GTE Operations Support Incorporated

Basking Ridge, New Jersey

Former Sylvania Electric Products Incorporated Facility
Hicksville, NY
Voluntary Cleanup Program
Site No. V00089-1

Data Report
P103, P107 and P108

February 2008

Report Prepared By:

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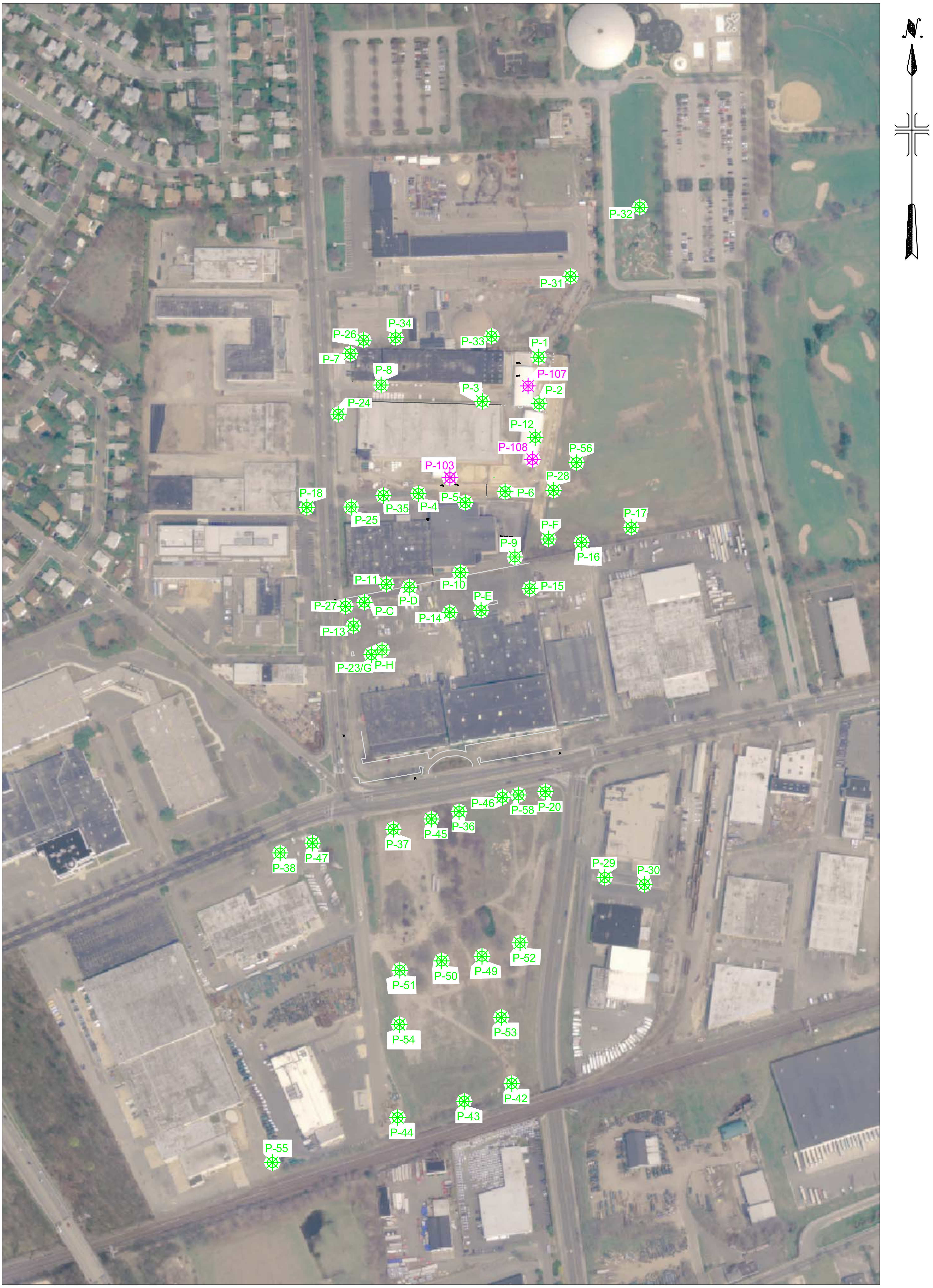
17-17 Route 208 North
Fair Lawn, New Jersey 07410
201.797.7400

4563001

MALCOLM PIRNIE



LEGEND

🟩 PROFILE LOCATION - DATA INCLUDED IN THE MALCOLM PIRNIE GROUNDWATER INTERPRETATION REPORT DATED JULY 2005.

🟪 PROFILE LOCATION - DATA INCLUDED IN THE MALCOLM PIRNIE SEPTEMBER 2007 DATA PACKAGE.

NOTES

1. AERIAL IMAGE FROM NYS GIS CLEARINGHOUSE HIGH RESOLUTION DIGITAL ORTHOIMAGERY (6-INCH RESOLUTION - 2004).

SCALE IN FEET
0 150 300 600

MALCOLM PIRNIE

GTE - OPERATIONS SUPPORT, INC.
HICKSVILLE, NY
FORMER SYLVANIA ELECTRIC
PRODUCTS FACILITY

PROFILE LOCATIONS COMPLETED
AS OF SEPTEMBER 2005

MALCOLM PIRNIE, INC.
FEBRUARY 2008
FIGURE 1

STONE ENVIRONMENTAL INC

Mobile Laboratory Results Sheet

Stone VOC Data - Groundwater Profiles P103. P107 and P108
GTEOSI
Former Sylvania Electric Products Facility
Hicksville, NY

Client:	**GTEOSI**
Location:	**Hicksville, NY**
Project ID:	**Groundwater Profiling**
SEI #:	**03-1402**
Date Sampled:	**4/18 - 4/28/05**
Date Analyzed:	**4/18 - 4/28/05**
Report Date:	**5/19/2005**

Matrix: Water

HOLE ID =P103

VOC DATA, ug/L

	Vinyl Chloride			t-Dichloroethene			c-Dichloroethene			Trichloroethene			Tetrachloroethene			% SS
Depth	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	
-74.0	4	U	4	4	U	4	4	U	4	**19**		4	**430**		1	105
-84.5	1	U	1	1	U	1	1	U	1	**1**		1	**60**		1	105
-94.5	1	U	1	1	U	1	1	U	1	**1**		1	**18**		1	84
-104.5	1	U	1	1	U	1	1	U	1	**1**		1	**11**		1	83
-114.5	1	U	1	1	U	1	1	U	1	1	U	1	**3**		1	83
-124.5	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	80
-134.5	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	84
-144.5	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	87
-154.5	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	82
-164.5	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	81
-174.5	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	86
-184.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	84
-194.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	78
-204.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	81
-214.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	77
-224.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	81
-234.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	86
-244.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	84
-253.3	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	84
-264.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	83
-274.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	84
-284.3	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	78
-294.3	1	U	1	1	U	1	1	U	1	1	U	1	**5**		1	76
-303.5	1	U	1	1	U	1	1	U	1	1	U	1	**8**		1	83
-333.4	1	U	1	1	U	1	1	U	1	1	U	1	**8**		1	83
-344.2	1	U	1	1	U	1	1	U	1	**3**		1	**2**		1	76
-354.2	1	U	1	1	U	1	1	U	1	**3**		1	1	U	1	81
-376.1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	78
-384.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	80
-394.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	82
-404.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	84

INORGANIC DATA, mg/L

Fe^{+2}	Fe, Total	Ammonia	Chloride	Chlorine, Total
nd	0.04	0.02	26	0.50
0.05	0.21	0.13	10	0.05
0.06	0.35	0.03	25	0.03
0.26	2.37	1	68	nd
nd	0.10	nd	89	0.04
0.10	0.42	0.9	131	0.04
0.16	0.58	0.35	174	0.04
0.10	0.25	0.07	155	0.03
1.40	4.80	0.04	185	0.06
0.10	0.29	0.09	149	0.08
0.11	0.32	0.11	66	0.07
0.07	0.24	0.08	180	0.03
0.04	0.11	0.04	167	0.03
0.11	0.28	0.22	205	0.07
0.03	0.06	0.11	255	0.04
0.06	0.18	0.11	151	0.03
0.04	0.09	0.08	218	0.03
0.03	0.04	nd	329	nd
0.12	0.24	0.22	483	0.05
0.06	0.19	0.15	568	0.38
nd	0.08	0.03	658	0.03
0.06	0.30	nd	745	0.03
0.05	0.20	nd	841	0.04
nd	0.03	nd	978	0.02
0.04	0.12	nd	421	nd
0.17	0.75	0.54	41	0.05
0.13	0.16	0.45	18	0.08
0.25	0.40	0.37	17	0.09
0.07	0.12	0.08	21	nd
0.12	0.18	0.18	12	0.03
0.14	0.22	0.37	14	0.08

COELUTING COMPOUNDS

Freon 113 / Freon 123A		
	Q	DF
4	U	4
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1

VOC DATA, ug/L

	1,1-Dichloroethene			Freon 123			1,1-Dichloroethane			1,1,1-Trichloroethane			Benzene			1,2-Dichlorothane			Toluene			Chlorobenzene			Ethylbenzene			m,p-Xylene			o-Xylene			1,3-Dichlorobenzene			1,4-Dichlorobenzene			1,2-Dichlorobenzene			%SS
Depth	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	
-74.0	4	U	4	4	U	4	4	U	4	4	U	4	4	U	4	4	U	4	4	U	4	4	U	4	4	U	4	8	U	4	4	U	4	4	U	4	4	U	4	4	U	4	105
-84.5	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	105
-94.5	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	84
-104.5	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	83
-114.5	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	83
-124.5	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	80
-134.5	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	84
-144.5	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	87
-154.5	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	82
-164.5	**1**		1	1	U	1	**2**		1	**2**		1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	81
-174.5	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	86
-184.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	84
-194.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	78
-204.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	81
-214.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	77
-224.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	81
-234.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	86
-244.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	84
-253.3	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	84
-264.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	83
-274.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	2	U	1	1	U	1	**1**		1	1	U	1	1	U	1	84
-284.3	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	78
-294.3	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	76
-303.5	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	83
-333.4	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	83
-344.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	**1**		1	1	U	1	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	76
-354.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	81
-376.1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	78
-384.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	80
-394.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	82
-404.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	84

Samples with >100 ppb total VOC's cannot be run on a carboxen fiber and will have detection limits of 20 ppb

%SS = Surrogate Recovery

U = Undetected below the specified reporting limit.

J = Estimated value.

ND = Value below detection limit.

NS = Not Sampled

DF =Laboratory Dilution Factor

2/28/20082:30 PM

STONE ENVIRONMENTAL INC

Stone VOC Data - Groundwater Profiles P103. P107 and P108
GTEOSI
Former Sylvania Electric Products Facility
Hicksville, NY

Mobile Laboratory Results Sheet

Client:	**GTEOSI**
Location:	**Hicksville, NY**
Project ID:	**Groundwater Profiling**
SEI #:	**03-1402**
Date Sampled:	**5/16 - 5/25/05**
Date Analyzed:	**5/16 - 5/25/05**
Report Date:	**5/31/2005**

Matrix: Water

HOLE ID =P107

VOC DATA, ug/L

	Vinyl Chloride			t-Dichloroethene			c-Dichloroethene			Trichloroethene			Tetrachloroethene			% SS
Depth	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	
-74.30	1	U	1	1	U	1	1	U	1	1	U	1	**2**		1	95
-84.30	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	102
-94.30	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	95
-104.30	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	103
-114.30	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	99
-124.30	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	107
-134.30	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	94
-144.30	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	98
-154.30	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	114
-164.30	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	104
-174.30	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	116
-184.30	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	110
-194.30	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	100
-204.20	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	120
-214.20	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	110
-224.20	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	106
-234.20	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	116
-244.20	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	106
-254.20	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	106
-264.20	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	107
-274.20	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	111
-285.80	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	110
-294.20	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	104
-304.20	1	UJ	1	1	UJ	1	1	UJ	1	1	UJ	1	1	UJ	1	107
-316.40	1	UJ	1	1	UJ	1	1	UJ	1	1	UJ	1	1	UJ	1	91
-324.05	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	108
-334.05	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	101
-350.20	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	102
-359.30	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	101
-371.60	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	114
-378.20	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	106
-391.50	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	103

INORGANIC DATA, mg/L

Fe^{+2}	Fe, Total	Ammonia	Chloride	Chlorine, Total
ND	0.03	0.04	118	0.03
0.06	0.11	0.08	88	0.04
0.16	0.40	0.14	92	0.17
0.16	0.31	0.10	53	0.17
0.07	0.15	0.10	239	0.12
0.05	0.08	0.09	104	0.09
0.05	0.10	0.09	90	0.07
0.05	0.06	0.04	93	0.04
0.04	0.07	0.04	117	0.02
0.04	0.10	0.04	301	0.03
0.04	0.05	0.02	374	0.04
0.04	0.09	0.08	398	0.04
0.09	0.13	0.05	389	0.09
0.03	0.03	0.04	424	0.04
0.03	0.08	0.06	507	0.06
0.04	0.16	0.10	481	0.00
0.03	0.07	0.04	523	0.00
ND	0.05	0.05	526	ND
0.10	0.59	0.26	437	0.09
0.03	0.04	ND	14	ND
0.03	0.38	0.49	8	ND
ND	0.06	0.17	11	ND
0.07	0.07	ND	11	ND
0.20	5.90	0.3	43	0.00
0.05	0.17	0.31	105	0.07
0.15	0.29	0.26	18	0.13
0.14	0.51	0.37	8	0
0.05	0.15	0.03	6	ND
0.04	0.08	0.15	7	ND
0.14	0.35	0.28	7	0.04
0.03	0.10	0.07	6	ND
0.04	0.18	0.03	6	ND

COELUTING COMPOUNDS

Freon 113 / Freon 123A		
	Q	DF
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1

VOC DATA, ug/L

	1,1-Dichloroethene			Freon 123			1,1-Dichloroethane			1,1,1-Trichloroethane			Benzene			1,2-Dichlorothane			Toluene		
Depth	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF
-74.3	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
-84.3	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
-94.3	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
-104.3	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
-114.3	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
-124.3	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
-134.3	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
-144.3	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
-154.3	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
-164.3	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
-174.3	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
-184.3	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
-194.3	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
-204.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
-214.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
-224.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
-234.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
-244.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
-254.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
-264.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
-274.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
-285.8	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
-294.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
-304.2	1	UJ	1	1	UJ	1	1	UJ	1	1	UJ	1	1	UJ	1	1	UJ	1	1	UJ	1
-316.4	1	UJ	1	1	UJ	1	1	UJ	1	1	UJ	1	1	UJ	1	1	UJ	1	1	UJ	1
-324.1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
-334.1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
-350.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
-359.3	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
-371.6	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
-378.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
-391.5	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1

	Chlorobenzene			Ethylbenzene			m,p-Xylene			o-Xylene			1,3-Dichlorobenzene			1,4-Dichlorobenzene			1,2-Dichlorobenzene			%SS
Depth	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	
-74.3	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	95
-84.3	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	102
-94.3	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	95
-104.3	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	103
-114.3	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	99
-124.3	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	107
-134.3	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	94
-144.3	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	98
-154.3	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	114
-164.3	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	104
-174.3	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	116
-184.3	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	110
-194.3	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	100
-204.2	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	120
-214.2	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	110
-224.2	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	106
-234.2	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	116
-244.2	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	106
-254.2	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	106
-264.2	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	107
-274.2	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	111
-285.8	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	110
-294.2	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	104
-304.2	1	UJ	1	1	UJ	1	2	UJ	1	1	UJ	1	1	UJ	1	1	UJ	1	1	UJ	1	107
-316.4	1	UJ	1	1	UJ	1	2	UJ	1	1	UJ	1	1	UJ	1	1	UJ	1	1	UJ	1	91
-324.1	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	108
-334.1	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	101
-350.2	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	102
-359.3	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	101
-371.6	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	114
-378.2	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	106
-391.5	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	103

Samples with >100 ppb total VOC's cannot be run on a carboxen fiber and will have detection limits of 20 ppb

%SS = Surrogate Recovery

U = Undetected below the specified reporting limit.

J = Estimated value.

J = Estimated value.

UJ = The analyte was not detected above the specified reporting limit. However, the reporting limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

DF =Laboratory Dilution Factor

STONE ENVIRONMENTAL INC

Stone VOC Data - Groundwater Profiles P103. P107 and P108
GTEOSI
Former Sylvania Electric Products Facility
Hicksville, NY

Mobile Laboratory Results Sheet

Client:	**GTEOSI**
Location:	**Hicksville, NY**
Project ID:	**Groundwater Profiling**
SEI #:	**03-1402**
Date Sampled:	**5/02 - 5/02/05**
Date Analyzed:	**5/02 - 5/02/05**
Report Date:	**5/19/2005**

Matrix: Water

HOLE ID =P108

VOC DATA, ug/L

	Vinyl Chloride			t-Dichloroethene			c-Dichloroethene			Trichloroethene			Tetrachloroethene			% SS
Depth	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	
-74.15	20	U	1	20	U	1	**360**		1	**670**		4	**32000**		240	107
-84.15	20	U	1	20	U	1	**69**		1	**250**		1	**20000**		192	106
-94.15	20	U	1	20	U	1	20	U	1	20	U	1	**6100**		24	93
-104.15	1	U	1	1	U	1	**1**		1	**5**		1	**160**		1	96
-114.15	1	U	1	1	U	1	1	U	1	1	U	1	**29**		1	77
-124.15	1	U	1	1	U	1	1	U	1	**1**		1	**23**		3	78
-134.15	1	U	1	1	U	1	1	U	1	1	U	1	**15**		1	110
-144.15	1	U	1	1	U	1	1	U	1	1	U	1	**28**		1	111
-154.15	1	U	1	1	U	1	1	U	1	1	U	1	**18**		1	110
-164.15	1	U	1	1	U	1	1	U	1	1	U	1	**14**		1	107
-174.15	1	U	1	1	U	1	1	U	1	1	U	1	**17**		1	91
-184.15	1	U	1	1	U	1	1	U	1	1	U	1	**8**		1	91
-192.80	1	U	1	1	U	1	1	U	1	1	U	1	**8**		1	103
-204.60	1	U	1	1	U	1	1	U	1	1	U	1	**1**		1	100
-214.60	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	110
-224.60	1	U	1	1	U	1	1	U	1	1	U	1	**7**		1	119
-234.60	1	U	1	1	U	1	1	U	1	1	U	1	**1**		1	99
-244.60	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	105
-254.60	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	114
-264.60	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	114
-293.40	1	U	1	1	U	1	1	U	1	1	U	1	**1**		1	119
-324.35	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	116
-334.35	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	103
-347.65	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	103
-359.30	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	103
-384.30	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	117
-394.30	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	108

INORGANIC DATA, mg/L

Fe^{+2}	Fe, Total	Ammonia	Chloride	Chlorine, Total
0.04	0.07	0.07	21.5	0.05
0.07	0.16	0.09	26.6	nd
nd	0.07	0.14	16.3	0.10
0.06	0.21	0.47	26.6	0.06
0.32	0.87	0.69	94.0	0.33
0.07	0.15	0.16	183	0.03
nd	0.03	nd	43.1	nd
0.05	0.08	0.07	37.5	0.03
0.19	0.82	0.57	123	0.23
0.06	0.14	0.16	275	0.05
nd	0.07	0.03	118	nd
nd	0.03	nd	94.2	0.03
nd	0.03	nd	101	nd
0.09	0.19	0.07	85.3	0.05
0.05	0.08	0.06	160	nd
0.12	0.23	0.05	201	0.04
nd	0.04	0.05	370	0.03
0.03	0.04	0.05	304	nd
0.03	0.05	0.06	327	nd
0.05	0.19	0.16	391	0.04
nd	nd	nd	489	nd
0.07	0.30	0.21	119	0.03
0.18	1.60	1.36	108	0.08
22.00	126.00	11	8.95	nd
8.20	313.00	0.11	9.41	0.51
0.08	0.17	0.06	7.19	0.03
0.26	0.68	0.49	5	0.12

COELUTING COMPOUNDS

Freon 113 / Freon 123A		
	Q	DF
20	U	1
20	U	1
20	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1

VOC DATA, ug/L

	1,1-Dichloroethene			Freon 123			1,1-Dichloroethane			1,1,1-Trichloroethane			Benzene			1,2-Dichlorothane			Toluene			Chlorobenzene			Ethylbenzene			m,p-Xylene			o-Xylene			1,3-Dichlorobenzene			1,4-Dichlorobenzene			1,2-Dichlorobenzene			%SS
Depth	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	
-74.2	20	U	1	20	U	1	20	U	1	20	U	1	20	U	1	20	U	1	20	U	1	20	U	1	20	U	1	40	U	1	20	U	1	20	U	1	20	U	1	20	U	1	107
-84.2	20	U	1	20	U	1	20	U	1	20	U	1	20	U	1	20	U	1	20	U	1	20	U	1	20	U	1	40	U	1	20	U	1	20	U	1	20	U	1	20	U	1	106
-94.2	20	U	1	20	U	1	20	U	1	20	U	1	20	U	1	20	U	1	20	U	1	20	U	1	20	U	1	40	U	1	20	U	1	20	U	1	20	U	1	1	U	1	93
-104.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	96
-114.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	77
-124.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	78
-134.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	110
-144.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	111
-154.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	110
-164.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	107
-174.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	91
-184.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	91
-192.8	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	103
-204.6	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	100
-214.6	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	110
-224.6	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	119
-234.6	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	99
-244.6	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	105
-254.6	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	114
-264.6	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	114
-293.4	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	119
-324.4	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	116
-334.4	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	103
-347.7	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	103
-359.3	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	2	U	1	1	U	1	**1**		1	1	U	1	1	U	1	103
-384.3	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	117
-394.3	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	108

Samples with >100 ppb total VOC's cannot be run on a carboxen fiber and will have detection limits of 20 ppb

%SS = Surrogate Recovery

U = Undetected below the specified reporting limit.

J = Estimated value.

ND = Value below detection limit.

DF =Laboratory Dilution Factor

STL Groundwater Profile VOC Results
GTEOSI
Former Sylvania Electric Products Incorporated Facility
Hicksville, NY

	Sample ID / Sampled Depth	P-103 EB#1	TRIP BLANK 4/21/05	P-103 74 ft	P-103 174.5 ft	P-103 344.2 ft	TB04210428	P-108 74.15 ft	P-108 84.15 ft	TB05020505	P-107 74.30 ft	TB05120519	P-107 324.1 ft	TB05202605
COMPOUND NAME	Units													
1,1,1-Trichloroethane	ug/L	1.0 U	1.0 U	1.0 U	**0.28 J**	**0.94 J**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2,2-Tetrachloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethane	ug/L	1.0 U	1.0 U	**0.29 J**	**0.29 J**	**1.2**	1.0 U	1.0 U	**0.29 J**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	**0.34 J**	1.0 U	**0.63 J**	**0.18 J**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichlorobenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**0.18 J**	1.3 U	1.0 U	**0.10 J**	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U	**0.11 J**	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloropropane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,3-Dichlorobenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,4-Dichlorobenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**0.24 J**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Butanone	ug/L	5.0 U	5.0 U	5.0 U	R	R	R	R	R	**0.82 J**	5.0 U	5.0 U	5.0 U	5.0 U
2-Hexanone	ug/L	R	R	R	5.0 UJ	5.0 UJ	5.0 UJ	5.0 U	5.0 U	5.0 UJ	5.0 U	5.0 U	5.0 U	5.0 U
4-Methyl-2-pentanone (MIBK)	ug/L	5.0 U	5.0 U	5.0 U	5.0 UJ	5.0 UJ	5.0 UJ	5.0 U	5.0 U	5.0 UJ	5.0 U	5.0 U	5.0 U	5.0 U
Acetone	ug/L	R	R	R	R	R	R	R	R	**2.1 J**	2.0 UJ	2.0 UJ	R	**8.4 J**
Benzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**0.085 NJ**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromodichloromethane	ug/L	**0.89 J**	1.0 U	1.0 U	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromoform	ug/L	**0.96 J**	1.0 U	1.0 U	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane	ug/L	2.0 U	2.0 U	2.0 U	2.0 UJ	2.0 UJ	2.0 UJ	2.0 U	2.0 U	2.0 U	2.0 UJ	2.0 UJ	2.0 U	2.0 U
Carbon disulfide	ug/L	**0.44 J**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon tetrachloride	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**0.017 NJ**	1.0 U	1.0 U	1.0 U
Chlorobenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**0.16 J**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroethane	ug/L	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Chloroform	ug/L	**3.9**	1.0 U	1.0 U	1.0 U	1.0 U	**0.10 J**	**0.15 J**	1.0 U	1.0 U	**7.8**	1.0 U	1.0 U	**0.22 J**
Chloromethane	ug/L	2.0 U	**0.36 J**	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 UJ	2.0 UJ	2.0 UJ	2.0 UJ
cis-1,2-Dichloroethene	ug/L	1.0 U	1.0 U	**1.8**	1.0 U	1.0 U	1.0 U	**380 J**	**79 J**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,3-Dichloropropene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dibromochloromethane	ug/L	**0.52 J**	1.0 U	1.0 U	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methylene chloride	ug/L	1.0 U	**0.54 J**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U
Styrene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	ug/L	1.0 U	1.0 U	**200 J**	**0.28 J**	**1.3 J**	1.0 UJ	**21,000**	**12,000 J**	1.0 U	**0.65 J**	1.0 UJ	1.0 U	1.0 U
Toluene	ug/L	**0.69 J**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**0.23 J**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,2-Dichloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**0.68 J**	**0.69 J**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,3-Dichloropropene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	ug/L	1.0 U	1.0 U	**17**	1.0 U	**2.0**	1.0 U	**480 J**	**300 J**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Vinyl chloride	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Xylenes (total)	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
D-limonene	ug/L				**1.5 NJ**	**80 NJ**		**1.0 NJ**						
Cyclohexene, 1-methyl-4-(1-m…	ug/L					**1.3 NJ**								

U = the analyte was analyzed for, but was not detected above the reported sample quantitation limit.

J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

N = The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification".

NJ = The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

UJ = The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

R = The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

STL Groundwater Profile Nickel Results
GTEOSI
Former Sylvania Electric Products Incorporated Facility
Hicksville, NY

Date Sampled	Date Analyzed	Location (depth)	Sample Description	Nickel Data (ug/L)
4/18/2005	04/28/2005	P-103 EB#1	Dissolved	40 U
4/19/2005	04/28/2005	P-103 74 ft	Dissolved	117
4/19/2005	04/28/2005	P-103 74 ft	Total	116
4/19/2005	04/28/2005	P-103 84.5 ft	Dissolved	250
4/19/2005	04/28/2005	P-103 94.5 ft	Dissolved	76.2
4/19/2005	04/28/2005	P-103 104.5 ft	Dissolved	90.1
4/19/2005	04/28/2005	P-103 114.5 ft	Dissolved	122
4/19/2005	04/28/2005	P-103 114.5 ft	Total	135
4/19/2005	04/28/2005	P-103 124.5 ft	Dissolved	114
4/20/2005	04/28/2005	P-103 134.5 ft	Dissolved	124
4/20/2005	04/28/2005	P-103 144.5 ft	Dissolved	60.7
4/20/2005	04/28/2005	P-103 144.5 ft	Total	80.7
4/20/2005	04/28/2005	P-103 154.5 ft	Dissolved	60.8
4/20/2005	04/28/2005	P-103 164.5 ft	Dissolved	62.7
4/20/2005	04/28/2005	P-103 174.5 ft	Dissolved	40.1
4/21/2005	04/28/2005	P-103 184.2 ft	Dissolved	31.2 J
4/21/2005	04/28/2005	P-103 194.2 ft	Total	28.4 J
4/21/2005	04/28/2005	P-103 194.2 ft	Dissolved	21.8 J
4/21/2005	04/28/2005	P-103 204.2 ft	Dissolved	32.4 J
4/21/2005	04/28/2005	P-103 214.2 ft	Dissolved	20.3 J
4/21/2005	04/28/2005	P-103 224.2 ft	Dissolved	13.2 J
4/21/2005	04/28/2005	P-103 234.2 ft	Dissolved	11.5 J
4/21/2005	05/09/2005	P103 244.2 ft	Total	22.5 J
4/21/2005	05/09/2005	P103 244.2 ft	Dissolved	20.2 J
4/21/2005	05/09/2005	P103 253.3 ft	Dissolved	14.9 J
4/22/2005	05/09/2005	P103 264.2 ft	Dissolved	27.2 J
4/22/2005	05/09/2005	P103 274.2 ft	Total	21.1 J
4/22/2005	05/09/2005	P103 274.2 ft	Dissolved	20.7 J
4/25/2005	05/09/2005	P103 284.25 ft	Dissolved	18.6 J
4/25/2005	05/09/2005	P103 294.25 ft	Dissolved	17.8 J
4/25/2005	05/09/2005	P103 303.25 ft	Total	21.3 J
4/25/2005	05/09/2005	P103 303.25 ft	Dissolved	26.9 J
4/26/2005	05/09/2005	P103 333.4 ft	Total	42.9
4/26/2005	05/09/2005	P103 333.4 ft	Dissolved	32.8 J
4/26/2005	05/09/2005	P103 344.2 ft	Dissolved	18.0 J
4/27/2005	05/09/2005	P103 354.2 ft	Dissolved	18.2 J
4/28/2005	05/09/2005	P103 376.1 ft	Dissolved	33.5 J
4/28/2005	05/09/2005	P103 384.2 ft	Dissolved	26.4 J
4/28/2005	05/09/2005	P103 394.2 ft	Dissolved	44.4
4/28/2005	05/09/2005	P103 404.2 ft	Dissolved	37.7 J

U = The analyte was not detected above reported sample quantitation limit.
J = The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample

STL Groundwater Profile Nickel Results
GTEOSI
Former Sylvania Electric Products Incorporated Facility
Hicksville, NY

Date Sampled	Date Analyzed	Location (depth)	Sample Description	Nickel Data (ug/L)
5/2/2005	05/12/2005	P108 74.15 ft	Dissolved	40 U
5/2/2005	05/12/2005	P108 84.15 ft	Dissolved	40.9
5/3/2005	05/12/2005	P108 84.15 ft DUP	Dissolved	41.7
5/3/2005	05/12/2005	P108 94.15 ft	Dissolved	40 U
5/3/2005	05/12/2005	P108 104.15 ft	Dissolved	40 U
5/3/2005	05/12/2005	P108 114.15 ft	Dissolved	40 U
5/3/2005	05/12/2005	P108 124.15 ft	Dissolved	42.9
5/3/2005	05/12/2005	P108 134.15 ft	Total	40 U
5/3/2005	05/12/2005	P108 134.15 ft	Dissolved	40 U
5/4/2005	05/12/2005	P108 144.15 ft	Dissolved	40 U
5/4/2005	05/12/2005	P108 154.15 ft	Dissolved	40 U
5/4/2005	05/12/2005	P108 164.15 ft	Total	40 U
5/4/2005	05/12/2005	P108 164.15 ft	Dissolved	40 U
5/4/2005	05/12/2005	P108 174.15 ft	Total	40 U
5/4/2005	05/12/2005	P108 174.15 ft	Dissolved	40 U
5/4/2005	05/12/2005	P108 184.15 ft	Total	40 U
5/4/2005	05/12/2005	P108 184.15 ft	Dissolved	40 U
5/4/2005	05/12/2005	P108 192.80 ft	Total	40 U
5/4/2005	05/12/2005	P108 192.80 ft DUP	Total	40 U
5/4/2005	05/12/2005	P108 192.80 ft	Dissolved	40 U
5/4/2005	05/12/2005	P108 192.80 ft DUP	Dissolved	40 U
5/5/2005	05/12/2005	P108 EB1	Dissolved	4.3 J
5/5/2005	05/12/2005	P108 204.60 ft	Dissolved	40 U
5/5/2005	05/12/2005	P108 214.60 ft		40 U
5/5/2005	05/12/2005	P108 214.60 ft	Dissolved	40 U
5/5/2005	05/12/2005	P108 224.60 ft	Total	40 U
5/5/2005	05/23/2005	P108 234.60 ft	Dissolved	40 U
5/6/2005	05/23/2005	P108 244.60 ft	Dissolved	40 U
5/6/2005	05/23/2005	P108 244.60 ft	Total	40 U
5/6/2005	05/23/2005	P108 254.60 ft	Dissolved	40 U
5/6/2005	05/23/2005	P108 254.60 ft	Total	40 U
5/6/2005	05/23/2005	P108 264.60 ft	Dissolved	40 U
5/6/2005	05/23/2005	P108 264.60 ft	Total	40 U
5/9/2005	05/23/2005	P108 293.40 ft	Dissolved	40 U
5/9/2005	05/23/2005	P108 293.40 ft	Total	40 U
5/10/2005	05/23/2005	P108 324.35 ft	Dissolved	40 U
5/10/2005	05/23/2005	P108 324.35 ft	Total	40 U
5/10/2005	05/23/2005	P108 334.35 ft	Dissolved	40 U
5/11/2005	05/23/2005	P108 347.65 ft	Dissolved	40 U
5/12/2005	05/23/2005	P108 359.30 ft	Dissolved	40 U
5/12/2005	05/23/2005	P108 384.30 ft	Dissolved	202
5/12/2005	05/23/2005	P108 384.30 ft DUP	Dissolved	213
5/12/2005	05/23/2005	P108 384.30 ft	Total	221
5/12/2005	05/23/2005	P108 384.30 ft DUP	Total	192
5/12/2005	05/25/2005	P108 394.3 ft	Dissolved	47.1

U = The analyte was not detected above reported sample quantitation limit.
J = The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample

STL Groundwater Profile Nickel Results
GTEOSI
Former Sylvania Electric Products Incorporated Facility
Hicksville, NY

Date Sampled	Date Analyzed	Location (depth)	Sample Description	Nickel Data (ug/L)
5/16/2005	05/25/2005	P107 EB1	Dissolved	40 U
5/16/2005	05/25/2005	P107 74.30 ft	Dissolved	40 U
5/16/2005	05/25/2005	P107 74.30 ft	Total	40 U
5/16/2005	05/25/2005	P107 84.30 ft	Dissolved	40 U
5/16/2005	05/25/2005	P107 84.30 ft	Total	40 U
5/17/2005	05/25/2005	P107 94.30 ft	Dissolved	40 U
5/17/2005	05/25/2005	P107 104.30 ft	Dissolved	40.7
5/17/2005	05/25/2005	P107 114.30 ft	Dissolved	40 U
5/17/2005	05/25/2005	P107 114.30 ft DUP	Dissolved	53.4
5/17/2005	05/25/2005	P107 124.30 ft	Dissolved	40 U
5/17/2005	05/25/2005	P107 124.30 ft	Total	40 U
5/17/2005	05/25/2005	P107 134.30 ft	Dissolved	51.3 J
5/17/2005	05/25/2005	P107 134.30 ft	Total	40 UJ
5/17/2005	05/25/2005	P107 144.30 ft	Dissolved	64.5
5/17/2005	05/25/2005	P107 154.30 ft	Dissolved	54.3 J
5/17/2005	05/25/2005	P107 154.30 ft	Total	40 UJ
5/17/2005	05/25/2005	P107 164.30 ft	Dissolved	40 U
5/17/2005	05/25/2005	P107 164.30 ft	Total	40 U
5/17/2005	05/25/2005	P107 174.30 ft	Dissolved	40 U
5/17/2005	05/25/2005	P107 174.30 ft	Total	40 U
5/17/2005	05/25/2005	P107 184.30 ft	Dissolved	40 U
5/17/2005	05/25/2005	P107 184.30 ft	Total	40 U
5/18/2005	05/25/2005	P107 194.30 ft	Dissolved	52.0
5/18/2005	05/25/2005	P107 204.20 ft	Dissolved	60.2 J
5/18/2005	05/25/2005	P107 204.20 ft	Total	48.2 J
5/18/2005	05/25/2005	P107 214.20 ft	Dissolved	40 U
5/18/2005	05/25/2005	P107 214.20 ft	Total	40 U
5/18/2005	05/25/2005	P107 224.20 ft	Dissolved	40 U
5/18/2005	05/25/2005	P107 224.20 ft DUP	Dissolved	40 U
5/18/2005	05/25/2005	P107 224.20 ft	Total	40 U
5/18/2005	05/25/2005	P107 224.20 ft DUP	Total	40 U
5/18/2005	05/25/2005	P107 234.20 ft	Dissolved	40 U
5/18/2005	05/25/2005	P107 234.20 ft	Total	40 U
5/19/2005	05/25/2005	P107 244.20 ft	Dissolved	40 U
5/19/2005	05/25/2005	P107 244.20 ft	Total	40 U
5/19/2005	05/25/2005	P107 254.20 ft	Dissolved	40 U
5/19/2005	05/25/2005	P107 264.20 ft	Dissolved	40 U
5/19/2005	05/25/2005	P107 264.20 ft	Total	40 U
5/19/2005	05/25/2005	P107 274.20 ft	Dissolved	40 U
5/19/2005	05/25/2005	P107 285.80 ft	Dissolved	40 U

U = The analyte was not detected above reported sample quantitation limit.
J = The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample

STL Groundwater Profile Nickel Results
GTEOSI
Former Sylvania Electric Products Incorporated Facility
Hicksville, NY

Date Sampled	Date Analyzed	Location (depth)	Sample Description	Nickel Data (ug/L)
5/19/2005	06/01/2005	P107 294.2 ft	Dissolved	40 U
5/19/2005	06/01/2005	P107 294.2 ft	Total	40 U
5/20/2005	06/01/2005	P107 316.4 ft	Dissolved	40 U
5/23/2005	06/01/2005	P107 324.1 ft	Dissolved	40 U
5/23/2005	06/01/2005	P107 334.1 ft	Dissolved	39.0 J
5/24/2005	06/01/2005	P107 350.2 ft	Dissolved	18.2 J
5/24/2005	06/01/2005	P107 350.2 ft	Total	51.8
5/24/2005	06/01/2005	P107 359.3 ft	Dissolved	26.4 J
5/24/2005	06/01/2005	P107 371.6 ft	Dissolved	38.4 J
5/25/2005	06/01/2005	P107 378.4 ft	Dissolved	19.3 J
5/25/2005	06/01/2005	P107 378.4 ft	Total	40 U
5/25/2005	06/01/2005	P107 391.5 ft	Dissolved	49.7
5/25/2005	06/01/2005	P107 391.5 ft	Total	120

U = The analyte was not detected above reported sample quantitation limit.
J = The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample

STL Radionuclide Data - Groundwater Profiles P103, P107 and P108
GTEOSI
Former Sylvania Electric Products Facility
Hicksville, NY

Sample ID	Sample Date	Sample Description	Radiological Results pCi/L											
			Uranium 234				Uranium 235				Uranium 238			
			Result	Uncertainty	MDA	Flag	Result	Uncertainty	MDA	Flag	Result	Uncertainty	MDA	Flag
P-103-74	4/19/2005	Dissolved	28.6	3.1	0.1		1.31	0.4	0.12		26.5	2.9	0.1	
P-103-84.5	4/19/2005	Dissolved	3.39	0.63	0.11		0.15	0.14	0.14	J	3.34	0.62	0.1	
P107-74.30	5/16/2005	Dissolved	95	11	0.2	J	5.1	1.1	0.2		96	11	0.1	
P107-84.30	5/16/2005	Dissolved	52.6	5.5	0.07	J	2.61	0.62	0.14		56.3	5.8	0.1	
P107-94.30	5/17/2005	Dissolved	5.7	1.6	0.4	J	0.1	0.27	0.53	U	6.1	1.6	0.3	
P107-104.3	5/17/2005	Dissolved	8.4	1.9	0.3	J	0.36	0.48	0.32	J	11.6	2.2	0.4	J
P108-74.15	5/2/2005	Dissolved	0.78	0.3	0.2	J	0.1	0.12	0.15	U	0.6	0.25	0.15	J
P108-84.15	5/2/2005	Dissolved	0.7	0.28	0.16	J	0.046	0.092	0.15	U	0.75	0.28	0.16	J
P108-DUP1	5/3/2005	Dissolved	1.32	0.44	0.23	J	0	0	0.2	U	0.95	0.36	0.19	J

U = the analyte was analyzed for, but was not detected above the reported sample quantitation limit.
J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
NA = the analyte was not analyzed for

STL Radionuclide Data - Groundwater Profiles P103, P107 and P108
GTEOSI
Former Sylvania Electric Products Facility
Hicksville, NY

Sample ID	Sample Date	Sample Description	Radiological Results pCi/L											
			Thorium 228				Thorium 230				Thorium 232			
			Result	Uncertainty	MDA	Flag	Result	Uncertainty	MDA	Flag	Result	Uncertainty	MDA	Flag
P-103-74	4/19/2005	Dissolved	0.05	0.1	0.16	U	0.12	0.11	0.11	J	0.022	0.061	0.058	U
P-103-84.5	4/19/2005	Dissolved	0.082	0.09	0.097	U	0.21	0.14	0.11	J	0.022	0.061	0.059	U
P107-74.30	5/16/2005	Dissolved	0.07	0.16	0.24	U	0.15	0.14	0.15	U	0	0	0.06	U
P107-84.30	5/16/2005	Dissolved	0.09	0.13	0.18	U	0.19	0.14	0.06	J	0	0	0.1	U
P107-94.30	5/17/2005	Dissolved	NA				NA				NA			
P107-104.3	5/17/2005	Dissolved	NA				NA				NA			
P108-74.15	5/2/2005	Dissolved	0.16	0.26	0.36	U	0.14	0.14	0.16	U	0.017	0.097	0.18	U
P108-84.15	5/2/2005	Dissolved	-0.009	-0.077	0.17	U	0.08	0.11	0.14	U	0.014	0.06	0.13	U
P108-DUP1	5/3/2005	Dissolved	-0.09	-0.18	0.33	U	-0.003	-0.068	0.15	U	-0.016	-0.06	0.13	U

U = the analyte was analyzed for, but was not detected above the reported sample quantitation limit.
J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
NA = the analyte was not analyzed for

STL Radionuclide Data - Groundwater Profiles P103, P107 and P108
GTEOSI
Former Sylvania Electric Products Facility
Hicksville, NY

Sample ID	Sample Date	Sample Description	Radiological Results pCi/L							
			Radium 226				Radium 228			
			Result	Uncertainty	MDA	Flag	Result	Uncertainty	MDA	Flag
P-103-74	4/19/2005	Dissolved	0.38	0.18	0.24	J	0.62	0.46	0.74	U
P-103-84.5	4/19/2005	Dissolved	0.19	0.13	0.18	J	0.45	0.44	0.71	U
P107-74.30	5/16/2005	Dissolved	0.22	0.2	0.31	U	0.63	0.51	0.81	U
P107-84.30	5/16/2005	Dissolved	0.19	0.15	0.22	U	0.78	0.52	0.81	U
P107-94.30	5/17/2005	Dissolved	NA				NA			
P107-104.3	5/17/2005	Dissolved	NA				NA			
P108-74.15	5/2/2005	Dissolved	0.06	0.16	0.28	U	0.22	0.36	0.6	U
P108-84.15	5/2/2005	Dissolved	0.27	0.15	0.2	J	0.13	0.35	0.58	U
P108-DUP1	5/3/2005	Dissolved	0.09	0.16	0.28	U	0.3	0.34	0.55	U

U = the analyte was analyzed for, but was not detected above the reported sample quantitation limit.
J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
NA = the analyte was not analyzed for

Boring ID:

P-103

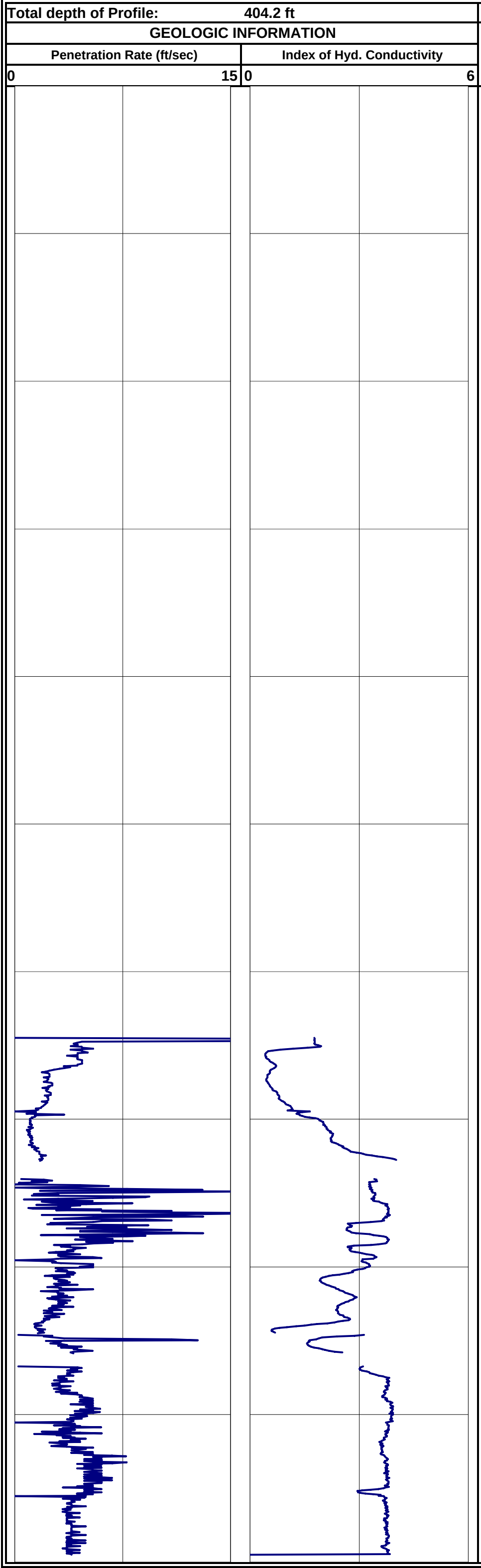
MALCOLM PIRNIE, INC.

17-17 Route 208 North Fair Lawn, NJ 07401

PROJECT NAME:	**GTEOSI-Hicksville**	**START DATE:**	**April 18, 2005**
JOB NUMBER:	**4563001**	**END DATE:**	**April 28, 2005**
DRILLING FIRM:	**CT&E**	**LOCATION:**	**GTEOSI Property South of Building 100**
DRILLING METHOD:	**Mud Rotary**		
DRILLER:	**Jim Lewis**	**DATUM:**	**Land Surface**
HELPER:	**Larry Carlin**	**HYDROGEOLOGIST:**	**John Hilton**

Total depth of Profile: **404.2 ft** **Total depth of Boring:** **375 ft**

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
0	Site Backfill			
10				
20				Hollow stem augers used to drill from 0 to 29.5 ft. Begin mud rotary drilling at 29.5 ft.
30	Poorly graded GRAVEL (fine, subrounded) with some sand (fine to medium)	GP - SP		
40				
50	Poorly graded SAND (fine to medium) with trace to little gravel (fine, to 1/4", subrounded); light brown	SP		
60	Poorly graded SAND (fine) with trace to little silt; light brown	SP - SM		
	Poorly graded SAND (medium) with little silt; light brown to gray brown	SP - SM		
70				Begin profiling at 74'
	Poorly graded SAND (medium to coarse, sub-angular); light brown to white	SP		Micaceous
80				
90	Poorly-graded SAND (fine); light brown	SP		

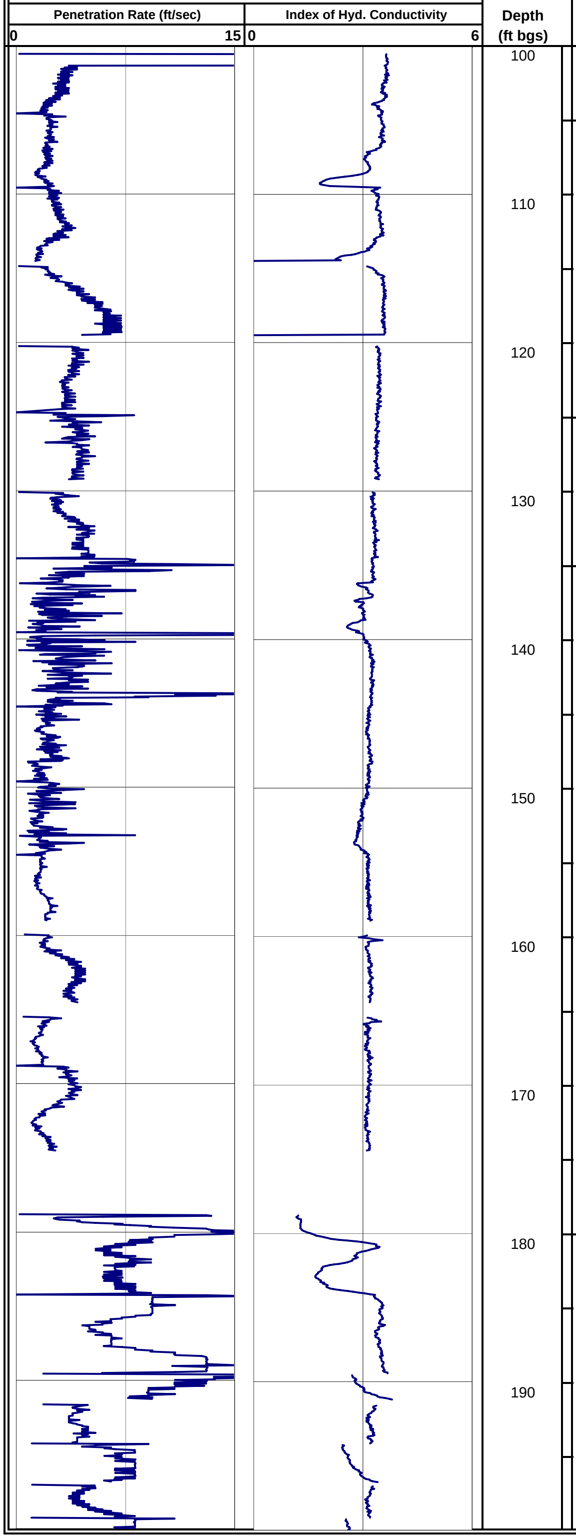
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-103

PROJECT NAME:	**GTEOSI-Hicksville**	**START DATE:**	**April 18, 2005**
JOB NUMBER:	**4563001**	**END DATE:**	**April 28, 2005**
DRILLING FIRM:	**CT&E**	**LOCATION:**	**GTEOSI Property South of Building 100**
DRILLING METHOD:	**Mud Rotary**		
DRILLER:	**Jim Lewis**	**DATUM:**	**Land Surface**
HELPER:	**Larry Carlin**	**HYDROGEOLOGIST:**	**John Hilton**

Total depth of Profile: 404.2 ft **Total depth of Boring:** 375 ft

GEOLOGIC INFORMATION



USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
Poorly graded SAND (medium to coarse, sub-rounded); light brown	SP		
Poorly graded SAND (as above) with gravel interbeds (fine, sub-rounded)	SP - GP		
Poorly graded SAND (fine to medium) with trace gravel (fine, sub-rounded); light brown to white	SP		
Poorly graded SAND (medium to coarse) with trace gravel (fine, to 1/4", sub-rounded); light brown to white	SP		Pulled profiling equipment at 174.5 ft. No penetration rate or IK data from 174.5 to 179.75 due to drilling activities.

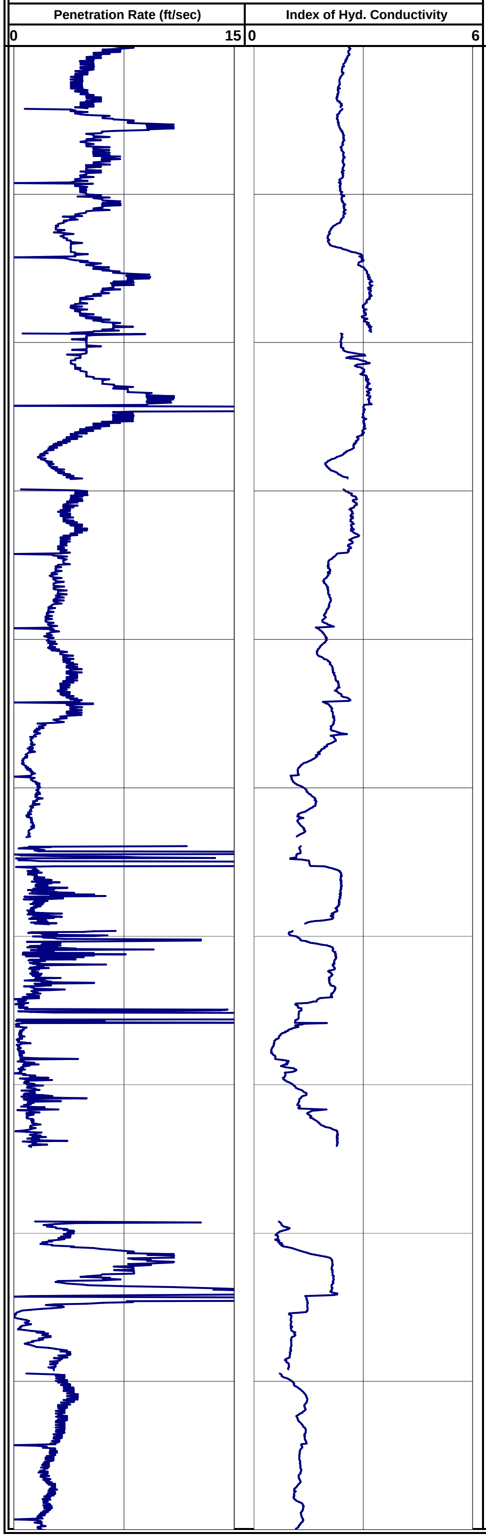
MALCOLM PIRNIE, INC. 17-17 Route 208 North Fair Lawn, NJ 07401		**Boring ID:** **P-103**

PROJECT NAME:	**GTEOSI-Hicksville**	**START DATE:**	**April 18, 2005**
JOB NUMBER:	**4563001**	**END DATE:**	**April 28, 2005**
DRILLING FIRM:	**CT&E**	**LOCATION:**	
DRILLING METHOD:	**Mud Rotary**		**GTEOSI Property South of Building 100**
DRILLER:	**Jim Lewis**	**DATUM:**	**Land Surface**
HELPER:	**Larry Carlin**	**HYDROGEOLOGIST:**	**John Hilton**

Total depth of Profile: **404.2 ft**

Total depth of Boring: **375 ft**

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
200				
210				
220	Poorly graded SAND (fine to medium); light brown to white	SP		
230				
240				
	Poorly graded SAND (fine) with trace to little silt; light brown to white	SP - SM		
250				
260	Poorly graded SAND (fine to medium) trace gravel (fine); pink to orange	SP		
270				Pulled profiling equipment at 274.2 ft. No penetration rate or IK data from 274.2 to 279.5 ft due to drilling activities
280	Poorly graded SAND (medium to coarse) with extensive Fe stained sand (coarse) and gravel (fine) component, trace silt; dark brown-gray to dark gray	SP - GP		
290	Poorly graded SAND (fine to medium, micaceous) with silt partings; medium gray-brown to dark gray	SP - SM		

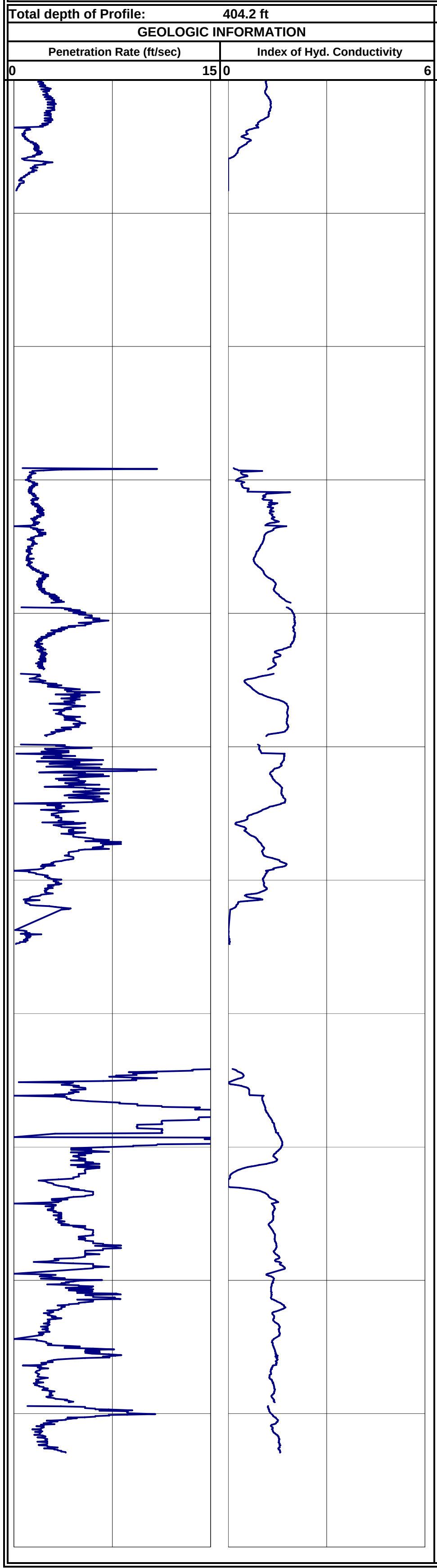
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-103

PROJECT NAME:	**GTEOSI-Hicksville**	**START DATE:**	**April 18, 2005**
JOB NUMBER:	**4563001**	**END DATE:**	**April 28, 2005**
DRILLING FIRM:	**CT&E**	**LOCATION:**	**GTEOSI Property South of Building 100**
DRILLING METHOD:	**Mud Rotary**		
DRILLER:	**Jim Lewis**	**DATUM:**	**Land Surface**
HELPER:	**Larry Carlin**	**HYDROGEOLOGIST:**	**John Hilton**

Total depth of Profile: 404.2 ft
Total depth of Boring: 375 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	REMARKS
300	CLAY stratified with silt and SAND (fine) at 300-305'; dark gray brown	CL-SM	Profiler refusal at 308.3 ft. No penetration rate or IK data from 308.3 to 329 ft due to drilling activities.
310	CLAY, dense with interbedded sand lenses; gray white	CL-SC	Clay noted at 305-312' and 317-322'
320			
	Poorly graded SAND/SILT (fine, micaceous) gray white	SM	
330	Poorly graded SAND (fine) with little silt; gray white	SP - SM	
	Poorly graded SAND (As above) with clay; gray white	SC	
340	Poorly graded SAND (fine to medium) with trace to little silt; gray white	SP - SM	
350			
360	Poorly graded SAND (fine) and SILT with trace clay as interbed	SM	
	CLAY (stiff) with lignite, sand interbeds; black brown	CL - SC	Carbonaceous
370			Sand unit at 370'
380			
390			
400			Pulled profiling equipment at 404.2 ft. End of profile.
410			

Boring ID:

P-107

MALCOLM PIRNIE, INC.

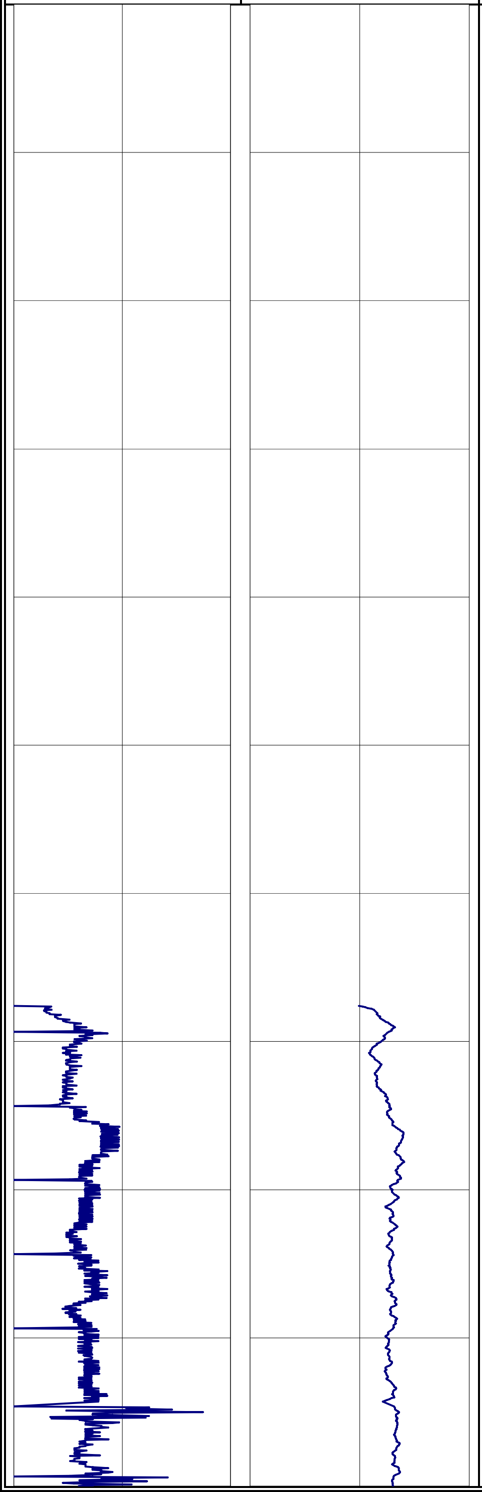
17-17 Route 208 North Fair Lawn, NJ 07401

PROJECT NAME:	**GTEOSI-Hicksville**	**START DATE:**	**May 16, 2005**
JOB NUMBER:	**4563001**	**END DATE:**	**May 26, 2005**
DRILLING FIRM:	**CT&E**	**LOCATION:**	
DRILLING METHOD:	**Mud Rotary**		**GTEOSI Property East of Building 100**
DRILLER:	**Jim Lewis**	**DATUM:**	**Land Surface**
HELPER:	**Larry Lynch**	**HYDROGEOLOGIST:**	**Collen Sullivan / John Hilton**

Total depth of Profile: **395.5 ft**

Total depth of Boring: **350 ft**

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
0 10 20 30	Site Backfill			Hollow stem augers used to drill from 0 to 14 ft. Begin mud rotary at 14 ft
40	Poorly graded SAND (medium) with some gravel (fine, subrounded); light brown	SP	░	
50	Poorly graded SAND (medium to coarse) with some gravel (fine, subrounded); light brown to tan	SP	░	
60	Poorly graded SAND (medium) with trace gravel (fine, subrounded); tan	SP	░	
70 80	Well graded SAND with some gravel (fine, subrounded) trace gravel (medium, rounded); tan	SW	░	Begin profiling at 74.30'
90	Poorly graded SAND (medium to coarse) with some gravel (fine, subrounded); tan	SP	░	

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

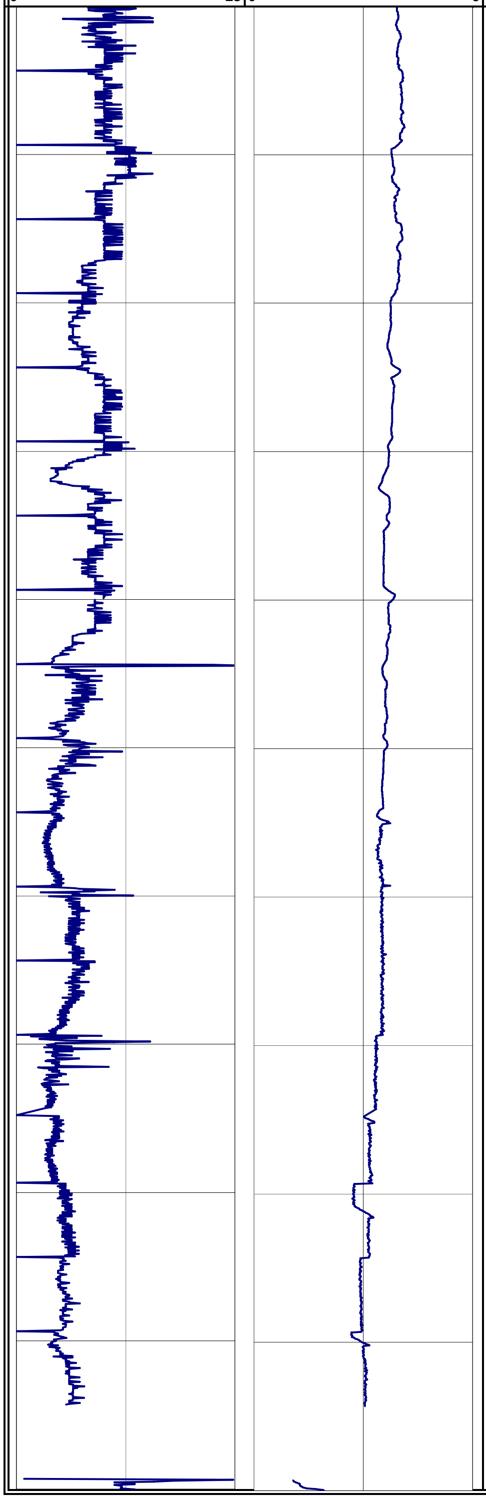
Boring ID:
P-107

PROJECT NAME:	**GTEOSI-Hicksville**	**START DATE:**	**May 16, 2005**
JOB NUMBER:	**4563001**	**END DATE:**	**May 26, 2005**
DRILLING FIRM:	**CT&E**	**LOCATION:**	**GTEOSI Property East of Building 100**
DRILLING METHOD:	**Mud Rotary**		
DRILLER:	**Jim Lewis**	**DATUM:**	**Land Surface**
HELPER:	**Larry Lynch**	**HYDROGEOLOGIST:**	**Collen Sullivan / John Hilton**

Total depth of Profile: **395.5 ft**
Total depth of Boring: **350 ft**

GEOLOGIC INFORMATION

Penetration Rate (ft/sec) 0 – 15
Index of Hyd. Conductivity 0 – 6



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
100				
110	Poorly graded SAND (medium to coarse) and GRAVEL (fine to medium, subrounded)	SP - GP		
120				
130	Poorly graded SAND (medium to coarse) with some gravel (fine to medium, subrounded); tan to white pink	SP		
140				
150	Poorly graded SAND (medium to coarse) and GRAVEL (fine to medium, subrounded); white pink. Trace Fe stained gravel	SP - GP		
160				
170	Poorly graded SAND (medium) with some gravel (fine to medium, subrounded); tan to white yellow	SP		
180				
190	Poorly graded SAND (medium to coarse) with little gravel (fine, subrounded); tan to white yellow	SP		Pulled profiling equipment at 194.30'. No penetration rate or IK data from 194.30 to 199.25 ft due to drilling operations.

MALCOLM PIRNIE, INC.

17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:

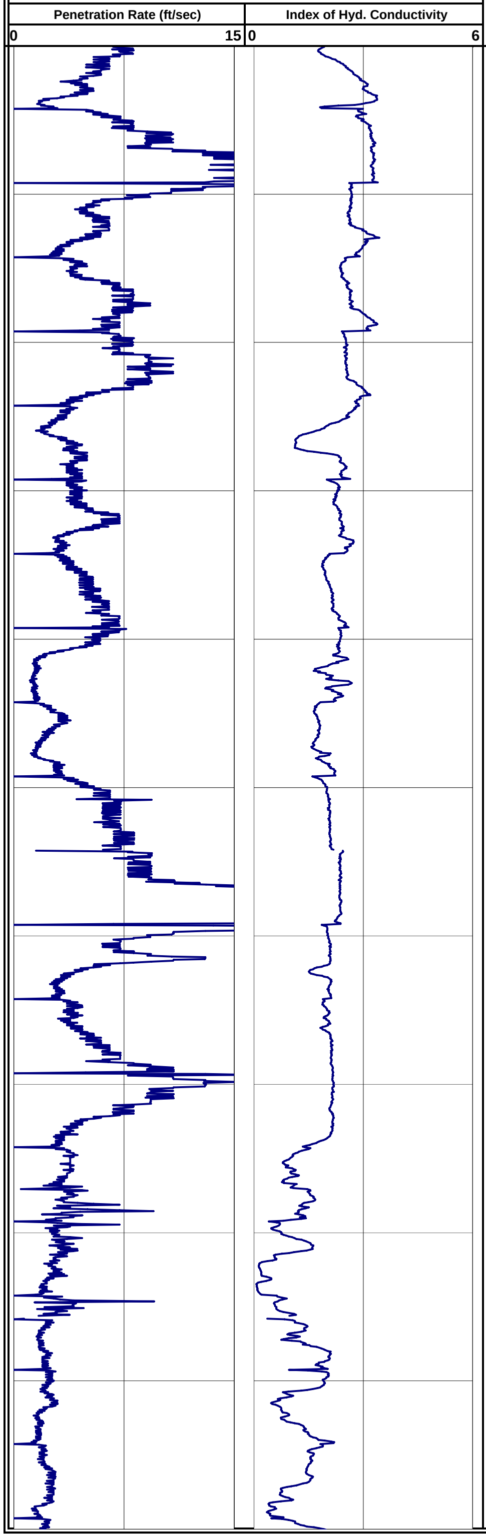
P-107

PROJECT NAME:	**GTEOSI-Hicksville**	**START DATE:**	**May 16, 2005**
JOB NUMBER:	**4563001**	**END DATE:**	**May 26, 2005**
DRILLING FIRM:	**CT&E**	**LOCATION:**	
DRILLING METHOD:	**Mud Rotary**		**GTEOSI Property East of Building 100**
DRILLER:	**Jim Lewis**	**DATUM:**	**Land Surface**
HELPER:	**Larry Lynch**	**HYDROGEOLOGIST:**	**Collen Sullivan / John Hilton**

Total depth of Profile: 395.5 ft

Total depth of Boring: 350 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
200	Poorly graded SAND (medium to coarse) with trace gravel (fine); light gray to white	SP	░	
210 220	Poorly graded SAND (medium to coarse) with some gravel (fine, subrounded); light tan to gray	SP	░	
	Poorly graded SAND (medium to coarse); light gray to white	SP	░	
230	Poorly graded SAND (coarse) with little gravel (fine); tan to brown	SP	░	
240	Poorly graded SAND (medium to coarse); red to brown	SP	░	
250	Well graded SAND and GRAVEL (fine, subrounded); red to brown	SW - GP	░ ▓	
	Well graded SAND and GRAVEL (fine); light tan to brown	SW - GP	░ ▓	
260 270				Lost circulation of drilling fluids from 260' - 275'. No recovery of cuttings
280	Poorly graded SAND (fine) with trace to little silt; gray to white	SP - SM	░ ▒	
290	Poorly graded SAND (fine) and SILT with trace clay; gray white to white	SM	▒	

Boring ID:
P-107

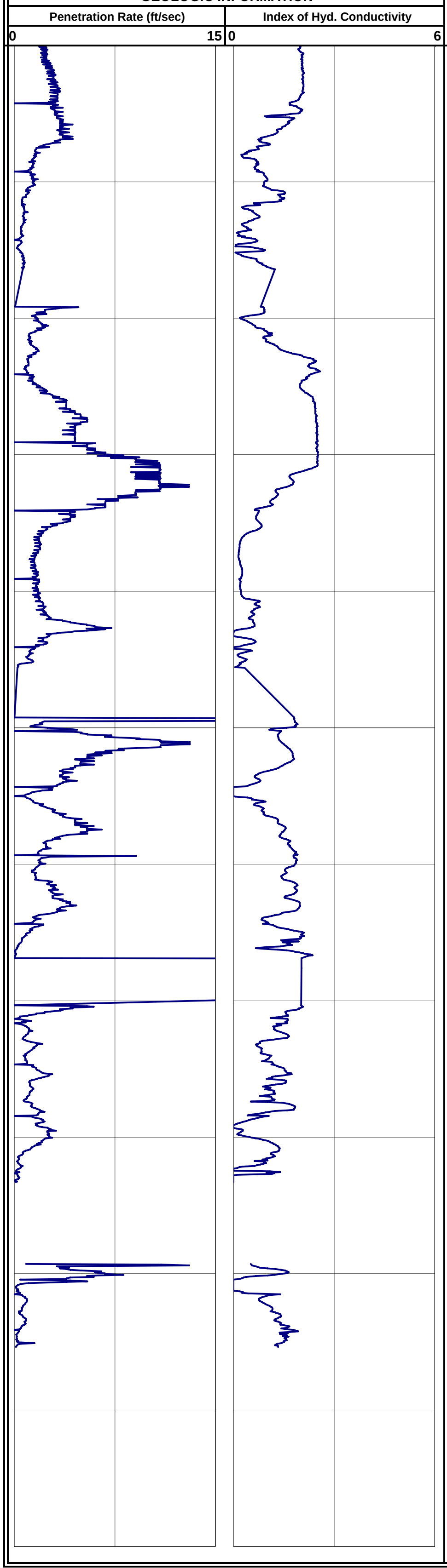
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

PROJECT NAME:	**GTEOSI-Hicksville**	**START DATE:**	**May 16, 2005**
JOB NUMBER:	**4563001**	**END DATE:**	**May 26, 2005**
DRILLING FIRM:	**CT&E**	**LOCATION:**	**GTEOSI Property East of Building 100**
DRILLING METHOD:	**Mud Rotary**		
DRILLER:	**Jim Lewis**	**DATUM:**	**Land Surface**
HELPER:	**Larry Lynch**	**HYDROGEOLOGIST:**	**Collen Sullivan / John Hilton**

Total depth of Profile: **395.5 ft**

Total depth of Boring: **350 ft**

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
300			▨	
310	Well graded SAND and SILT; gray brown to white	SM	▨	Pulled profiling equipment at 316.4. Now penetration rate or IK data from 316.4 to 319.15 due to drilling operations
320	No return: likely silt and fine sand with occasional clay lenses based on drilling characteristics.			
330				
340				Profiler refusal at 345 ft. No penetration rate or IK data from 345 to 349.2 ft due to drilling activities.
350				
360				Profiler refusal at 367.7 ft. No penetration rate or IK data from 367.7 to 369.7 due to drilling activities.
370				
380				Profiler refusal at 383.3 ft. No penetration rate or IK data from 383.3 to 389.3 due to drilling activities
390				Profiler refusal at 395.5. End of profile.
400				
410				

Boring ID:

P-108

MALCOLM PIRNIE, INC.

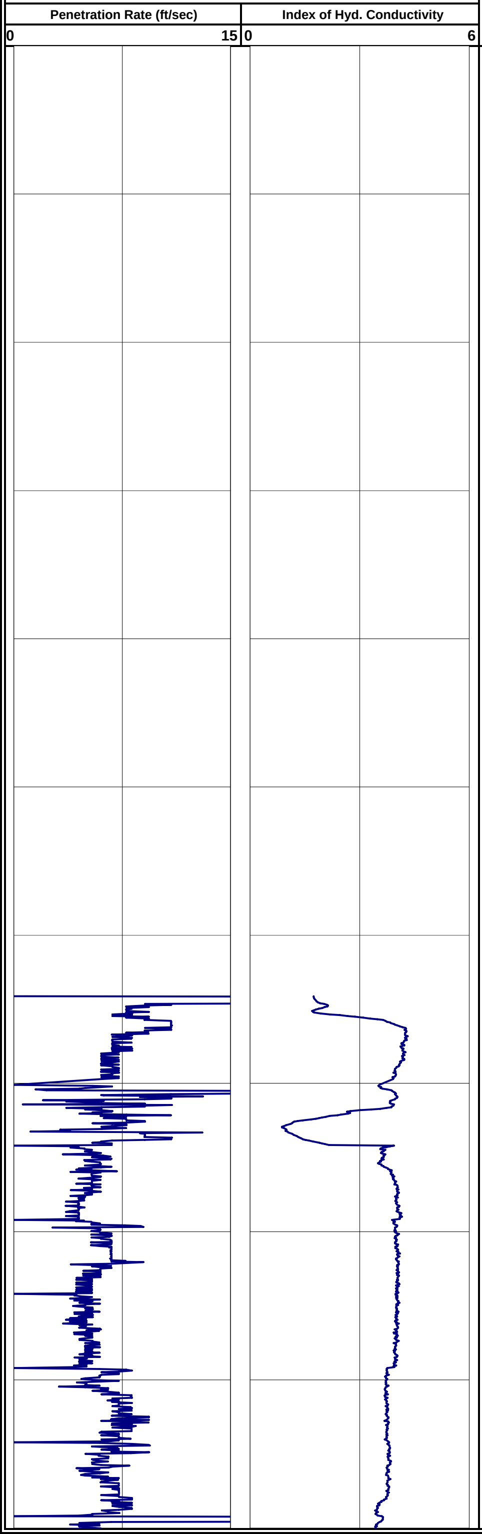
17-17 Route 208 North Fair Lawn, NJ 07401

PROJECT NAME:	**GTEOSI-Hicksville**	**START DATE:**	**April 29, 2005**
JOB NUMBER:	**4563001**	**END DATE:**	**May 13, 2005**
DRILLING FIRM:	**CT&E**	**LOCATION:**	**GTEOSI Property East of Building 100**
DRILLING METHOD:	**Mud Rotary**		
DRILLER:	**Jim Lewis**	**DATUM:**	**Land Surface**
HELPER:	**Larry Carlin**	**HYDROGEOLOGIST:**	**Collen Sullivan**

Total depth of Profile: **394.3 ft**

Total depth of Boring: **380 ft**

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
0 10 20	Site Backfill			Hollow stem augers used to drill from 0 to 14 ft. Begin mud rotary at 14 ft
30	Poorly graded GRAVEL (fine, subrounded) and well graded SAND; light brown	GP - SW	▒	
40	Poorly graded SAND (fine to medium) with some gravel (fine, subrounded); light brown to brown	SP	░	
50	Poorly graded SAND (fine to medium) and clayey SILT; light brown to yellow	SM	▒	
	Poorly graded SAND (fine to medium) and GRAVEL (fine, subrounded; light brown, yellowish	SP - GP	▓	
60	Poorly graded SAND (fine to medium) with trace gravel (fine); light brown	SP	░	
70	Poorly graded SAND (fine to medium) with trace silt; light brown to dark gray	SP	░	Begin profiling at 74.15'
80 90	Poorly graded SAND (fine to medium) with trace gravel (fine, subrounded); light brown	SP	░	

Boring ID:

MALCOLM PIRNIE, INC.

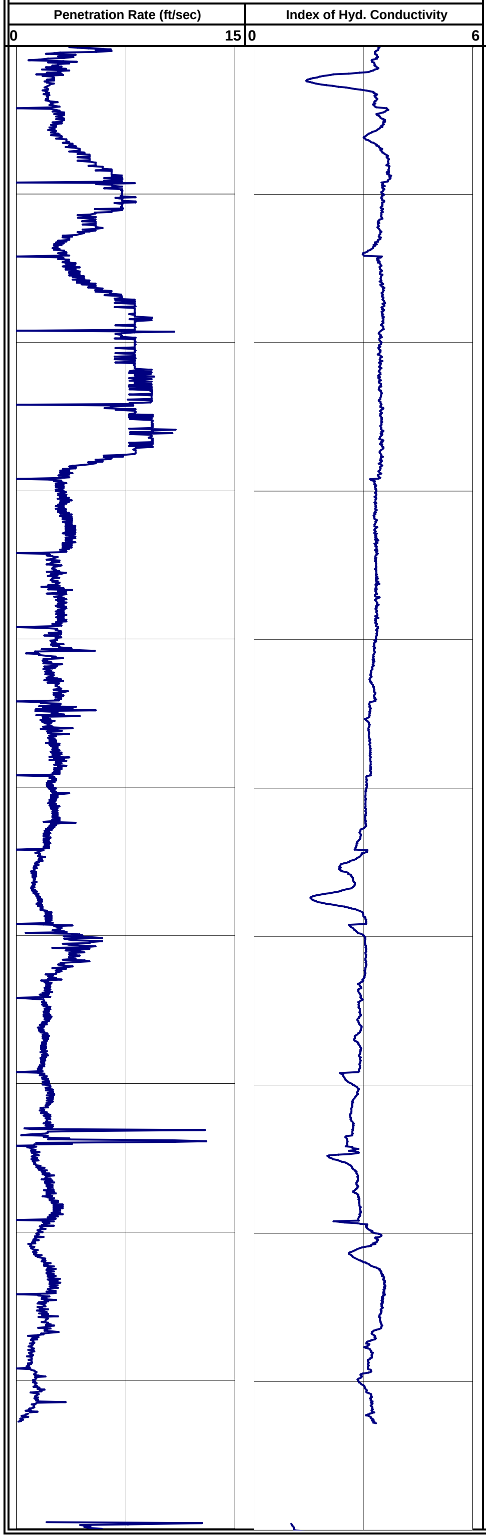
17-17 Route 208 North Fair Lawn, NJ 07401

P-108

PROJECT NAME:	**GTEOSI-Hicksville**	**START DATE:**	**April 29, 2005**
JOB NUMBER:	**4563001**	**END DATE:**	**May 13, 2005**
DRILLING FIRM:	**CT&E**	**LOCATION:**	
DRILLING METHOD:	**Mud Rotary**		**GTEOSI Property East of Building 100**
DRILLER:	**Jim Lewis**	**DATUM:**	**Land Surface**
HELPER:	**Larry Carlin**	**HYDROGEOLOGIST:**	**Collen Sullivan**

Total depth of Profile: **394.3 ft** **Total depth of Boring:** **380 ft**

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
100	Poorly graded SAND (medium) with trace gravel (fine, subrounded); light brown	SP		
110				
120	Poorly graded SAND (medium to coarse) with trace gravel (fine, subrounded); trace fine sand at 135-140'; light brown to brown	SP		
130				
140	Poorly graded SAND (medium) with trace gravel (fine, subrounded) and trace coarse sand; light brown to brown	SP		
150	Well graded SAND with little gravel (fine, subangular); trace fine sand at 165-170'; light brown	SP		
160				
170	Poorly graded SAND (medium) with trace gravel (fine, subrounded); light brown	SP		
180				
190	Poorly graded SAND (medium to coarse) with little gravel (fine, subrounded); light brown	SP		Profiler refusal at 192.8 ft. No penetration rate or IK data from 192.9 to 200 ft due to drilling activities

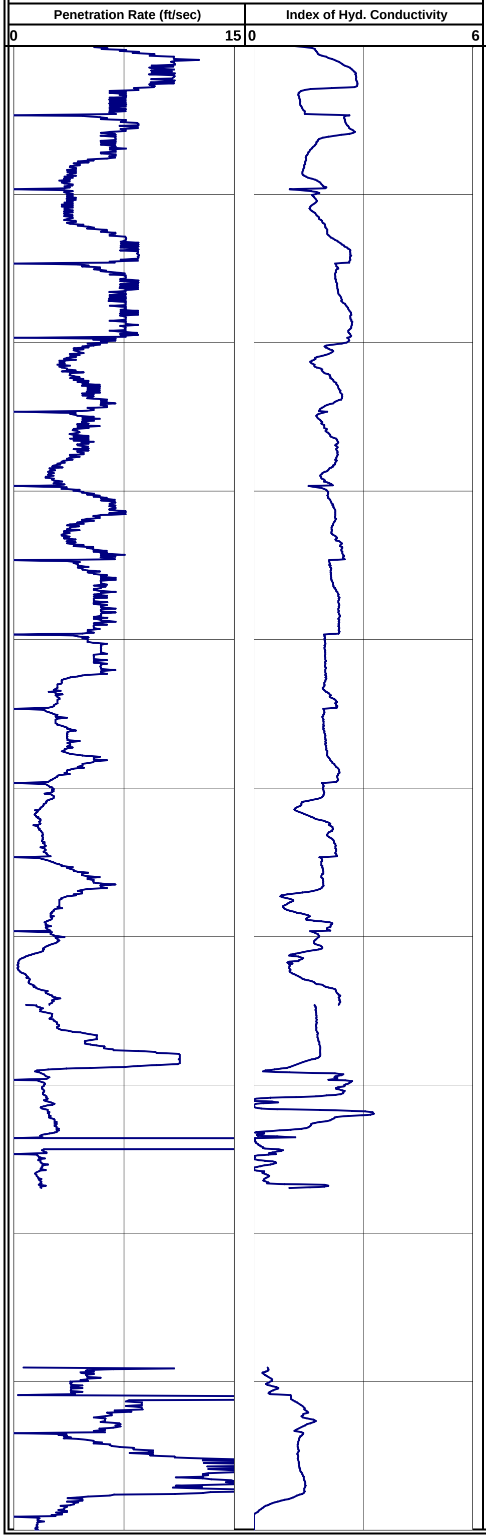
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-108

PROJECT NAME:	**GTEOSI-Hicksville**	**START DATE:**	**April 29, 2005**
JOB NUMBER:	**4563001**	**END DATE:**	**May 13, 2005**
DRILLING FIRM:	**CT&E**	**LOCATION:**	**GTEOSI Property East of Building 100**
DRILLING METHOD:	**Mud Rotary**		
DRILLER:	**Jim Lewis**	**DATUM:**	**Land Surface**
HELPER:	**Larry Carlin**	**HYDROGEOLOGIST:**	**Collen Sullivan**

Total depth of Profile: **394.3 ft**
Total depth of Boring: **380 ft**

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	REMARKS
200 210	Poorly graded SAND (medium to coarse) with some gravel (fine, subrounded); white-orange to tan	SP	
220 230 240	Poorly graded SAND (medium to coarse) with trace gravel (fine, subrounded); tan to light brown	SP	
250	Poorly graded SAND (medium to coarse) with trace gravel (fine, subrounded) and trace fine sand; pink	SP	
260	Poorly graded SAND (medium) and Fe stained GRAVEL (fine, subrounded) with trace clayey silt; orange-light brown to pink	SP - GP	
	Silty CLAY, thin layers interbedded with poorly graded SAND (medium) and GRAVEL (fine, subrounded); white-dark gray to tan	CL - SP	
270	Poorly graded SAND (fine-medium), with little very fine sand and silt, trace gravel (fine); tan to gray	SP - SM	Pulled profiling equipment at 276.95 ft. No penetration rate or IK data from 276.95 to 289 ft due to drilling activities.
280	Poorly graded SAND (fine) with little silt; gray	SP - SM	
290	Little recovery; Likely poorly graded GRAVEL (medium to coarse)	GP	290-300' Poor recovery. Significant loss of drilling fluid.
	Dense CLAY; brown black	CL	

Boring ID:

MALCOLM PIRNIE, INC.

17-17 Route 208 North Fair Lawn, NJ 07401

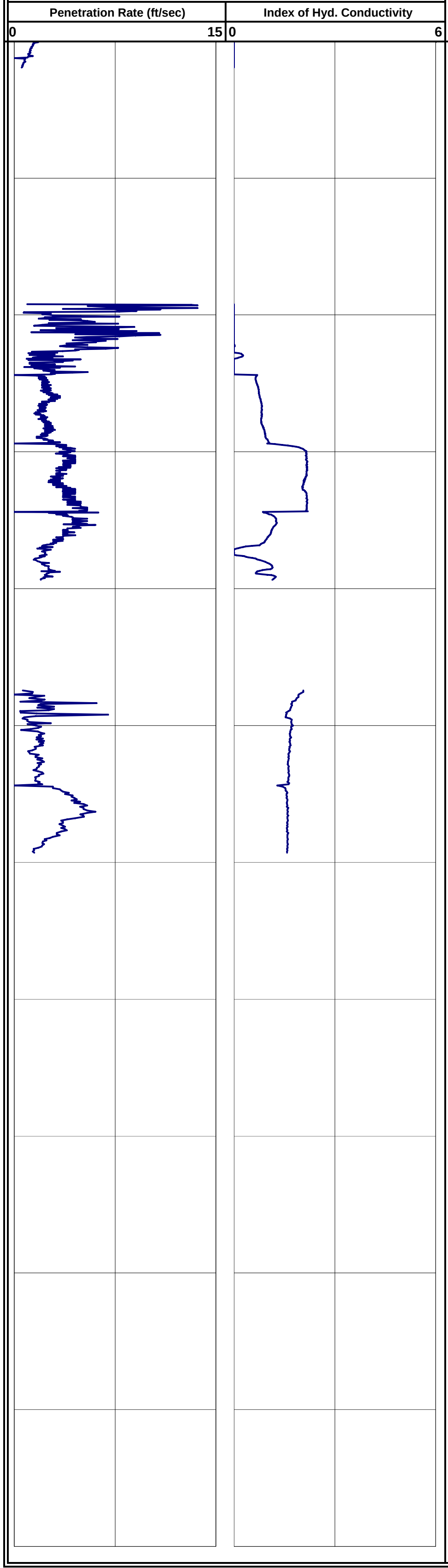
P-108

PROJECT NAME:	**GTEOSI-Hicksville**	**START DATE:**	**April 29, 2005**
JOB NUMBER:	**4563001**	**END DATE:**	**May 13, 2005**
DRILLING FIRM:	**CT&E**	**LOCATION:**	**GTEOSI Property East of Building 100**
DRILLING METHOD:	**Mud Rotary**		
DRILLER:	**Jim Lewis**	**DATUM:**	**Land Surface**
HELPER:	**Larry Carlin**	**HYDROGEOLOGIST:**	**Collen Sullivan**

Total depth of Profile: **394.3 ft**

Total depth of Boring: **380 ft**

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
300			▤	Profiler refusal at 301.9 ft. No penetration rate or IK data from 301.9 to to 319.15 ft due to drilling activities
310	Poorly graded SAND (fine) with soft interbeds of clay, traces of lignite; gray.	SP -SC	░ ▤	Clay layers noted at 311' and 313'
	Poorly graded SAND (fine) with trace mica; gray	SP	░	
320	Poorly graded SAND (fine) with trace silty clay; gray to white	SP	░	Invaid IK data from 319.15 to 324.35 due to air in line or plugged Kpro.
330	Poorly graded SAND (fine to medium) with trace coarse sand; gray to white	SP	░	
340	No recovery. Likely silty SAND based on drilling characteristics	SM	▒	No IK or penatration rate data from 339.35 to 347.65 due to problems with lines and controls.
350			▒	
360			▒	Pulled profiling equipment at 359.30. No IK or penetration rate data from 359.30 to 379.20 ft due to drilling activities.
	No recovery. Likely same as above	SM	▒	Little circulation, poor recovery
370			▒	
380				
390				Pulled profiling equipment at 394.30 ft. End of profile.
400				
410				

Data Usability Summary Report
Volatile Organics
Profiles P-103, P-107, and 108

Former Sylvania Electric Products Facility
GTE Operations Support Incorporated
Hicksville, NY

REPORT

Table of Contents

List of Tables

Executive Summary

This report addresses data quality for groundwater samples collected at the former Sylvania Electric Products Incorporated Facility in Hicksville, New York (the Site). This report pertains to Volatile Organic Compound (VOC) samples collected by Malcolm Pirnie, Inc. (Malcolm Pirnie) from April 18, 2005 through May 26, 2005.

The environmental samples collected for this investigation were submitted to Severn Trent Laboratories, Inc. of Earth City, Missouri, for VOC analysis using United States Environmental Protection Agency (USEPA) guidance methods. A total of 13 samples[1] were submitted, which resulted in 485 VOC results[2]. Of this number, 263 of them are actual sample results[3] and the remainders are field quality assurance/quality control (QA/QC) indicators[4] of the samples. The analytical data generated for this investigation were evaluated by Malcolm Pirnie using the QA/QC criteria established in the methods and USEPA guidelines. Non-conformances from the QA/QC criteria were qualified based on guidance provided in the following references:

- New York State Department of Environmental Conservation. *Analytical Services Protocol*. Guidance documents including Exhibits A, B, C, D, E, F, G, and I. June 2000.
- United States Environmental Protection Agency. *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.* SW-846: Final Update IIIA. April 1998.
- United States Environmental Protection Agency. *Contract Laboratory Program National Functional Guidelines for Organic Data Review*. EPA 540-R-99-008. October 1999.
- United States Environmental Protection Agency, Region 2. *Contract Laboratory Program* Organics *Data Review*. SOP No. HW-6, Revision #12. March 2001.
- United States Environmental Protection Agency, Region 2. *Standard Operating Procedure for the Validation of Organic Data Acquired Using SW-846 Method 8260B.* SOP No. HW-24, Revision #1. June 1999.

In circumstances where the quality of the data or the accuracy of the results is suspect, the project's Quality Assurance Project Plan (QAPP) and professional judgment[5] were also used to consider if results should be qualified as estimated ("J" or "UJ"). Since individual guidance documents used (as a source of reference for the validation) may differ slightly in the type of qualification applied to data, Malcolm Pirnie applied qualifiers generally with an err to caution. Method non-conformances included exceedances of the relative percent standard deviation for the initial calibrations, the percent differences of the continuing calibrations, and the excessively low response factors in both the initial and continuing calibrations. Results rejected were due to initial and continuing calibration response factor non-conformances.

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[1] Total number of samples includes field samples, field duplicates, trip blanks, field blanks, and equipment blanks.

[2] Total number of results includes 481 results for targeted compounds and four results for tentatively identified compounds. This number includes some results, which were rejected by the validation process.

[3] This is the total number of results minus trip blank, field blank, and equipment blank results.

[4] These indicators do not include Matrix Spike/Matrix Spike Duplicate or other internal laboratory QA/QC indicators.

[5] Professional judgment is performed by a USEPA certified data validator with over a decade of environmental laboratory experience.

Additionally, most laboratory method blanks contained low level contamination from common laboratory contaminants, including acetone and methylene chloride. The presence of these contaminants affected some project samples. Qualification of associated results was performed to show the relationship between the laboratory contamination and the uncertainty of the final sample result. In many cases, the project trip blanks and equipment blank contained low-levels of the same contaminants as were seen in the laboratory method blanks, in addition to other contaminants due to cross-contamination during field sampling activities. Again, Malcolm Pirnie qualified the affected data to show the potential impact on the final sample results.

Other quality issues requiring data validation qualification included replacement of results which exceeded the laboratory calibration range (i.e., qualified with an "E" by the laboratory) with re-analysis results, and qualification of all tentatively identified compounds (TIC). TIC results are qualitative only, and not considered usable for quantitative assessments, in particular risk screening evaluations.

Overall, 96.5 percent[6] of the VOC results retained in the database as final data were determined to be usable for qualitative and quantitative purposes. The other 3.5 percent were qualified as unusable, "R," – the presence or absence of the compounds cannot be verified. Sample results qualified as estimated, "J" and "UJ," due to quality control (QC) deficiencies should be considered conditionally usable. Therefore, the completeness objective of 90 percent, as presented in the QAPP, was met for the VOCs database.

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[6] Value = (481 total target compound list data points – 17 rejected TCL data points) / 481 X 100

1. Introduction

1.1. Sample Identification

This report addresses the results of a data quality evaluation for groundwater samples for VOCs collected at the Site by Malcolm Pirnie from April 18, 2005 through May 26, 2005.

The sample delivery group (SDG) number (laboratory package identification number), field identification, and corresponding laboratory identification of the samples that were submitted for data validation are presented in Table 1-1.

Table 1-1. *Sample Cross-Reference List*

Package Identification	***Sample ID***	***Laboratory ID***	***Analysis Performed***
F5D220296	P-103-EB#1	F5D220296001	VOCs
	P-103-74	F5D220296002	VOCs
	P-103-174.5	F5D220296012	VOCs
	TRIP BLANK	F5D220296019	VOCs
F5D290261	P-103-344.2	F5D290261013	VOCs
	TB04210428	F5D290261020	VOCs
F5E060294	P108-74.15	F5E060294001	VOCs
	P108-DUP1 (P-108-84.15)	F5E060294003	VOCs
	TB05020505	F5E060294023	VOCs
F5E200169	P-107-74.30	F5E200169003	VOCs
	TB05120519	F5E200169037	VOCs
F5E270218	P-107-324.1	F5E270218007	VOCs
	TB05202605	F5E270218014	VOCs

1.2. General Considerations

Validation is a process of determining the suitability of a measurement system for providing useful analytical data. Although the term is frequently used in discussing methodologies, it applies to all aspects of the analytical system and especially to samples, their measurements, and the actual data output. Accordingly, for the samples and analyses addressed herein, this report summarizes the findings of the review and outlines any deviations from the applicable quality control (QC) criteria referenced in the following documents:

- New York State Department of Environmental Conservation. *Analytical Services Protocol*. Guidance documents including Exhibits A, B, C, D, E, F, G, and I. June 2000.

- United States Environmental Protection Agency. *Contract Laboratory Program National Functional Guidelines for Organic Data Review*. EPA 540-R-99-008. October 1999.

- United States Environmental Protection Agency. *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.* SW-846: Final Update IIIA. April 1998.

- United States Environmental Protection Agency, Region 2. *Contract Laboratory Program* Organics *Data Review*. SOP No. HW-6, Revision #12. March 2001.

- United States Environmental Protection Agency, Region 2. *Standard Operating Procedure for the Validation of Organic Data Acquired Using SW-846 Method 8260B.* SOP No. HW-24, Revision #1. June 1999.

- URS Corporation. *GTE Operations Support Incorporated - Groundwater Investigation Work Plan, Former Sylvania Electric Products Incorporated Facility, Hicksville, New York.* QAPP: Appendix C. September 2002.

1.3. Analytical Methods

The environmental samples presented in this report were submitted to Severn Trent Laboratories, Inc. of Earth City, Missouri, for VOC analyses. The laboratory used the following USEPA guidance methods for the analyses:

- SW846 Method 5030B: Purge-and-Trap for Aqueous Samples
- SW846 Method 8260B: Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

The laboratory assigned an SDG number to a group of samples during the sample log-in process. The SDG number is the means by which the laboratory tracks samples and QC analyses. A total of 13 samples in a total of five SDGs are included in this data validation report. The SDG, field identification, and laboratory identification for each sample are summarized in Table 1-1.

The following sections of this document address distinct aspects of the validation process. Section 2 lists the data QA/QC protocols used to validate the sample data. Section 3 presents a summary of the findings associated with the validation and a discussion of the specific QA/QC deviations and qualifications performed on the sample data. Section 4 presents a discussion of data completeness and usability. Section 5 presents the Data Usability Summary Report (DUSR) summary information.

2. Data Validation Protocols

2.1. Sample Analysis Parameters

The validation of analyses for this project used guidances presented in the QAPP (GTEOSI, 2002), the analytical methodologies, the data validation guidelines referenced in Section 1, and professional judgment[7]. Malcolm Pirnie performed a data review of all analytical results to assess data quality. The data review included an assessment of sample handling protocols and supporting laboratory and field QC parameters. The following is a list of specific analytical information evaluated during the validation:

- Data package completeness review – per the NYSDEC ASP Category B or USEPA CLP deliverables requirements
- Analytical methods performed and test method references
- Sample condition - review of log-in records for cooler temperature, absence of headspace, chemical preservation, etc.
- Holding times - comparison of collection, preparation, and analysis dates
- Analytical results - units, values, significant figures
- Sample traceability to raw data
- Instrument tuning
- Initial calibration – comparison to technical guideline criteria
- Continuing calibration – comparison to technical guideline criteria
- Method blank results and laboratory contamination
- Laboratory control sample (LCS) results and comparison to laboratory control limits
- Matrix spike/matrix spike duplicate (MS/MSD) results and comparison to laboratory control limits
- Field replicate/duplicate results and comparison to technical guideline criteria
- Field QC sample (i.e., trip blanks, field blanks, equipment blanks)
- Surrogate standard recoveries and comparison to laboratory control limits
- Internal standards and comparison to technical guideline criteria
- Compound identifications, quantitations, dilutions, and reporting limits
- Tentatively Identified Compounds (TICs)

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[7] Professional judgment is performed by a USEPA certified data validator with over a decade of environmental laboratory experience.

- Electronic Data Deliverables (EDDs) – comparison to the hardcopy analytical

The analytical reports were reviewed for completeness and the accompanying QC data were reviewed for acceptable performance. When QC results indicated poor performance, Malcolm Pirnie applied data qualifiers to the results to inform the data user of the possible performance problem. These qualifiers are in addition to or a revision of the qualifiers provided by the laboratory. A summary of the data qualifiers used for this review is presented in Section 2.2.

2.2. Data Qualifiers

The following qualifiers have been used by the laboratory for organic analyses:

"U"	Non-detect result at the laboratory established reporting limit.
"B"	Associated with a result if the compound was also identified in the corresponding method blank.
"J"	Indicates an estimated value or a value below the laboratory established reporting limit but above the method detection limit.
"E"	This flag identifies compounds whose concentrations exceed the calibration range of the instrument for the specific analysis; data qualified with an "E" are qualitative only and not useable for quantitative purposes. All results qualified with an "E" were required to be re-analyzed using an applicable dilution and re-reported.

Laboratory qualifiers defined above, are retained in the final database unless revised during the data validation process to one of the following qualifiers:

"U"	The compound was analyzed for, but was not detected above the reported quantitation limit.
"J"	The compound was positively identified; the associated numerical value is the approximate concentration of the compound in the sample.
"N"	The analysis indicates the presence of a compound for which there is presumptive evidence to make a "tentative identification".
"NJ"	The analysis indicates the presence of a compound that has been "tentatively identified" and the associated numerical value represents its approximate concentration.
"UJ"	The compound was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the compound in the sample.
"R"	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the compound cannot be verified.

2.3. Data Usability Summary Report Questions

The DUSR determines whether or not the data meets Site-specific criteria for data quality and use. It was developed to review and evaluate the analytical data packages. During the course of this review the following questions were addressed (where applicable):

1. *Is the data package complete as defined under the requirements for the NYSDEC ASP Category B or USEPA CLP deliverables?*

2. *Have all holding times been met?*

3. *Do all the QC data: blanks, instrument tunings, calibration standards, calibration verifications, surrogate recoveries, spike recoveries, replicate analyses, laboratory controls and sample data fall within the protocol required limits and specifications?*

4. *Have all of the data been generated using established and agreed upon analytical protocols?*

5. *Does an evaluation of the raw data confirm the results provided in the data summary sheets and quality control verification forms?*

6. *Have the correct data qualifiers been used?*

The answers to the questions presented by the DUSR are presented in the following sections of the report and in the DUSR summary information section, Section 5.

3. Data Quality Evaluation

3.1. Summary

This section summarizes whether the QA/QC parameters reported, which were specified in Section 2.1, met validation criteria. Summaries of the individual components of the review are described in the following sections.

3.2. Review of Validation Criteria

3.2.1. Completeness Review

The laboratory provided the analytical results using formats based on the Contract Laboratory Program (CLP). Most documents were included in the report packages including a case narrative summarizing the QC issues associated with the project analyses. It should be noted that although the case narratives were included in each SDG, they were indiscriminately written and usually did not contain information relevant to the data reported for this project. They were not relied upon in this data validation. Documents missing from the report packages are detailed in Section 3.2.5.

3.2.2. Test Methods

The laboratory performed the analyses using the analytical test methods listed in Section 1.3. They included USEPA SW-846 Method 5030B (purge and trap sample introduction) followed by Method 8260B (gas chromatography/mass spectrometry sample analysis). All samples were analyzed using a 25 mL (common volume used is 5 mL) purge volume, which offered lower reporting limits for each compound.

3.2.3. Sample Receipt

The laboratory received 13 water samples for VOC analysis between April 22, 2005 and May 27, 2005. The temperatures within all VOC sample shipment coolers at the time of laboratory receipt were within the recommended temperature range of 4°C ± 2°C. Field and laboratory personnel completed the Chain-of-Custody (COC) documents recording the signature, date, and time of custody transfer. The laboratory recorded the condition of the samples at the time of receipt on a "Conditions Upon Receipt Form." This form identifies whether the containers were received undamaged, within the proper temperature range, at the proper pH, in a container that is sealed with a custody seal on the exterior, and with a completed COC enclosed to identify all samples submitted to the laboratory.

The following problem with sample receipt was found:

- SDG F5D220296: the trip blank sample was not listed on the COC for analysis. The sample was submitted with the SDG and the laboratory added it onto the COC upon receipt at the laboratory.

There were no custody seals attached to individual sample bottles. No qualification is necessary because the exterior of the shipment coolers had intact custody seals.

3.2.4. Holding Times

The laboratory performed all VOC analyses within the technical holding time of 14 days from date of sample collection. All samples were correctly preserved with acid to a pH of ≤ 2. There were no problems observed.

3.2.5. Analytical Results

For each sample tested, the laboratory provided the analytical test information using formats based on the CLP program. This format requires the use of stylized forms to present critical information pertaining to the analyses performed. For all analytical results, the laboratory provided a "Form I" with the reported analytical results for the requested analyses. The Form I format shows the following information for organic analyses: the laboratory name; the laboratory sample identification; the matrix; the sample identification; the date the sample was received; the date the sample was analyzed; the dilution factor; the chemical abstract service (CAS) number; the units of measure; and the laboratory qualifier (if any).

- SDG F5D290261: sample P-103-344.2 was analyzed twice at the same dilution. It was analyzed the second time because the laboratory had erroneously thought that there was carryover from the previous sample from another client. Both sets of data were submitted; however, for this validation, the second set was not reviewed and is to be ignored.

3.2.6. Traceability to Raw Data

Traceability of the VOC analyses is established by Form V (Instrument Performance Check). These forms list the project samples analyzed per laboratory batch processed and the corresponding QC samples performed with the project samples.

3.2.7. Instrument Tuning

The GC/MS instrument performance (i.e., "tuning data," or a check of mass spectral ion intensities using bromofluorobenzene [BFB]) met method criteria. The instrument performance was checked prior to calibration and once every 12-hour shift for all analytical batches. There were no deficiencies found.

3.2.8. Initial Calibration

Initial Calibrations (ICALs) were performed at seven levels with most compound concentrations from 0.5 ug/L to 30 ug/L. The ICAL performed on 5/19/05 was with six levels with concentrations from 1.0 ug/L to 40 ug/L. Some compounds in the ICALs did not meet data validation criteria [i.e., relative response factors (RRFs) technical criteria of ≥ 0.05, and the percent relative standard deviations (%RSDs) technical criteria of ≤ 15%]. For some chemicals with elevated %RSD, the laboratory had employed a linear regression equation to determine the calibration curve. For these chemicals, an acceptable calibration must have the coefficient of the determination (COD) greater than or equal to 0.99 (SW-846 8000B criterion). Table 3-1 shows a summary of the samples and compounds qualified as estimated, "J," or not usable, "R," due to ICAL deficiencies.

Table 3-1. *Evaluation of Initial Calibration Results*

Package Identification	***Initial Calibration Date***	***Sample ID***	***Compounds***	***Action***
F5D220296	04/20/05, 15:12	P-103-EB#1 P-103-74	RRF: Acetone 2-Hexanone	RRF < 0.05 R – all non-detect results
	04/25/05, 12:39	P-103-174.5	RRF: Acetone 2-Butanone	RRF < 0.05 R – all non-detect results
	05/03/05, 02:09	TRIP BLANK	RRF: Acetone 2-Hexanone	RRF < 0.05 R – all non-detect results
F5D290261	04/25/05, 12:39	P-103-344.2 TB04210428	RRF: Acetone 2-Butanone	RRF < 0.05 R – all non-detect results
F5E060294	05/05/05, 14:38	P108-74.15 P108-DUP1 TB05020505	RRF: Acetone 2-Butanone	RRF < 0.05 R – all non-detect results J – all positive results

Table 3-1. *Evaluation of Initial Calibration Results*

Package Identification	***Initial Calibration Date***	***Sample ID***	***Compounds***	***Action***
F5E200169	05/19/05, 12:02	P-107-74.30 TB05120519	None	None
F5E270218	05/24/05, 03:15	P-107-324.1 TB05202605	RRF: Acetone	RRF < 0.05 R – all non-detect results J – all positive results

3.2.9. Continuing Calibration

The continuing calibration (CCAL) verification analyses were performed with a mid-level standard immediately following the tuning check at the beginning of each 12-hour analytical sequence. Some compounds in the CCAL verification analyses did not meet data validation criteria (i.e., RRFs technical criteria of ≥ 0.05, and the percent differences (%Ds) from the average RRF technical criteria of ≤ 20%). For chemicals that had employed a linear regression equation to determine the calibration curve, the % drift in the CCAL must be within ± 15% (SW-846 8000B criterion). Table 3-2 shows a summary of the samples and compounds qualified as estimated, "J," or not usable, "R," due to CCAL deficiencies.

Table 3-2. *Evaluation of Continuing Calibration Results*

Package Identification	***CCAL Date***	***Sample ID***	***Compounds***	***Action***
F5D220256	04/29/05, 11:40	P-103-EB#1 P-103-74	% D: Acetone RRF: Acetone 2-Hexanone	%D > 20% UJ – all non-detect results RRF < 0.05 R – all non-detect results
	05/02/05, 14:13	P-103-74 DL P-103-174.5	% D: Bromomethane 2-Butanone 1,2-Dichloroethane Bromodichloromethane 4-Methyl-2-pentanone Tetrachloroethene Dibromochloromethane 2-Hexanone Bromoform RRF: Acetone 2-Butanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results
	05/05/05, 10:38	TRIP BLANK	% D: 2-Hexanone RRF: Acetone 2-Hexanone	%D > 20% UJ – all non-detect results RRF < 0.05 R – all non-detect results
F5D290261	05/04/05, 15:14	P-103-344.2 TB04210428	% D: Bromomethane 4-Methyl-2-pentanone Tetrachloroethene 2-Hexanone RRF: Acetone 2-Butanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results

Table 3-2. *Evaluation of Continuing Calibration Results*

Package Identification	*CCAL Date*	*Sample ID*	*Compounds*	*Action*
F5E060294	05/09/05, 11:17	P-108-74.15 P-108-DUP1	RRF: Acetone 2-Butanone	RRF < 0.05 R – all non-detect results
	05/10/05, 15:27	P-108-74.15 DL P-108-DUP1 DL		None
	05/16/05, 20:34	TB05020505	% D: Acetone Methylene chloride 2-Butanone 4-Methyl-2-pentanone 2-Hexanone RRF: Acetone 2-Butanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 J – all positive results
F5E200169	05/24/05, 13:08	P-107-74.30 TB05120519	% D / % Drift: Chloromethane Bromomethane Acetone Tetrachloroethene	%D > 20%, % Drift > 15% UJ – all non-detect results J – all positive results
F5E270218	05/29/05, 17:06	P-107-324.1 TB05202605	% D: Chloromethane	%D > 20% UJ – all non-detect results

Note:
DL Suffix – Indicates a secondary diluted sample reanalysis

3.2.10. Laboratory Method Blanks

In general, most laboratory method blanks contained trace levels of one or more common laboratory contaminants. The corresponding sample results for the identified contaminants were revised to non-detect results if these results were "less than five times" (< 5 X) the method blank results for laboratory contaminants in accordance with the QAPP (GTEOSI, 2002). However, per National Functional Guidelines (EPA 540-R-99-008), common laboratory contaminants (methylene chloride, acetone, 2-butanone, and cyclohexane) criterion is "< 10 X" the method blank results. The National Functional Guidelines' criterion was also used. Most samples were affected by these qualification guidelines. A summary of the samples and compounds that were revised due to laboratory contamination are presented in Table 3-3.

Table 3-3. *Evaluation of Laboratory Method Blank Results*

Package Identification	*Sample ID*	*Compounds*	*Action*
F5D220296	TRIP BLANK	Methylene chloride	Removed "B" qualifier. No need to qualify TB with MB
F5D290261	P-103-344.2	1,4-Dichlorobenzene 1,2-Dichlorobenzene Chlorobenzene	Revise "B" qualifier to "U" to indicate non-detect result
	TB04210428	1,4-Dichlorobenzene 1,2-Dichlorobenzene Chlorobenzene	Removed "B" qualifier. No need to qualify TB with MB
F5E060294	P108-74.15	Tetrachloroethene	Removed "B" qualifier. Blank concentration < 5X of sample
	P108-DUP1	Tetrachloroethene	Removed "B" qualifier. Blank concentration < 5X of sample
	TB05020505	Acetone	Removed "B" qualifier. No need to qualify TB with MB

Table 3-3. *Evaluation of Laboratory Method Blank Results*

Package Identification	***Sample ID***	***Compounds***	***Action***
F5E200169			None
F5E270218			None

3.2.11. Laboratory Control Sample Results

The laboratory analyzed a laboratory control sample (LCS) for each day of sample analysis. Most LCS percent recoveries were within the laboratory control limits for each of the batches. Generally, for recoveries exceeding laboratory control limits substantially, the associated data would be qualified as estimated ("J" or "UJ") using the following validation guidance: 1) if the percent recovery was greater than the upper control limit, positive results are qualified as estimated; non-detects are not qualified; 2) if the percent recovery was below the lower control limit, both positive and non-detect results are qualified as estimated. For compounds that were slightly out, but were within the method default range of 70% to 130%, they were not qualified based on professional judgment. Table 3-4 shows the evaluation of LCS samples.

Table 3-4. *Evaluation of Laboratory Control Sample Results*

Package Identification	***LCS Date***	***Sample ID***	***Compound(s) Out***	***Action***
F5D220296	04/29/05		None	None
	05/02/05		None	None
	05/05/05		None	None
F5D290261	05/04/05		None	None
F5E060294	05/09/05		None	None
	05/10/05		None	None
	05/16/05	TB05020505	4-Methyl-2-pentanone	None (high %R but not detected in samples)
F5E200169	05/24/05		None	None
F5E270218	05/29/05		None	None

3.2.12. Matrix Spike/Matrix Spike Duplicate Analyses

The MS/MSD analyses are designed to provide information about the effect of sample matrix on the sample preparation procedures and the measurement methodology. Data precision from the field sampling and the analytical techniques can also be assessed.

Only the associated non-spiked MS/MSD samples were evaluated for qualification (unless a trend can be determined for all other samples within the SDG). Where recoveries exceeded laboratory control limits, the associated data are qualified as estimated ("J" or "UJ") using the following validation guidance: 1) if the percent recovery was greater than the upper control limit, positive results are qualified as estimated; 2) if the percent recovery was below the lower control limit, both positive and non-detect results are qualified as estimated. No qualification of data is required when percent recoveries are above the upper control limit and the VOC results are non-detect. However, there were no MS/MSDs submitted that were relevant to the samples of this project.

- SDGs F5D220296, F5D290261, F5E060294, and F5E270218: the MS/MSDs were performed on samples from other clients of the laboratory. Matrix effect of the samples for accuracy and precision was not evaluated because those MS/MSDs offer no pertinent information on matrix effects of field samples from this project.

- SDG F5E200169: an MS/MSD set was analyzed for sample P-107-74.30. However, the laboratory had analyzed the sample and the MS/MSD at 10X dilution. The dilution was unnecessary. The laboratory subsequently reanalyzed the sample with no dilution but did not reanalyze the MS/MSD. Therefore, the diluted MS/MSD was not evaluated because it did not represent the undiluted matrix of the sample. In addition, the laboratory had noted that there was a problem with the spiking solution which resulted in poor recoveries.

- SDGs F5E060294 and F5E200169: the MS/MSDs were also performed on laboratory water, as the LCS and LCS duplicate; they offer no information on matrix effects of the actual field samples.

Table 3-5 shows the samples and compounds that were qualified as estimated due to MS/MSD percent recoveries exceeding criteria.

Table 3-5. *Evaluation of Matrix Spike/Matrix Spike Duplicate Sample Results*

Package Identification	***Sample ID***	***Compounds***	***Action***
Not Evaluated			None

3.2.13. Field Duplicate Analyses

Blind field duplicate samples were supposed to be collected and analyzed to assess the overall sampling and analytical technique's precision. And by design, the laboratory was never made aware of which field samples the blind duplicates were associated with. However, there were no field duplicates submitted for assessment.

- SDG F5E060294: sample P-108-DUP1 is a blind field duplicate of sample P-108-84. However, the original sample, P-108-84, was not submitted to the laboratory for analysis. Therefore, the duplicate sample is considered the original sample and duplicate evaluation could not be performed.

There were no field duplicates submitted with SDGs F5D220296, F5D290261, F5E060294, F5E200169, and F5E270218. It should be noted that QAPP requirements (GTEOSI, 2002) specified that a field duplicate sample be collected at a rate of one sample for every ten samples (collection rate of 10%). There were no field duplicates collected for the seven field samples submitted (not including blank samples collected as QCs) for analysis. Therefore, the frequency is not satisfied and field precision is not considered to have been evaluated to the QAPP's requirements.

3.2.14. Trip Blanks, Field Blanks, and Equipment Blanks

Five trip blanks, no field blanks, and one equipment blank were submitted for analysis. Many of the trip blanks that were submitted contained common contaminants. Revisions made on the affected target compound results were based on trip blank and equipment blank contamination, in accordance with practices described in the validation guidance documents listed in Sections 1.2 and 3.2.10 (method blank contamination). It should be noted that the results for the trip blanks and equipment blank were not revised with respect to the method blank's contamination; but the original result were retained to show data users the presence and concentrations of contamination that was used to qualify the project sample results. The laboratory's "B" qualifiers in the trip blanks and equipment blank were removed. The contamination in the trip blanks and equipment blank, like the project samples, is potentially attributable to contamination from sample collection techniques in the field, cross-contamination from samples during shipment, or contamination during the preparation and analysis of these QC samples (at the laboratory).

There were no field blanks or equipment blanks submitted with SDGs F5D290261, F5E060294, F5E200169 and F5E270218. Equipment blanks were evaluated against the groundwater profiler location samples. Therefore, SDG F5D290261 used the equipment blank submitted with F5D220296. There was no equipment blank or field blank associated with groundwater profiler location P-108 or P-107. However, a trip blank was submitted with each SDG.

Table 3-6 shows the samples and compounds that were qualified as non-detect, "U."

Table 3-6. *Evaluation of Trip Blank, Field Blank, and Equipment Blank Results*

Package Identification	***Sample ID***	***Compound***	***Action***
F5D220296	P-103-74	Carbon Disulfide	Revised result to "U" (non-detect)
F5D290261	P-103-344.2	Chloroform 1,4-Dichlorobenzene* 1,2-Dichlorobenzene* Chlorobenzene*	Revised result to "U" (non-detect)
F5E060294			None
F5E200169			None
F5E270218			None

Note:
* - Also qualified due to method blank contamination

In addition to the above, the following actions were also performed.

- SDG F5E060294: Sample P-108-74.15 – 1,2-Dichlorobenzene was detected at a concentration of 1.3 ug/L. It was also detected in its associated trip blank at 0.10 J ug/L. A small peak was present in the method blank at the elution time of 1,2-dichlorobenzene, so a request for additional information was made to the laboratory. It was determined that 1,2-dichlorobenzene was also present in the method blank at a concentration of 0.12 J ug/L. Based on other project samples and on professional judgment, the result for 1,2-dichlorobenzene in this sample will be qualified as a false positive and the concentration will be changed from 1.3 ug/L to 1.3 U ug/L.
- SDG F5E060294: Sample P-108-84.15 – 1,2-Dichlorobenzene was detected at a concentration of 0.56 ug/L. It was also detected in its associated trip blank at 0.10 J ug/L. A small peak was present in the method blank at the elution time of 1,2-dichlorobenzene, so a request for additional information was made to the laboratory. It was determined that 1,2-dichlorobenzene was also present in the method blank at a concentration of 0.12 J ug/L. Since the method blank concentration is right at one-fifth the concentration of the sample concentration, the result for 1,2-dichlorobenzene in this sample will be qualified as a false positive and the concentration will be changed from 0.56 J ug/L to 1.0 U ug/L.

3.2.15. System Monitoring Compounds

All percent recoveries for the VOC surrogates were within laboratory control limits. There were no deficiencies found.

3.2.16. Internal Standards

All internal standard retention times were within ± 0.5 minutes from that of the associated calibration for all analyses. The responses of all internal standards were within the range of 50-200% of the associated calibration verification for all samples. There were no deficiencies found.

3.2.17. Compound Identification and Quantitation of Results / Dilutions

The laboratory's evaluations of the gas chromatographs and mass spectra for the identified compounds were acceptable with the exception.

- SDG F5D290261: Sample P-103-344.2 - carbon tetrachloride and 1,1,1-trichloroethane was both reported and had been detected at the same retention time. It is determined that co-elution did not occur and that the peak was 1,1,1-trichloroethane. Therefore, carbon tetrachloride is a false positive and the concentration will be changed to the non detected value of 1.0 U ug/L.
- SDG F5E060294: Sample P-108-74.15 – benzene was detected at a concentration of 0.085 ug/L. Since the concentration was substantially below the reporting limit, and it cannot be confirmed if benzene was also present at a similar low level in the blanks, the presence of benzene will be qualified as estimated, "N," in additional to its estimated value, "J." Therefore, the result for benzene will be changed from 0.085 J ug/L to 0.085 JN ug/L.
- SDT F5E200169: Sample P-107-74.30 – carbon tetrachloride was detected in the sample at 1.7 ug/L. Although an acceptable linear regression calibration was used to calculate the concentration, the calibration curve does not appear to produce accurate results at low concentrations. If the average relative response factor was used instead of a linear regression equation, a %RSD of 23.8 would be calculated for the initial calibration, which would result in a sample concentration that is qualified as estimated. Using the average RRF, the concentration of carbon tetrachloride would be 0.017 J µg/L, a very low but more likely concentration than 1.7 J µg/L, based on the low area count. Since it is believed, based on professional judgment, that the estimated concentration is near but above the true minimum level of detection and that "blank contamination" may be possible but cannot be confirmed near that level, the presence of carbon tetrachloride will be qualified as tentative, "N." Consequently, the result for carbon tetrachloride will be changed from 1,7 µg/L to 0.017 JN µg/L.

Some samples contained elevated concentrations of target compounds that exceeded the calibration range for the VOC analysis. The laboratory reported and qualified these results with an "E" qualifier. As part of the laboratory's corrective action, the affected samples were reanalyzed at a dilution to obtain usable results within the established calibration curve range. As part of this validation, specific compound results, which exceeded the calibration range in the original analysis, were replaced with the compound results from the secondary dilution analysis. The sample results, in effect, are made whole when the initial and secondary analyses are "hybridized," into one. A list of the re-analyzed samples and the affected compounds are listed in Table 3-7.

Table 3-7. *Summary of Laboratory Re-Analyses*

Package Identification	***Sample ID***	***Compound Reported From Re-Analysis***

Table 3-7. *Summary of Laboratory Re-Analyses*

Package Identification	***Sample ID***	***Compound Reported From Re-Analysis***
F5C220296	P-103-74	Tetrachloroethene
F5E060294	P108-74.15	cis-1,2-Dichloroethene Tetrachloroethene Trichloroethene
	P108-DUP1	cis-1,2-Dichloroethene Tetrachloroethene Trichloroethene

SDG: F5E060296: cis-1,2-dichloroethene and trichloroethene were diluted for in samples P-108-74.15 and P-108-DUP1. However, the dilution of the diluted sample was so excessive that the raw diluted results were either not detected or below the reporting limit. Therefore, the original values were kept for these compounds and qualified as estimated, “J.”

SDG F5E200169: samples P-107-74.30 and TB05120519 were initially analyzed a dilution of 10X. The laboratory subsequently reanalyzed the samples with no dilution after realizing that dilutions were not necessary. Therefore, the diluted analyses are to be ignored.

Table 3-8 lists the samples that were analyzed diluted without an undiluted analysis. This table is not applicable because all diluted analyses had associated undiluted analyses.

Table 3-8. *Summary of Samples Analyze Diluted Without an Undiluted Analysis*

Package Identification	***Sample ID***	***Initial Dilution***
Not applicable		

3.2.18. Tentatively Identified Compounds (TICs)

The laboratory was required to perform library searches for TICs present in the samples and QC matrices for the VOC analyses. Since the TIC evaluation provides only the identity of a possible compound in the matrix and not the actual concentration of a compound, all TIC data should be considered tentatively qualitative (i.e., not usable for quantitative purposes). The “N” qualifier was added to all TIC results to indicate to the data user that the compound identifications are tentative. The “J” qualifier was added to all TIC results to indicate to the data user that the values are estimated.

- SDG F5D290261: a TIC was detected in sample TB04210428 at 11.682 minutes. Upon closer inspection, this compound was also detected in sample P-103-344.2, which was analyzed immediately before it. The TIC detection in TB04210428 is determined to be a carry-over, and the same TIC in sample P-103-344.1 is determined not to be a result of contamination. The reanalysis of these two samples on 5/09/05, which were not evaluated, confirmed this.

- SDG F5E060294: a TIC was detected in sample P-108-74.15 at 11.69 minutes. The laboratory failed to report it. The TIC has been reported as a result of this data validation effort.

The TICs identified in the project and laboratory QC samples (d-limonene and a substituted cyclohexene) are tabulated for inclusion in tables in the associated Groundwater Investigation Report.

3.2.19. Electronic Data Deliverables

The results in the electronic database matched results listed on the hardcopy analytical report including laboratory qualifiers. The qualifiers and results were revised based on quality control issues; and foundation for changes are listed in previous sections of this DUSR. The qualifiers were also placed onto the reporting forms located near the beginning of each hardcopy deliverable package (i.e., SDG package).

4. Summary and Data Usability

This chapter summarizes the analytical data in terms of its completeness and usability. Data completeness is defined as the percentage of sample results that have been determined to be usable during the data validation process. Overall, 96.5 percent[8] of the VOC data (individual compound results) were determined to be usable for qualitative and quantitative purposes. The other 3.5 percent were qualified as rejected – the presence or absence of the compounds cannot be verified. Those sample results qualified as estimated, "J" and "UJ," due to QC deficiencies should be considered conditionally usable. TIC identifications are only presumptive evidence of the compound's presence, and are qualified with "N."

The samples collected from the Site were evaluated based on QA/QC criteria established by methods as listed in Section 1.3, in the data validation guidelines listed in Section 1.2, on the QAPP (GTEOSI, 2002) established for this project, and by professional judgment[9]. Major deficiencies in the data generation process have resulted in some sample data being rejected, indicating that the data are considered unusable for either quantitative or qualitative purposes. Minor deficiencies in the data generation process have resulted in some sample data being characterized as approximate or estimated. Identification of a data point as approximate, "J," indicates uncertainty in the reported concentration or detection limit of the chemical, but not its assigned identity.

The following paragraphs present the adherence of the data to the precision, accuracy, representativeness, comparability, completeness, and sensitivity (PARCCS) parameters. Completeness has been discussed above.

Precision is measured through the evaluation of field duplicate samples. For the VOC analyses, precision was not evaluated because there were no field duplicate samples to evaluate. The frequency of duplicates should have been at a minimum of 10 percent as presented in the QAPP.

LCS, MS, and MSD recoveries indicate the accuracy of the data. For the VOC analyses, none of the data were rejected due to LCS deficiencies. However, MS/MSD recoveries were not evaluated because there were no MS/MSD data that were relevant to this project. Therefore, accuracy of the data was not evaluated.

Holding times, sample preservation, blank analysis, and analyte identification and quantification are indicators of the representativeness of the analytical data. There were some VOC data qualified as false-positives due to field and/or laboratory contamination. Details are summarized within Section 3.

Comparability is not compromised, provided that the analytical methods do not change over time. A major component of comparability is the use of standard reference materials for calibration and QC. These standards are compared to other unknowns to verify their concentrations. Since standard analytical methods and reporting procedures were consistently used by the laboratory, the comparability criteria for the analytical data were met.

Sensitivity is established by reported detection limits that represent measurable concentrations of analytes that can be determined with a designated level of confidence. Sensitivity requirements were not met for several project samples due to excessively poor compound responses in the initial and continuing calibrations performed. All of the VOC data rejected were due to this sensitivity non-conformance.

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[8] Value = (481 total target compound list data points – 17 rejected TCL data points) / 481 X 100

[9] Professional judgment is performed by a USEPA certified data validator with over a decade of environmental laboratory experience.

5. Data Usability Summary Report Summary Information

The DUSR was performed to determine whether or not the data meets Site-specific criteria for data quality and use. The DUSR is developed by reviewing and evaluating the analytical data packages. The following questions were addressed:

1. *Is the data package complete as defined under the requirements for the NYSDEC ASP Category B or USEPA CLP deliverables?*

   The QAPP required that USEPA Level III deliverables be provided by the laboratory for each data package. This requirement was met as it applies to the methods used by the laboratory for sample analysis. The evaluation of the sample data was completed using the information provided in the data packages provided by the laboratory.

2. *Have all holding times been met?*

   The holding times were met for all VOC samples. There were no problems observed.

3. *Do all the QC data: blanks, standards, spike recoveries, replicate analyses, and sample data fall within the protocol-required limits and specifications?*

   The laboratory used laboratory control limits. QC deviations and qualifications performed on the sample data are discussed in Section 3. There were no matrix spike/matrix spike duplicate or field duplicate analyses suitable for evaluation. Major non-conformances were observed with initial and continuing calibrations and with sample conditions upon receipt – 3.5 percent of all data were qualified as not usable.

4. *Have all of the data been generated using established and agreed upon analytical protocols?*

   The QAPP required that USEPA guidance methods be used in the analysis of the samples. The laboratory used the required method. Some samples had results which were over diluted.

5. *Does an evaluation of the raw data confirm the results provided in the data summary sheets and quality control verification forms?*

   The evaluation of selected raw data confirmed most information provided in the data packages. One chemical in one sample was falsely identified and another chemical in another sample had a detected concentration that cannot be correct due to the usage of a linear regression equation.

6. *Have the correct data qualifiers been used?*

   The laboratory applied the correct qualifiers to the sample data. The validation qualifiers were applied as required by validation guidelines listed in Section 1. The laboratory and validation qualifier definitions are listed in Section 2.2.

References

New York State Department of Environmental Conservation. *Analytical Services Protocol*. Guidance documents including Exhibits A, B, C, D, E, F, G, and I. June 2000.

United States Environmental Protection Agency. *Contract Laboratory Program National Functional Guidelines for Organic Data Review*. PA 540-R-99-008. October 1999.

United States Environmental Protection Agency. *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.* SW-846: Final Update IIIA. April 1998.

United States Environmental Protection Agency, Region 2. *Contract Laboratory Program Organics Data Review*. SOP No. HW-6, Revision #12. March 2001.

United States Environmental Protection Agency, Region 2. *Standard Operating Procedure for the Validation of Organic Data Acquired Using SW-846 Method 8260B.* SOP No. HW-24, Revision #1. June 1999.

URS Corporation. *GTE Operations Support Incorporated - Groundwater Investigation Work Plan, Former Sylvania Electric Products Incorporated Facility, Hicksville, New York.* QAPP: Appendix C. September 2002.

Data Usability Summary Report
Metal
Profiles P-103, P-107, and 108

Former Sylvania Electric Products Facility
GTE Operations Support Incorporated
Hicksville, NY

REPORT

Table of Contents

List of Tables

Executive Summary

This report addresses data quality for groundwater samples collected at the former Sylvania Electric Products Incorporated Facility in Hicksville, New York (the Site). This report pertains to "metals" samples collected by Malcolm Pirnie, Inc. (Malcolm Pirnie) from April 18, 2005 through May 25, 2005.

The environmental samples collected for this investigation were submitted to Severn Trent Laboratories, Inc. of Earth City, Missouri, for metals analyses using United States Environmental Protection Agency (USEPA) guidance methods. A total of 97 samples[1] were submitted, which resulted in 138 nickel results[2]. Of this number, 135 of them are results[3] of actual samples and the remainders are field quality assurance/quality control (QA/QC) indicators[4] of these samples. The quality of the analytical data generated for this investigation were evaluated by Malcolm Pirnie using the QA/QC criteria established in the methods and USEPA guidelines. Non-conformances from the QA/QC criteria were qualified based on guidance provided in the following references:

- New York State Department of Environmental Conservation. *Analytical Services Protocol*. Guidance documents including Exhibits A, B, C, D, E, F, G, and I. June 2000.
- United States Environmental Protection Agency. *Contract Laboratory Program National Functional Guidelines for Inorganic Data Review.* EPA 540-R-01-008, July 2002.
- United States Environmental Protection Agency. *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.* SW-846: Final Update IIIA. April 1998.
- United States Environmental Protection Agency, Region 2. *Validation of Metals for the Contract Laboratory Program based on SOW ILM05.3.* SOP No. HW-2, Revision 13. September 2006.
- URS Corporation, GTE Operations Support Incorporated (GTEOSI). *Groundwater Investigation Work Plan (QAPP: Appendix C), Former Sylvania Electric Products Incorporated Facility, Hicksville, New York.* URS, September 2002.

In circumstances where the quality of the data or the accuracy of the results is suspect, the project's Quality Assurance Project Plan (QAPP) and professional judgment[5] were also used to consider if results should be qualified as estimated ("J" or "UJ"). Since the individual guidance documents used (as a source of reference for the validation) differ somewhat in the type of qualification applied to data, Malcolm Pirnie applied qualifiers generally with an err to caution. All instrument calibration analyses, laboratory control sample analyses, serial dilution analyses, and interference check sample analyses were acceptable.

There were some laboratory initial calibration blanks, continuing calibration blanks, and method blanks, that contained low concentrations of nickel. The presence of nickel in specific blanks affected many project samples. Qualification of associated results was performed to show the relationship between the laboratory contamination and the uncertainty of the actual project sample results.

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[1] Each sample may have been analyzed for total recoverable and/or dissolved fractions.

[2] This is the number of results reported by the laboratory on their Sample Results reporting form (Form 1).

[3] This is the total number of well data points, which may include total recoverable and dissolved fractions including duplicate sample results.

[4] These indicators do not include Matrix Spike/Matrix Spike Duplicate or other internal laboratory QA/QC indicators.

[5] Professional judgment is performed by a USEPA certified data validator with over a decade of environmental laboratory experience.

Equipment/field blanks and matrix spike samples were not performed for all sample batches; however, they were performed for each of the groundwater profiler locations. The relative percent differences (RPD) between eight (8) field duplicate pair results were performed and assessed (five for dissolved nickel and three for total nickel). This is equivalent to a field duplicate sample collection rate of 6.3 percent[6]. Based on the QAPP, the rate should have been 10 percent. With 127 discrete field sample data values[7], 13 field duplicate data should have been performed. Therefore, evaluation of precision could not be evaluated adequately.

None of the exceedances of method non-conformances were significant enough to jeopardize the usability of the data. Overall, 100 percent[8] of the metals data were determined to be usable and/or conditionally usable for qualitative and quantitative purposes. Some results were qualified as non-detects (“U”). Other results, which were qualified as estimated (“J” and “UJ”) due to quality control (QC) exceedances should be considered conditionally usable. The completeness percentage of all the analyses requested is 98.4[9]. Therefore, the completeness objective of 90 percent, as stated in the QAPP, has been met for the metals database.

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[6] Value = (8 duplicate data / (135 – 8) discrete field sample data) X 100.

[7] This number represents 135 (non-field blank/equipment blank) total data points minus 8 duplicate sample data points.

[8] Value = ((127 discrete field data points – 0 unusable data points) / 127 discrete field data points) X 100.

[9] Value = (127 discrete data points /(127 discrete data points + 2 missing data points)) X 100.

1. Introduction

1.1. Sample Identification

This report addresses the results of a data quality evaluation for groundwater samples collected at the Site for metals (nickel) collected by Malcolm Pirnie from April 18, 2005 through May 25, 2005.

The sample delivery group (SDG) number (laboratory package identification number), field identification, and corresponding laboratory identification of the samples that were submitted for data validation are presented in Table 1-1.

Table 1-1: *Sample Cross-Reference List*

Package Identification	***Sample ID***	***Laboratory ID***	***Analysis Performed***
F5D220296	P-103-EB#1	F5D220296001	Ni Dissolved
	P-103-74 (also MS/MSD for Total)	F5D220296002	Ni Dissolved, Ni Total
	P-103-84.5	F5D220296003	Ni Dissolved
	P-103-94.5	F5D220296004	Ni Dissolved
	P-103-104.5	F5D220296005	Ni Dissolved
	P-103-114.5	F5D220296006	Ni Dissolved, Ni Total
	P-103-124.5	F5D220296007	Ni Dissolved
	P-103-134.5	F5D220296008	Ni Dissolved
	P-103-144.5	F5D220296009	Ni Dissolved, Ni Total
	P-103-154.5	F5D220296010	Ni Dissolved
	P-103-164.5	F5D220296011	Ni Dissolved
	P-103-174.5	F5D220296012	Ni Dissolved
	P-103-184.2	F5D220296013	Ni Dissolved
	P-103-194.2	F5D220296014	Ni Dissolved, Ni Total
	P-103-204.2	F5D220296015	Ni Dissolved
	P-103-214.2 (also MS/MSD)	F5D220296016	Ni Dissolved
	P-103-224.2	F5D220296017	Ni Dissolved
	P-103-234.2	F5D220296018	Ni Dissolved
F5D290261	P-103-244.2	F5D290261001, 002	Ni Dissolved, Ni Total
	P-103-253.3	F5D290261003	Ni Dissolved
	P-103-264.2	F5D290261004	Ni Dissolved
	P-103-274.2	F5D290261005, 006	Ni Dissolved, Ni Total
	P-103-284.25	F5D290261007	Ni Dissolved
	P-103-294.25	F5D290261008	Ni Dissolved
	P-103-303.25	F5D290261009, 010	Ni Dissolved, Ni Total
	P-103-333.4	F5D290261011, 012	Ni Dissolved, Ni Total

Table 1-1: *Sample Cross-Reference List*

Package Identification	***Sample ID***	***Laboratory ID***	***Analysis Performed***
	P-103-344.2	F5D290261013, 014	Ni Dissolved
	P-103-354.2	F5D290261015	Ni Dissolved
	P-103-376.1	F5D290261016	Ni Dissolved
	P-103-384.2	F5D290261017	Ni Dissolved
	P-103-394.2	F5D290261018	Ni Dissolved
	P-103-404.2	F5D290261019	Ni Dissolved
F5E060294	P-108-74.15 (also MS/MSD)	F5E060294001	Ni Dissolved
	P-108-84.15	F5E060294002	Ni Dissolved
	P-108-DUP1 (P-108-84.15)	F5E060294003	Ni Dissolved
	P-108-94.15	F5E060294004	Ni Dissolved
	P-108-104.15	F5E060294005	Ni Dissolved
	P-108-114.15	F5E060294006	Ni Dissolved
	P-108-124.15	F5E060294007	Ni Dissolved
	P-108-134.15	F5E060294009, 008	Ni Dissolved, Ni Total
	P-108-144.15	F5E060294010	Ni Dissolved
	P-108-154.15	F5E060294011	Ni Dissolved
	P-108-164.15	F5E060294013, 012	Ni Dissolved, Ni Total
	P-108-174.15	F5E060294015, 014	Ni Dissolved, Ni Total
	P-108-184.15	F5E060294017, 016	Ni Dissolved, Ni Total
	P-108-192.80	F5E060294019, 018	Ni Dissolved, Ni Total
	P-108-DUP2 (P-108-192.80) (also MS/MSD for Dissolved)	F5E060294021, 020	Ni Dissolved, Ni Total
	P-108-EB1	F5E060294022	Ni Dissolved
	P-108-204.60	F5E060294024	Ni Dissolved
	P-108-214.60	F5E060294026, 025	Ni Dissolved, Ni Total
	P-108-224.60	F5E060294027	Ni Total
F5E130246	P-108-234.60	F3E130246001	Ni Dissolved
	P-108-244.60 (also MS/MSD for Total)	F3E130246002, 003	Ni Dissolved, Ni Total
	P-108-254.60	F3E130246004, 005	Ni Dissolved, Ni Total
	P-108-264.60	F3E130246006, 007	Ni Dissolved, Ni Total
	P-108-293.40	F3E130246008, 009	Ni Dissolved, Ni Total
	P-108-324.35	F3E130246010, 011	Ni Dissolved, Ni Total
	P-108-334.35	F3E130246012	Ni Dissolved
	P-108-347.65	F3E130246013	Ni Dissolved
	P-108-359.30	F3E130246014	Ni Dissolved

Table 1-1: *Sample Cross-Reference List*

Package Identification	*Sample ID*	*Laboratory ID*	*Analysis Performed*
	P-108-384.30	F3E130246015, 016	Ni Dissolved, Ni Total
	P-108-DUP3 (P-108-384.30)	F3E130246017, 018	Ni Dissolved, Ni Total
F5E200169	P-108-394.30 (also MS/MSD)	F5E200169001	Ni Dissolved
	P-107-EB1	F5E200169002	Ni Dissolved
	P-107-74.30	F5E200169003, 004	Ni Dissolved, Ni Total
	P-107-84.30	F5E200169005, 006	Ni Dissolved, Ni Total
	P-107-94.30	F5E200169007	Ni Dissolved
	P-107-104.30	F5E200169008	Ni Dissolved
	P-107-114.30	F5E200169009	Ni Dissolved
	P-107-DUP1 (P-107-114.30)	F5E200169010	Ni Dissolved
	P-107-124.30	F5E200169011, 012	Ni Dissolved, Ni Total
	P-107-134.30	F5E200169013, 014	Ni Dissolved, Ni Total
	P-107-144.30	F5E200169015	Ni Dissolved
	P-107-154.30	F5E200169016, 017	Ni Dissolved, Ni Total
	P-107-164.30	F5E200169018, 019	Ni Dissolved, Ni Total
	P-107-174.30 (also MS/MSD for Total)	F5E200169020, 021	Ni Dissolved, Ni Total
	P-107-184.30	F5E200169022, 023	Ni Dissolved, Ni Total
	P-107-194.30	F5E200169024	Ni Dissolved
	P-107-204.20	F5E200169025, 026	Ni Dissolved, Ni Total
	P-107-214.20	F5E200169027, 028	Ni Dissolved, Ni Total
	P-107-224.20	F5E200169029, 030	Ni Dissolved, Ni Total
	P-107-DUP2 (P-107-224.20 for Dissolved)	F5E200169031, 032	Ni Dissolved, Ni Total
	P-107-234.20	F5E200169033, 034	Ni Dissolved, Ni Total
	P-107-244.20	F5E200169035, 036	Ni Dissolved, Ni Total
	P-107-254.20	F5E200169038	Ni Dissolved
	P-107-264.20	F5E200169039, 040	Ni Dissolved, Ni Total
	P-107-274.20	F5E200169041	Ni Dissolved
	P-107-285.80 (also MS/MSD)	F5E200169042	Ni Dissolved
F5E270218	P-107-294.2 (also MS/MSD for Total)	F5E270218001, 005	Ni Dissolved, Ni Total
	P-107-316.4	F5E270218006	Ni Dissolved
	P-107-324.1	F5E270218007	Ni Dissolved
	P-107-334.1	F5E270218008	Ni Dissolved
	P-107-350.2	F5E270218002, 009	Ni Dissolved, Ni Total
	P-107-359.3	F5E270218010	Ni Dissolved
	P-107-371.6	F5E270218011	Ni Dissolved
	P-107-378.4	F5E270218003, 012	Ni Dissolved, Ni Total
	P-107-391.5	F5E270218004, 013	Ni Dissolved, Ni Total

1.2. General Considerations

Validation is a process of determining the suitability of a measurement system for providing useful analytical data. Although the term is frequently used in discussing methodologies, it applies to all aspects of the analytical system and especially to samples, their measurements, and the actual data output. Accordingly, for the samples and analyses addressed herein, this report summarizes the findings of the review and outlines any deviations from the applicable quality control (QC) criteria referenced in the following documents:

- New York State Department of Environmental Conservation. *Analytical Services Protocol*. Guidance documents including Exhibits A, B, C, D, E, F, G, and I. June 2000.
- United States Environmental Protection Agency. *Contract Laboratory Program National Functional Guidelines for Inorganic Data Review.* EPA 540-R-01-008, July 2002.
- United States Environmental Protection Agency. *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.* SW-846: Final Update IIIA. April 1998.
- United States Environmental Protection Agency, Region 2. *Validation of Metals for the Contract Laboratory Program based on SOW ILM05.3.* SOP No. HW-2, Revision 13. September 2006.
- URS Corporation, GTE Operations Support Incorporated (GTEOSI). *Groundwater Investigation Work Plan (QAPP: Appendix C), Former Sylvania Electric Products Incorporated Facility, Hicksville, New York.* URS, September 2002.

1.3. Analytical Methods

The environmental samples presented in this report were submitted to Severn Trent Laboratories, Inc. of Earth City, Missouri, for selected metals, including nickel, analyses. The laboratory used the following USEPA guidance methods for the analyses:

- SW-846 Method 3010A: Acid Digestion of Aqueous Samples and Extracts for Total Metals for Analysis by FLAA or ICP Spectroscopy
- SW-846 Method 6010B: Inductively Coupled Plasma-Atomic Emission Spectrometry

The laboratory assigned an SDG number to a group of samples during their sample log-in process. The SDG number is the means by which the laboratory tracks samples and QC analyses. A total of 97 samples in a total of six SDGs are included in this data validation report. Of the 97 total number of samples, 42 were analyzed for total nickel and 96 for dissolved nickel[10]. The SDG, field identification, and corresponding laboratory identification for each sample are summarized in Table 1-1.

The following sections of this document address distinct aspects of the validation process. Section 2 lists the data QA/QC protocols used to validate the sample data. Section 3 presents a summary of the findings associated with the validation and a discussion of the specific QA/QC deviations and qualifications performed on the sample data. Section 4 presents a discussion of data completeness and usability. Section 5 presents the Data Usability Summary Report (DUSR) summary information.

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[10] Each sample may included total recoverable and/or dissolved fractions.

2. Data Validation Protocols

2.1. Sample Analysis Parameters

The validation of analyses for this project used guidance presented in the QAPP (GTEOSI, 2002), the analytical methodologies, the data validation guidelines referenced in Section 1, and professional judgment[11]. Malcolm Pirnie performed a data review of all analytical results to assess data quality. The data review included an assessment of sample handling protocols and supporting laboratory and field QC parameters. The following is a list of specific analytical information evaluated during the validation:

- Data package completeness review – per the NYSDEC ASP Category B or USEPA CLP deliverables requirements
- Analytical methods performed and test method references
- Sample condition - review of log-in records for cooler temperature, chemical preservation, etc.
- Holding times - comparison of collection, preparation, and analysis dates
- Analytical results - units, values, significant figures
- Sample traceability to raw data
- Initial calibration – comparison to technical guideline criteria
- Continuing calibration – comparison to technical guideline criteria
- Initial and continuing calibration blanks
- Method blank results and laboratory contamination
- Laboratory control sample (LCS) results and comparison to laboratory control limits
- Matrix spike/matrix spike duplicate (MS/MSD) results and comparison to laboratory control limits
- Field replicate/duplicate results and comparison to technical guideline criteria
- Field QC sample (i.e., equipment blanks and field blanks)
- Reporting limits and Dilutions
- Electronic Data Deliverables (EDDs) – comparison to the hardcopy analytical report

The analytical reports were reviewed for completeness and the accompanying QC data were reviewed for acceptable performance. When QC results indicated poor performance, Malcolm Pirnie applied data qualifiers to the results to inform the data user of the possible performance problem. These qualifiers are

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[11] See footnote 5.

in addition to or a revision of the qualifiers provided by the laboratory. A summary of the data qualifiers used for this review is presented in Section 2.2.

2.2. Data Qualifiers

The following qualifiers have been used by the laboratory for metals analyses:

"U"	Non-detect result at the method (or instrument) detection limit.
"B"	Indicates an estimated value or a value below the established reporting limit but above the method detection limit.

Laboratory qualifiers defined above, are retained in the final database unless revised during the data validation process to one of the following qualifiers:

"U"	The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
"J"	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
"UJ"	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
"R"	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.

2.3. Data Usability Summary Report Questions

The DUSR determines whether or not the data meets Site-specific criteria for data quality and use. It was developed to review and evaluate the analytical data packages. During the course of this review the following questions were addressed (where applicable):

1. *Is the data package complete as defined under the requirements for the NYSDEC ASP Category B or USEPA CLP deliverables?*

2. *Have all holding times been met?*

3. *Do all the QC data: blanks, calibration standards, calibration verifications, spike recoveries, replicate analyses, laboratory controls and sample data fall within the protocol required limits and specifications?*

4. *Have all of the data been generated using established and agreed upon analytical protocols?*

5. *Does an evaluation of the raw data confirm the results provided in the data summary sheets and quality control verification forms?*

6. *Have the correct data qualifiers been used?*

The answers to the questions presented by the DUSR are presented in the following sections of the report and in the DUSR Summary Information Section, Section 5.

3. Data Quality Evaluation

3.1. Summary

This section summarizes whether QA/QC parameters reported, which were specified in Section 2.1, met validation criteria. Summary of the individual components of the review are described in the following sub-sections.

3.2. Review of Validation Criteria

3.2.1. Completeness Review

The laboratory provided the analytical report using formats based on the Contract Laboratory Program (CLP). With the exception of noted items detailed in Section 3.2.5, all necessary documents were included in the report packages including a case narrative summarizing the QC issues associated with the project analyses.

3.2.2. Test Methods

The laboratory performed the analyses using the analytical test methods listed in Section 1.3. They included USEPA SW-846 Method 3010 (digestion of aqueous samples) followed by Method 6010B (ICP) for metals analysis. No method anomalies were noted.

3.2.3. Sample Receipt

The laboratory received 97 aqueous samples[12] for metals analysis between April 22, 2005 and May 27, 2005. Samples collected for different analytical fractions from the same boring at the same depth are defined as the same sample within this data validation report. The sample temperatures at the time of receipt by the laboratory were within the recommended temperature range of 4°C ± 2°C for all SDGs. Field and laboratory personnel completed the chain-of-custody (COC) documents recording the signature, date, and time of custody transfer. The laboratory recorded the condition of the samples at the time of receipt on a “Condition Upon Receipt Form.” This form identifies whether the containers were received undamaged, within the proper temperature range, at the proper pH, in a container that is sealed with a custody seal on the exterior, and with a completed COC enclosed to identify all samples submitted to the laboratory.

The following problems with sample receipt were found:

- SDG F5D220296: the sample bottle labeled P-103-184.15 was labeled P-103-184.2 on the COC. The COC ID will be used in this validation.

There were no custody seals attached to individual sample containers. No qualification is necessary because the exterior of the shipment coolers had intact custody seals.

3.2.4. Holding Times

The laboratory performed all nickel analyses within the EPA-recommended holding time of 180 days from date of collection for acid preserved samples.

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[12] Each sample may include total recoverable and/or dissolved fractions.

3.2.5. Analytical Results

For each sample tested, the laboratory provided the analytical test information using the laboratory's standardized format, which shows critical information pertaining to the analyses performed. The information provided includes the following: the laboratory name; the project name; the analysis type; the laboratory sample ID; matrix; date sampled; date received; preparation batch ID; the result; the reporting limit; the units of measure; the laboratory method; dilution factor; analysis time; preparation date; analysis date; work order number, and laboratory qualifiers (if any). The laboratory provided all the appropriate forms for the requested methods with the following exceptions.

- SDG F5E060294: for sample P-108-224.60, the COC had requested for dissolved nickel; however, the laboratory had analyzed for total nickel.

- SDG F5E200169: for sample P-107-144.30, the COC had requested for both dissolved and total nickel; however, only the dissolved fraction was reported by the laboratory.

A review of dissolved vs. total concentrations is performed and detailed in Section 3.2.15, subsequent to modifications, if any, to the results performed in the following sections prior to that section.

3.2.6. Traceability to Raw Data

Traceability of the metals analyses is established by the digestion (preparation) logs. These forms list the project samples analyzed per laboratory batch processed and the corresponding QC samples (e.g., preparation blank and laboratory control sample) performed with the project samples. All project samples analyzed, for all SDGs, were included on the applicable forms.

3.2.7. Initial Calibration

The laboratory prepared an initial calibration (ICAL) curve for each analyte in accordance with method criteria. Initial calibration verification (ICV) standards were analyzed immediately after each ICAL, with recoveries all within ± 10% of the true values for all analytes. All ICVs are acceptable.

3.2.8. Continuing Calibration Verification

The continuing calibration verification (CCV) standards were analyzed after the ICALs and after every 10 project samples as required by the reference test method. The percent recoveries were all within ± 10% of the true values for all analytes. All CCVs are acceptable.

3.2.9. Initial and Continuing Calibration Blanks

The initial calibration blank (ICB) and continuing calibration blanks (CCB) were analyzed after the ICALs and after every 10 project samples as required by the reference test method. In general, initial and continuing calibration blank results should all have been less than the laboratory reporting limit (a.k.a., practical quantitation limit (PQL)), but in a few cases the blank results were greater than the laboratory MDL (or -MDL). For these cases, if an analyte in the associated field samples was detected at a concentration greater than the MDL but less than the PQL, the validation process qualified the result to account for the potential contamination associated with the analysis system. A summary of the samples and analytes that were revised due to laboratory contamination are presented in Table 3-1.

Table 3-1. *Evaluation of Laboratory Initial and Continuing Calibration Blanks*

Package Identification	***Sample ID***	***Analyte***	***Action***
F5D220296			None
F5D290261			None

Table 3-1. *Evaluation of Laboratory Initial and Continuing Calibration Blanks*

Package Identification	***Sample ID***	***Analyte***	***Action***
F5E060294	P-108-74.15 Dissolved P-108-94.15 Dissolved P-108-104.15 Dissolved P-108-114.15 Dissolved P-108-134.15 Total P-108-134.15 Dissolved P-108-144.15 Dissolved P-108-154.15 Dissolved P-108-164.15 Total P-108-164.15 Dissolved P-108-174.15 Total P-108-174.15 Dissolved P-108-184.15 Total P-108-184.15 Dissolved P-108-192.80 Total P-108-192.80 Dissolved P-108-DUP2 Total P-108-DUP2 Dissolved P-108-204.60 Dissolved P-108-214.60 Total P-108-214.60 Dissolved P-108-224.60 Total	Nickel	Revise to “U” non-detect at PQL, for all detects < PQL.
F5E130246	P-108-234.60 Dissolved P-108-244.60 Dissolved P-108-244.60 Total P-108-254.60 Dissolved P-108-254.60 Total P-108-264.60 Total P-108-293.40 Dissolved P-108-293.40 Total P-108-324.35 Dissolved P-108-324.35 Total P-108-334.35 Dissolved P-108-347.65 Dissolved P-108-359.30 Dissolved	Nickel	Revise to “U” non-detect at PQL, for all detects < PQL.

Table 3-1. *Evaluation of Laboratory Initial and Continuing Calibration Blanks*

Package Identification	***Sample ID***	***Analyte***	***Action***
F5E200169	P-107-74.30 Dissolved P-107-74.30 Total P-107-84.30 Dissolved P-107-84.30 Total P-107-94.30 Dissolved P-107-114.30 Dissolved P-107-124.30 Dissolved P-107-124.30 Total P-107-134.30 Total P-107-154.30 Total P-107-164.30 Dissolved P-107-164.30 Total P-107-174.30 Dissolved P-107-174.30 Total P-107-184.30 Dissolved P-107-184.30 Total P-107-214.20 Dissolved P-107-214.20 Total P-107-224.20 Dissolved P-107-224.20 Total P-107-DUP2 Dissolved P-107-DUP2 Total P-107-234.20 Dissolved P-107-234.20 Total P-107-244.20 Dissolved P-107-244.20 Total P-107-254.20 Dissolved P-107-264.20 Dissolved P-107-264.20 Total P-107-274.20 Dissolved P-107-285.80 Dissolved	Nickel	Revise to “U” non-detect at PQL, for all detects < PQL (blanks were < (-MDL)).
F5E270218	P-107-294.2 Dissolved P-107-294.2 Total P-107-378.4 Total	Nickel	Revise to “U” non-detect at PQL, for all detects < PQL.

3.2.10. Laboratory Method Blanks (Preparation Blanks)

There were nickel contaminations detected in several preparation blanks. When contamination is detected, the corresponding project sample results for the identified contaminants are revised to non-detect if the associated sample results were less than five times the method blank results in accordance with the QAPP (GTEOSI, 2002). A summary of the samples and analytes that were revised due to laboratory contamination are presented in Table 3-2.

Table 3-2. *Evaluation of Laboratory Method Blanks*

Package Identification	***Sample ID***	***Analyte***	***Action***
F5D220296			None
F5D290261			None
F5E060294			None
F5E130246	P-108-234.60 Dissolved * P-108-244.60 Dissolved * P-108-244.60 Total * P-108-254.60 Dissolved * P-108-254.60 Total * P-108-264.60 Total * P-108-293.40 Dissolved * P-108-293.40 Total * P-108-324.35 Dissolved * P-108-324.35 Total * P-108-334.35 Dissolved * P-108-347.65 Dissolved * P-108-359.30 Dissolved *	Nickel	Revise to "U" non-detect at PQL, for all detects < PQL
F5E200169	P-107-74.30 Dissolved * P-107-74.30 Total * P-107-84.30 Dissolved * P-107-84.30 Total * P-107-94.30 Dissolved * P-107-114.30 Dissolved * P-107-124.30 Dissolved * P-107-124.30 Total * P-107-134.30 Total * P-107-154.30 Total * P-107-164.30 Dissolved * P-107-164.30 Total * P-107-174.30 Dissolved * P-107-285.80 Dissolved *	Nickel	Revise to "U" non-detect at PQL, for all detects < PQL (blanks were < (-MDL)).
F5E270218			None

* - Also qualified due to other types of blank contamination

3.2.11. Laboratory Control Sample Results

The laboratory analyzed an LCS for each QC batch. The percent recoveries were within laboratory control limits for all QC batches.

3.2.12. Matrix Spike Analyses

Samples for Matrix Spike / Matrix Spike Duplicate (MS/MSD) analysis were chosen by the laboratory. The MS/MSD sample analysis is designed to provide information about the effect of sample matrix on the sample preparation procedures and the measurement methodology. Data precision is also measured. All percent recoveries (%R) and relative percent differences (RPD) were within criteria (75 ≤ %R ≤ 125; RPD ≤ 20%) - no qualifications were required.

Table 1-1 specifies the samples that were also performed for MS/MSD.

For the following, matrix effect of the samples for accuracy and precision was not evaluated:

- For SDGs F5D290261, an MS/MSD was only performed on samples from other clients of the laboratory.

Of the 127 discrete nickel data values (non-QA/QC values), nine of them had corresponding MS/MSD results. This represented a frequency of 7.1 percent, which exceeds the QAPP's minimum required goal of 5 percent.

3.2.13. Field Duplicate Analyses

Five project samples were submitted as blind field duplicates. This represents eight duplicate data points (five for dissolved nickel and three for total nickel). By design, the laboratory was never made aware of which field samples the blind field duplicates were associated with. An evaluation of the precision of the field sampling procedure (as well as the laboratory analysis procedure) was made based on RPD calculated between the original and duplicate sample results. Blind field duplicate samples were collected and analyzed to assess the overall sampling and analytical precision. Evaluation calculations were made only when both results were above the PQL. The RPD values for most duplicates were within the criterion of ≤ 30% with the following exceptions:

- There were no field duplicates performed for SDGs F5D220296, F5D290261, and F5E270218.

It should be noted that QAPP requirements (GTEOSI, 2002) specified that a field duplicate sample be collected at a rate of one sample for every ten samples (collection rate of 10%). Thirteen (13) field duplicates data points were required to be collected for the project since a total of 127[13] project sample fractions were submitted (not including other field QC samples collected) for analysis. The actual collection rate performed is equivalent to 6.3 percent[14]. Since an adequate number of field duplicate samples were not collected, the precision objective for the project is not in compliance. Table 3-3 shows the evaluation of field duplicate samples submitted.

Table 3-3. *Evaluation of Field Duplicate Samples*

Package Identification	***Sample ID***	***Analytes***	***Action***
F5E060294	P-108-84.15 Dissolved	Nickel	None
	P-108-192.80 Dissolved	Nickel	None
	P-108-192.80 Total	Nickel	None
F5E130246	P-27-99.75 Dissolved	Nickel	None
	P-27-99.75 Total	Nickel	None
F5E200169	P-107-114.30 Dissolved	Nickel	None
	P-107-224.20 Dissolved	Nickel	None

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[13] This number represents 135 (non-field blank/equipment blank) total data points minus 8 duplicate sample data points.
[14] Value = (8 duplicate data / 127 discrete sample data points) X 100.

3.2.14. Field Blanks and Equipment Blanks

A total of 0 field blanks and 3 equipment blank data points were performed as part of the samples submitted for this data validation report. Although this limited number of blanks is in compliance with the QAPP, it is slightly insufficient to fully evaluate field contaminations (false positives). An appropriate frequency of blank collections should have been at a 5 percent rate. Based on the 5 percent rate, 7[15] field blanks and/or equipment blank data points should been performed. The actual rate performed is 2.4 percent[16]. However, field blank collection for each time the sampling equipment was cleaned is also acceptable. This appears to have been the procedure.

There were no field blanks or equipment blanks submitted with SDGs F5D290261, F5E130246, and F5E270218. However, at least one equipment blank was submitted for each groundwater profiler location. Equipment blanks were evaluated against the groundwater profiler location samples. The following list summarized whether and which equipment blank had contamination:

Equipment Blank	Contamination?	Concentration (ug/L)
P-103-EB1	No	4 ug/L U
P-108-EB1	Yes	4.3 ug/L J
P-107-EB1	No	4 ug/L U

If an analyte was detected in the field blank or equipment blank, the associated field sample results are revised to non-detect if they were less than 10 times the blank result (when blank result > PQL), or to non-detect at the PQL value (when blank result < PQL). A summary of the samples and analytes that were revised due to field sampling contamination are presented in Table 3-4**.**

Table 3-4. *Evaluation of Field Blank and Equipment Blank Results*

Package Identification	***Sample ID***	***Analyte***	***Action***
F5D220296			None
F5D290261			None

---

[15] Value = (135 (non-field blank/equipment blank) total data points minus 8 duplicate sample data points) X 0.05.
[16] Value = 3 / (135 (non-field blank/equipment blank) total data points minus 8 duplicate sample data points) X 100.

Table 3-4. *Evaluation of Field Blank and Equipment Blank Results*

Package Identification	***Sample ID***	***Analyte***	***Action***
F5E060294	P-108-74.15 Dissolved * P-108-94.15 Dissolved * P-108-104.15 Dissolved * P-108-114.15 Dissolved * P-108-134.15 Total * P-108-134.15 Dissolved * P-108-144.15 Dissolved * P-108-154.15 Dissolved * P-108-164.15 Total * P-108-164.15 Dissolved * P-108-174.15 Total * P-108-174.15 Dissolved * P-108-184.15 Total * P-108-184.15 Dissolved * P-108-192.80 Total * P-108-192.80 Dissolved * P-108-DUP2 Total * P-108-DUP2 Dissolved * P-108-204.60 Dissolved * P-108-214.60 Total * P-108-214.60 Dissolved * P-108-224.60 Total *	Nickel	Revised to “U” (non-detect)
F5E130246	P-108-234.60 Dissolved * P-108-244.60 Dissolved * P-108-244.60 Total * P-108-254.60 Dissolved * P-108-254.60 Total * P-108-264.60 Total * P-108-293.40 Dissolved * P-108-293.40 Total * P-108-324.35 Dissolved * P-108-324.35 Total * P-108-334.35 Dissolved * P-108-347.65 Dissolved * P-108-359.30 Dissolved *	Nickel	Revised to “U” (non-detect)
F5E200169			None
F5E270218			None

* - Also qualified due to other types of blank contamination

3.2.15. Quantitation of Results

The reporting limits for nickel was in accordance with the NYSDEC requirements (i.e., reporting at the PQL specified in the QAPP). The laboratory reported estimated data below the PQL but above the MDL, and qualified the estimated data with a “B” qualifier. The validation process revised the “B” qualifier to a “J” qualifier to provide consistency for others in review of the validated database.

When dissolved and total nickel are performed on the same sample, the dissolved concentration should not be greater than the total concentration if the dissolved concentration is greater than or equal to 5x its MDL. If it is, and if the dissolved concentration is greater than the total concentration by more than 20%, both dissolved and total concentrations are to be qualified as estimated, “J.” If the difference is greater than 50%, both concentrations are to be qualified as unusable, “R.” Therefore, the dissolved and total nickel concentrations for the following samples are qualified as estimated: P103-303.25, P107-134.30, P107-135.30, and P107-204.20. There were no differences greater than 50%.

3.2.16. Electronic Data Deliverables

The results in electronic database matched results listed on the hardcopy analytical report including laboratory qualifiers. The qualifiers and results were revised based on quality control issues, and foundation for changes are detailed in previous sections of this DUSR. The qualifiers were also placed onto the hardcopy reporting forms located near the beginning of each deliverable package (i.e., SDG package).

4. Summary and Data Usability

This chapter summarizes the analytical data in terms of its completeness and usability. Data completeness is defined as the percentage of sample results that have been determined to be usable during the data validation process. Overall, 100 percent[17] of the nickel data were determined to be usable. However, those sample results qualified as estimated, "J" and "UJ," due to data validation QC exceedances should be considered conditionally usable for qualitative and quantitative purposes. There were two samples which were not analyzed as specified in the COC and are discussed in Section 3.2.5. The completeness percentage, with the two missing data points taken into consideration is 98.4%[18].

The samples collected from the site in Hicksville, New York were evaluated based on QA/QC criteria established by methods as listed in Section 1.3, in the data validation guidelines listed in Section 1.2, in the QAPP (GTEOSI, 2002) established for this project, and by professional judgment. There were no major deficiencies, which would have resulted in unusable data for either quantitative or qualitative purposes. However, there were some minor deficiencies in the data generation process, which resulted in some sample data being characterized as estimated and/or non-detects. Identification of a data point as estimated indicates uncertainty in the reported concentration of the analyte, but not its assigned identity.

The following paragraphs present the adherence of the data to the precision, accuracy, representativeness, comparability, completeness, and sensitivity (PSARCC) parameters. Completeness has been discussed above.

Precision is measured through the evaluation of field duplicate samples and matrix spike duplicate samples. For the metals analyses, none of the data were rejected due to precision non-conformances. However, the frequency of duplicate sample collection was insufficient, and therefore, evaluation of this criteria may not be adequate.

LCS, MS, and MSD recoveries indicate the accuracy of the data. For the nickel analyses, none of the data were rejected due to accuracy non-conformances.

Holding times, sample preservation, blank analysis, and analyte quantification are indicators of the representativeness of the analytical data. There were some nickel contamination detected in the blanks resulting in many detects being qualified as non-detects.

Comparability is not compromised, provided that the analytical methods do not change over time. A major component of comparability is the use of standard reference materials for calibration and QC. These standards are compared to other unknowns to verify their concentrations. Since standard analytical methods and reporting procedures were consistently used by the laboratory, the comparability criteria for the analytical data were met.

Sensitivity is established by reported detection limits that represent measurable concentrations of analytes that can be determined with a designated level of confidence. None of the metals data were rejected due to sensitivity non-conformances.

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[17] Value = ((127 discrete field data points – 0 unusable data points) / 127 discrete field data points) X 100.

[18] Value = (127 discrete data points /(127 discrete data points + 2 missing data points)) X 100.

5. Data Usability Summary Report Summary Information

The DUSR was performed to determine whether or not the data meets Site-specific criteria for data quality and use. The DUSR is developed by reviewing and evaluating the analytical data package. The following questions were addressed:

1. *Is the data package complete as defined under the requirements for the NYSDEC ASP Category B or USEPA CLP deliverables?*

   The QAPP required that USEPA Level III deliverables be provided by the laboratory for each data package. This requirement was met with the exception of two missing analyses as discussed in Section 3.2.5. The evaluation of the sample data was completed using the information provided in the data packages provided by the laboratory.

2. *Have all holding times been met?*

   The holding times were met for all analyses.

3. *Do all the QC data: blanks, standards, spike recoveries, replicate analyses, and sample data fall within the protocol-required limits and specifications?*

   The laboratory used laboratory control limits. QA/QC deviations and qualifications performed on the sample data are discussed in Chapter 3. Major non-conformances were not detected for the data. However, the low frequency of replicate (duplicate) analyses was not in compliance with the QAPP.

4. *Have all of the data been generated using established and agreed upon analytical protocols?*

   The QAPP required that USEPA guidance methods be used in the analysis of the samples. The laboratory used the required method protocols for the analyses performed for this sampling event, which met data user and client needs.

5. *Does an evaluation of the raw data confirm the results provided in the data summary sheets and quality control verification forms?*

   The evaluation of selected raw data confirmed the information provided in the data packages.

6. *Have the correct data qualifiers been used?*

   The laboratory applied the correct qualifiers to the sample data. The laboratory qualifiers were revised and/or new qualifiers applied as required by the validation guidelines listed in Section 1. The validation guideline qualifier definitions are listed in Section 2.2.

References

New York State Department of Environmental Conservation. *Analytical Services Protocol*. Guidance documents including Exhibits A, B, C, D, E, F, G, and I. June 2000.

United States Environmental Protection Agency. *Contract Laboratory Program National Functional Guidelines for Inorganic Data Review.* EPA 540-R-01-008, July 2002.

United States Environmental Protection Agency. *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.* SW-846: Final Update IIIA. April 1998.

United States Environmental Protection Agency, Region 2. *Validation of Metals for the Contract Laboratory Program based on SOW ILM05.3.* SOP No. HW-2, Revision 13. September 2006.

URS Corporation, GTE Operations Support Incorporated (GTEOSI). *Groundwater Investigation Work Plan (QAPP: Appendix C), Former Sylvania Electric Products Incorporated Facility, Hicksville, New York.* URS, September 2002.

Data Usability Summary Report
Radionuclides
Profiles P-103, P-107, and 108

Former Sylvania Electric Products Facility
GTE Operations Support Incorporated
Hicksville, NY

REPORT

Table of Contents

List of Tables

List of Attachments

Executive Summary

This report addresses data quality for groundwater samples collected at the former Sylvania Electric Products facility in Hicksville, New York (the Site). Sample collection activities were conducted by Malcolm Pirnie, Inc. (Malcolm Pirnie) from April 18 through May 17, 2005.

The environmental samples collected for this investigation were submitted to Severn Trent Laboratories, Inc. of Earth City, Missouri for radiochemistry analyses including alpha spectrometry for isotopic thorium and isotopic uranium using United States Department of Energy (USDOE) Methods and laboratory standard operating procedures (SOP's) and gas proportional counting for gross alpha, radium-226 and radium-228 using USEPA SW-846 Methods and laboratory SOP's. The analytical data generated for this investigation were evaluated by Malcolm Pirnie using the quality assurance/quality control (QA/QC) criteria established in the methods as guidance. Non-conformances from the QA/QC criteria were qualified based on guidance provided in the Science Applications International Corporation (SAIC) *Laboratory Data Validation Guidelines For Evaluating Radionuclide Analyses*, 143-ARCS-00.08, Revision 06, June 2000 and USDOE *Guidance For Radiochemical Data Validation*, Draft RD4, October 4, 1995.

Method non-conformances requiring data validation qualification (J) include laboratory duplicate analysis, field duplicate analysis and equipment blank contamination. None of these non-conformances were significant enough to jeopardize the usability of the data.

Overall, 90 percent of the radiochemistry data were determined to be usable for qualitative and quantitative purposes. Those sample results qualified as estimated (J) due to data validation QA/QC exceedances should be considered conditionally usable. Therefore, the completeness objective of 90 percent, as stated in the quality assurance project plan (QAPP), was met.

1. Introduction

1.1. Sample Identification

This report addresses the results of a data quality evaluation of groundwater samples with radionuclides collected at the Site by Malcolm Pirnie from April 18 through May 17, 2005.

The quantity and types of samples that were submitted for data validation are presented in Table 1-1.

Table 1-1. *Sample Cross-Reference List*

Package Identification	***Date Collected***	***Client ID***	***Laboratory ID***	***Analysis Requested***
F5D220296:	4/18/05	P-103-EB#1	F5D220296-001	Alpha, GFPC
	4/19/05	P-103-74	F5D220296-002	Alpha, GFPC
	4/19/05	P-103-84.5	F5D220296-003	Alpha, GFPC
F5E060294:	5/2/05	P108-74.15	F5E060294-001	Alpha, GFPC
	5/2/05	P108-84.15	F5E060294-002	Alpha, GFPC
	5/3/05	P108-DUP1	F5E060294-003	Alpha, GFPC
F5E200169:	5/16/05	P107-74.30	F5E200169-003	Alpha, GFPC
	5/16/05	P107-84.30	F5E200169-005	Alpha, GFPC
F5F240341	5/17/05	P107-94.30	F5F240341-001	Alpha
	5/17/05	P107-104.3	F5F240341-002	Alpha

Notes:
Alpha indicates Alpha Spectrometry of thorium (isotopic) and uranium (isotopic).
GFPC indicates Gas Proportional Counting for gross alpha, radium 226 and radium 228.

1.2. General Considerations

Validation is a process of determining the suitability of a measurement system for providing useful analytical data. Although the term is frequently used in discussing methodologies, it applies to all aspects of the analytical system and especially to samples, their measurements, and the actual data output. Accordingly, for the samples and analyses addressed herein, this report outlines deviations from the applicable QC criteria outlined in the following documents:

- URS Corporation *GTE Operations Support Incorporated. (GTEOSI). Groundwater Investigation Work Plan, Former Sylvania Electric Products Facility, Hicksville, New York,* QAPP: Appendix C. September 2002.

- United States Department of Energy (USDOE). 1997. *Environmental Measurements Laboratory (EML) Procedures Manual, 28th Edition, Volume 1*. (HASL-300) New York, New York.

Deviations from the QA/QC criteria were qualified based on guidance provided in the following documents:

- Science Applications International Corporation (SAIC). 2000. *Laboratory Data Validation Guidelines for Evaluating Radionuclide Analyzes*, 143-ARCS-00.08, Revision 06. Oak Ridge, Tennessee.

- USDOE. October 4, 1995. *Guidance for Radiochemical Data Validation*, Draft RD4. Gaithersburg, Maryland.

1.3. Analytical Methods

The environmental samples collected for this investigation were submitted to Severn Trent Laboratories, Inc. of Earth City, Missouri for radiochemistry analyses including alpha spectrometry (thorium-228, thorium-230, thorium-232, uranium-234, uranium-235, and uranium-238) using USDOE Methods and laboratory SOP's and gas proportional counting (gross alpha, radium 226 and radium 228) using USEPA SW-846 methods and laboratory SOP's. The methods used in this investigation are presented in Table 1-2.

Table 1-2. *Analytical Method References*

Parameter	***Method***	***Reference***
Alpha Spectrometry (Uranium-234, -235 and –238)	NAS/DOE 3050 RP (DOE RP-725)*	1, 2
Alpha Spectrometry (Thorium-228, -230 and –232)	NAS/DOE 3004/RP (DOE RP-725)*	1, 2
Radium-226 by GFPC	SW-846 9315 MOD	3
Radium-228 by GFPC	SW-846 9320 MOD	3

Notes:
* The Extraction Chromatography method used for analysis utilizes the same technology as the cited reference but includes proprietary techniques more selective in separation of uranium and thorium from the matrix. The reference is for background information only.

1. United States Department of Energy (USDOE). October 1994. DOE Method for Evaluating Environmental and Waste Management Samples.
2. National Academy of Science (NAS).
3. USEPA SW-846. Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, 3rd Edition, November 1986 and its updates.

The following sections of this document address distinct aspects of the validation process. Section 2 lists the data QA/QC protocols used to validate the sample data. Specific QA/QC deviations and qualifications performed on the sample data are discussed in Section 3. Data completeness and usability are discussed in Section 4. Section 5 presents the Data Usability Summary Report (DUSR) Summary Information. A copy of the validated electronic deliverable data is summarized in Attachment A.

2. Data Validation Protocols

2.1. Sample Analysis Parameters

The validation of analyses for this project used guidance presented in the QAPP (URS, 2002), the analytical methodology, and the data validation guidelines referenced in Section 1 herein.

The following QA/QC parameters were evaluated for the radiochemistry (alpha spectrometry and gas-flow proportional counting) analyses (where applicable):

- Holding times and sample preservation;
- Calibration;
- Blank analysis:
- Tracer recovery;
- Laboratory Control Sample (LCS);
- Matrix Spike Sample (MS)
- Duplicate analysis;
- Field duplicate analysis;
- Radionuclide quantitation and detection limit evaluation;
- Chemical separation specificity (alpha spectrometry);
- System performance; and
- Documentation completeness.

It should be noted that no Matrix Spike samples were associated with these data. The field blind duplicate associated with these data is P108-84.15 associated with P108-DUP1.

2.2. Data Validation Qualifiers

The following guidelines are used regarding the assignment of qualifiers and the use of qualified data:

- QA/QC exceedances which do not result in the qualification of an analyte, or which result in additional qualification of the analyte with the same qualifier, are not discussed.

- The use of estimated analytical data for quantitative uses is consistent with the guidance presented in the *USEPA Risk Assessment Guidance for Superfund* (USEPA 1992).

The following qualifiers may have been used in this data validation.

"J"	The associated numerical value is an estimated quantity, due to a QC or statistical exceedance.
"UJ"	The associated non-detect value is an estimated quantity, due to a QC or statistical exceedance.
"R"	The associated non-detect or numerical value is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

2.3. Data Usability Summary Report Questions

The DUSR determines whether or not the data meets site-specific criteria for data quality and use. It was developed by reviewing and evaluating the analytical data packages. During the course of this review the following questions were addressed (where applicable):

1. Is the data package complete as defined under the requirements for the NYSDEC ASP Category B or USEPA CLP deliverables?

2. Have all holding times been met?

3. Do all the QC data (where applicable): blanks, instrument tunings, calibration standards, calibration verifications, surrogate recoveries, replicate analyses, laboratory controls and sample data fall within the protocol required limits and specifications?

4. Have all of the data been generated using established and agreed upon analytical protocols?

5. Does an evaluation of the raw data confirm the results provided in the data summary sheets and quality control verification forms?

6. Have the correct data qualifiers been used?

The answers to the questions presented by the DUSR are presented in the following sections of the report and in the DUSR Summary Information Section, Section 5.

3. Data Quality Evaluation

3.1. Summary

This section summarizes which QA/QC parameters specified in Section 2.1 met validation criteria, and which QA/QC parameters did not meet validation criteria. Samples requiring qualification are described in the following sections, and are identified by the description documented on the sample chain-of-custody records.

3.2. Alpha Spectrometry Analyses

3.2.1. Criteria

The QA/QC parameters presented in Section 2.1 for radiochemistry were applied to the environmental samples listed in Table 1-1. The following QA/QC parameters were found to meet validation criteria:

- Holding times and sample preservation;
- Calibration;
- Tracer recovery;
- Laboratory Control Sample (LCS);
- Radionuclide quantitation and detection limit evaluation;
- Chemical separation specificity (alpha spectrometry);
- System performance; and
- Documentation completeness.

Only those QA/QC parameters not meeting validation criteria are discussed in subsequent sections.

3.2.2. Blank Analysis

The field and laboratory blank results were evaluated using the following statistical approach: if the net blank result was not less than the associated uncertainty and if the sample result ± uncertainty was less than ten times the associated blank result ± uncertainty, the qualifier “J” was applied to the associated sample result. The statistical evaluation of the field and laboratory blank results is summarized in Table 3-1.

Table 3-1. *Blank Evaluation for Thorium/Uranium Analyses.*

Blank ID	***Radionuclide***	***Blank Concentration* ± *Uncertainty (pCi/L)***	***Affected Samples***	***Action***
P-103-EB#1	Th-230	0.15 ±0.12	P-103-74 P-103-84.5 P-107-84.3	J

Note:
pCi/L indicates picocuries per liter
Uncertainty indicates total propagated uncertainty, which includes counting error and non-counting error.

3.2.3. Duplicate Analysis

If the Duplicate Error Ratio (DER) is greater than one (1) when comparing laboratory or field duplicate samples then the qualifier of "J" was applied to the associated sample results, as summarized in table 3-2 .

Table 3-2. *Evaluation of Duplicate Analysis*

Sample ID	*Affected Radionuclide Results*	*Action*
F5E060294:		
P-108-84.15 P-108-DUP-1	Uranium-234	J
F5E200169:		
P107-74.30 P107-84.30	Uranium-234	J
F5F240341:		
P107-94.30 P107-104.3	Uranium-234	J

3.2.6. Radionuclide Quantitation and Detection Limits

If the net positive results are less than their uncertainties and the uncertainty multiplied by 1.65 is greater than the MDC, this would indicate that the sample counts were less than the critical values or less than 95% confidence of positive detection, therefore the sample results were qualified as estimated "J", as summarized in Table 3-3. It the net negative result has an uncertainty smaller than their absolute value, this is an indication of improper blank subtraction and the sample results were rejected "R".

Table 3-3. *Evaluation of Positive Results versus Uncertainties for Alpha Spectrometry Analyses*

Sample ID	*Affected Radionuclide Results*	*Sample Concentration ± Uncertainty (pCi/L)*	*Action*
F5F240341:			
P-107-104.3	Uranium-235	0.36 ± 0.48	J

3.3. Gas Proportional Counting

3.3.1. Criteria

The QA/QC parameters presented in Section 2.1 were applied to the environmental samples listed in Table 1-1. All of the following QA/QC parameters were found to meet validation criteria:

- Holding times and sample preservation;
- Calibration;
- Blank analysis:
- Laboratory Control Sample (LCS);

- Duplicate analysis;
- Field duplicate analysis;
- Radionuclide quantitation and detection limit evaluation;
- System performance; and
- Documentation completeness.

4. Summary and Data Usability

This chapter summarizes the analytical data in terms of its completeness and usability. Data completeness is defined as the percentage of sample results that have been determined to be usable during the data validation process. Overall, 100 percent of the radiochemistry data were determined to be usable for qualitative and quantitative purposes. Those sample results qualified as estimated (J) due to data validation QA/QC exceedances should be considered conditionally usable.

The samples collected from the Site in Hicksville, New York were evaluated based on QA/QC criteria established by methods as listed in Section 1.3, by the data validation guidelines listed in Section 1.2, and by the QAPP (URS, 2002) established for this project. Major deficiencies in the data generation process would have resulted in data being rejected, indicating that the data are considered unusable for either quantitative or qualitative purposes. Minor deficiencies in the data generation process resulted in some sample data being characterized as approximate or estimated. Identification of a data point as approximate indicates uncertainty in the reported concentration of the radionuclide, but not its assigned identity.

The following paragraphs present the adherence of the data to the precision, accuracy, representativeness, comparability, completeness, and sensitivity (PSARCC) parameters.

Precision is measured through the evaluation of field duplicate samples and laboratory duplicate samples. For the radiochemistry analyses, none of the data were rejected due to precision non-conformances.

LCS recoveries indicate the accuracy of the data. For the radiochemistry analyses, none of the data were rejected due to accuracy non-conformances.

Holding times, sample preservation, blank analysis, and analyte identification and quantification are indicators of the representativeness of the analytical data. For the radiochemistry analyses, none of the data were rejected due to accuracy non-conformances.

Comparability is not compromised, provided that the analytical methods do not change over time. A major component of comparability is the use of standard reference materials for calibration and QC. These standards are compared to other unknowns to verify their concentrations. Since standard analytical methods and reporting procedures were consistently used by the laboratory, the comparability criteria for the analytical data were met.

Sensitivity is established by reported detection limits that represent measurable concentrations of radionuclidesthat can be determined with a designated level of confidence. Sensitivity requirements were met for the sample data in this project. None of the radiochemistry data were rejected due to the sensitivity non-conformances.

5. Data Usability Summary Report Summary Information

The DUSR was performed to determine whether or not the data meets site-specific criteria for data quality and use. The DUSR is developed by reviewing and evaluating the analytical data package. The following questions were addressed:

1. Is the data package complete as defined under the requirements for the NYSDEC ASP Category B or USEPA CLP deliverables?

The QAPP required that USEPA Level III deliverables be provided by the laboratory for each data package. This requirement was met as it applies to the methods used by the laboratory for sample analysis. The evaluation of the sample data was completed using the information provided in the data packages provided by the laboratory.

2. Have all holding times been met?

The holding times were met for the radiochemistry analyses.

3. Do all the QC data: blanks, standards, spike recoveries, replicate analyses, and sample data fall within the protocol-required limits and specifications?

The laboratory used the laboratory control limits during the analyses performed for this sampling event. QA/QC deviations and qualifications performed on the sample data are discussed in Chapter 3. Major non-conformances were not detected for the radiochemistry data.

4. Have all of the data been generated using established and agreed upon analytical protocols?

The QAPP required that USDOE methods are used in the analysis of samples collected for this sampling event. The laboratory used the required method protocols (with some minor modifications) for the analyses performed for this sampling event, which met data user and client needs.

5. Does an evaluation of the raw data confirm the results provided in the data summary sheets and quality control verification forms?

The evaluation of selected raw data confirmed information provided in the data packages.

6. Have the correct data qualifiers been used?

The laboratory applied the correct qualifiers to the sample data. The validation qualifiers were applied as required by validation guidelines as listed in Section 1

References

O'Brien & Gere Engineers, Inc. 2000. *Supplement to the Approved Work Plan (QAPP – Appendix C), Former Sylvania Electric Products Incorporated Facility Cantiague Rock Road, Hicksville, New York.* Syracuse, New York.

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United States Environmental Protection Agency (USEPA). 1992. *USEPA Risk Assessment Guidance for Superfund, Volume I, Human Health Evaluation Manual (Part A),* 540/1-891002. Washington D.C.

URS Corporation *GTE Operations Support Incorporated. (GTEOSI). Groundwater Investigation Work Plan, Former Sylvania Electric Products Facility, Hicksville, New York,* QAPP: Appendix C. September 2002.