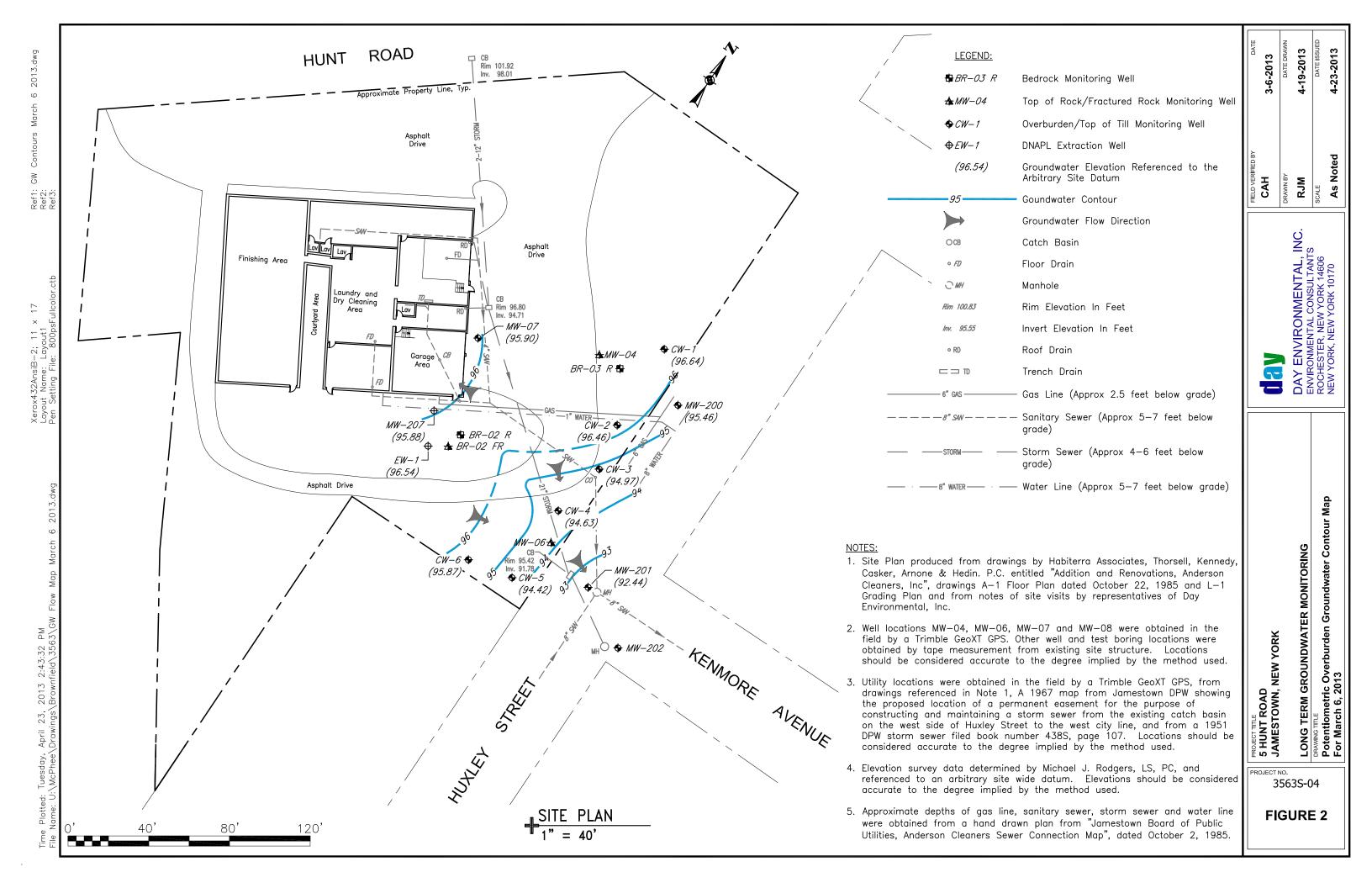
LONG TERM MONITORING BCP #C907027

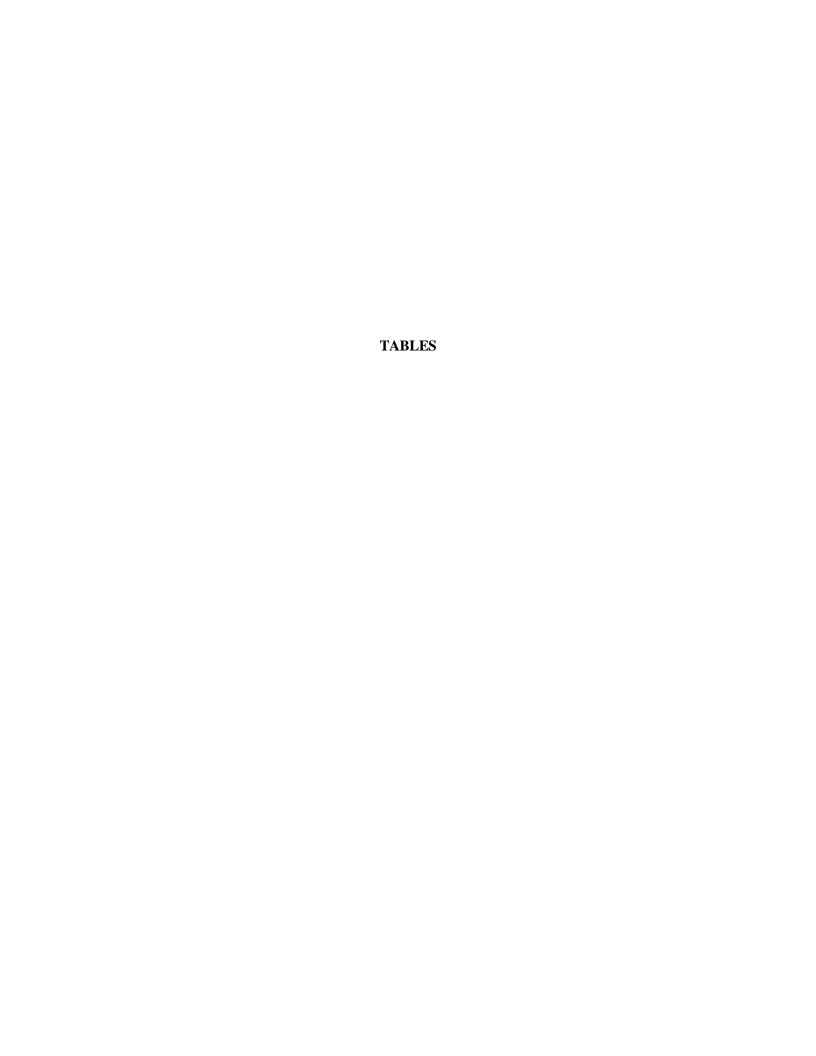
PROJECT LOCUS MAP

PROJECT NO.

3563S-04

FIGURE 1





# Table 1 Long Term Monitoring Program 5 Hunt Road Jamestown, New York NYSDEC BCP Site #C907027

Summary of Water Quality Parameters - Groundwater Samples

WELL ID	Parameter	DA	TE
WELLID	Parameter	8/8/2012	3/6/2013
	GW Elevation (ft)	95.27	95.90
	pH (su)	N/M	7.04
MW-07	S.C. (mS/cm)	N/M	1.70
	D.O. (mg/l)	0.9	0.10
	O.R.P. (mV)	106	100
	GW Elevation (ft)	92.99	95.46
	pH (su)	N/M	8.23
MW-200	S.C. (mS/cm)	N/M	2.68
	D.O. (mg/l)	0.6	4.24
	O.R.P. (mV)	70	196
	GW Elevation (ft)	92.08	92.44
	pH (su)	N/M	7.58
MW-201	S.C. (mS/cm)	N/M	2.11
	D.O. (mg/l)	2.3	1.38
	O.R.P. (mV)	-31	-53
	GW Elevation (ft)		96.46
	pH (su)		7.65
CW-2	S.C. (mS/cm)		2.01
	D.O. (mg/l)		0.88
	O.R.P. (mV)		299
	GW Elevation (ft)		94.97
	pH (su)		7.77
CW-3	S.C. (mS/cm)		1.90
CW 3	D.O. (mg/l)		0.70
	O.R.P. (mV)		310
	GW Elevation (ft)		94.63
CW-4	pH (su)		8.10
CVV-4	S.C. (mS/cm)		1.64
	D.O. (mg/l)		0.23
	O.R.P. (mV)		193
	GW Elevation (ft)	97.72	100.16
N 414 / O 4	pH (su)	N/M	7.83
MW-04	S.C. (mS/cm)	N/M	1.11
	D.O. (mg/l)	0.7	0.14
	O.R.P. (mV)	95	133
	GW Elevation (ft)	96.95	100.09
	pH (su)	N/M	8.37
MW-06	S.C. (mS/cm)	N/M	0.70
	D.O. (mg/l)	2	0.00
	O.R.P. (mV)	-52	197
	GW Elevation (ft)	97.89	100.22
	pH (su)	N/M	7.58
BR-02FR	S.C. (mS/cm)	N/M	0.62
	D.O. (mg/l)	0.6	0.13
	O.R.P. (mV)	121	74
	GW Elevation (ft)	97.99	100.46
	pH (su)	N/M	8.17
BR-02R	S.C. (mS/cm)	N/M	0.60
	D.O. (mg/l)	0.8	0.00
	O.R.P. (mV)	88	-164
	GW Elevation (ft)	98.39	100.01
	pH (su)	N/M	7.86
BR-03R	S.C. (mS/cm)	N/M	0.51
й≿∪-иа	D.O. (mg/l)	0.3	0.00
	O.R.P. (mV)	69	131
NM = Not Me			

NM = Not Measured

# Summary of Analytical Laboratory Results Groundwater Samples

Anderson Cleaners Site Jamestown, New York BCP Site C907027

		Sample Locations and Sample Dates																						
	MW-01	MW-02		MW-03						MW	-04					MW	<b>'-05</b>	MW-06						
Constituent	5/25/2005	1/12/2006	5/25/2005	1/12/2006	9/12/2006	5/25/2005	1/12/2006	1/4/2007	2/13/2007	3/15/2007	11/8/2007	7/24/2008	1/15/2010	5/5/2010	8/8/2012	5/25/2005	1/12/2006	5/25/2005	1/12/2006	1/4/2007	2/13/2007	3/15/2007	7/24/2008	8/8/2012
PCE	U (10)	2,090	1,400	1,040	1,560	1,200	1,230	1,820	1,120	904	189	734	837	694	974	2 E	U (2)	620	392	369	256	246	329	187
TCE	U (10)	U (20)	U (10)	U (20)	U (20)	1 E	U (20)	U (200)	U (200)	U (100)	1,220	113	34.9	31.4	U (18.9)	U (10)	U (2)	1 E	U (10)	U (4)	U (5)	U (5)	U (5)	U (3.8)
trans 1,2-DCE	U (10)	U (20)	U (10)	U (20)	U (20)	U (10)	U (20)	U (200)	U (200)	U (100)	187	U (20)	U (20)	U (20)	U (17.0)	U (10)	U (2)	U (10)	U (10)	U (4)	U (5)	U (5)	U (5)	U (3.4)
cis 1,2-DCE	U (10)	-	U (10)	-	-	U (10)	-	U (200)	U (200)	U (100)	3,830	101	24.6	28.6	U (17.9)	U (10)	-	U (10)	-	U (4)	U (5)	U (5)	U (5)	U (3.6)
vc	U (10)	U (20)	U (10)	U (20)	U (20)	U (10)	U (20)	U (200)	U (200)	U (100)	U (100)	U (20)	U (20)	U (20)	U (20.2)	U (10)	U (2)	U (10)	U (10)	U (4)	U (5)	U (5)	U (5)	U (4.0)
Total VOCs	0	2,090	1,400	1,040	1,560	1,201	1,230	1,820	1,120	904	5,426	948	896.5	754	974	2	0	621	392	369	256	246	329	187

### Notes:

All samples tested for halogenated VOCs by USEPA Method 8260B and concentrations are shown in ug/L or parts per billion.

U (200) = constituent not detected at the concentration shown in parenthesis.

E = estimated concentration

PCE = tetrachloroethene

TCE = trichloroethene

trans 1,2-DCE = trans 1,2-dichloroethene

cis 1,2-DCE = cis 1,2-dichloroethene

# Summary of Analytical Laboratory Results Groundwater Samples

Anderson Cleaners Site Jamestown, New York BCP Site C907027

		Sample Locations and Sample Dates																						
		MW-07								PW-2					PW-3				MW-7		MW-7.1			
Constituent	5/25/2005	1/12/2006	9/12/2006	1/4/2007	2/13/2007	3/15/2007	7/24/2008	8/8/2012	11/16/2012	3/6/2013	10/21/2004	1/12/2006	8/8/2006	10/21/2004	5/25/2005	1/12/2006	8/8/2006	9/12/2006	11/23/2003	10/21/2004	5/25/2005	8/9/2006	9/12/2006	7/24/2008
PCE	9,600 E	8,590	9,170	5,310	6,440	4,240	11,600	15,600	6,410	2,140	91,400	29,700	50,400	108,000	74,000	64,700	34,100	23,100	53,300	53,700	73,000	113,000	120,000	78,100
TCE	6,500	U (200)	U (200)	U (200)	U (200)	U (200)	U (200)	U (151)	U (151)	U (37.8)	U (2000)	U (1000)	U (1000)	9,070	8,100	7,360	8,150	9,040	U (1000)	U (2000)	81	U (1000)	U (1000)	1,120
trans 1,2-DCE	61	U (200)	U (200)	U (200)	U (200)	U (200)	U (200)	U (136)	U (136)	U (34.0)	U (2000)	U (1000)	U (1000)	U (2000)	290 E	U (1000)	U (1000)	U (400)	U (1000)	U (2000)	U (10)	U (1000)	U (1000)	U (1000)
cis 1,2-DCE	7,100	-	-	U (200)	U (200)	U (200)	245	U (143)	U (143)	U (35.8)	U (2000)	-	-	72,500	57,000	-	-	-	-	U (2000)	95	-	-	U (1000)
vc	1,000	U (200)	U (200)	U (200)	U (200)	U (200)	U (200)	U (161)	U (161)	U (40.4)	U (2000)	U (1000)	U (1000)	13,800	12,000	17,900	20,400	5,490	U (1000)	U (2000)	2 E	U (1000)	U (1000)	U (1000)
Total VOCs	24,261	8,590	9,170	5,310	6,440	4,240	11,845	15,600	6,410	2,140	91,400	29,700	50,400	203,370	151,390	89,960	62,650	37,630	53,300	53,700	73,178	113,000	120,000	79,220

### Notes:

All samples tested for halogenated VOCs by USEPA Method 8260B and concentrations are shown in ug/L or parts per billion.

U (200) = constituent not detected at the concentration shown in parenthesis.

E = estimated concentration

PCE = tetrachloroethene

TCE = trichloroethene

trans 1,2-DCE = trans 1,2-dichloroethene

cis 1,2-DCE = cis 1,2-dichloroethene

# Summary of Analytical Laboratory Results Groundwater Samples

Anderson Cleaners Site Jamestown, New York BCP Site C907027

		Sample Locations and Sample Dates																						
		MW-201												MW-202	MW	-203		BR-02 FR						
Constituent	4/20/2006	7/24/2008	8/8/2012	11/16/2012	3/6/2013	4/24/2006	1/4/2007	2/13/2007	3/15/2007	8/31/2007	11/8/2007	4/2/2008	7/24/2008	12/20/2008	8/8/2012	11/16/2012	12/7/2012	3/6/2013	4/20/2006	7/12/2006	7/24/2008	1/15/2010	5/5/2010	8/8/2012
PCE	U (2.0)	U (2.0)	1.4	U (0.7)	1.8	10,500	14,200	2,610	423	1,000	402	U (100)	U (200)	U (200)	U (186)	U (0.7)	U (250)	U (186)	U (2.0)	U (2.0)	U (2.0)	15,000	30,000	5,880
TCE	U (2.0)	U (2.0)	3.2	5.6	1.5	970	U (200)	17,500	937	772 E	232	U (100)	U (200)	U (200)	U (189)	U (0.8)	U (250)	U (189)	U (2.0)	U (2.0)	U (2.0)	U (200)	U (400)	499
trans 1,2-DCE	U (2.0)	U (2.0)	0.8	U (0.7)	U (0.7)	U (200)	U (200)	1,290	94.4	361 E	141	U (100)	U (200)	U (200)	U (170)	U (0.7)	U (250)	U (170)	U (2.0)	U (2.0)	U (2.0)	U (200)	U (400)	U (68.1)
cis 1,2-DCE	-	4.56	32.6	45.6	7.2	•	U (200)	7,860	U (20)	16,000	9,130	4,040	7,820	752	10,400	27.7	9,570	11,200	-	1	3.66	U (200)	U (400)	97.0
VC	U (2.0)	U (2.0)	0.9	0.8	U (0.8)	U (200)	U (200)	U (200)	U (20)	566 E	1,180	1,710	4,260	1,050	650	14.7	848	588	U (2.0)	3.38	U (2.0)	U (200)	U (400)	U (80.7)
							·				·	·												
Total VOCs	ND	4.56	38.9	52.0	10.5	11,470	14,200	29,260	1,454	18,699	11,085	5,750	12,080	1,804	11,050	42.4	10,418	11,788	0	3.38	3.66	15,000	30,000	6,476

### Notes:

All samples tested for halogenated VOCs by USEPA Method 8260B and concentrations are shown in ug/L or parts per billion.

U (200) = constituent not detected at the concentration shown in parenthesis.

E = estimated concentration

PCE = tetrachloroethene

TCE = trichloroethene

trans 1,2-DCE = trans 1,2-dichloroethene

cis 1,2-DCE = cis 1,2-dichloroethene

# Summary of Analytical Laboratory Results Groundwater Samples

# Anderson Cleaners Site Jamestown, New York BCP Site C907027

		Sample Locations and Sample Dates											
		BR-02 R			CV	V-2	CV	<b>/-</b> 3	CV	V-4	CW-5	CW-6	
Constituent	1/15/2010	5/5/2010	8/8/2012	12/7/2012	11/16/2012	3/6/2013	11/16/2012	3/6/2013	11/16/2012	3/6/2013	11/16/2012	11/16/2012	
PCE	334	371	1,620	13.3	155	308	794	910	39,800	31,300	U (0.7)	U (0.7)	
TCE	79.8	550	1,330	1.0	60.8	40.0	U (7.6)	U (15.1)	U (378)	U (378)	U (0.8)	U (0.8)	
trans 1,2-DCE	U (20)	U (20)	U (17.0)	U (1.0)	1.8	U (3.4)	U (6.8)	U (13.6)	U (340)	U (340)	U (0.7)	U (0.7)	
cis 1,2-DCE	U (20)	U (20)	364	1.3	37.4	24.4	28.5	25.4	U (358)	U (358)	U (0.7)	U (0.7)	
vc	79.0	115	400	U (1.0)	1.2	U (4.0)	U (8.1)	U (16.1)	U (404)	U (404)	U (0.8)	U (0.8)	
		·											
Total VOCs	492.8	1,036	3,762.5	15.6	256.2	372.4	822.5	935.4	39,800	31,300	0	0	

U (200) = constituent not detected at the concentration shown in parenthesis.

E = estimated concentration

PCE = tetrachloroethene

TCE = trichloroethene

trans 1,2-DCE = trans 1,2-dichloroethene

cis 1,2-DCE = cis 1,2-dichloroethene

# Attachment A

Monitoring Well Sampling Logs for Samples Collected March 6, 2013

# WELL MW-07

SECTION 1 - SITE INFORMATION										
SITE LOCATION: 5 Hunt Road	JOB #: 3563S-04									
Jamestown, New York	<b>DATE</b> : 3/6/13									
SAMPLE COLLECTOR(S): C. Hampton/R. Kampff										
WEATHER CONDITIONS: ~35°F, Overcast	PID IN WELL (PPM): N/M LNAPL N/O DNAPL N/M									

	SECTION 2 - P	PURGE INFORMATION
DEPTH OF WELL [FT]:	N/M	(MEASURED FROM TOP OF CASING - T.O.C.)
STATIC WATER LEVEL (SWI	L) [FT]: 5.19	(MEASURED FROM T.O.C.)
THICKNESS OF WATER COL	UMN [FT]:N/A	(DEPTH OF WELL - SWL)
CALCULATED VOL. OF H <sub>2</sub> O	PER WELL CASING [GA	AL]: N/A CASING DIA.: 1"
CALCULATIONS: <u>CASING DIA. (FT)</u> 3/4" (0.0625)  1" (0.0833)  11/4" (0.1041)  2" (0.1667)  3" (0.250)  4" (0.3333)  41/2" (0.375)  6" (0.5000)  8" (0.666)		CALCULATIONS VOL. OF H <sub>2</sub> O IN CASING = DEPTH OF WATER COLUMN X WELL CONSTANT  No Purge
CALCULATED PURGE VOLU		ΓIMES CASING VOLUME)
ACTUAL VOLUME PURGED	GALJ: N/A	
PURGE METHOD: N/A	I	PURGE START: N/A END: N/A

SECTION 3 - SAMPLE IDENTIFICATION AND TEST PARAMETERS										
SAMPLE ID # DATE / TIME SAMPLING METHOD ANALYTICAL SCAN(S)										
MW-07	3-6-13 / 14:50	PDB Sample	Halogenated VOCs							

	SECTION 4 - WATER QUALITY DATA												
SWL (FT)	TEMP (°C)	pН	CONDUCTIVITY (mS/cm)	TURBIDITY (NTU)	DO (mg/L)	ORP (mV)	VISUAL						
5.19	10.1	7.04	1.70	943	0.10	100	PDB – Clear Bailer - Cloudy						

N/M – Not Measured

N/O – Not Observed

# **WELL MW-200**

SECTION 1 - SITE INFORMATION										
SITE LOCATION: 5 Hunt Road	JOB #: <u>3563S-04</u>									
Jamestown, New York	<b>DATE</b> : 3/6/13									
SAMPLE COLLECTOR(S): C. Hampton/R. Kampff										
WEATHER CONDITIONS: ~35°F, Overcast	PID IN WELL (PPM): N/M LNAPL N/O DNAPL N/O									

SECTION 2 - PURGE INFORMATION										
<b>DEPTH OF WELL [FT]:</b> 15.85 (MEASURED FROM TOP OF CASING - T.O.C.)										
STATIC WATER LEVEL (SWL) [FT]: 0.44 (MEASURED FROM T.O.C.)										
THICKNESS OF WATER COLUMN [FT]: 15.41 (DEPTH OF WELL - SWL)										
CALCULATED VOL. OF H <sub>2</sub> O PER WELL CASING [GAL]: 0.63 CASING DIA.: 1"										
CALCULATIONS:           CASING DIA. (FT)         WELL CONSTANT(GAL/FT)         CALCULATIONS           3/4" (0.0625)         0.023         VOL. OF H <sub>2</sub> O IN CASING = DEPTH OF WATER COLUMN X WELL CONSTANT           1" (0.0833)         0.041           1½" (0.1041)         0.063           2" (0.1667)         0.1632           3" (0.250)         0.380           4" (0.3333)         0.6528           4½" (0.375)         0.826           6" (0.5000)         1.4688           8" (0.666)         2.611										
CALCULATED PURGE VOLUME [GAL]: 1.89 (3 TIMES CASING VOLUME)										
ACTUAL VOLUME PURGED [GAL]: 1.0 (Dry)  PURGE METHOD: Bailer PURGE START: 13:00 END: 13:20										

S	SECTION 3 - SAMPLE IDENTIFICATION AND TEST PARAMETERS										
SAMPLE ID # DATE / TIME SAMPLING METHOD ANALYTICAL SCAN(S)											
MW-200	3-6-13 / 13:40	Bailer	Halogenated VOCs								

SECTION 4 - WATER QUALITY DATA							
SWL (FT)	TEMP (°C)	pН	CONDUCTIVITY (mS/cm)	TURBIDITY (NTU)	DO (mg/L)	ORP (mV)	VISUAL
N/M	9.0	8.23	2.68	195.0	4.24	196	Clear

N/M – Not Measured

N/O – Not Observed

# **WELL MW-201**

SECTION 1 - SITE INFORMATION						
SITE LOCATION: 5 Hunt Road	<b>JOB</b> #: 3563S-04					
Jamestown, New York	<b>DATE</b> : 3/6/13					
SAMPLE COLLECTOR(S): C. Hampton/R. Kampff						
WEATHER CONDITIONS: ~35°F, Overcast	PID IN WELL (PPM): N/M LNAPL N/O DNAPL N/O					

SECTION 2 - PURGE INFORMATION					
DEPTH OF WELL [FT]: 13.55	(MEASURED FROM TOP OF CASING - T.O.C.)				
STATIC WATER LEVEL (SWL) [FT]: 2.79	(MEASURED FROM T.O.C.)				
THICKNESS OF WATER COLUMN [FT]: 10.76	(DEPTH OF WELL - SWL)				
CALCULATED VOL. OF H <sub>2</sub> O PER WELL CASING [GAI	L]: <u>0.44</u> CASING DIA.: <u>1"</u>				
CALCULATIONS:         CASING DIA. (FT)       WELL CONSTANT(GAL/FT)       CASING DIA. (FT)         34" (0.0625)       0.023       VO         1" (0.0833)       0.041         1½" (0.1041)       0.063         2" (0.1667)       0.1632         3" (0.250)       0.380         4" (0.3333)       0.6528         4½" (0.375)       0.826         6" (0.5000)       1.4688         8" (0.666)       2.611	ALCULATIONS L. OF H <sub>2</sub> O IN CASING = DEPTH OF WATER COLUMN X WELL CONSTANT				
CALCULATED PURGE VOLUME [GAL]: 1.32 (3 TIMES CASING VOLUME)					
ACTUAL VOLUME PURGED [GAL]: 1.5					
PURGE METHOD: Bailer P	URGE START: 13:00 END: 13:20				

SECTION 3 - SAMPLE IDENTIFICATION AND TEST PARAMETERS						
SAMPLE ID # DATE / TIME SAMPLING METHOD ANALYTICAL SCAN						
MW-201	3-6-13 / 14:35	Bailer	Halogenated VOCs			

SECTION 4 - WATER QUALITY DATA							
SWL (FT)	TEMP (°C)	pН	CONDUCTIVITY (mS/cm)	TURBIDITY (NTU)	DO (mg/L)	ORP (mV)	VISUAL
2.80	9.1	7.58	2.11	433.0	1.38	-53	Clear

N/M – Not Measured

N/O – Not Observed

# WELL CW-2

SECTION 1 - SITE INFORMATION					
SITE LOCATION: 5 Hunt Road	JOB #: 3563S-04				
Jamestown, New York	<b>DATE</b> : 3/6/13				
SAMPLE COLLECTOR(S): C. Hampton/R. Kampff					
WEATHER CONDITIONS: ~35°F, Overcast	PID IN WELL (PPM): N/M LNAPL N/O DNAPL N/O				

SECTION 2 - PURGE INFORMATION					
<b>DEPTH OF WELL [FT]:</b> 17.38 (MEASURED FROM TOP OF CASING - T.O.C.)					
STATIC WATER LEVEL (SWL) [FT]: 3.40 (MEASURED FROM T.O.C.)					
THICKNESS OF WATER COLUMN [FT]: 13.98 (DEPTH OF WELL - SWL)					
CALCULATED VOL. OF H <sub>2</sub> O PER WELL CASING [GAL]: 0.57 CASING DIA.: 1"					
CALCULATIONS:           CASING DIA. (FT)         WELL CONSTANT(GAL/FT)         CALCULATIONS           ¾" (0.0625)         0.023         VOL. OF H <sub>2</sub> O IN CASING = DEPTH OF WATER COLUMN X WELL CONSTANT           1½" (0.1041)         0.063         VOL. OF H <sub>2</sub> O IN CASING = DEPTH OF WATER COLUMN X WELL CONSTANT           3" (0.250)         0.1632         VOL. OF H <sub>2</sub> O IN CASING = DEPTH OF WATER COLUMN X WELL CONSTANT           4" (0.3333)         0.6528         VOL. OF H <sub>2</sub> O IN CASING = DEPTH OF WATER COLUMN X WELL CONSTANT           4" (0.3333)         0.6528         VOL. OF H <sub>2</sub> O IN CASING = DEPTH OF WATER COLUMN X WELL CONSTANT           4" (0.3333)         0.6528         VOL. OF H <sub>2</sub> O IN CASING = DEPTH OF WATER COLUMN X WELL CONSTANT           4" (0.3333)         0.6528         VOL. OF H <sub>2</sub> O IN CASING = DEPTH OF WATER COLUMN X WELL CONSTANT           4" (0.3333)         0.6528         VOL. OF H <sub>2</sub> O IN CASING = DEPTH OF WATER COLUMN X WELL CONSTANT           4" (0.3333)         0.6528         VOL. OF H <sub>2</sub> O IN CASING = DEPTH OF WATER COLUMN X WELL CONSTANT           4" (0.3333)         0.6528         VOL. OF H <sub>2</sub> O IN CASING = DEPTH OF WATER COLUMN X WELL CONSTANT					
CALCULATED PURGE VOLUME [GAL]: 1.72 (3 TIMES CASING VOLUME)					
ACTUAL VOLUME PURGED [GAL]: 2.0					
PURGE METHOD:         Bailer         PURGE START:         12:40         END:         13:00					

SECTION 3 - SAMPLE IDENTIFICATION AND TEST PARAMETERS						
SAMPLE ID # DATE / TIME SAMPLING METHOD ANALYTICAL SCAN(S)						
CW-2	3-6-13 / 14:25	Bailer	Halogenated VOCs			

SECTION 4 - WATER QUALITY DATA							
SWL (FT)	TEMP (°C)	pН	CONDUCTIVITY (mS/cm)	TURBIDITY (NTU)	DO (mg/L)	ORP (mV)	VISUAL
3.45	9.4	7.65	2.01	>800	0.88	299	Cloudy

N/M – Not Measured

N/O – Not Observed

# WELL CW-3

SECTION 1 - SITE INFORMATION					
SITE LOCATION: 5 Hunt Road	JOB #:3563S-04				
Jamestown, New York	<b>DATE</b> : 3/6/13				
SAMPLE COLLECTOR(S): C. Hampton/R. Kampff					
WEATHER CONDITIONS: ~35°F, Overcast	PID IN WELL (PPM): N/M LNAPL N/O DNAPL N/O				

SECTION 2 - PURGE INFORMATION					
<b>DEPTH OF WELL [FT]:</b> 15.28 (MEASURED FROM TOP OF CASING - T.O.C.)					
STATIC WATER LEVEL (SWL) [FT]: 1.68 (MEASURED FROM T.O.C.)					
THICKNESS OF WATER COLUMN [FT]: 13.60 (DEPTH OF WELL - SWL)					
CALCULATED VOL. OF H <sub>2</sub> O PER WELL CASING [GAL]: 0.56 CASING DIA.: 1"					
CALCULATIONS:           CASING DIA. (FT)         WELL CONSTANT(GAL/FT)         CALCULATIONS           3/4" (0.0625)         0.023         VOL. OF H <sub>2</sub> O IN CASING = DEPTH OF WATER COLUMN X WELL CONSTANT           1" (0.0833)         0.041           1½" (0.1041)         0.063           2" (0.1667)         0.1632           3" (0.250)         0.380           4" (0.3333)         0.6528           4½" (0.375)         0.826           6" (0.5000)         1.4688           8" (0.666)         2.611					
CALCULATED PURGE VOLUME [GAL]: 1.67 (3 TIMES CASING VOLUME)					
ACTUAL VOLUME PURGED [GAL]: 2.0					
PURGE METHOD: Bailer PURGE START: 12:20 END: 12:40					

SECTION 3 - SAMPLE IDENTIFICATION AND TEST PARAMETERS						
SAMPLE ID # DATE / TIME SAMPLING METHOD ANALYTICAL SCAN(S)						
CW-3	3-6-13 / 14:10	Bailer	Halogenated VOCs			

SECTION 4 - WATER QUALITY DATA							
SWL (FT)	TEMP (°C)	pН	CONDUCTIVITY (mS/cm)	TURBIDITY (NTU)	DO (mg/L)	ORP (mV)	VISUAL
1.53	9.8	7.77	1.90	80.6	0.70	310	Clear

N/M – Not Measured

N/O – Not Observed

# WELL CW-4

SECTION 1 - SITE INFORMATION							
SITE LOCATION: 5 Hunt Road	JOB #: 3563S-04						
Jamestown, New York	<b>DATE</b> : 3/6/13						
SAMPLE COLLECTOR(S): C. Hampton/R. Kampff							
WEATHER CONDITIONS: ~35°F, Overcast	PID IN WELL (PPM): <u>N/M</u> LNAPL <u>N/O</u> DNAPL <u>N/O</u>						

SECTION 2 - PURGE INFORMATION						
<b>DEPTH OF WELL [FT]:</b> 15.04 (M	EASURED FROM TOP OF CASING - T.O.C.)					
STATIC WATER LEVEL (SWL) [FT]: 2.13 (MI	EASURED FROM T.O.C.)					
THICKNESS OF WATER COLUMN [FT]: 12.91 (DI	EPTH OF WELL - SWL)					
CALCULATED VOL. OF H <sub>2</sub> O PER WELL CASING [GAL]:	0.53 <b>CASING DIA.:</b> 1"					
	EULATIONS FH2O IN CASING = DEPTH OF WATER COLUMN X WELL CONSTANT					
CALCULATED PURGE VOLUME [GAL]:1.59 (3 TIMES CASING VOLUME)						
ACTUAL VOLUME PURGED [GAL]:						
PURGE METHOD: Bailer PURG	GE START: 12:05 END: 12:20					

SECTION 3 - SAMPLE IDENTIFICATION AND TEST PARAMETERS							
SAMPLE ID # DATE / TIME SAMPLING METHOD ANALYTICAL SCAN(S)							
CW-4	3-6-13 / 13:55	Bailer	Halogenated VOCs				

SECTION 4 - WATER QUALITY DATA							
SWL (FT)	TEMP (°C)	pН	CONDUCTIVITY (mS/cm)	TURBIDITY (NTU)	DO (mg/L)	ORP (mV)	VISUAL
2.12	5.2	8.10	1.64	>800	0.23	193	Cloudy

N/M – Not Measured

N/O – Not Observed

#### WELL MW-04

SECTION 1 - SITE INFORMATION							
SITE LOCATION: 5 Hunt Road	JOB #: 3563S-04						
Jamestown, New York	<b>DATE</b> : 3/6/13						
SAMPLE COLLECTOR(S): C. Hampton/R. Kampff							
WEATHER CONDITIONS: ~35°F, Overcast	PID IN WELL (PPM): N/M LNAPL N/O DNAPL N/M						
SECTION 2 - PU	URGE INFORMATION						
DEPTH OF WELL [FT]: N/M	(MEASURED FROM TOP OF CASING - T.O.C.)						
STATIC WATER LEVEL (SWL) [FT]: 1.15	_ (MEASURED FROM T.O.C.)						
THICKNESS OF WATER COLUMN [FT]: N/A	(DEPTH OF WELL - SWL)						

CALCULATIONS:		
CASING DIA. (FT)	WELL CONSTANT(GAL/FT)	CALCULATIONS
<sup>3</sup> / <sub>4</sub> " (0.0625)	0.023	VOL. OF H <sub>2</sub> O IN CASING = DEPTH OF WATER COLUMN X WELL CONSTANT
111 (0.0000)	0.041	

CALCULATED VOL. OF H<sub>2</sub>O PER WELL CASING [GAL]: N/A CASING DIA.: 2"

0.041 1" (0.0833) 11/4" (0.1041) 0.063 2" (0.1667) 0.1632 3" (0.250) 0.380 4" (0.3333) 0.6528 41/2" (0.375) 0.826 6" (0.5000) 1.4688

8" (0.666)

No Purge

**CALCULATED PURGE VOLUME [GAL]:** N/A (3 TIMES CASING VOLUME)

2.611

ACTUAL VOLUME PURGED [GAL]: N/A

PURGE METHOD: N/A PURGE START: N/A END: N/A

SECTION 3 - SAMPLE IDENTIFICATION AND TEST PARAMETERS							
SAMPLE ID # DATE / TIME SAMPLING METHOD ANALYTICAL SCAN(S)							
MW-04	3-6-13 / 13:55	Water Quality Only	None				

SECTION 4 - WATER QUALITY DATA							
SWL (FT)	TEMP (°C)	pН	CONDUCTIVITY (mS/cm)	TURBIDITY (NTU)	DO (mg/L)	ORP (mV)	VISUAL
1.15	9.0	7.83	1.11	23.9	0.14	133	Clear

N/M – Not Measured N/O – Not Observed N/A – Not Applicable

#### WELL MW-06

SECTION 1 - SITE INFORMATION						
SITE LOCATION: 5 Hunt Road	JOB #: 3563S-04					
Jamestown, New York	<b>DATE</b> : 3/6/13					
SAMPLE COLLECTOR(S): C. Hampton/R. Kampff						
WEATHER CONDITIONS: ~35°F, Overcast	PID IN WELL (PPM): N/M LNAPL N/O DNAPL N/M					
SECTION 2 - PU	URGE INFORMATION					
DEPTH OF WELL [FT]: N/M	(MEASURED FROM TOP OF CASING - T.O.C.)					
STATIC WATER LEVEL (SWL) [FT]: 1.75	_ (MEASURED FROM T.O.C.)					
THICKNESS OF WATER COLUMN [FT]: N/A	(DEPTH OF WELL - SWL)					
CALCULATED VOL. OF H <sub>2</sub> O PER WELL CASING [GA	L]:N/A CASING DIA.:2"					

CASING DIA. (FT)	WELL CONSTANT(GAL/FT)	<u>CALCULATIONS</u>
<sup>3</sup> / <sub>4</sub> " (0.0625)	0.023	VOL. OF H <sub>2</sub> O IN CASING = DEPTH OF WATER COLUMN X WELL CONSTANT
1" (0.0833)	0.041	
11/4" (0.1041)	0.063	

2" (0.1667) 0.1632 3" (0.250) 0.380 4" (0.3333) 0.6528 41/2" (0.375) 0.826 6" (0.5000) 1.4688 8" (0.666) 2.611

**CALCULATED PURGE VOLUME [GAL]:** N/A (3 TIMES CASING VOLUME)

ACTUAL VOLUME PURGED [GAL]: N/A

PURGE METHOD: N/A PURGE START: N/A END: N/A

SECTION 3 - SAMPLE IDENTIFICATION AND TEST PARAMETERS							
SAMPLE ID # DATE / TIME SAMPLING METHOD ANALYTICAL SCAN(S)							
MW-06	3-6-13 / 15:30	Water Quality Only	None				

No Purge

SECTION 4 - WATER QUALITY DATA							
SWL (FT)	TEMP (°C)	pН	CONDUCTIVITY (mS/cm)	TURBIDITY (NTU)	DO (mg/L)	ORP (mV)	VISUAL
1.75	1.4	8.37	0.701	25.5	0	197	Clear

N/M – Not Measured N/O – Not Observed

# WELL BR-02FR

SECTION 1 - SITE INFORMATION						
SITE LOCATION: 5 Hunt Road	<b>JOB</b> #: 3563S-04					
Jamestown, New York	<b>DATE</b> : 3/6/13					
SAMPLE COLLECTOR(S): C. Hampton/R. Kampff						
WEATHER CONDITIONS: ~35°F, Overcast	PID IN WELL (PPM): N/M LNAPL N/O DNAPL N/M					
SECTION 2 - PU	URGE INFORMATION					
DEPTH OF WELL [FT]: N/M	_ (MEASURED FROM TOP OF CASING - T.O.C.)					

	CECETONA	DUDGE INFORMATION
	SECTION 2 -	PURGE INFORMATION
DEPTH OF WELL [FT]:	N/M	(MEASURED FROM TOP OF CASING - T.O.C.)
STATIC WATER LEVEL (SW	L) [FT]: 1.33	(MEASURED FROM T.O.C.)
THICKNESS OF WATER COI	LUMN [FT]: N	/A (DEPTH OF WELL - SWL)
CALCULATED VOL. OF H <sub>2</sub> O	PER WELL CASING [	GAL]: N/A CASING DIA.: 4"
CALCULATIONS: <u>CASING DIA. (FT)</u> 34" (0.0625) 1" (0.0833) 114" (0.1041) 2" (0.1667) 3" (0.250) 4" (0.3333) 41/2" (0.375)	0.023 0.041 0.063 0.1632 0.380 0.6528 0.826	$\frac{\textbf{CALCULATIONS}}{\text{VOL. OF H}_2\text{O IN CASING}} = \text{DEPTH OF WATER COLUMN X WELL CONSTANT}$ No Purge
6" (0.5000) 8" (0.666)  CALCULATED PURGE VOLU  ACTUAL VOLUME PURGED	[GAL]: <u>N/A</u>	
PURGE METHOD: N/A		PURGE START: N/A END: N/A

SECTION 3 - SAMPLE IDENTIFICATION AND TEST PARAMETERS							
SAMPLE ID # DATE / TIME SAMPLING METHOD ANALYTICAL SCAN(S)							
BR-02FR	3-6-13 / 15:05	Water Quality Only	None				

	SECTION 4 - WATER QUALITY DATA							
SWL (FT)	TEMP (°C)	pН	CONDUCTIVITY (mS/cm)	TURBIDITY (NTU)	DO (mg/L)	ORP (mV)	VISUAL	
1.33	10.7	7.58	0.624	40.9	0.13	74	Clear	

N/M – Not Measured N/O – Not Observed

### WELL BR-02R

	SECTION	1 - SITE INFORMATION				
SITE LOCATION: _	5 Hunt Road	JOB #: 3563S-04				
	Jamestown, New York	<b>DATE</b> : 3/6/13				
SAMPLE COLLECT	<b>ΓΟR(S):</b> C. Hampton/R. Kampff					
WEATHER CONDI	TIONS: ~35°F, Overcast	PID IN WELL (PPM): N/M LNAPL N/O DNAPL N/M				
	SECTION 2	- PURGE INFORMATION				
DEPTH OF WELL	<b>DEPTH OF WELL [FT]:</b> N/M (MEASURED FROM TOP OF CASING - T.O.C.)					
	1,111	(METBERED TROM FOR OF CHARACTER)				
STATIC WATER LI	EVEL (SWL) [FT]: 1.52	(MEASURED FROM T.O.C.)				
THICKNESS OF WA	ATER COLUMN [FT]:	N/A (DEPTH OF WELL - SWL)				
CALCULATED VOI	CALCULATED VOL. OF H <sub>2</sub> O PER WELL CASING [GAL]: N/A CASING DIA.: 4"					
CALCULATIONS:						
	WELL CONSTANT(GAL/FT)	CALCULATIONS				
<sup>3</sup> / <sub>4</sub> " (0.0625)	0.023	VOL. OF $H_2O$ IN CASING = DEPTH OF WATER COLUMN X WELL CONSTANT				
1" (0.0833)	0.041					
11/4" (0.1041)	0.063					
2" (0.1667)	0.1632					
3" (0.250)	0.380	No Duga				
4" (0.3333)	0.6528	No Purge				
4½" (0.375)	0.826					
6" (0.5000) 8" (0.666)	1.4688 2.611					
8 (U.000)	/.DII					

SECTION 3 - SAMPLE IDENTIFICATION AND TEST PARAMETERS							
SAMPLE ID # DATE / TIME SAMPLING METHOD ANALYTICAL SCAN(S)							
BR-02R	3-6-13 / 15:15	Water Quality Only	None				

PURGE METHOD: N/A PURGE START: N/A END: N/A

SECTION 4 - WATER QUALITY DATA							
SWL (FT)	TEMP (°C)	pН	CONDUCTIVITY (mS/cm)	TURBIDITY (NTU)	DO (mg/L)	ORP (mV)	VISUAL
1.52	1.8	8.17	0.600	103.0	0.00	-164	Clear

N/M – Not Measured N/O – Not Observed N/A – Not Applicable

ACTUAL VOLUME PURGED [GAL]: N/A

**CALCULATED PURGE VOLUME [GAL]:** N/A (3 TIMES CASING VOLUME)

# WELL MW-BR-03R

SECTION 1 - SITE INFORMATION						
SITE LOCATION: 5 Hunt Road	JOB #: 3563S-04					
Jamestown, New York	<b>DATE</b> : 3/6/13					
SAMPLE COLLECTOR(S): C. Hampton/R. Kampff						
WEATHER CONDITIONS: ~35°F, Overcast	PID IN WELL (PPM): N/M LNAPL N/O DNAPL N/M					
SECTION 2 - PURGE INFORMATION						
DEPTH OF WELL [FT]: N/M	_ (MEASURED FROM TOP OF CASING - T.O.C.)					

	SECTION 2 - PURGE INFORMATION						
DEPTH OF WELL [FT	]: N/M (MEASURED FROM TOP OF CASING - T.O.C.)						
STATIC WATER LEV	EL (SWL) [FT]: (MEASURED FROM T.O.C.)						
THICKNESS OF WAT	ER COLUMN [FT]: N/A (DEPTH OF WELL - SWL)						
CALCULATED VOL.	OF H <sub>2</sub> O PER WELL CASING [GAL]: N/A CASING DIA.: 1"						
34" (0.0625) 1" (0.0833) 11/4" (0.1041) 2" (0.1667) 3" (0.250) 4" (0.3333) 41/2" (0.375) 6" (0.5000)	VELL CONSTANT(GAL/FT)       CALCULATIONS         0.023       VOL. OF H₂O IN CASING = DEPTH OF WATER COLUMN X WELL CONSTANT         0.041       0.063         0.1632       0.380         0.6528       No Purge         0.826       1.4688         2.611       1.4688						
CALCULATED PURGACTUAL VOLUME PU	6" (0.5000) 1.4688 8" (0.666) 2.611  CALCULATED PURGE VOLUME [GAL]: N/A (3 TIMES CASING VOLUME)  ACTUAL VOLUME PURGED [GAL]: N/A  PURGE METHOD: N/A PURGE START: N/A END: N/A						

SECTION 3 - SAMPLE IDENTIFICATION AND TEST PARAMETERS							
SAMPLE ID # DATE / TIME SAMPLING METHOD ANALYTICAL SCAN(S)							
MW-BR-03R	3-6-13 / 15:25	Water Quality Only	None				

SECTION 4 - WATER QUALITY DATA							
SWL (FT)	TEMP (°C)	pН	CONDUCTIVITY (mS/cm)	TURBIDITY (NTU)	DO (mg/L)	ORP (mV)	VISUAL
1.58	1.4	7.86	0.509	34	0	131	Clear

N/M – Not Measured

N/O – Not Observed

# Attachment B

Spectrum Analytical, Inc. Laboratory Report and Chain-of-Custody Documentation

Report Date: 19-Mar-13 17:07



☑ Final Report☐ Re-Issued Report☐ Revised Report

# HANIBAL TECHNOLOGY Laboratory Report

Day Environmental, Inc. 1563 Lyell Avenue Rochester, NY 14606 Attn: Ray Kampff

Project: 5 Hunt Rd. Jamestown, NY

Project #: 3563S-04

<b>Laboratory ID</b>	Client Sample ID	<u>Matrix</u>	<b>Date Sampled</b>	<b>Date Received</b>
SB65609-01	MW-07	Ground Water	06-Mar-13 14:50	07-Mar-13 21:00
SB65609-02	MW-200	Ground Water	06-Mar-13 13:40	07-Mar-13 21:00
SB65609-03	MW-201	Ground Water	06-Mar-13 14:35	07-Mar-13 21:00
SB65609-04	CW-2	Ground Water	06-Mar-13 14:25	07-Mar-13 21:00
SB65609-05	CW-3	Ground Water	06-Mar-13 14:10	07-Mar-13 21:00
SB65609-06	CW-4	Ground Water	06-Mar-13 13:55	07-Mar-13 21:00

I attest that the information contained within the report has been reviewed for accuracy and checked against the quality control requirements for each method. These results relate only to the sample(s) as received.

All applicable NELAC requirements have been met.

Massachusetts # M-MA138/MA1110 Connecticut # PH-0777 Florida # E87600/E87936 Maine # MA138 New Hampshire # 2538 New Jersey # MA011/MA012 New York # 11393/11840 Pennsylvania # 68-04426/68-02924 Rhode Island # 98 USDA # S-51435



Authorized by:

Nicole Leja Laboratory Director

Micole Leja

Spectrum Analytical holds certification in the State of New York for the analytes as indicated with an X in the "Cert." column within this report. Please note that the State of New York does not offer certification for all analytes. Please refer to our website for specific certification holdings in each state.

Please note that this report contains 11 pages of analytical data plus Chain of Custody document(s). When the Laboratory Report is indicated as revised, this report supersedes any previously dated reports for the laboratory ID(s) referenced above. Where this report identifies subcontracted analyses, copies of the subcontractor's test report are available upon request. This report may not be reproduced, except in full, without written approval from Spectrum Analytical, Inc.

Spectrum Analytical, Inc. is a NELAC accredited laboratory organization and meets NELAC testing standards. Use of the NELAC logo however does not insure that Spectrum is currently accredited for the specific method or analyte indicated. Please refer to our "Quality" web page at www.spectrum-analytical.com for a full listing of our current certifications and fields of accreditation. States in which Spectrum Analytical, Inc. holds NELAC certification are New York, New Hampshire, New Jersey and Florida. All analytical work for Volatile Organic and Air analysis are transferred to and conducted at our 830 Silver Street location (NY-11840, FL-E87936 and NJ-MA012).

Please contact the Laboratory or Technical Director at 800-789-9115 with any questions regarding the data contained in this laboratory report.

#### **CASE NARRATIVE:**

The sample temperature upon receipt by Spectrum Analytical courier was recorded as 3.8 degrees Celsius. The condition of these samples was further noted as received on ice. The samples were transported on ice to the laboratory facility and the temperature was recorded at 1.3 degrees Celsius upon receipt at the laboratory. Please refer to the Chain of Custody for details specific to sample receipt times.

An infrared thermometer with a tolerance of +/- 1.0 degrees Celsius was used immediately upon receipt of the samples.

If a Matrix Spike (MS), Matrix Spike Duplicate (MSD) or Duplicate (DUP) was not requested on the Chain of Custody, method criteria may have been fulfilled with a source sample not of this Sample Delivery Group.

See below for any non-conformances and issues relating to quality control samples and/or sample analysis/matrix.

### SW846 8260C

#### Calibration:

#### 1302049

Analyte quantified by quadratic equation type calibration.

Bromoform

Carbon tetrachloride

cis-1,3-Dichloropropene

Dibromochloromethane

trans-1,3-Dichloropropene

#### This affected the following samples:

1305708-BLK1

1305708-BS1

1305708-BSD1

CW-2

CW-3

CW-4

MW-200

MW-201

S301998-ICV1

S302676-CCV1

#### 1303015

Analyte quantified by quadratic equation type calibration.

Bromoform

Dibromochloromethane

trans-1,3-Dichloropropene

### This affected the following samples:

1305917-BLK1

1305917-BS1

1305917-BSD1

MW-07

S302593-ICV1

S302759-CCV1

#### S302593-ICV1

Analyte percent recovery is outside individual acceptance criteria (80-120).

Bromomethane (78%)

Dichlorodifluoromethane (Freon12) (70%)

#### SW846 8260C

#### Calibration:

# S302593-ICV1

This affected the following samples:

1305917-BLK1 1305917-BS1 1305917-BSD1

MW-07 S302759-CCV1

#### **Laboratory Control Samples:**

#### 1305708 BS/BSD

Bromomethane percent recoveries (74/67) are outside individual acceptance criteria (70-130), but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

CW-2

CW-3

CW-4

MW-200

MW-201

Chloroethane percent recoveries (72/67) are outside individual acceptance criteria (70-130), but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

CW-2

CW-3

CW-4

MW-200

MW-201

Vinyl chloride percent recoveries (70/66) are outside individual acceptance criteria (70-130), but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

CW-2

CW-3

CW-4

MW-200

MW-201

#### 1305917 BS/BSD

Vinyl chloride percent recoveries (71/69) are outside individual acceptance criteria (70-130), but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

MW-07

### Samples:

#### S302676-CCV1

Analyte percent difference is outside individual acceptance criteria (20), but within overall method allowances.

Bromomethane (-26.4%)

Chloroethane (-28.2%)

Methylene chloride (-21.1%)

Vinyl chloride (-29.9%)

#### SW846 8260C

#### Samples:

#### S302676-CCV1

This affected the following samples:

1305708-BLK1

1305708-BS1

1305708-BSD1

CW-2

CW-3

CW-4

MW-200

MW-201

#### S302759-CCV1

Analyte percent difference is outside individual acceptance criteria (20), but within overall method allowances.

Vinyl chloride (-20.1%)

This affected the following samples:

1305917-BLK1

1305917-BS1

1305917-BSD1

MW-07

SB65609-01

MW-07

Sample dilution required for high concentration of target analytes to be within the instrument calibration range.

SB65609-03

MW-201

Sample dilution required for high concentration of target analytes to be within the instrument calibration range.

SB65609-04

CW-2

Sample dilution required for high concentration of target analytes to be within the instrument calibration range.

SB65609-05

CW-3

Sample dilution required for high concentration of target analytes to be within the instrument calibration range.

SB65609-06

CW-4

Sample dilution required for high concentration of target analytes to be within the instrument calibration range.

Matrix Ground Water Collection Date/Time 06-Mar-13 14:50 Received 07-Mar-13

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cer
Volatile O	rganic Compounds												
Volatile Org	anic Halocarbons		GS1										
Prepared	by method SW846 5030 V	Vater MS											
75-27-4	Bromodichloromethane	< 24.0	U, D	μg/l	25.0	24.0	50	SW846 8260C	15-Mar-13	15-Mar-13	ek	1305917	Χ
75-25-2	Bromoform	< 30.2	U, D	μg/I	50.0	30.2	50	II .		"	"		Χ
74-83-9	Bromomethane	< 57.0	U, D	μg/l	100	57.0	50	п		"	"		Χ
56-23-5	Carbon tetrachloride	< 27.4	U, D	μg/l	50.0	27.4	50	п		"	"		Χ
108-90-7	Chlorobenzene	< 32.7	U, D	μg/l	50.0	32.7	50	п		"	"		Χ
75-00-3	Chloroethane	< 51.6	U, D	μg/l	100	51.6	50	п		"	"		Χ
67-66-3	Chloroform	< 34.4	U, D	μg/l	50.0	34.4	50	и		II .	"		Χ
74-87-3	Chloromethane	< 73.6	U, D	μg/l	100	73.6	50	и		II .	"		Χ
124-48-1	Dibromochloromethane	< 14.4	U, D	μg/l	25.0	14.4	50	п		"	"		Χ
95-50-1	1,2-Dichlorobenzene	< 33.4	U, D	μg/l	50.0	33.4	50	п		"	"		Χ
541-73-1	1,3-Dichlorobenzene	< 35.6	U, D	μg/l	50.0	35.6	50	и		II .	"		Χ
106-46-7	1,4-Dichlorobenzene	< 31.2	U, D	μg/l	50.0	31.2	50	и		II .	"		Χ
75-71-8	Dichlorodifluoromethane (Freon12)	< 22.4	U, D	μg/l	100	22.4	50	W.		u	"		Х
75-34-3	1,1-Dichloroethane	< 34.0	U, D	μg/l	50.0	34.0	50	п			"		Χ
107-06-2	1,2-Dichloroethane	< 39.0	U, D	μg/l	50.0	39.0	50	п			"		Χ
75-35-4	1,1-Dichloroethene	< 24.4	U, D	μg/l	50.0	24.4	50	п			"		Χ
156-59-2	cis-1,2-Dichloroethene	< 35.8	U, D	μg/l	50.0	35.8	50	и		II .	"		Χ
156-60-5	trans-1,2-Dichloroethene	< 34.0	U, D	μg/l	50.0	34.0	50	п			"		Χ
78-87-5	1,2-Dichloropropane	< 35.6	U, D	μg/l	50.0	35.6	50	п			"		Χ
10061-01-5	cis-1,3-Dichloropropene	< 12.6	U, D	μg/l	25.0	12.6	50	п					Χ
10061-02-6	trans-1,3-Dichloropropene	< 25.0	U, D	μg/l	25.0	25.0	50	п					Χ
75-09-2	Methylene chloride	< 34.5	U, D	μg/l	100	34.5	50						Χ
79-34-5	1,1,2,2-Tetrachloroethane	< 17.4	U, D	μg/l	25.0	17.4	50						Χ
127-18-4	Tetrachloroethene	2,140	D	μg/l	50.0	37.2	50	п					Χ
71-55-6	1,1,1-Trichloroethane	< 29.1	U, D	μg/I	50.0	29.1	50						Χ
79-00-5	1,1,2-Trichloroethane	< 32.1	U, D	μg/I	50.0	32.1	50						Χ
79-01-6	Trichloroethene	< 37.8	U, D	μg/I	50.0	37.8	50						Χ
75-69-4	Trichlorofluoromethane (Freon 11)	< 31.4	U, D	μg/l	50.0	31.4	50	н		u	"		Х
75-01-4	Vinyl chloride	< 40.4	U, D	μg/l	50.0	40.4	50	п			"		Х
Surrogate red	coveries:												
460-00-4	4-Bromofluorobenzene	103			70-13	0 %		п		II .	"		
2037-26-5	Toluene-d8	98			70-13	0 %		п			"		
17060-07-0	1,2-Dichloroethane-d4	101			70-13	0 %		п			"		
1868-53-7	Dibromofluoromethane	102			70-13	0 %							

70-130 %

70-130 %

70-130 %

2037-26-5

17060-07-0

1868-53-7

Toluene-d8

1,2-Dichloroethane-d4

Dibromofluoromethane

102

105

103

Matrix Ground Water Collection Date/Time 06-Mar-13 14:35 Received 07-Mar-13

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cer
Volatile O	Organic Compounds												
Volatile Org	anic Halocarbons		GS1										
Prepared	by method SW846 5030 V	Vater MS											
75-27-4	Bromodichloromethane	< 120	U, D	μg/l	125	120	250	SW846 8260C	13-Mar-13	13-Mar-13	GMA	1305708	Χ
75-25-2	Bromoform	< 151	U, D	μg/l	250	151	250				"		Χ
74-83-9	Bromomethane	< 285	U, D	μg/l	500	285	250	н			"		Χ
56-23-5	Carbon tetrachloride	< 137	U, D	μg/l	250	137	250	II .			"		Χ
108-90-7	Chlorobenzene	< 164	U, D	μg/l	250	164	250	н			"		Χ
75-00-3	Chloroethane	< 258	U, D	μg/l	500	258	250	н			"		Χ
67-66-3	Chloroform	< 172	U, D	μg/l	250	172	250				"		Χ
74-87-3	Chloromethane	< 368	U, D	μg/l	500	368	250				"		Χ
124-48-1	Dibromochloromethane	< 72.2	U, D	μg/l	125	72.2	250				"		Χ
95-50-1	1,2-Dichlorobenzene	< 167	U, D	μg/l	250	167	250				"		Χ
541-73-1	1,3-Dichlorobenzene	< 178	U, D	μg/l	250	178	250	п			"		Χ
106-46-7	1,4-Dichlorobenzene	< 156	U, D	μg/l	250	156	250	п			"		Χ
75-71-8	Dichlorodifluoromethane (Freon12)	< 112	U, D	μg/l	500	112	250				"		Х
75-34-3	1,1-Dichloroethane	< 170	U, D	μg/l	250	170	250	п			"		Χ
107-06-2	1,2-Dichloroethane	< 195	U, D	μg/I	250	195	250	п					Χ
75-35-4	1,1-Dichloroethene	< 122	U, D	μg/I	250	122	250	п					Χ
156-59-2	cis-1,2-Dichloroethene	11,200	D	μg/l	250	179	250	п					Χ
156-60-5	trans-1,2-Dichloroethene	< 170	U, D	μg/l	250	170	250						Χ
78-87-5	1,2-Dichloropropane	< 178	U, D	μg/l	250	178	250						Χ
10061-01-5	cis-1,3-Dichloropropene	< 63.0	U, D	μg/I	125	63.0	250				"		Χ
10061-02-6	trans-1,3-Dichloropropene	< 125	U, D	μg/l	125	125	250				"		Χ
75-09-2	Methylene chloride	< 172	U, D	μg/l	500	172	250				"		Χ
79-34-5	1,1,2,2-Tetrachloroethane	< 87.2	U, D	μg/l	125	87.2	250				"		Χ
127-18-4	Tetrachloroethene	< 186	U, D	μg/l	250	186	250				"		Χ
71-55-6	1,1,1-Trichloroethane	< 146	U, D	μg/l	250	146	250	н			"		Χ
79-00-5	1,1,2-Trichloroethane	< 160	U, D	μg/l	250	160	250	н			"		Χ
79-01-6	Trichloroethene	< 189	U, D	μg/l	250	189	250	н			"		Χ
75-69-4	Trichlorofluoromethane (Freon 11)	< 157	U, D	μg/l	250	157	250	п		п	"		Х
75-01-4	Vinyl chloride	588	D	μg/l	250	202	250	п			"		Χ
Surrogate red	coveries:												
460-00-4	4-Bromofluorobenzene	96			70-13	0 %		п			"		
2037-26-5	Toluene-d8	102			70-13	0 %		и			"		
17060-07-0	1,2-Dichloroethane-d4	103			70-13	0 %		и			"		
1868-53-7	Dibromofluoromethane	102			70-13	0 %					"		

Matrix Ground Water Collection Date/Time 06-Mar-13 14:25 Received 07-Mar-13

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert
Volatile O	Organic Compounds												
Volatile Org	anic Halocarbons		GS1										
Prepared	by method SW846 5030 V	Vater MS											
75-27-4	Bromodichloromethane	< 2.4	U, D	μg/l	2.5	2.4	5	SW846 8260C	13-Mar-13	13-Mar-13	GMA	1305708	Χ
75-25-2	Bromoform	< 3.0	U, D	μg/I	5.0	3.0	5	II .		"	"		Χ
74-83-9	Bromomethane	< 5.7	U, D	μg/l	10.0	5.7	5	п		"	"		Χ
56-23-5	Carbon tetrachloride	< 2.7	U, D	μg/l	5.0	2.7	5	н		"	"		Χ
108-90-7	Chlorobenzene	< 3.3	U, D	μg/l	5.0	3.3	5	п		"	"		Χ
75-00-3	Chloroethane	< 5.2	U, D	μg/l	10.0	5.2	5	п		"	"		Χ
67-66-3	Chloroform	< 3.4	U, D	μg/l	5.0	3.4	5			II .	"		Χ
74-87-3	Chloromethane	< 7.4	U, D	μg/l	10.0	7.4	5			II .	"		Χ
124-48-1	Dibromochloromethane	< 1.4	U, D	μg/l	2.5	1.4	5			II .	"		Χ
95-50-1	1,2-Dichlorobenzene	< 3.3	U, D	μg/l	5.0	3.3	5			II .	"		Χ
541-73-1	1,3-Dichlorobenzene	< 3.6	U, D	μg/l	5.0	3.6	5			"	"		Χ
106-46-7	1,4-Dichlorobenzene	< 3.1	U, D	μg/l	5.0	3.1	5	п			"		Χ
75-71-8	Dichlorodifluoromethane (Freon12)	< 2.2	U, D	μg/l	10.0	2.2	5	n.		ı	"		Х
75-34-3	1,1-Dichloroethane	< 3.4	U, D	μg/l	5.0	3.4	5	п			"		Χ
107-06-2	1,2-Dichloroethane	< 3.9	U, D	μg/I	5.0	3.9	5						Χ
75-35-4	1,1-Dichloroethene	< 2.4	U, D	μg/I	5.0	2.4	5						Χ
156-59-2	cis-1,2-Dichloroethene	24.4	D	μg/I	5.0	3.6	5						Χ
156-60-5	trans-1,2-Dichloroethene	< 3.4	U, D	μg/l	5.0	3.4	5						Χ
78-87-5	1,2-Dichloropropane	< 3.6	U, D	μg/l	5.0	3.6	5						Χ
10061-01-5	cis-1,3-Dichloropropene	< 1.3	U, D	μg/l	2.5	1.3	5				"		Χ
10061-02-6	trans-1,3-Dichloropropene	< 2.5	U, D	μg/I	2.5	2.5	5				"		Χ
75-09-2	Methylene chloride	< 3.4	U, D	μg/l	10.0	3.4	5						Χ
79-34-5	1,1,2,2-Tetrachloroethane	< 1.7	U, D	μg/l	2.5	1.7	5						Χ
127-18-4	Tetrachloroethene	308	D	μg/l	5.0	3.7	5				"		Χ
71-55-6	1,1,1-Trichloroethane	< 2.9	U, D	μg/l	5.0	2.9	5	п			"		Х
79-00-5	1,1,2-Trichloroethane	< 3.2	U, D	μg/l	5.0	3.2	5						Χ
79-01-6	Trichloroethene	40.0	D	μg/l	5.0	3.8	5						Χ
75-69-4	Trichlorofluoromethane (Freon 11)	< 3.1	U, D	μg/l	5.0	3.1	5	u		"	"		Х
75-01-4	Vinyl chloride	< 4.0	U, D	μg/l	5.0	4.0	5	п		п	II		Х
Surrogate red	coveries:												
460-00-4	4-Bromofluorobenzene	93			70-13	0 %		п		"	"		
2037-26-5	Toluene-d8	101			70-13	0 %		п			"		
17060-07-0	1,2-Dichloroethane-d4	103			70-13	0 %		п		n .	"		
1868-53-7	Dibromofluoromethane	102			70-13	0 %							

Matrix Ground Water Collection Date/Time 06-Mar-13 14:10 Received 07-Mar-13

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cer
Volatile O	Organic Compounds												
Volatile Org	anic Halocarbons		GS1										
Prepared	by method SW846 5030 V	Vater MS											
75-27-4	Bromodichloromethane	< 9.6	U, D	μg/l	10.0	9.6	20	SW846 8260C	13-Mar-13	14-Mar-13	GMA	1305708	Χ
75-25-2	Bromoform	< 12.1	U, D	μg/l	20.0	12.1	20	н		"	"		Χ
74-83-9	Bromomethane	< 22.8	U, D	μg/l	40.0	22.8	20			II .	"		Χ
66-23-5	Carbon tetrachloride	< 11.0	U, D	μg/l	20.0	11.0	20	п		п	"		Χ
08-90-7	Chlorobenzene	< 13.1	U, D	μg/l	20.0	13.1	20			II .	"		Χ
75-00-3	Chloroethane	< 20.7	U, D	μg/l	40.0	20.7	20			II .	"		Χ
67-66-3	Chloroform	< 13.8	U, D	μg/l	20.0	13.8	20				"		Χ
74-87-3	Chloromethane	< 29.5	U, D	μg/l	40.0	29.5	20				"		Χ
124-48-1	Dibromochloromethane	< 5.8	U, D	μg/l	10.0	5.8	20				"		Χ
95-50-1	1,2-Dichlorobenzene	< 13.4	U, D	μg/l	20.0	13.4	20						Χ
541-73-1	1,3-Dichlorobenzene	< 14.2	U, D	μg/l	20.0	14.2	20	II .			"		Χ
106-46-7	1,4-Dichlorobenzene	< 12.5	U, D	μg/l	20.0	12.5	20						Χ
75-71-8	Dichlorodifluoromethane (Freon12)	< 8.9	U, D	μg/l	40.0	8.9	20	н		"	"		Х
75-34-3	1,1-Dichloroethane	< 13.6	U, D	μg/l	20.0	13.6	20						Χ
07-06-2	1,2-Dichloroethane	< 15.6	U, D	μg/l	20.0	15.6	20				"		Χ
75-35-4	1,1-Dichloroethene	< 9.8	U, D	μg/l	20.0	9.8	20				"		Χ
156-59-2	cis-1,2-Dichloroethene	25.4	D	μg/l	20.0	14.3	20						Χ
156-60-5	trans-1,2-Dichloroethene	< 13.6	U, D	μg/l	20.0	13.6	20						Χ
78-87-5	1,2-Dichloropropane	< 14.2	U, D	μg/l	20.0	14.2	20			"	"		Χ
10061-01-5	cis-1,3-Dichloropropene	< 5.0	U, D	μg/l	10.0	5.0	20				"		Χ
10061-02-6	trans-1,3-Dichloropropene	< 10.0	U, D	μg/l	10.0	10.0	20				"		Χ
75-09-2	Methylene chloride	< 13.8	U, D	μg/l	40.0	13.8	20						Χ
79-34-5	1,1,2,2-Tetrachloroethane	< 7.0	U, D	μg/l	10.0	7.0	20						Χ
127-18-4	Tetrachloroethene	910	D	μg/l	20.0	14.9	20			"			Χ
71-55-6	1,1,1-Trichloroethane	< 11.6	U, D	μg/l	20.0	11.6	20						Χ
79-00-5	1,1,2-Trichloroethane	< 12.8	U, D	μg/l	20.0	12.8	20						Χ
79-01-6	Trichloroethene	< 15.1	U, D	μg/l	20.0	15.1	20						Χ
75-69-4	Trichlorofluoromethane (Freon 11)	< 12.6	U, D	μg/l	20.0	12.6	20	н		"	"		Х
75-01-4	Vinyl chloride	< 16.1	U, D	μg/l	20.0	16.1	20	п		n .	"		Χ
Surrogate red	coveries:												
460-00-4	4-Bromofluorobenzene	97			70-13	0 %		п			"		
2037-26-5	Toluene-d8	101			70-13	0 %		п			"		
17060-07-0	1,2-Dichloroethane-d4	103			70-13	0 %				п	"		
1868-53-7	Dibromofluoromethane	101			70-13	0 %							

Matrix Ground Water Collection Date/Time 06-Mar-13 13:55 Received 07-Mar-13

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert
Volatile O	organic Compounds												
/olatile Orga	anic Halocarbons		GS1										
Prepared	by method SW846 5030 V	Vater MS											
75-27-4	Bromodichloromethane	< 240	U, D	μg/l	250	240	500	SW846 8260C	13-Mar-13	14-Mar-13	GMA	1305708	Χ
75-25-2	Bromoform	< 302	U, D	μg/l	500	302	500				"		Χ
74-83-9	Bromomethane	< 570	U, D	μg/l	1000	570	500				"		Χ
56-23-5	Carbon tetrachloride	< 274	U, D	μg/l	500	274	500				"		Χ
108-90-7	Chlorobenzene	< 327	U, D	μg/l	500	327	500				"		Χ
75-00-3	Chloroethane	< 516	U, D	μg/l	1000	516	500				"		Χ
67-66-3	Chloroform	< 344	U, D	μg/l	500	344	500				"		Χ
74-87-3	Chloromethane	< 736	U, D	μg/l	1000	736	500				"		Χ
124-48-1	Dibromochloromethane	< 144	U, D	μg/l	250	144	500				"		Χ
95-50-1	1,2-Dichlorobenzene	< 334	U, D	μg/l	500	334	500						Χ
541-73-1	1,3-Dichlorobenzene	< 356	U, D	μg/l	500	356	500						Χ
106-46-7	1,4-Dichlorobenzene	< 312	U, D	μg/l	500	312	500						Χ
75-71-8	Dichlorodifluoromethane (Freon12)	< 224	U, D	μg/l	1000	224	500	н			"		Х
75-34-3	1,1-Dichloroethane	< 340	U, D	μg/l	500	340	500						Χ
107-06-2	1,2-Dichloroethane	< 390	U, D	μg/l	500	390	500						Χ
75-35-4	1,1-Dichloroethene	< 244	U, D	μg/l	500	244	500						Χ
56-59-2	cis-1,2-Dichloroethene	< 358	U, D	μg/l	500	358	500				"		Χ
56-60-5	trans-1,2-Dichloroethene	< 340	U, D	μg/l	500	340	500				"		Х
8-87-5	1,2-Dichloropropane	< 356	U, D	μg/l	500	356	500				"		Х
0061-01-5	cis-1,3-Dichloropropene	< 126	U, D	μg/l	250	126	500				"		Х
10061-02-6	trans-1,3-Dichloropropene	< 250	U, D	μg/l	250	250	500				"		Х
75-09-2	Methylene chloride	< 345	U, D	μg/l	1000	345	500				"		Х
9-34-5	1,1,2,2-Tetrachloroethane	< 174	U, D	μg/l	250	174	500				"		Х
127-18-4	Tetrachloroethene	31,300	D	μg/l	500	372	500				"		Х
71-55-6	1,1,1-Trichloroethane	< 291	U, D	μg/l	500	291	500				"		Х
79-00-5	1,1,2-Trichloroethane	< 321	U, D	μg/l	500	321	500				"		Х
79-01-6	Trichloroethene	< 378	U, D	μg/l	500	378	500				"		Х
75-69-4	Trichlorofluoromethane (Freon 11)	< 314	U, D	μg/l	500	314	500	н		u	"		Χ
75-01-4	Vinyl chloride	< 404	U, D	μg/l	500	404	500				"		Х
Surrogate rec	coveries:												
160-00-4	4-Bromofluorobenzene	96			70-13	0 %		ı			"		
037-26-5	Toluene-d8	102			70-13	0 %					"		
7060-07-0	1,2-Dichloroethane-d4	103			70-13	0 %		ı			"		
868-53-7	Dibromofluoromethane	101			70-13	0 %					"		

#### **Notes and Definitions**

D Data reported from a dilution

GS1 Sample dilution required for high concentration of target analytes to be within the instrument calibration range.

OM9 The spike recovery for this OC sample is outside the established control limits. The sample results for the OC batch were

accepted based on LCS/LCSD or SRM recoveries within the control limits.

U Analyte included in the analysis, but not detected at or above the MDL.

dry Sample results reported on a dry weight basis

NR Not Reported

RPD Relative Percent Difference

<u>Laboratory Control Sample (LCS)</u>: A known matrix spiked with compound(s) representative of the target analytes, which is used to document laboratory performance.

Matrix Duplicate: An intra-laboratory split sample which is used to document the precision of a method in a given sample matrix.

<u>Matrix Spike</u>: An aliquot of a sample spiked with a known concentration of target analyte(s). The spiking occurs prior to sample preparation and analysis. A matrix spike is used to document the bias of a method in a given sample matrix.

<u>Method Blank</u>: An analyte-free matrix to which all reagents are added in the same volumes or proportions as used in sample processing. The method blank should be carried through the complete sample preparation and analytical procedure. The method blank is used to document contamination resulting from the analytical process.

Method Detection Limit (MDL): The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix type containing the analyte.

Reportable Detection Limit (RDL): The lowest concentration that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions. For many analytes the RDL analyte concentration is selected as the lowest non-zero standard in the calibration curve. While the RDL is approximately 5 to 10 times the MDL, the RDL for each sample takes into account the sample volume/weight, extract/digestate volume, cleanup procedures and, if applicable, dry weight correction. Sample RDLs are highly matrix-dependent.

<u>Surrogate</u>: An organic compound which is similar to the target analyte(s) in chemical composition and behavior in the analytical process, but which is not normally found in environmental samples. These compounds are spiked into all blanks, standards, and samples prior to analysis. Percent recoveries are calculated for each surrogate.

<u>Continuing Calibration Verification:</u> The calibration relationship established during the initial calibration must be verified at periodic intervals. Concentrations, intervals, and criteria are method specific.

Validated by: Kimberly Wisk

1=Na <sub>2</sub> S2O <sub>3</sub> 2=HCl	Project Mgr.	4	Rochester, NY	1563 Lyell Avenue	Report To: Day Environmental, Inc.	SPECTRUM ANALYTICAL, INC. Featuring HANIBAL TECHNOLOGY	
1=Na <sub>2</sub> S2O <sub>3</sub> 2=HCl 3=H <sub>2</sub> SO <sub>4</sub> 4=HNO <sub>3</sub> 5=NaOH	Ray Kampff	E05 454 0040		0	tal, Inc	TICAL, INC.	
OH 6=Ascorbic Acid 7=CH <sub>3</sub> OH	P.O No.: RON	Attn: Mike Lyons	Jamestown, NY 14701	5 Hunt Road	Invoice To: Anderson Cleaners, Inc.	CHAIN OF CUSTODY RECORD	
-	Sampler(s):	Location:	olle Name:	Oit None	Project No:		U Star
	C.Hampton/R.Kampff	Jamestown	5 Hunt Road		3563S-04	Rush TAT - Date Needed:  All TATs subject to laboratory approval  Min. 24-hr notification needed for rushes  Samples disposed after 60 days unless otherwise instructed	Special Handling:
		State NY				Prwise instructed	

	J. Mar	X	Ch	Re			1-06	-05	1-04	-03	1 -02	10-107	Lab ID	G=	X1=	O= Oil SW= surface Water	DW=Dinking Water		8= NaHSO <sub>4</sub> 9= Deion
	. My	The A	Charles Hampton	Relinquished by:			CW-4	CW-3	CW-2	MW-201	MW-200	MW-07	Sample ID	G= Grab	X2=	SO=Soil	GW= Groundwater		9= Deionized Water 10=H <sub>3</sub> PO <sub>4</sub>
-		Now W	A Stan	, a			3/6/2013	3/6/2013	3/6/2013	3/6/2013	3/6/2013	3/6/2013	Date	C=Compsite	X3=	SL= Sludge A= Air	WW= Waste Water		11=
	A STATE OF THE PARTY OF THE PAR	Jan San San San San San San San San San S	XXX	Received by:			1:55 PM	2:10 PM	2:25 PM	2:35 PM	1:40 PM	2:50 PM	Time	te		ir	ater		
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	CHAIN OF CUSTODY RECORD	Standa	Rush TAT - Date Needed:
SPECTRUM ANALYTICAL, INC.		All TA	All TATs subject to laboratory approval
Featuring HANIBAL TECHNOLOGY	Page 1 of 1	Min. 2	Min. 24-hr notification needed for rushes
		Sampl	Samples disposed after 60 days unless otherwise instructed
Report To: Day Environmental, Inc	Invoice To: Anderson Cleaners, Inc.	Project No:	3563S-04
1563 Lyell Avenue	5 Hunt Road		
Rochester, NY	Jamestown, NY 14701	Site Name:	5-Hunt Road
	Attn: Mike Lyons	Location:	Jamestown State NY
Telephone #: 585-454-0210			
Project Mgr: Ray Kampff	P.O No.:	Sampler(s):	C.Hampton/R.Kampff

1=Na <sub>2</sub> S2O <sub>3</sub>	03	5=NaOH	6=Ascorbic Acid	Acid	<b>7</b> =CH <sub>3</sub> OH	¥				-	List Preservative Code below:	OA/OC Reporting Notes:
										20		*additional charges may appply
<b>DW</b> =Dinking Water <b>GW</b> = G	GW= Groundwater WW	WW= Waste Water	ter				Cont	Containers		-	Analysis	MA DEP MCP CAM Report Ves no
O= Oil SW= surface Water	SO=Soil SL= Sludge	dge <b>A</b> = Air	7				3			s		2
X1=	X2=	X3=								d VOC		
<b>G</b> = Grab		C=Compsite	Φ	е	rix	/OA V	Amber	Plastic		enate		
Lab ID S	Sample ID	Date	Time	Тур	Mat					Halog		reporting s
15/09-01	MW-07	3/6/2013	2:50 PM	G	GW	N		-		×		C
1-02	MW-200	3/6/2013	1:40 PM	G	GW	10		-		×		
-03	MW-201	3/6/2013	2:35 PM	۵	GW	N	-	+		×		
-04	CW-2	3/6/2013	2:25 PM	۵	GW	22		+	1	×		
105	CW-3	3/6/2013	2:10 PM	G	GW	Ν				×		
V-06	CW-4	3/6/2013	1:55 PM	G	GW	N				×		
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Special Handling:

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