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Niagara Mohawk
A **National Grid** Company

August 4, 2005

Mr. Scott Deyette
New York State Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway
Albany, New York 12233

Re: Site Characterization Data Summary for Oswego (West Utica St.) Former Manufactured Gas Plant, Oswego, New York

Dear Mr. Deyette:

Please find attached the *Site Characterization Data Summary Report, Oswego (West Utica St.) Former MGP in Oswego, New York* prepared by Brown and Caldwell Associates. This Site Characterization (SC) Data Summary Report comprises tables, figures and logs that relate the findings of the initial SC activities, and is being submitted in accordance with: the *Site Characterization/Interim Remedial Measure Work Plan for Site investigations at Oswego Non-Owned Former MGP Site* (EECS, Inc., January 2004) (hereafter referred to as the "SC Work Plan"); the August 17, 2004 letter addendum to the SC Work Plan; and the Voluntary Consent Order (VCO) between the New York State Department of Environmental Conservation (NYSDEC) and Niagara Mohawk, A National Grid Company (Niagara Mohawk) dated January 25, 2002.

The Data Usability Summary Report (DUSR), presenting the results of the independent validation of the analytical data for the initial SC, was previously submitted to the NYSDEC.

Data and information obtained during the SC investigation activities indicate that MGP-related constituents are present at the site. Niagara Mohawk recommends that a Remedial Investigation (RI) be conducted at this site to further evaluate the nature and extent of the MGP-related constituents and assess whether remedial activities are required to address them. Accordingly, Niagara Mohawk would like to schedule a meeting with the NYSDEC to discuss the findings of the SC and potential RI activities. After you have had an opportunity to review the attached SC Data Summary Report, please contact me to schedule this meeting.

Please contact me at (315) 428-5652 if you have any questions.

Sincerely,

Steven P. Stucker, C.P.G.
Senior Analyst

Cc :
William Holzhauer-National Grid Service Company (w/o report)
Terry Young-Niagara Mohawk, a National Grid Company (w/o report)
Wendy Kuehner-NYSDOH (w/report)
Robert O'Neill-Brown & Caldwell (w/o report)

Brown and Caldwell Associates

Site Characterization
Data Summary Report
Oswego (West Utica St.) Former MGP
Oswego, New York

August 2005

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Remedial Bureau C
Division of Environmental Remediation

SITE CHARACTERIZATION
DATA SUMMARY REPORT
OSWEGO (WEST UTICA ST.) FORMER MGP
OSWEGO, NEW YORK

Prepared for:

Niagara Mohawk, A National Grid Company
300 Erie Boulevard West
Syracuse, New York 13202

Prepared by:

Brown and Caldwell Associates
110 Commerce Drive
Allendale, New Jersey 07401

August 2005

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WELL CONSTRUCTION AND WATER LEVEL DATA
Oswego (West Utica St.) MGP Site, Oswego, New York

Well	Ground Surface Elevation (ft., NGVD)	Top of Casing Elevation (ft., NGVD)	Top of Screen (ft., BGS)	Bottom of Screen (ft., BGS)	Date of Measurements	Total Depth (ft., BTOC)	Depth to Water (ft., BTOC)	Water Elevation (ft., NGVD)
MW-101	304.42	303.99	4.0	14.0	12/16/2004	13.80	3.88	300.11
MW-102	303.70	303.39	6.0	16.0	12/16/2004	17.44	6.01	297.38
MW-103	306.75	306.48	5.0	15.0	12/16/2004	14.59	4.70	301.78
MW-104	309.14	308.79	4.5	14.5	12/16/2004	14.08	6.58	302.21

Notes:

NGVD - National Geodetic Vertical Datum
BGS - Below Ground Surface
BTOC - Below Top of Casing

TABLE 2
SOIL ANALYTICAL RESULTS
DETECTED CONSTITUENTS
OSWEGO (West Utica St.) MGP Site
Oswego, New York

Constituent	Units	Recommended Soil Cleanup Objective (TAGM 4046)	B-102A 10-12' 11/29/2004	B-105A 16-18' 11/23/2004	B-106 20-20.7' 11/19/2004	MW-101 4-6' 11/23/2004	MW-103 8-10' 11/29/2004	MW-104 6-8' 11/24/2004
Volatile Organic Compounds								
BTEX								
Benzene	mg/Kg	0.06	1.1	3 D	0.12	0.00023 U	0.00023 U	0.00022 U
Ethylbenzene	mg/Kg	5.5	1.7	8.2 D	0.18	0.00028 U	0.00028 U	0.00027 U
Toluene	mg/Kg	1.5	6.22	0.19	0.019	0.00029 U	0.00029 U	0.00028 U
o-Xylene	mg/Kg	1.2	8.1	4.4 D	0.25	0.00049 U	0.00049 U	0.00047 U
m&p-Xylenes	mg/Kg	1.2	23	21 D	0.68 EJ	0.0014 J	0.00058 U	0.00056 U
Total BTEX	mg/Kg	NE	40	37	1.25	0.0014	ND	ND
Other VOCs	mg/Kg		No other VOCs detected in samples					
Semivolatile Organic Compounds								
Noncarcinogenic PAHs								
Acenaphthene	mg/Kg	50	0.28 J	1.5 J	0.48 U	0.0081 U	0.0081 UJ	0.008 U
Acenaphthylene	mg/Kg	41	1.3	0.12 U	3.3 J	0.011 U	0.011 UJ	0.011 U
Anthracene	mg/Kg	50	0.96	0.92 J	0.52 U	0.062 J	0.0088 UJ	0.0086 U
Benzo(g,h,i)perylene	mg/Kg	50	0.44	0.17 U	0.95 U	0.066 J	0.016 U	0.016 U
Fluoranthene	mg/Kg	50	1.8	1.6 J	13 J	0.24 J	0.0051 UJ	0.12 J
Fluorene	mg/Kg	50	0.9	1.2 J	3 J	0.01 U	0.01 UJ	0.01 U
Naphthalene	mg/Kg	13	24 D	210 D	390 D	0.39	0.13 J	0.21 J
Phenanthrene	mg/Kg	50	3.2	3.2 J	20 J	0.14 J	0.047 J	0.055 J
Pyrene	mg/Kg	50	1.6	1.2 J	11 J	0.23 J	0.0066 UJ	0.086 J
Total Noncarcinogenic PAHs	mg/Kg	NE	34	220	440	1.1	0.18	0.47
Carcinogenic PAHs								
Benzo(a)anthracene	mg/Kg	0.224	0.59	0.058 U	3.1 J	0.18 J	0.0056 UJ	0.0055 U
Benzo(a)pyrene	mg/Kg	0.061	0.5	0.066 U	2.9 J	0.2 J	0.0063 U	0.0062 U
Benzo(b)fluoranthene	mg/Kg	1.1	0.49	0.2 U	4 J	0.33 J	0.02 U	0.05 J
Benzo(k)fluoranthene	mg/Kg	1.1	0.28 J	0.13 U	0.74 U	0.091 J	0.013 U	0.012 U
Chrysene	mg/Kg	0.4	0.53	0.42 J	3.9 J	0.17 J	0.012 U	0.046 J
Dibenzo(a,h)anthracene	mg/Kg	0.014	0.012 U	0.11 U	0.64 U	0.011 U	0.011 U	0.011 U
Indeno(1,2,3-cd)pyrene	mg/Kg	3.2	0.48 J	0.093 U	0.53 U	0.037 J	0.0089 U	0.0087 U
Total Carcinogenic PAHs	mg/Kg	NE	2.9	0.4	14	1.0	ND	0.10
Total PAHs	mg/Kg	NE	37	220	454	2.1	0.18	0.57
Other SVOCs								
Bis(2-ethylhexyl)phthalate	mg/Kg	50	NA	NA	NA	NA	NA	NA
Polychlorinated Biphenyls			not detected in samples (only samples TP-101 (5') and TP-104B (6') were analyzed)					
Pesticides			not detected in samples (only sample TP-101 (5') was analyzed)					
Inorganic Constituents								
Aluminum	mg/Kg	SB	NA	NA	NA	NA	NA	NA
Arsenic	mg/Kg	7.5 or SB	NA	NA	NA	NA	NA	NA
Barium	mg/Kg	300 or SB	NA	NA	NA	NA	NA	NA
Beryllium	mg/Kg	0.160 or SB	NA	NA	NA	NA	NA	NA
Calcium	mg/Kg	SB	NA	NA	NA	NA	NA	NA
Chromium	mg/Kg	10 or SB	NA	NA	NA	NA	NA	NA
Cobalt	mg/Kg	30 or SB	NA	NA	NA	NA	NA	NA
Copper	mg/Kg	25 or SB	NA	NA	NA	NA	NA	NA
Iron	mg/Kg	2000 or SB	NA	NA	NA	NA	NA	NA
Lead	mg/Kg	SB	NA	NA	NA	NA	NA	NA
Magnesium	mg/Kg	SB	NA	NA	NA	NA	NA	NA

TABLE 2
SOIL ANALYTICAL RESULTS
DETECTED CONSTITUENTS
OSWEGO (West Utica St.) MGP Site
Oswego, New York

Constituent	Units	Recommended Soil Cleanup Objective (TAGM 4046)	B-102A 10-12' 11/29/2004	B-105A 16-18' 11/23/2004	B-106 20-20.7' 11/19/2004	MW-101 4-6' 11/23/2004	MW-103 8-10' 11/29/2004	MW-104 6-8' 11/24/2004
Manganese	mg/Kg	SB	NA	NA	NA	NA	NA	NA
Nickel	mg/Kg	13 or SB	NA	NA	NA	NA	NA	NA
Potassium	mg/Kg	SB	NA	NA	NA	NA	NA	NA
Vanadium	mg/Kg	150 or SB	NA	NA	NA	NA	NA	NA
Zinc	mg/Kg	20 or SB	NA	NA	NA	NA	NA	NA
Cyanide, Total	mg/Kg	NE	0.121 U	0.704 J	30	20 J	0.136 U	0.115 UJ
Other Parameters								
Total Organic Carbon	mg/Kg	NE	1700	5600	9700	~~50000 R~~	4700	8400
Fingerprint (GC)		NE	NA	NA	NA	NA	NA	NA

Notes:
U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit. The method detection limit is the associated numerical value.
J - Estimated concentration. The result is below the quantitation limit but above the method detection limit.
D - The sample was diluted.
UJ - The analyte was not detected above the reported sample quantitation limit. However, the reported method detection limit is approximate and may or may not represent the actual limit of the quantitation necessary to accurately and precisely measure the analyte in the sample.
E - Value exceeds calibration range.
SB - Site Background. Site background concentrations have not been established.
NE - Not established.
NA - Not analyzed.
ND - Not detected.
Boxed values indicate concentrations above the NYSDEC Recommended Soil Cleanup Objectives. Boxed and X rejected value.

TABLE 2
SOIL ANALYTICAL RESULTS
DETECTED CONSTITUENTS
OSWEGO (West Utica St.) MGP Site
Oswego, New York

Constituent	Units	Recommended Soil Cleanup Objective (TAGM 4046)	TP-101 5' 11/19/2004	TP-102 8' 11/18/2004	TP-103 7.5' 11/18/2004	TP-103 DUP 7.5' 11/18/2004	TP-104 6' 11/18/2004
Volatile Organic Compounds							
BTEX							
Benzene	mg/Kg	0.06	0.0012 U	0.00024 U	0.011 J	0.0024 J	0.16
Ethylbenzene	mg/Kg	5.5	0.0012 U	0.26 JD	0.016 J	0.0024 J	0.19 D
Toluene	mg/Kg	1.5	0.0013 U	0.013 J	0.0059 J	0.0011 J	0.016
o-Xylene	mg/Kg	1.2	0.0012 U	0.13 J	0.013 J	0.0021 J	0.21
m&p-Xylenes	mg/Kg	1.2	0.0032 U	1.5 D	0.02 J	0.0035 J	1.4 D
Total BTEX	mg/Kg	NE	ND	1.9	0.07	0.0115	2.0
Other VOCs	mg/Kg		No other VOCs detected in samples				
Semivolatile Organic Compounds							
Noncarcinogenic PAHs							
Acenaphthene	mg/Kg	50	0.017 U	0.042 J	0.37 J	0.19 J	0.0089 U
Acenaphthylene	mg/Kg	41	0.016 U	0.24 J	1	0.5 J	0.012 U
Anthracene	mg/Kg	50	0.022 U	0.49	2.3	0.98 J	0.0096 U
Benzo(g,h,i)perylene	mg/Kg	50	0.083 U	1.2	1.4	0.66 J	0.017 U
Fluoranthene	mg/Kg	50	0.067 U	2.8 D	8.9 D	3.8 JD	0.0056 U
Fluorene	mg/Kg	50	0.023 U	0.14 J	1.1	0.54 J	0.011 U
Naphthalene	mg/Kg	13	0.026 U	0.52	2.2 JD	8 JD	3.5 D
Phenanthrene	mg/Kg	50	0.022 U	1.3	7 D	3.3 JD	0.009 U
Pyrene	mg/Kg	50	0.098 U	3.7 D	11 D	3.6 JD	0.0072 U
Total Noncarcinogenic PAHs	mg/Kg	NE	ND	10.4	35	22	3.5
Carcinogenic PAHs							
Benzo(a)anthracene	mg/Kg	0.224	0.029 U	2.6	5.3 D	1.8 J	0.0061 U
Benzo(a)pyrene	mg/Kg	0.061	0.021 U	3.2 D	5.4 D	1.7 J	0.0069 U
Benzo(b)fluoranthene	mg/Kg	1.1	0.06 U	3.7 D	5.9 D	2.3 J	0.021 U
Benzo(k)fluoranthene	mg/Kg	1.1	0.094 U	1.1	2.6	0.79 J	0.014 U
Chrysene	mg/Kg	0.4	0.036 U	2.2	4.1 D	1.5 J	0.013 U
Dibenzo(a,h)anthracene	mg/Kg	0.014	0.077 U	0.43	0.52	0.012 UJ	0.012 U
Indeno(1,2,3-cd)pyrene	mg/Kg	3.2	0.072 U	0.99	0.75	0.0097 UJ	0.0097 U
Total Carcinogenic PAHs	mg/Kg	NE	ND	14.2	24.6	8.1	ND
Total PAHs	mg/Kg	NE	ND	25	60	30	3.5
Other SVOCs							
Bis(2-ethylhexyl)phthalate	mg/Kg	50	0.092 J	NA	NA	NA	NA
Polychlorinated Biphenyls			not detected in samples (only samples TP-101 (5') and TP-104B (6') were analyzed)				
Pesticides			not detected in samples (only sample TP-101 (5') was analyzed)				
Inorganic Constituents							
Aluminum	mg/Kg	SB	9640	NA	NA	NA	NA
Arsenic	mg/Kg	7.5 or SB	2.5	NA	NA	NA	NA
Barium	mg/Kg	300 or SB	48.8	NA	NA	NA	NA
Beryllium	mg/Kg	0.160 or SB	0.47	NA	NA	NA	NA
Calcium	mg/Kg	SB	1510	NA	NA	NA	NA
Chromium	mg/Kg	10 or SB	11.1 J	NA	NA	NA	NA
Cobalt	mg/Kg	30 or SB	6.4	NA	NA	NA	NA
Copper	mg/Kg	25 or SB	29.9	NA	NA	NA	NA
Iron	mg/Kg	2000 or SB	16900	NA	NA	NA	NA
Lead	mg/Kg	SB	3.3	NA	NA	NA	NA
Magnesium	mg/Kg	SB	2930	NA	NA	NA	NA

TABLE 2
SOIL ANALYTICAL RESULTS
DETECTED CONSTITUENTS
OSWEGO (West Utica St.) MGP Site
Oswego, New York

Constituent	Units	Recommended Soil Cleanup Objective (TAGM 4046)	TP-101	TP-102	TP-103	TP-103 DUP	TP-104
			5'	8'	7.5'	7.5'	6'
			11/19/2004	11/18/2004	11/18/2004	11/18/2004	11/18/2004
Manganese	mg/Kg	SB	271	NA	NA	NA	NA
Nickel	mg/Kg	13 or SB	13.2	NA	NA	NA	NA
Potassium	mg/Kg	SB	722	NA	NA	NA	NA
Vanadium	mg/Kg	150 or SB	17.9	NA	NA	NA	NA
Zinc	mg/Kg	20 or SB	32.6 EJ	NA	NA	NA	NA
Cyanide, Total	mg/Kg	NE	1.55	1.13	7.15	9.85	0.004 U
Other Parameters							
Total Organic Carbon	mg/Kg	NE	1700	7800	8500	3600	3700
Fingerprint (GC)		NE	NA	NA	NA	NA	30W Lubricating Oil

Notes:
U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit. The method detection limit is the associated numerical value.
J - Estimated concentration. The result is below the quantitation limit but above the method detection limit.
D - The sample was diluted.
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E - Value exceeds calibration range.
SB - Site Background. Site background concentrations have not been established.
NE - Not established.
NA - Not analyzed.
ND - Not detected.
Boxed values indicate concentrations above the NYSDEC Recommended Soil Cleanup Objectives.
Boxed and X rejected value.

TABLE 3
GROUNDWATER ANALYTICAL RESULTS
DETECTED CONSTITUENTS
OSWEGO (West Utica St.) MGP Site
Oswego, New York

			MW-101	MW-102	MW-103	MW-103 DUP	MW-104
Constituent	Units	Class GA Groundwater Criteria	12/16/2004	12/16/2004	12/16/2004	12/16/2004	12/16/2004
Volatile Organic Compounds							
BTEX							
Benzene	ug/L	1	11000 D	4500 D	0.5 U	0.5 U	0.5 U
Ethylbenzene	ug/L	5	140	150 J	0.5 U	0.5 U	0.5 U
Toluene	ug/L	5	240 D	3600 D	0.5 U	0.5 U	1.5 J
o-Xylene	ug/L	5	140 D	1300 D	0.5 U	0.5 U	0.5 U
m&p-Xylenes	ug/L	5	270	3000 D	0.5 U	0.5 U	0.5 U
Total BTEX	ug/L	NE	11790	12550	ND	ND	1.5
Other VOCs							
Carbon disulfide	ug/L	NE	3.2 J	1 J	0.5 U	0.5 U	0.5 U
Chlorobenzene	ug/L	5	0.5 U	1.6 J	0.5 U	0.5 U	0.5 U
1,1-Dichloroethene	ug/L	5	0.5 U	0.5 U	0.5 U	0.5 U	2.5 J
Isopropylbenzene	ug/L	5	5.3 J	8.3 J	0.5 U	0.5 U	0.5 U
Methyl tert-butyl ether	ug/L	NE	6 J	1.7 J	0.5 U	0.5 U	0.5 U
Styrene	ug/L	5	46	120	0.5 U	0.5 U	0.5 U
Semivolatile Organic Compounds							
Acenaphthene	ug/L	NE	1.1 U	24 J	1.2 U	1.1 U	1.2 U
Acenaphthylene	ug/L	NE	1.1 U	130	1.2 U	1.1 U	1.2 U
Anthracene	ug/L	NE	2 J	5.3 J	0.98 U	0.96 U	0.97 U
Fluorene	ug/L	NE	1.1 U	33 J	1.2 U	1.1 U	1.2 U
2-Methylnaphthalene	ug/L	NE	4.4 J	380 J	1.5 U	1.5 U	1.5 U
Naphthalene	ug/L	NE	320 D	8100 D	1.9 U	1.9 U	1.9 U
Phenanthrene	ug/L	NE	2.2 J	23 J	0.9 U	0.89 U	0.89 U
1,1'-Biphenyl	ug/L	5	0.68 U	36 J	0.69 U	0.68 U	0.68 U
Carbazole	ug/L	NE	0.86 U	74	0.88 U	0.86 U	0.87 U
m&p-Cresol	ug/L	1	14 J	800 JD	3.2 U	3.1 U	3.2 U
Dibenzofuran	ug/L	NE	1 U	58	1.1 U	1 U	1.1 U
2,4-Dimethylphenol	ug/L	1	2.3 U	480 JD	2.3 U	2.3 U	2.3 U
2-Methylphenol	ug/L	1	23 JD	360 J	3.2 U	3.1 U	3.2 U
Phenol	ug/L	1	70	360 J	3.3 U	3.2 U	3.3 U
Total SVOCs	ug/L	NE	436	10863	ND	ND	ND
Polychlorinated Biphenyls			not detected in any sample				
Pesticides			not detected in any sample				
Inorganic Constituents							
Aluminum	ug/L	NE	4030	496	428	374	51.6 J
Arsenic	ug/L	25	6.4 J	4.07 J	2.9 U	2.9 U	3.57 J
Barium	ug/L	1000	115 J	125 J	80.3 J	80.7 J	153 J
Calcium	ug/L	NE	54900	96100	121000	124000	151000
Chromium	ug/L	50	13.3	2.62 J	3.38 J	3.4 J	2.4 U
Cobalt	ug/L	NE	6.1 J	1.77 J	2.09 J	2.12 J	1.3 U
Copper	ug/L	200	23.5 J	15.2 J	8.92 J	9.8 J	9.23 J
Iron	ug/L	300	8680	1020	1060	963	56.7 J

TABLE 3
GROUNDWATER ANALYTICAL RESULTS
DETECTED CONSTITUENTS
OSWEGO (West Utica St.) MGP Site
Oswego, New York

Constituent	Units	Class GA Groundwater Criteria	MW-101 12/16/2004	MW-102 12/16/2004	MW-103 12/16/2004	MW-103 DUP 12/16/2004	MW-104 12/16/2004
Lead	ug/L	25	5.59 J	2.7 U	2.7 U	4.15 J	2.7 U
Magnesium	ug/L	35000	18400	17900	41000	42100	79600
Manganese	ug/L	300	592	962	1050	1060	155
Nickel	ug/L	100	14.5 J	4.9 U	4.9 U	5.77 J	4.9 U
Potassium	ug/L	NE	36900 J	9460 J	18400 J	18800 J	24000 J
Selenium	ug/L	10	5.6 U	5.6 U	5.6 U	5.6 U	7.67 J
Sodium	ug/L	20000	191000	79100	65000	66200	201000
Vanadium	ug/L	NE	8.26 J	1.6 U	1.79 J	1.6 U	1.6 U
Zinc	ug/L	NE	53 J	45.4 J	22.4 J	24.4 J	22.6 J
Cyanide, Total	ug/L	200	537.104	118	67.6	62.7	10 U

Notes:
U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
J - Estimated concentration. The result is below the quantitation limit but above the method detection limit.
D - The sample was diluted.
NE - Not established.
ND - Not detected.
Boxed concentrations are above New York State Class GA Groundwater Standards and Guidance

TABLE 4
FIELD PARAMETER MEASUREMENTS FOR GROUNDWATER
Oswego (West Utica St.) MGP Site, Oswego, New York

Well	Date	pH	Temperature (°C)	Specific Conductance (mS/cm)	ORP (mV)	Dissolved Oxygen (mg/l)	Turbidity (NTU)
MW-101	12/16/2004	8.49	7.63	1.50	-121.0	1.55	827.0
MW-102	12/16/2004	7.31	11.52	1.48	8.0	0.85	117.0
MW-103	12/16/2004	7.01	12.64	1.42	-9.0	0.74	69.5
MW-104	12/16/2004	7.21	10.12	2.55	142.0	2.71	9.3

Notes:

°C - degrees centigrade
mS/cm - milliSiemens per centimeter
mV - millivolts
mg/l - milligrams per liter
NTU - nephelometric turbidity units

TABLE 5

SUMMARY OF VISUAL/OLFACTORY FIELD OBSERVATIONS
Oswego (West Utica St.) MGP Site

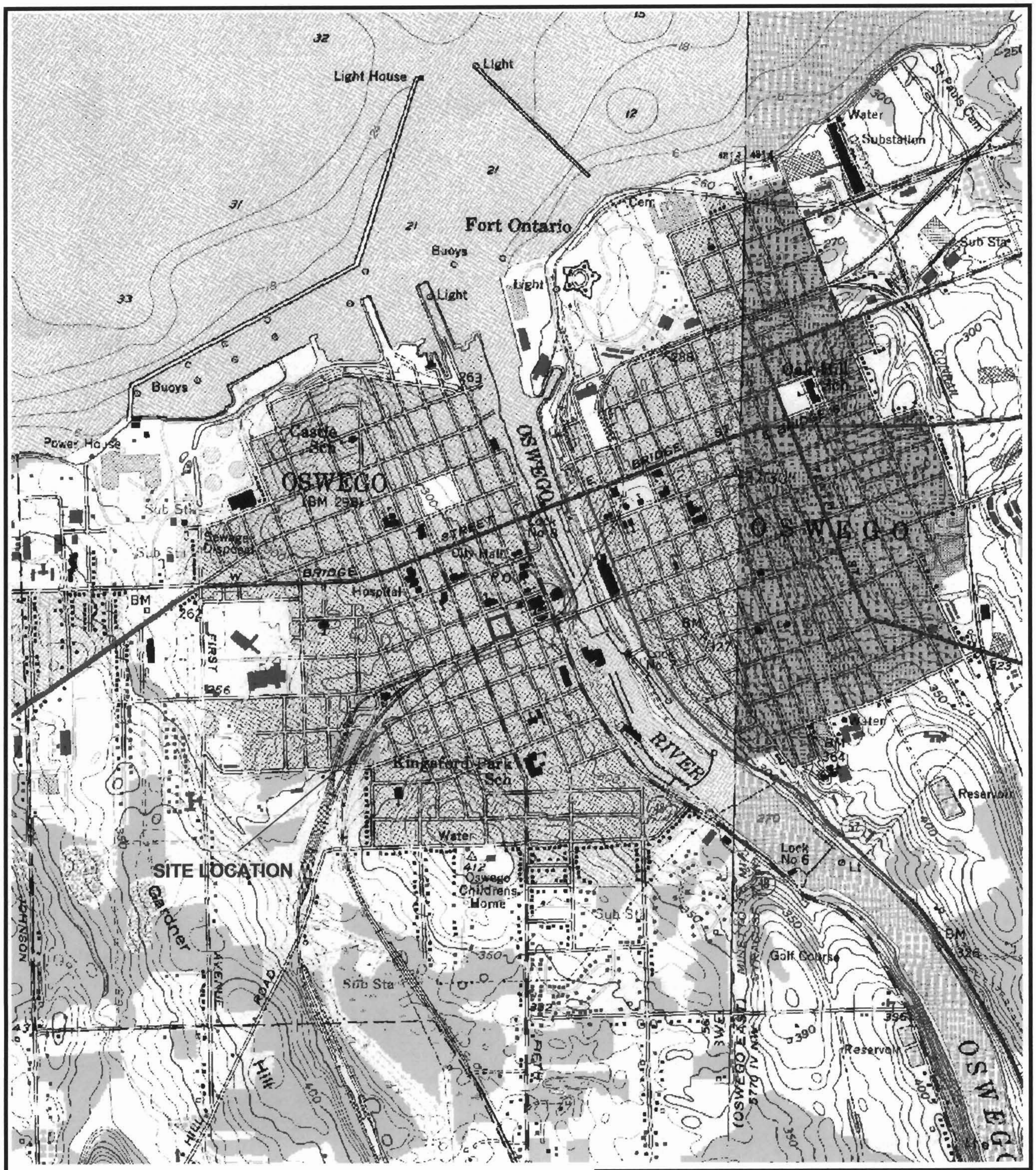
Location	Depth (ft., BGS)	Description
Soil Borings		
B-102A	6-8	Moderate tar odor
	8-10	Strong iridescent sheen. Intermittent brown-black NAPL @8.5-10.
	10-12	Black-brown viscous NAPL coat fragments of sandstone. Strong iridescent sheen. Strong tar odor.
	12-12.8	Strong tar odor (in Till)
B-105	8-10	Slight petroleum odor in lower part of sample.
	14-16	14.1-14.3: Slight tar odor in sand lens
B-105A	2-4	Slight tar odor.
	4-6	@4.8: wood with little black-brown NAPL. Stong tar odor. Sheen.
	6-8	Wood fragments with black-brown NAPL, stains. Tar odor. Few droplets of NAPL on water in sample.
	8-10	Droplets of NAPL on water in sample. Tar odor.
	10-12	Moderate tar odor
	12-14	Slight tar odor, slight sheen.
	14-16	Faint tar odor
	16-18	Dark yellow-light brown NAPL throughout soil sample. Stong tar odor, slight petroleum odor. Strong sheen.
	18-20	Black stain @19.8. Droplets of NAPL. Strong sheen. Stong tar odor.
	20-21.1	Local black stains. Strong tar odor.
B-106	2-4	Moderate detergent-like odor. Sheen on water in borehole.
	4-6	@5.8: black sand and gravel, wood fragments with stong tar odor and sheen.
	10-12	Black stain. Strong sheen. Petroleum odor.
	12-14	Slight tar odor, slight sheen.
	14-16	Slight sheen.
	16-18	Slight tar odor.
	20-21.4	@20.5: strong tar odor, sheen. @ base of sample: black stain, strong tar odor.
MW-101	4-6	@5.2-5.6: Black stain with moderate tar odor.
	6-8	Intermittent black stain. Tar odor.
	8-10	Intermittent black stain. Tar odor.
	10-12	Faint tar odor. (Top of till).
	12-14	Slight tar odor.
	14-16	Slight tar odor.
	16-18	Moderate tar odor.
	18-20	Moderate tar odor.
	20-20.4	Moderate tar odor.

TABLE 5

SUMMARY OF VISUAL/OLFACTORY FIELD OBSERVATIONS
Oswego (West Utica St.) MGP Site

Location	Depth (ft., BGS)	Description
MW-102	0-2	Faint tar odor.
	4-6	Occasional dark mottling of soil.
	8-10	In Till: NAPL coating gravel grains in till; Silt & Clay in till matrix is mottled with NAPL and stained. Sheen. Tar odor.
	10-12	Black stained mottles or layers throughout sample. NAPL in pockets (usually associated with gravel grains). NAPL is brown-black and iridescent. Strong sheen. Strong tar odor.
	12-14	Black, iridescent NAPL mottling and/or veins throughout sample and coating gravel. Strong tar odor.
	14-16	Black, iridescent NAPL in pockets and/or veins throughout sample. Moderate tar odor..
	16-18	Occasional black mottling of soil. Moderate tar odor.
MW-103	6-8	Slight tar odor.
	8-10	Slight tar odor. *Note: Collected soil samples from well screen interval only--See description of adjacent boring B-105 for description of soil from above and below.*
MW-104		No observations or odor indicative of MGP-related materials.
Test Pits		
TP-101A	0.5	Moderate tar odor.
TP-101B	0.5-1.5	Lens of nearly-solid tar on west side of pit (outside of holder wall).
	3	Thin layer of LNAPL on surface of water east (inside) of holder wall. Gasoline odor.
TP-102	3	East-west pipe cast iron (±12 in. diameter) with slight tar odor.
	8	Initially, a thin, clear LNAPL layer was observed on water surface with gasoline odor. Later, dark NAPL with strong tar odor flowed into pit.
TP-103	3.5	East-west pipe cast iron (±12 in. diameter) with slight tar odor.
	5.5	Groundwater in pit with sheen.
TP-104A		South side of sewer line: No observations or odor indicative of MGP-related materials.
TP-104B		North side of sewer line:
	4	Moderate tar odor.
	5	Groundwater in pit with moderate tar odor and sheen. Thin layer of clear LNAPL on water surface.
	6	Strong tar odor. Sheen. (Note: GC fingerprint analysis indicate 30W lubricating oil).
Monitoring Wells/Piezometers		
MW-101		No observations or odor indicative of MGP-related materials.
MW-102		Tar-like odor during 12/16/04 groundwater sampling.
MW-103		Slight petroleum odor during 12/16/04 groundwater sampling.
MW-104		No observations or odor indicative of MGP-related materials.

FIGURES



Source:
USGS 15 Minute Quadrangles
Oswego East, NY, 1954, Photorevised 1978
Oswego West, NY, 1954, Photorevised 1978

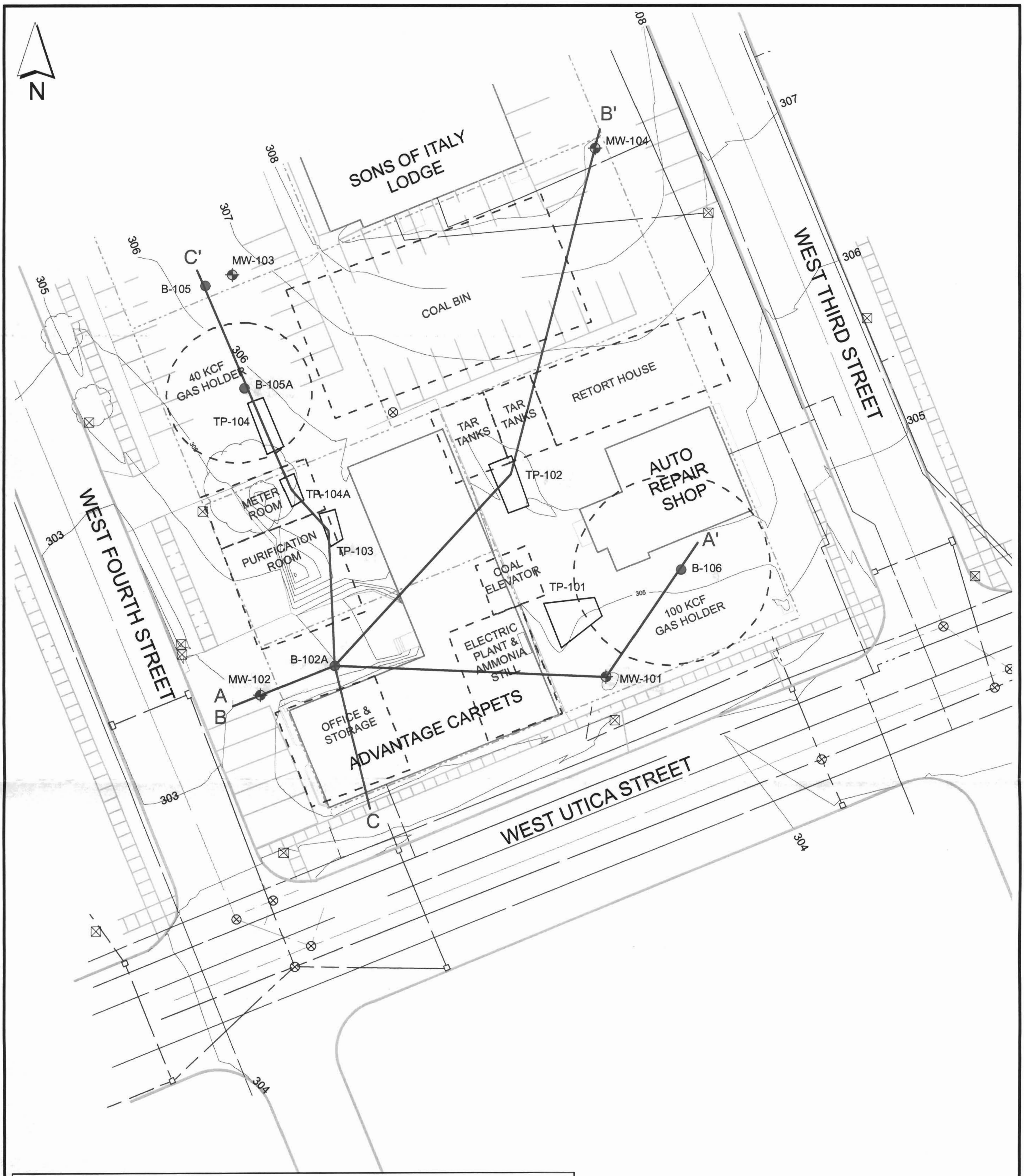
N

2000 0 2000 4000 Feet

FIGURE 1
SITE LOCATION MAP

OSWEGO (WEST UTICA ST.)
FORMER MGP SITE
OSWEGO, NEW YORK

BROWN AND CALDWELL
Associates



Legend

- ● Soil Boring
- ⊕ Monitoring Well
- ☐ Test Pit
- ⊗ Manhole
- ⊠ Power Pole
- Ground Surface Elevation Contour (ft, NGVD 29)
- Property Line
- Pavement Edge
- Vegetation
- Water Line
- Storm Sewer Line
- Sanitary Sewer Line
- Gas Line

Former MGP Structure Location. Locations are approximate, based on 1924 Sanborn Fire Insurance Map.

A ____ A' Line of Cross-Section (See Figure 3)

Source: Base map developed based on drawing prepared by Snyder Engineering & Land Surveying, LLP (January 11, 2005). Refer to this drawing for site details.

40 20 0 40 Feet

FIGURE 2

SITE PLAN

OSWEGO (WEST UTICA ST.)
FORMER MGP SITE
OSWEGO, NEW YORK

DATE	PROJECT NUMBER
08/01/05	126410.003

BROWN AND CALDWELL
ASSOCIATES

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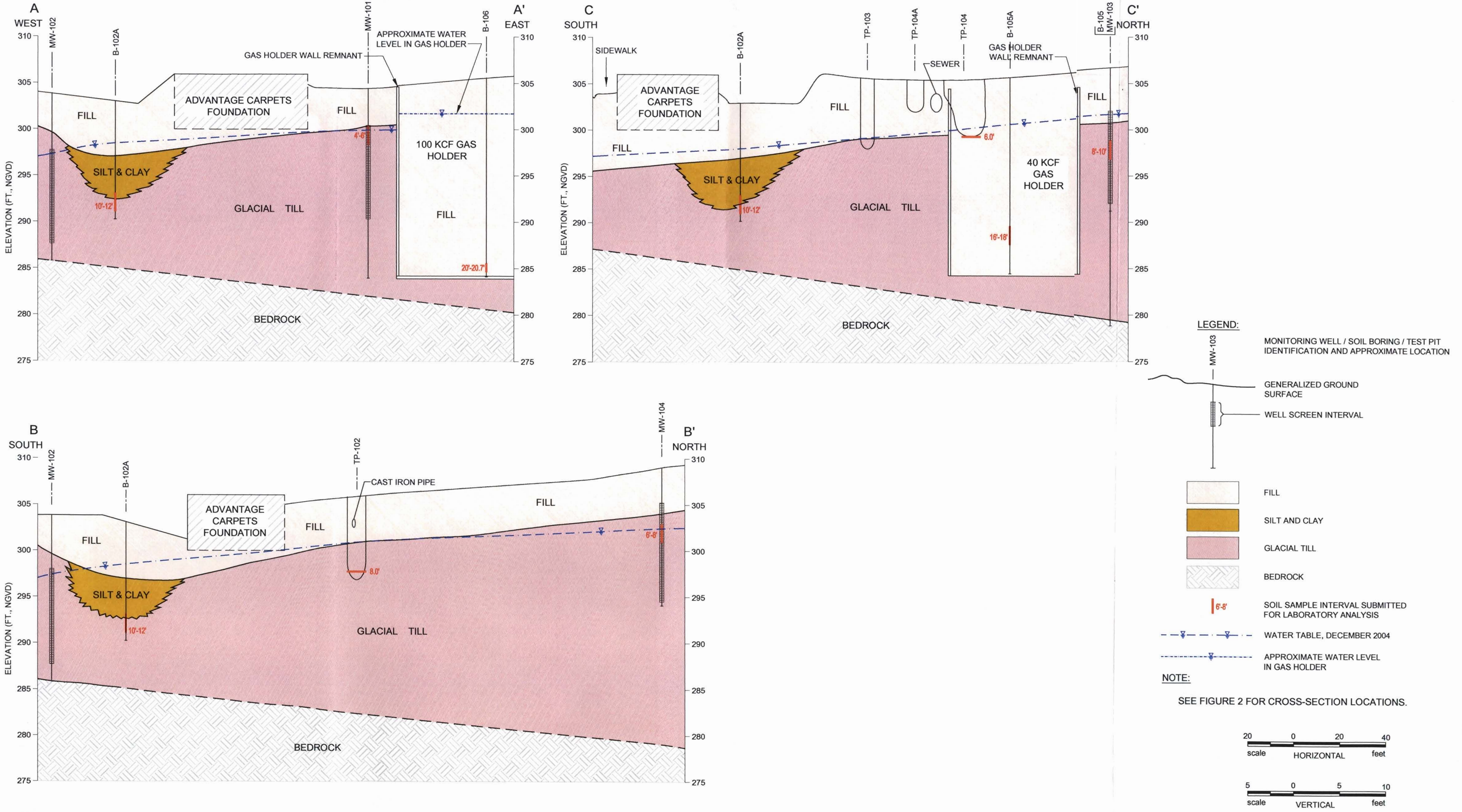


NOTE:

SEE FIGURE 2 FOR CROSS-SECTION LOCATIONS.

BROWN AND CALDWELL ASSOCIATES
ALLENDALE, NEW JERSEY

SUBMITTED: ROBERT O'NEILL DATE: 06/22/05
PROJECT MANAGER
APPROVED: DATE:
BROWN AND CALDWELL

LINE IS 2 INCHES AT FULL SIZE
(IF NOT 2" - SCALE ACCORDINGLY)

DESIGNED:	NOK
DRAWN:	PL
CHECKED:	NOK
CHECKED:	RLO
APPROVED:	

EXTERNAL REFERENCES

JEFFREY R. CAPUTI
PROFESSIONAL ENGINEER
N.Y. LICENSE NO. 082196-1
DATE

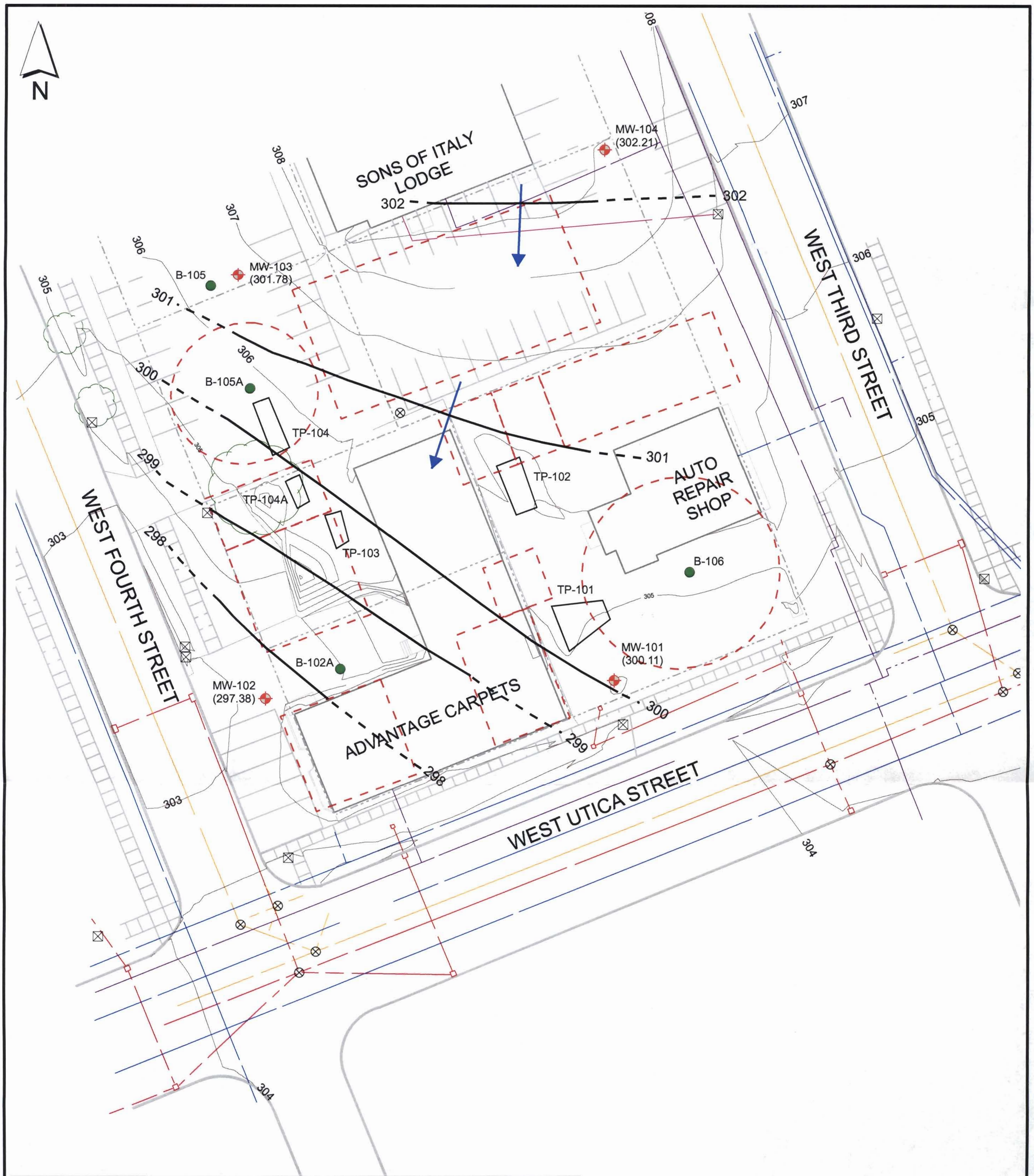
REVISIONS

ZONE	REV.	DESCRIPTION	BY	DATE	APP.

FIGURE 3
HYDROGEOLOGIC CROSS-SECTIONS A-A', B-B' & C-C'

NIAGARA MOHAWK, A NATIONAL GRID COMPANY
OSWEGO (UTICA STREET) MGP SITE
OSWEGO, NEW YORK

FILENAME
126410\003\C1001.DWG
BC PROJECT NUMBER
126410.003
CLIENT PROJECT NUMBER
DRAWING NUMBER
C-1001
SHEET NUMBER
OF



Legend

●	Soil Boring	—	Water Table Elevation Contour (ft, NGVD) dashed where inferred
⊕	Monitoring Well	→	Generalized Groundwater Flow Direction
☐	Test Pit	(315.01)	Water Level Elevations (ft, NGVD) 12/16/04
⊗	Manhole	▭	Former MGP Structure Location. Locations are approximate, based on 1924 Sanborn Fire Insurance Map.
☒	Power Pole		
—	Ground Surface Elevation Contour (ft, NGVD 29)		
-·-	Property Line		
—	Pavement Edge		
—	Vegetation		
—	Water Line		
—	Storm Sewer Line		
—	Sanitary Sewer Line		
—	Gas Line		

Source: Base map developed based on drawing prepared by Snyder Engineering & Land Surveying, LLP (January 11, 2005). Refer to this drawing for site details.

40 20 0 40 Feet

FIGURE 4

WATER TABLE CONTOUR MAP
DECEMBER 2004

OSWEGO (WEST UTICA ST.)
FORMER MGP SITE
OSWEGO, NEW YORK

DATE	PROJECT NUMBER
08/01/05	126410.003

BROWN AND CALDWELL
ASSOCIATES

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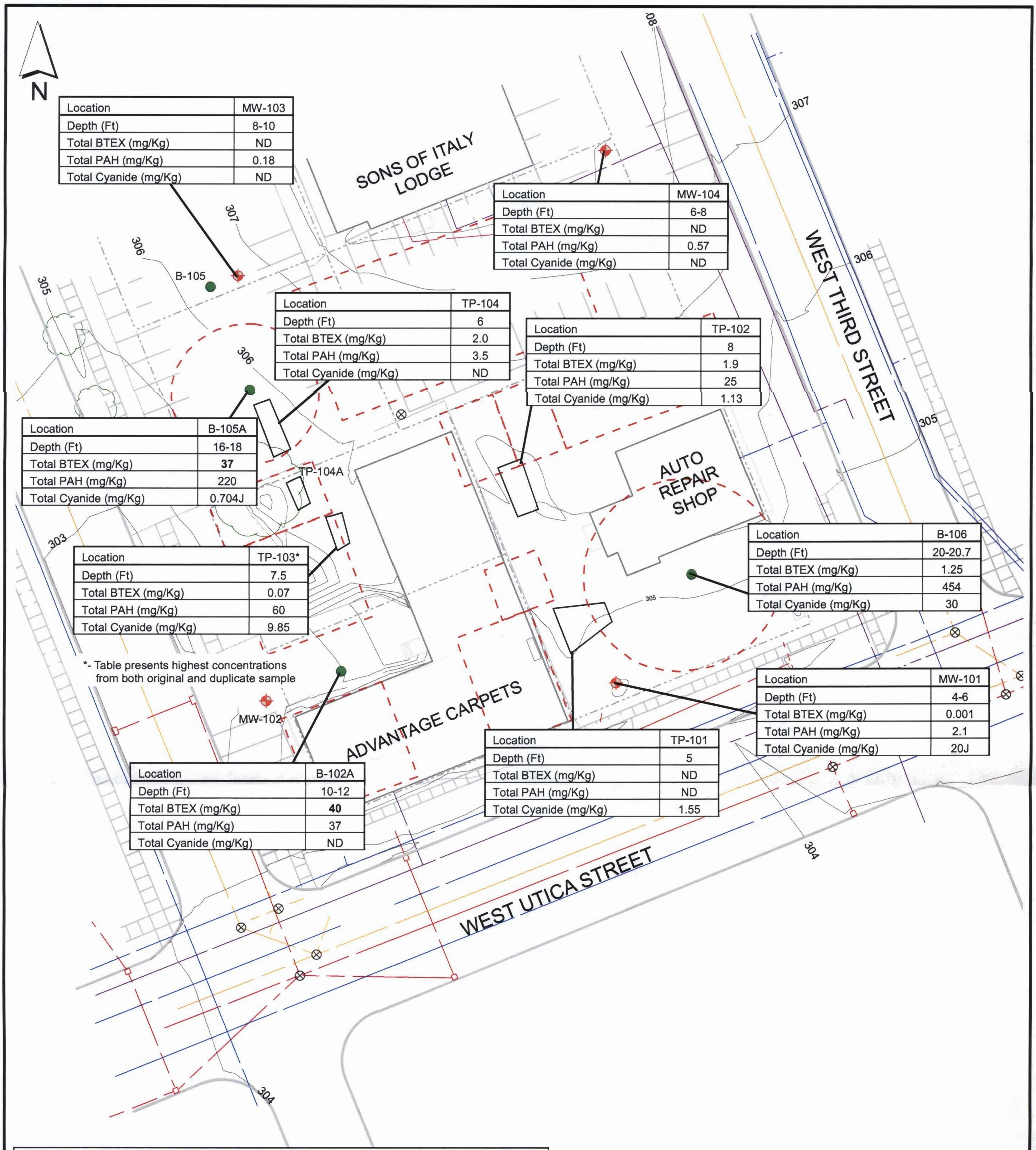

Location	MW-103
Depth (Ft)	8-10
Total BTEX (mg/Kg)	ND
Total PAH (mg/Kg)	0.18
Total Cyanide (mg/Kg)	ND

Location	MW-104
Depth (Ft)	6-8
Total BTEX (mg/Kg)	ND
Total PAH (mg/Kg)	0.57
Total Cyanide (mg/Kg)	ND

Location	TP-104
Depth (Ft)	6
Total BTEX (mg/Kg)	2.0
Total PAH (mg/Kg)	3.5
Total Cyanide (mg/Kg)	ND

Location	TP-102
Depth (Ft)	8
Total BTEX (mg/Kg)	1.9
Total PAH (mg/Kg)	25
Total Cyanide (mg/Kg)	1.13

Location	B-105A
Depth (Ft)	16-18
Total BTEX (mg/Kg)	**37**
Total PAH (mg/Kg)	220
Total Cyanide (mg/Kg)	0.704J

Location	TP-103*
Depth (Ft)	7.5
Total BTEX (mg/Kg)	0.07
Total PAH (mg/Kg)	60
Total Cyanide (mg/Kg)	9.85

*- Table presents highest concentrations from both original and duplicate sample

Location	B-106
Depth (Ft)	20-20.7
Total BTEX (mg/Kg)	1.25
Total PAH (mg/Kg)	454
Total Cyanide (mg/Kg)	30

Location	MW-101
Depth (Ft)	4-6
Total BTEX (mg/Kg)	0.001
Total PAH (mg/Kg)	2.1
Total Cyanide (mg/Kg)	20J

Location	TP-101
Depth (Ft)	5
Total BTEX (mg/Kg)	ND
Total PAH (mg/Kg)	ND
Total Cyanide (mg/Kg)	1.55

Location	B-102A
Depth (Ft)	10-12
Total BTEX (mg/Kg)	**40**
Total PAH (mg/Kg)	37
Total Cyanide (mg/Kg)	ND

Legend

- ● Soil Boring
- ⊕ Monitoring Well
- ☐ Test Pit
- ⊗ Manhole
- □ Catch Basin
- — Ground Surface Elevation Contour (ft, NGVD 29)
- - · · - Property Line
- — Pavement Edge
- — Vegetation
- — Water Line
- — Storm Sewer Line
- — Sanitary Sewer Line
- — Electrical Line
- — Gas Line

- - - Former MGP Structure Location. Locations are approximate, based on 1924 Sanborn Fire Insurance Map.

Explanation of terms and abbreviations:

BTEX- Benzene, Toluene, Ethylbenzene, Xylenes
PAH- Polycyclic Aromatic Hydrocarbons
mg/Kg- Milligrams per Kilogram
ND- Not Detected
Bold Value- Indicates concentration of total BTEX or total PAHs are above RSCO (TAGM 4046) criteria of 10 mg/kg for total VOCs or 500 mg/kg for total SVOCs respectively

Source: Base map developed based on drawing prepared by Snyder Engineering & Land Surveying, LLP (January 11, 2005). Refer to this drawing for site details.

40 20 0 40
Feet

FIGURE 5

BTEX, PAH, AND CYANIDE CONCENTRATIONS IN SOIL

OSWEGO (WEST UTICA ST.)
FORMER MGP SITE
OSWEGO, NEW YORK

DATE	PROJECT NUMBER
08/01/05	126410.003

BROWN AND CALDWELL
ASSOCIATES

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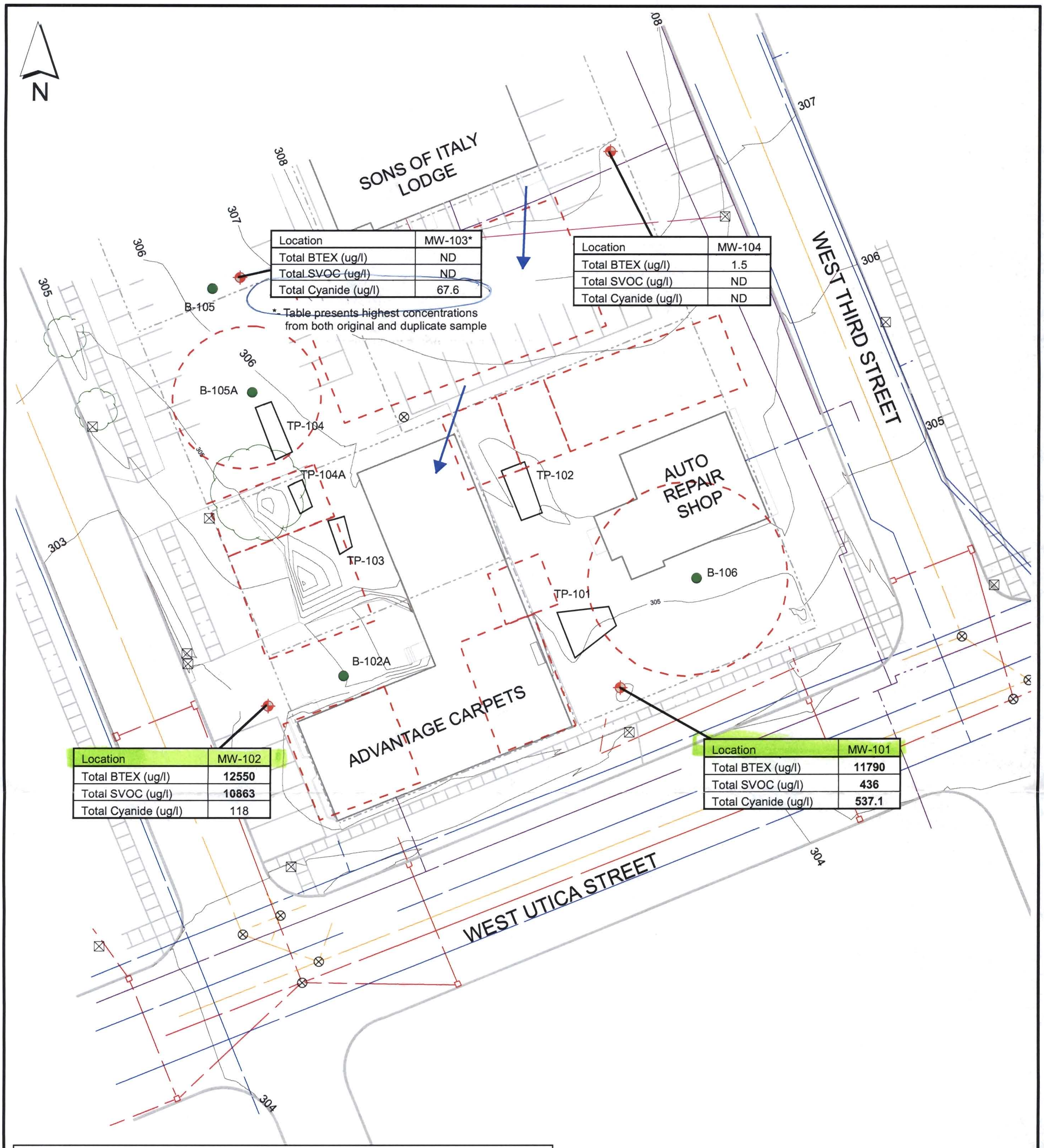

Location	MW-103*
Total BTEX (ug/l)	ND
Total SVOC (ug/l)	ND
Total Cyanide (ug/l)	67.6

* Table presents highest concentrations from both original and duplicate sample

Location	MW-104
Total BTEX (ug/l)	1.5
Total SVOC (ug/l)	ND
Total Cyanide (ug/l)	ND

Location	MW-102
Total BTEX (ug/l)	**12550**
Total SVOC (ug/l)	**10863**
Total Cyanide (ug/l)	118

Location	MW-101
Total BTEX (ug/l)	**11790**
Total SVOC (ug/l)	**436**
Total Cyanide (ug/l)	**537.1**

Legend

- ● Soil Boring
- ⊕ Monitoring Well
- ☐ Test Pit
- ⊗ Manhole
- □ Catch Basin
- Ground Surface Elevation Contour (ft, NGVD 29)
- Property Line
- Pavement Edge
- Vegetation
- Water Line
- Storm Sewer Line
- Sanitary Sewer Line
- Electrical Line
- Gas Line

→ Generalized Groundwater Flow Direction (December 2004)

Former MGP Structure Location. Locations are approximate, based on 1924 Sanborn Fire Insurance Map.

Explanation of terms and abbreviations:
BTEX- Benzene, Toluene, Ethylbenzene, Xylenes
SVOC- Semivolatile Organic Compounds
ug/L- Micrograms per Liter
ND- Not Detected
NA- Not Analyzed
Bold Value - Indicates one or more constituents are above Class GA Criteria

Source: Base map developed based on drawing prepared by Snyder Engineering & Land Surveying, LLP (January 11, 2005). Refer to this drawing for site details.

40 20 0 40
Feet

FIGURE 6
BTEX, SVOC, AND CYANIDE CONCENTRATIONS IN GROUNDWATER

OSWEGO (WEST UTICA ST.)
FORMER MGP SITE
OSWEGO, NEW YORK

DATE 08/01/05
PROJECT NUMBER 126410.003

BROWN AND CALDWELL
ASSOCIATES

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BROWN AND CALDWELL

TEST PIT LOG

SITE LOCATION	**Oswego, NY, Utica St.**	**TEST PIT NUMBER**	**TP-101A/B**
PROJECT NUMBER	126410.002	**BC REPRESENTATIVE**	N. Krupinski
GENERAL LOCATION	Area of former gas holder, ammonia still, electric plant	**CONTRACTOR**	Parratt Wolff
DATE	11/19/04	**OTHERS**	J. Wolf (DEC)
TIME OPENED	06:57	**TIME CLOSED**	08:40
DEPTH TO WATER (ft. BGS)	TP-101A: 3.5 TP-101B: 4.0	**EQUIPMENT**	Backhoe excavator
DEPTH TO NATIVE SOILS (ft. BGS)	3.5	**TOTAL LENGTH (ft.)**	19.5
TOTAL DEPTH (ft. BGS)	TP-101A: 7.0 TP-101B: 4.0	**NAPL OBSERVED**	Yes, inside & outside holder, w/ petroleum and tar odors
ANALYTICAL SAMPLES	TP-101-F(5.0')		

View Northeast (TP-101A foreground, TP-101B background)

Fill: Black-gray mfc GRAVEL and cmf SAND, little Silt & Clay. Frequent whole bricks, some wood

Thin NAPL/sheen on water (gasoline odor)

Brick wall of holder tank

NAPL on water

TEST PIT LOG

SITE LOCATION **Oswego, NY, Utica St.** **TEST PIT NUMBER** **TP-101A/B**

View Northwest (TP-101A left, TP-101B right)

Brick holder tank wall

View Southwest (TP-101A)

0.5'-1.0': Tar, hard but slightly malleable.

1.0'-1.5': White-gray ash.

1.5'-3.5': Tan mcf SAND and mfc GRAVEL (rounded), some Silt & Clay.

2.0'-2.5': Lens of wood.

3.5'-7.0': Gray-black stained CLAY & SILT, some mfc Gravel, little (-) mcf Sand. Moderate to strong coal tar odor. Analytical sample collected @ 5.0'

BROWN AND
CALDWELL

TEST PIT LOG

SITE LOCATION	**Oswego, NY, Utica St.**	**TEST PIT NUMBER**	**TP-102**
PROJECT NUMBER	126410.002	**BC REPRESENTATIVE**	N. Krupinski
GENERAL LOCATION	Area of former tar tank rooms	**CONTRACTOR**	Parratt Wolff
DATE	11/18/04	**OTHERS**	J. Wolf (DEC)
TIME OPENED	13:18	**TIME CLOSED**	15:15
DEPTH TO WATER (ft. BGS)	6.5	**EQUIPMENT**	Backhoe excavator
DEPTH TO NATIVE SOILS (ft. BGS)	5.0	**TOTAL LENGTH (ft.)**	14.0
TOTAL DEPTH (ft. BGS)	8.5	**NAPL OBSERVED**	Yes, with petroleum and tar odors
ANALYTICAL SAMPLES	TP-102-F(8.0’)		

View Southeast

0.6’-2.0’: Black cmf SAND, some fm Gravel, some (-) Silt & Clay.

2.0’-5.0’: Brown-tan CLAY & SILT< and fmc SAND, some mfc Gravel. Occ. black mottled/stained layers, occ. bricks.

3.0’: Cast iron pipe (1’ diameter)

5.0’-8.0’: Tan SAND and Clayey SILT, some mfc Gravel.

6.5’: Light-colored NAPL on water surface (petroleum odor).

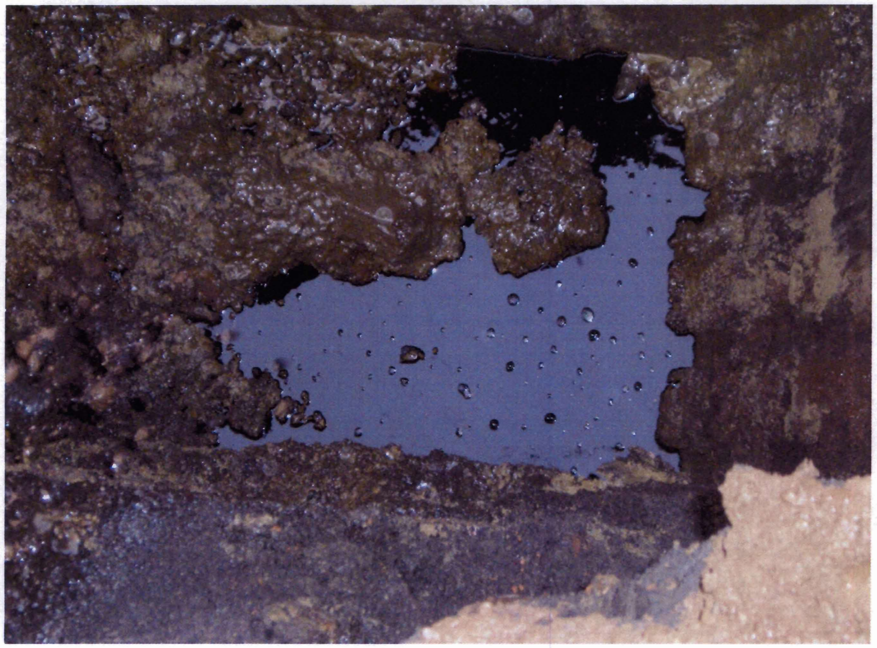
8.0’:Black cmf SAND and fmc GRAVEL, some Silt & Clay. Strong tar odor. Analytical sample collected @ 8.0’

SITE LOCATION	Oswego, NY, Utica St.	TEST PIT NUMBER	TP-102

View Southeast

8.0'-8.5': Black cmf SAND and fmc GRAVEL, some Silt & Clay. Strong tar odor.

Dark-colored NAPL, tar odor.



Dark-colored NAPL, tar odor.

TEST PIT LOG

SITE LOCATION	**Oswego, NY, Utica St.**	**TEST PIT NUMBER**	**TP-103**
PROJECT NUMBER	126410.002	**BC REPRESENTATIVE**	N. Krupinski
GENERAL LOCATION	Area of former purifying room	**CONTRACTOR**	Parratt Wolff
DATE	11/18/04	**OTHERS**	J. Wolf (DEC)
TIME OPENED	11:20	**TIME CLOSED**	12:50
DEPTH TO WATER (ft. BGS)	5.5	**EQUIPMENT**	Backhoe excavator
DEPTH TO NATIVE SOILS (ft. BGS)	6.5	**TOTAL LENGTH (ft.)**	10
TOTAL DEPTH (ft. BGS)	8.0	**NAPL OBSERVED**	Yes, sheen on water with petroleum odor
ANALYTICAL SAMPLES	TP-103-F(7.5’)		

View Northwest

0.5’-8.0’: Dark brown cmf GRAVEL/COBBLES and cmf SAND, some CLAY & SILT. Frequent bricks, concrete, rubble, coke, coal, loose pieces of iron pipe (4” diameter), occ. ash.

1.5’-2.0’: Black ash lens

3.0’Cast iron pipe (1’ diameter), slight tar odor near pipe.

5.5’: Water table with light-colored sheen, petroleum odor.

TEST PIT LOG

SITE LOCATION	**Oswego, NY, Utica St.**	**TEST PIT NUMBER**	**TP-103**

Photo of excavated material

6.5': Tan mcf SAND and CLAY & SILT, some mcf Gravel (rounded/sub-rounded).

7.5': Gray-black stained cmf SAND and CLAY & SILT, some mcf Gravel. Analytical sample collected from soil @ 7.5'.

TEST PIT LOG

SITE LOCATION	**Oswego, NY, Utica St.**	**TEST PIT NUMBER**	**TP-104 A/B**
PROJECT NUMBER	126410.002	**BC REPRESENTATIVE**	N. Krupinski
GENERAL LOCATION	Area of former gas holder and associated contamination	**CONTRACTOR**	Parratt Wolff
DATE	11/17/04-11/18/04	**OTHERS**	B. O'Neill (BC), S. Stucker (NM) , J. Wolf (DEC)
TIME OPENED	A: 13:57 B: 15:34	**TIME CLOSED**	A: 15:05 B: 11:20
DEPTH TO WATER (ft. BGS)	5.0	**EQUIPMENT**	Backhoe excavator
DEPTH TO NATIVE SOILS (ft. BGS)	>4.0	**TOTAL LENGTH (ft.)**	12.0/19.0
TOTAL DEPTH (ft. BGS)	TP-104A: 3.2 TP-104B: 6.0	**NAPL OBSERVED**	Yes, in TP-104B, w/ petroleum odor
ANALYTICAL SAMPLES	TP-104B-F(6.0')		

View East (TP-104A)

3.0': Cast iron pipe (1' diameter)

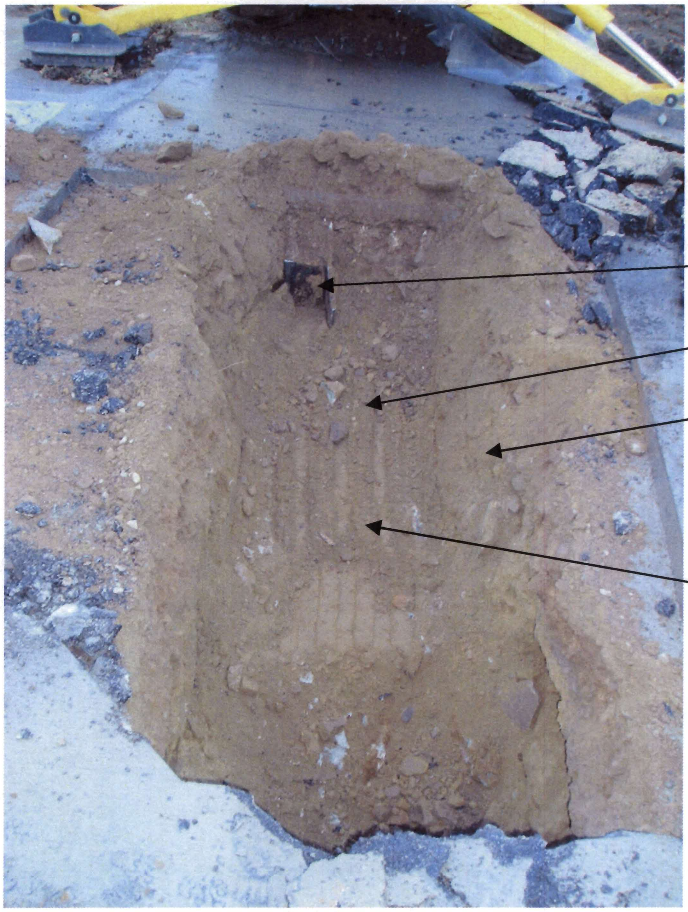
1.0'-3.2': Brown-black fill with bricks, concrete, sandstone, tile, asphalt, ash.

TEST PIT LOG

SITE LOCATION	**Oswego, NY, Utica St.**	**TEST PIT NUMBER**	**TP-104 A/B**

<u>View Northwest (TP-104A)</u>
<u>1.0'-3.2'</u>: Brown-black fill with bricks, concrete, sandstone, tile, asphalt, ash.

SITE LOCATION **Oswego, NY, Utica St.** **TEST PIT NUMBER** **TP-104 A/B**



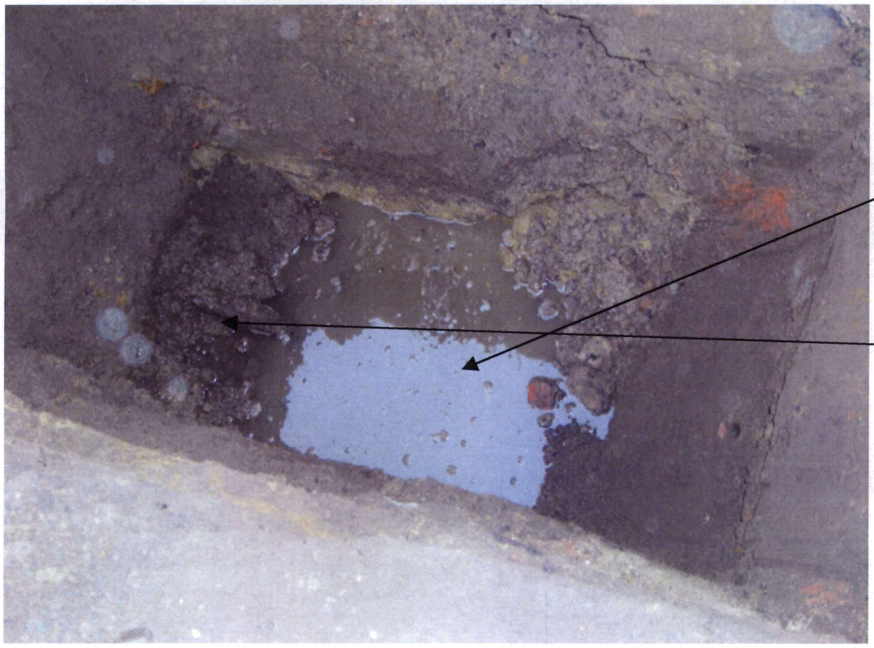
View Northwest (TP-104B)

Metal corner

Edge or footer of holder tank

0.3'-: Brown cmf GRAVEL and cmf SAND, some Silt & Clay. Frequent rubble, metal pieces. Occ. tar odor.

4.0': Flat slab of stone blocks and concrete, possible holder tank foundation, tar odor.



View Southeast (TP-104B)

5.0': Groundwater with thin light/clear NAPL sheen, petroleum odor.

6.0': Gray cmf SAND and cmf GRAVEL (sub-rounded), some (+) Clay & Silt. Tar odor. Analytical sample @ 6.0'

ATTACHMENT 2

SOIL BORING AND WELL CONSTRUCTION LOGS

BORING LOG

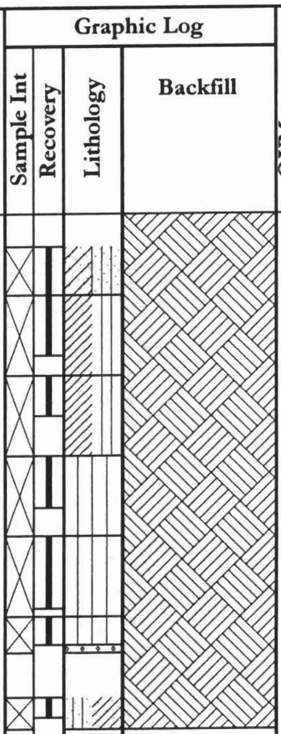
BROWN AND CALDWELL	**Project Name:** SC of Oswego (Utica St) MGP Site **Project Number:** 126410.002 **Project Location:** W. Utica St., Oswego, NY	**Permit Number:** NA	**Boring No.** B-102A **Page** 1 **of** 1

Geologist/Office N. Krupinski/Allendale	**Checked By:** R. O'Neill	**Borehole Diameter:** 8"	**Screen Diameter and Type:**	**Slot Size:** NA"	**Total Boring Depth (ft)** 12.8 ft.

Start/Finish Date 11/29/04 - 11/29/04	**Drilling Contractor:** Parratt-Wolff, Inc.	**Sampling:** Split Spoon **Hammer Type:** Manual	**Development Method:** NA

Driller: R. Baldue	**Drilling Method:** Hollow-stem auger	**Drilling Equipment:** Ingersoll Rand 830	**Horiz Datum/Proj:** State Plane NAD 83 **Vert Datum:** NGVD 29 **Ground Surface Elev:** 303.1 ft.	**Easting:** 839105.1 ft. **Northing:** 1257885.3 ft. **TOC Elev:** NA ft.

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	OVM Readings (ppm)	Remarks
		SC SM	**FILL** Brown and black cmf SAND and CLAY & SILT, some mf Gravel. Red brick fragments, occ. black layer. Damp.	/-7-13-4	1	0	Grouted to surface
		CL ML	Brown CLAY & SILT, some cmf Sand, little (+) fm Gravel. Occ. pieces of coal throughout, occ. Black layers. Soil is disturbed, not stratified. Saturated @ 3.0'.	2-3-1-2	2	0	
5		CL ML	Light Brown and tan/gray CLAY & SILT, some cmf Sand, little fm Gravel (sub-rounded, natural). Soil is disturbed (not stratified). Wet.	1-2-2-3	3	0	
		ML	**SILT & CLAY DEPOSIT** Black-gray stained SILT & CLAY to Clayey SILT. Moderate tar odor. Wet.	1-2-10-10	4	34.1	
		ML	As above, Brown-gray-black. Strong iridescent sheen, intermittent Black-brown NAPL @ 8.5-10.0. Dense @ 9.8'. Saturated w/ water.	5-2-2-8	5	96.1	
10		ML	As above, bits of fractured gray sandstone throughout. Large veins of Black-red-brown viscous NAPL throughout, coating sandstone fragments. Strong iridescent sheen, strong tar odor.	14-50/0.4	6	284	10'-12' Soil sample sent for laboratory analysis.
		SW	**GLACIAL TILL** Brown cmf SAND, some Silt, some fm Gravel. Dense. Saturated w/ water.				
		SM SC	Tan-gray cmf SAND and SILT & CLAY, some (-) fm Gravel. Strong tar odor. Dense/very dense.	39-50/0.3	7	26.8	12.8' End of boring.



BORING LOG

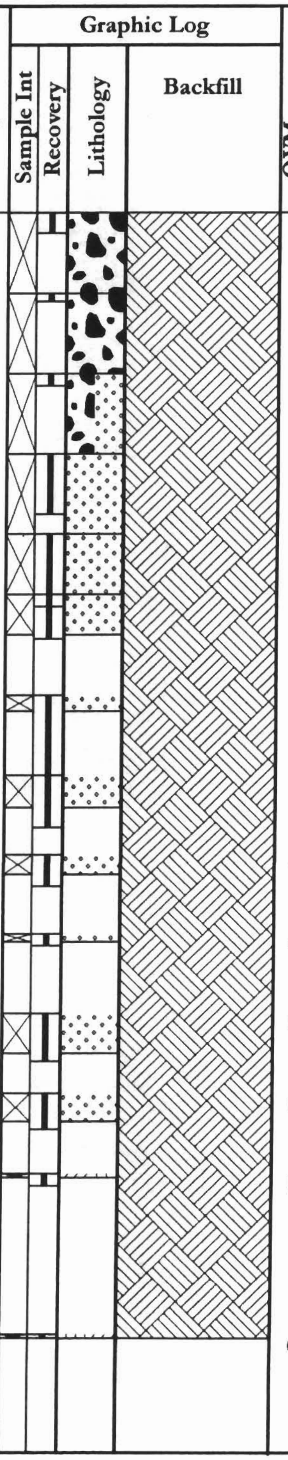
BROWN AND CALDWELL	**Project Name:** SC of Oswego (Utica St) MGP Site **Project Number:** 126410.002 **Project Location:** W. Utica St., Oswego, NY	**Permit Number:** NA	**Boring No.** **B-105** **Page** 1 **of** 1

Geologist/Office N. Krupinski/Allendale	**Checked By:** R. O'Neill	**Borehole Diameter:** 8"	**Screen Diameter and Type:**	**Slot Size:** NA"	**Total Boring Depth (ft)** 28.1 ft.

Start/Finish Date 11/22/04 - 11/22/04	**Drilling Contractor:** Parratt-Wolff, Inc.	**Sampling:** Split Spoon **Hammer Type:** Manual	**Development Method:** NA

Driller: R. Baldue	**Drilling Method:** Hollow-stem auger	**Drilling Equipment:** Ingersoll Rand 830	**Horiz Datum/Proj:** State Plane NAD 83 **Vert Datum:** NGVD 29 **Ground Surface Elev:** 306.4 ft.	**Easting:** 839054.2 ft. **Northing:** 1259034.9 ft. **TOC Elev:** NA ft.

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	OVM Readings (ppm)	Remarks
		GW	**FILL** Light Brown fm GRAVEL (sub-rounded) and cmf SAND, little Silt. Dry.	6-28-16-12	1	5.6	Grouted to surface.
		GW	As above. @ 3.9' Brown cmf SAND and mf GRAVEL, some Clayey Silt. Brick frags. Dry.	6-7-2-3	2	5.7	
5		GW SW	Brown mf GRAVEL (fractured, some sub-rounded) and cmf SAND, some (-) Clayey Silt. Bits of brick. Dry.	7-9-32-8	3	1.4	
		SW	**GLACIAL TILL** Tan mcf SAND, some Silt & Clay, some mf Gravel (fractured or sub-rounded). Saturated @ 6.5'.	11-12-28-62	4	0.0	
		SW	As above. @ 9.3' denser.	32-52-60/0.5	5	0.5	
10		SW	As above, slight petroleum-like odor. Very dense.	44-50/0.4	6	0.2	
		SW	Tan mcf SAND, some Silt & Clay, some mf Gravel (fractured or sub-rounded). Very dense.	50/0.4	7	2.2	
15		SW	As above. @ 14.1'-14.3' lens of cmf SAND, trace Silt. Slight tar-like odor. Very dense.	40-50/0.3	8	0.0	
		SW	As above, @ 16.2'-16.3' lens of Gray cmf SAND, trace Silt.	56	9	0.0	
		SW	As above. Gravel is sub-rounded/sub-angular.	50/0.2	10	0.0	
20		SW	As above. @ 20.8' Gray SILT, trace f Gravel. Very dense.	44-56	11	0.0	
		SW	Gray-pink fm SAND, some (-) Silt. Dense.	34-50/0.2	12	0.1	
25		CL ML	Gray-pink CLAY & SILT, little f Gravel, trace f Sand. Dense, Damp.	100/0.1	13	0.0	
			No recovery.	86/0.0	14		
		ML CL	Pink-gray SILT & CLAY and fm GRAVEL (fragmented brown-gray sandstone), some mcf Sand.	50/0.1	15	0.0	28.1 End of Boring.



BORING LOG

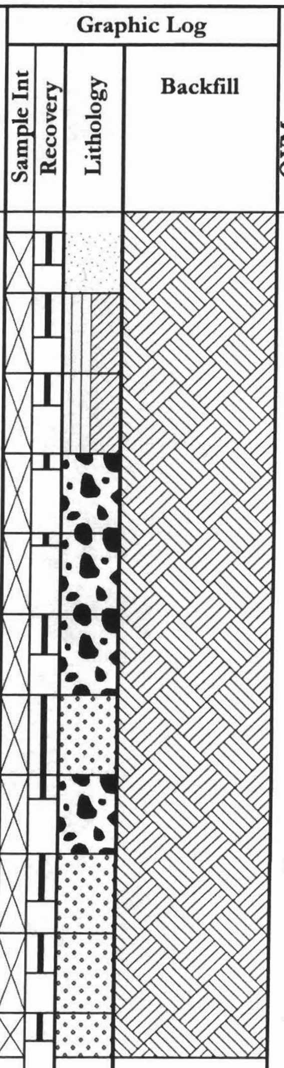
BROWN AND CALDWELL	**Project Name:** SC of Oswego (Utica St) MGP Site **Project Number:** 126410.002 **Project Location:** W. Utica St., Oswego, NY	**Permit Number:** NA	**Boring No.** B-105A **Page** 1 **of** 1

Geologist/Office	**Checked By:**	**Borehole Diameter:**	**Screen Diameter and Type:**	**Slot Size:**	**Total Boring Depth (ft)**
N. Krupinski/Allendale	R. O'Neill	8"		NA"	21.1 ft.

Start/Finish Date	**Drilling Contractor:**	**Sampling:** Split Spoon **Hammer Type:** Manual	**Development Method:**
11/23/04 - 11/23/04	Parratt-Wolff, Inc.		NA

Driller:	**Drilling Method:**	**Drilling Equipment:**	**Horiz Datum/Proj:** State Plane NAD 83 **Vert Datum:** NGVD 29 **Ground Surface Elev:** 308.8 ft.	**Easting:** 839069.8 ft. **Northing:** 1257994.5 ft. **TOC Elev:** NA ft.
R. Baldue	Hollow-stem auger	Ingersoll Rand 830		

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	OVM Readings (ppm)	Remarks
		SP	**FILL** Light Brown cmf SAND, some Clayey Silt, some fm Gravel. Slight soil odor, damp.	/-9-18-19	1	0.5	Grouted to surface.
		ML CL	Brown-gray CLAY & SILT and cmf SAND, little f Gravel. Slight tar odor. Damp.	14-14-2-2	2	0.3	
5		ML CL	As above. @ 4.4' Gray fm GRAVEL, some cmf Sand, little Silt. @ 4.8' Black wood with little Black-brown liquid NAPL (coal tar?), strong tar odor, sheen. Saturated w/ water.	14-5-8-13	3	27.1	
		GW	Dark Gray fm GRAVEL, some cmf Sand, little Silt & Clay. Wood bits (black-stained w/ NAPL) at top. Tar odor, few droplets of NAPL (coal tar?) on water.	13-8-7-8	4	11.5	Boring is located within area of former 40 KCF gas holder.
		GW	Dark Gray fm GRAVEL, some cmf Sand, some (-) Silt & Clay. Tar odor, droplets of NAPL (coal tar?) on water.	9-7-3-1	5	5.6	
10		GW	Dark Gray mf GRAVEL (rounded/sub-rounded gray, green, red sandstone), some cmf Sand, little Silt & Clay. Moderate tar odor.	3-3-7-9	6	6.2	
		SW	Gray-brown cmf SAND, some fm Gravel (sub-rounded sandstone), little Silt. Slight tar odor.	7-7-8-14	7	5.0	
15		GW	Gray mf Gravel (sub-rounded/sub-angular gray, green, red sstn.), some (-) cmf Sand, trace Silt. Piece of screw w/ orange paint (possibly from above). Faint tar odor.	8-6-16-5	8	1.1	
		SW	Gray cmf SAND, little (+) Silt & Clay, trace f Gravel. @ 16.9'-17.2' lens of SILT & CLAY. NAPL throughout (dark Yellow/light brown, strong tar odor, slight petroleum odor, corrodes latex). Strong sheen.	16-18-3-3	9	11.1	16'-18' Soil sample sent for laboratory analysis.
		SW	Gray fm SAND, trace Silt. @ 19.5' Black-stained fm GRAVEL, some cmf Sand, little Silt. @ 19.8' piece of Red brick. Strong tar odor, strong sheen, droplets of NAPL. Concrete in tip.	2-3-13-3	10	4.0	
20		SW	Gray f SAND. @ 20.5' Black-stained mf GRAVEL and cmf SAND, little (+) Silt. @ 20.8' piece of gravel coated w/ prominently green SILT & CLAY, some cmf Sand. @ 21.0' piece of brick and concrete in tip. Strong tar odor throughout, Black-stained at bottom.	9-37-50/0.0	11	101	
							21.1' End of Boring.



BORING LOG

BROWN AND CALDWELL	**Project Name:** SC of Oswego (Utica St) MGP Site **Project Number:** 126410.002 **Project Location:** W. Utica St., Oswego, NY	**Permit Number:** NA	**Boring No.** B-106 **Page** 1 **of** 1

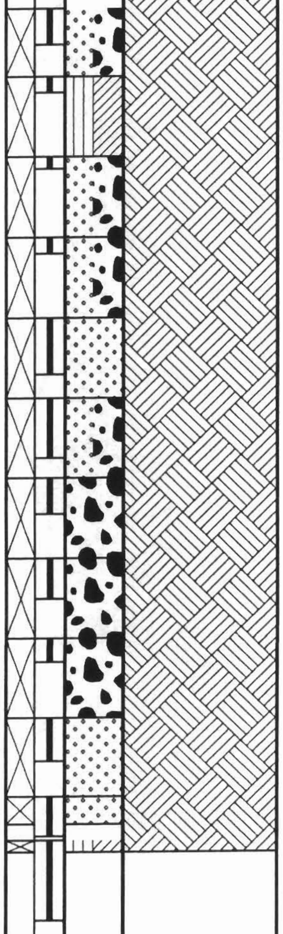
Geologist/Office	**Checked By:**	**Borehole Diameter:**	**Screen Diameter and Type:**	**Slot Size:**	**Total Boring Depth (ft)**
N. Krupinski/Allendale	R. O'Neill	8"		NA"	21.4 ft.

Start/Finish Date	**Drilling Contractor:**	**Sampling:** Split Spoon **Hammer Type:** Manual	**Development Method:**
11/19/04 - 11/19/04	Parratt-Wolff, Inc.		NA

Driller:	**Drilling Method:**	**Drilling Equipment:**		
R. Baldue	Hollow-stem auger	Ingersoll Rand 830	**Horiz Datum/Proj:** State Plane NAD 83 **Vert Datum:** NGVD 29 **Ground Surface Elev:** 305.5 ft.	**Easting:** 839241.2 ft. **Northing:** 1257922.9 ft. **TOC Elev:** NA ft.

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	OVM Readings (ppm)	Remarks
		SW GW ML CL	**FILL** Brown cmf SAND and fm GRAVEL, little Silt. @ 0.6' Red mf GRAVEL and cmf SAND, some Silt & Clay. @ 0.8' Black & white SILT & CLAY (ash), some mf Gravel (brick), little mfc Sand.	/-7-6-6 5-2-4-4	1 2	- 33.1	Grouted to surface
5		SW GW	Black/white SILT & CLAY and mcf SAND, trace f Gravel. Pieces of brick @ 3.6'. Moderate detergent-like odor. Sheen on water in borehole. Saturated @ 3.5'.	3-2-2-1	3	12.1	Boring is located within area of former 100 KCF gas holder.
		SW GW	Brown cmf SAND and fm GRAVEL, some Silt & Clay. @ 5.8' Black mf GRAVEL and cmf SAND, some Silt & Clay. Bits of wood, pieces of brick. Strong tar odor, sheen.	3-4-2-3	4	1.6	
		SW	As above @ 5.8'. Detergent-like odor, tar odor.	4-2-3-2	5	9.0	
10		SW GW	Black and red cmf SAND, little Silt, trace f Gravel (red brick). @ 9.6' Black and gray ash and brick, pebbles.	7-2-2-4	6	5.0	
		GW	Black cmf SAND and mf GRAVEL, little Silt. Pieces of brick. Black staining, strong sheen, petroleum odor.	6-2-3-3	7	2.1	
		GW	Black and red mfc SAND, grades to fm GRAVEL, some cmf Sand, trace Silt. Pieces of brick, coal. Slight tar odor, slight sheen.	2-3-3-1	8	1.6	
15			As above, brick in last 0.4'. Slight sheen.				
		GW	As above. @ 17.9' Orange CLAY & SILT and mf GRAVEL (brick). Slight tar odor.	4-3-2-4	9	1.5	
		SW	Black-brown and red mfc SAND, trace Silt. @ 19.2' grades to mf GRAVEL, little cmf Sand, trace Silt.	4-6-7-5	10	0.5	
20		SW	As above. @ 20.4' piece of brick, @ 20.5' black wood/SILT, little fm Sand. @ 20.5' strong tar odor & staining, sheen. Brick and concrete in shoe.	16-50/0.2	11	1.2	20.0'-20.7' Soil sample sent for laboratory analysis.
		ML CL	Black SILT & CLAY, little (+) fm Sand, trace f Gravel. Stained black, strong tar odor. @ 21.2' piece of brick and concrete in shoe.	50/0.3	12	3.6	21.4' End of Boring

Graphic Log: Sample Int, Recovery, Lithology, Backfill



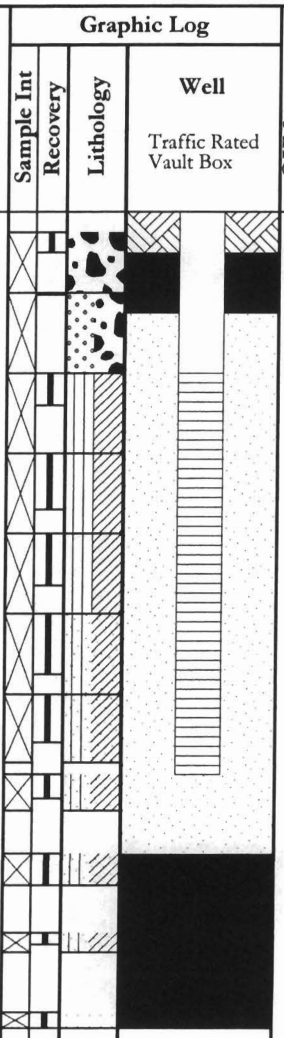
MONITORING WELL LOG

BROWN AND CALDWELL	**Project Name:** SC of Oswego (Utica St) MGP Site **Project Number:** 126410.002 **Project Location:** W. Utica St., Oswego, NY	**Permit Number:** NA	**Well No.** **MW-101** **Page** 1 **of** 1

Geologist/Office	**Checked By:**	**Borehole Diameter:**	**Screen Diameter and Type:**	**Slot Size:**	**Total Boring Depth (ft)**
N. Krupinski/Allendale	R. O'Neill	8"	2" Slotted PVC	0.02"	20.4 ft.

Start/Finish Date	**Drilling Contractor:**	**Sampling:** Split Spoon	**Development Method:**
11/23/04 - 11/24/04	Parratt-Wolff, Inc.	**Hammer Type:** Manual	Surge & Pump

Driller:	**Drilling Method:**	**Drilling Equipment:**	**Horiz Datum/Proj:** State Plane NAD 83 **Vert Datum:** NGVD 29 **Ground Surface Elev:** 304.4 ft.	**Easting:** 839211.8 ft. **Northing:** 1257880.6 ft. **TOC Elev:** 304.0 ft.
R. Baldue	Hollow-stem auger	Ingersoll Rand 830		



Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	OVM Readings (ppm)	Remarks
		GW	**FILL** Red fm GRAVEL, little cmf Sand, little Silt & Clay. @ 0.3' Black cmf SAND and fm GRAVEL, little Silt. @ 0.5' Tan mcf SAND, some Clayey Silt, trace f Gravel.	/-5-5-4	1	0.0	0'-1' Concrete pad
		SW GW	Brown cmf SAND and fm GRAVEL, little Silt. Damp.	5-4-3-3	2	-	1.0'-2.5' Bentonite seal 2.5'-3.0' Choker sand (00)
5		ML CL	**GLACIAL TILL** Tan SILT & CLAY, some mcf Sand, some fm Gravel. @ 5.2'-5.6' stained Black, moderate tar odor. Wet/saturated.	4-6-22-9	3	0.0	3.0'-16.0' Filter sand (1) 4'-6' Soil sample sent for laboratory analysis
		ML CL	As above. Black staining intermittent throughout. Tar odor. Wet.	3-3-4-4	4	0.6	
		ML CL	As above, intermittent staining throughout, moderate tar odor. Saturated.	8-13-15-26	5	0.9	4'-14' 0.02" Slot screen
10		SM SC	Gray-tan SILT & CLAY and mcf SAND, some fm Gravel (sub-rounded/sub-angular gray sstn, shale). Faint tar odor. Dense.	20-22-28-30	6	0.2	
		SM SC	As above, Piece of rock @ 12.6'. Very dense. Slight tar odor.	19-31-37-50/0.2	7	3.2	
15		SM SC	As above, piece of Gray sandstone. Very dense. Faint odor.	39-50/0.4	8	14.1	
		SM SC	Gray cmf SAND and SILT & CLAY, some fm Gravel (sub-rounded). @ 16.3' grades to light Brown. Moderate tar odor.	44-50/0.3'	9	-	16'-20.4' Bentonite
		SM SC	As above, moderate tar odor.	65/0.5'	10	-	
20		SSTN	Piece of Gray Sandstone. @ 20.2' Pink-gray fm GRAVEL (sandtone), some cmf Sand, little Silt & Clay. Moderate tar odor.	80/0.4'	11	-	20.4' End of borehole.

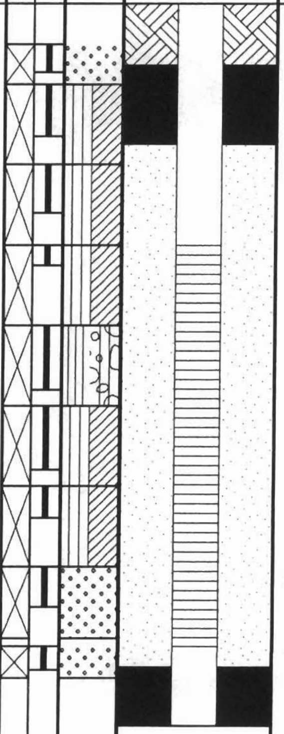
MONITORING WELL LOG

BROWN AND CALDWELL	**Project Name:** SC of Oswego (Utica St) MGP Site **Project Number:** 126410.002 **Project Location:** W. Utica St., Oswego, NY	**Permit Number:** NA	**Well No.** MW-102 **Page** 1 **of** 1

Geologist/Office	**Checked By:**	**Borehole Diameter:**	**Screen Diameter and Type:**	**Slot Size:**	**Total Boring Depth (ft)**
N. Krupinski/Allendale	R. O'Neill	8"	2" Slotted PVC	0.02"	18.0 ft.

Start/Finish Date	**Drilling Contractor:**	**Sampling:** Split Spoon	**Development Method:**
11/30/04 - 11/30/04	Parratt-Wolff, Inc.	**Hammer Type:** Manual	Surge & Pump

Driller:	**Drilling Method:**	**Drilling Equipment:**	**Horiz Datum/Proj:** State Plane NAD 83 **Vert Datum:** NGVD 29 **Ground Surface Elev:** 303.7 ft.	**Easting:** 839075.9 ft. **Northing:** 1257873.7 ft. **TOC Elev:** 303.4 ft.
R. Baldue	Hollow-stem auger	Ingersoll Rand 830		

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	Graphic Log Sample Int Recovery Lithology Well Traffic Rated Vault Box	OVM Readings (ppm)	Remarks
		SW	**FILL** Black cmf SAND (coke, slag), some Silt & Clay. @ 1.7' piece of Gray sandstone. @ 1.8' Brown-tan SILT & CLAY and cmf SAND, some (-) fm Gravel. Very faint tar odor. Dry/damp.	10-6	1		1.0	0'-1.5' Concrete pad
		ML CL	Light Brown-tan SILT & CLAY and cmf SAND, some fm Gravel (sub-rounded/sub-angular). Occ. pieces of brick, coke, lenses of black coke fill. Damp.	7-4-1-2	2		0.0	1.5-3.5" Bentonite seal
5		ML CL	**GLACIAL TILL** Light Brown-tan SILT & CLAY and cmf SAND, some fm Gravel (sub-rounded/sub-angular natural). @ 4.0'-4.5' occ. dark Brown mottling. Saturated.	3-3-1-2	3		0.0	3.5'-4.0' Choker sand (00) 4.0'-16.5' Filter sand (1)
		ML CL	As above, saturated.	1-2-3-3	4		0.0	
		ML GM	Black SILT & CLAY, some (-) mf Gravel, trace fmc Sand. NAPL around gravel pieces, mottled w/ NAPL in SILT & CLAY, stained, strong sheen, strong coal tar odor. Wet.	5-4-6-10	5		16.8	
10		ML CL	Tan/light Brown/black SILT & CLAY, some fm Gravel, some fmc Sand. Slightly dense. Mottled/layered w/ Black-stained soil throughout, NAPL pockets throughout, usually associated w/ pieces of gravel. NAPL is Brown to black and iridescent. Strong sheen, strong tar odor.	7-12-16-22	6		58.1	
		ML CL	As above, Tan. Dense. Black and iridescent NAPL mottled or in veins throughout, coats gravel. Strong tar odor. Wet.	36-23-14-24	7		27.1	6'-16' 0.02" Slot screen
15		SW	Tan mf SAND, little fm Gravel, little Silt & Clay. Dense. Veins/pockets of Black iridescent NAPL throughout w/ little black staining. Moderate tar odor.	15-27-50/0.3	8		29.0	
		SW	Tan fm SAND, some mf Gravel, little Clayey Silt. Dense. @ 16.2' Gray. Occ. Black mottling throughout. Moderate tar odor.	15-50/0.3	9		15.2	16.5'-18' Bentonite 16'-18' Sump
			No recovery. Bit of Gray slough in shoe (Silt, Sand).	50/0.0	10		-	18' End of borehole.

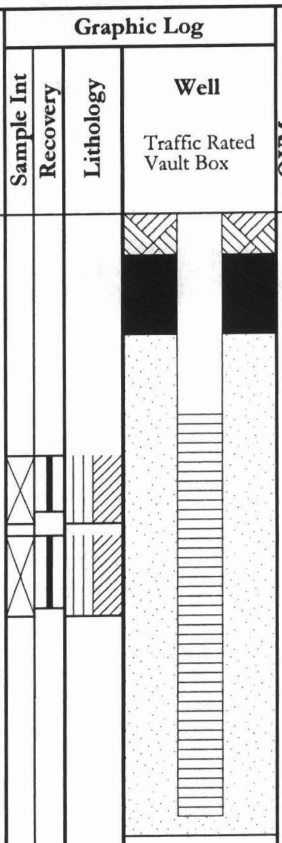
MONITORING WELL LOG

BROWN AND CALDWELL	**Project Name:** SC of Oswego (Utica St) MGP Site **Project Number:** 126410.002 **Project Location:** W. Utica St., Oswego, NY	**Permit Number:** NA	**Well No.** MW-103 **Page** 1 **of** 1

Geologist/Office N. Krupinski/Allendale	**Checked By:** R. O'Neill	**Borehole Diameter:** 8"	**Screen Diameter and Type:** 2" Slotted PVC	**Slot Size:** 0.02"	**Total Boring Depth (ft)** 15.5 ft.

Start/Finish Date 11/29/04 - 11/29/04	**Drilling Contractor:** Parratt-Wolff, Inc.	**Sampling:** Split Spoon **Hammer Type:** Manual	**Development Method:** Surge & Pump

Driller: R. Baldue	**Drilling Method:** Hollow-stem auger	**Drilling Equipment:** Ingersoll Rand 830	**Horiz Datum/Proj:** State Plane NAD 83 **Vert Datum:** NGVD 29 **Ground Surface Elev:** 306.8 ft.	**Easting:** 839064.9 ft. **Northing:** 1258039.1 ft. **TOC Elev:** 306.5 ft.



Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	OVM Readings (ppm)	Remarks
							0'-1' Concrete pad
							1'-3' Bentonite seal
							3.0'-3.5' Choker sand (00)
							3.5'-15.5' Filter sand (1)
5							
		ML CL	**GLACIAL TILL** Light Brown/tan SILT & CLAY and cmf SAND, some fm Gravel (sub-rounded, natural). Very slight tar odor. Saturated.	10-10-38-50/0.2	1	8.3	
		ML CL	As above. Dense. Very slight tar odor.	20-31-32-44	2	10.3	8'-10' Soil sample sent for laboratory analysis
10							5'-15' 0.02" Slot screen
15							15.5' End of borehole.
							See log of adjacent boring B-105 for description of soil at location MW-103.

MONITORING WELL LOG

BROWN AND CALDWELL	**Project Name:** SC of Oswego (Utica St) MGP Site **Project Number:** 126410.002 **Project Location:** W. Utica St., Oswego, NY	**Permit Number:** NA	**Well No.** **MW-104** **Page** 1 **of** 1

Geologist/Office	**Checked By:**	**Borehole Diameter:**	**Screen Diameter and Type:**	**Slot Size:**	**Total Boring Depth (ft)**
N. Krupinski/Allendale	R. O'Neill	8"	2" Slotted PVC	0.02"	15.0 ft.

Start/Finish Date	**Drilling Contractor:**	**Sampling:** Split Spoon **Hammer Type:** Manual	**Development Method:**
11/24/04 - 11/24/04	Parratt-Wolff, Inc.		Surge & Pump

Driller:	**Drilling Method:**	**Drilling Equipment:**		
R. Baldue	Hollow-stem auger	Ingersoll Rand 830	**Horiz Datum/Proj:** State Plane NAD 83 **Vert Datum:** NGVD 29 **Ground Surface Elev:** 309.1 ft.	**Easting:** 839207.6 ft. **Northing:** 1258088.8 ft. **TOC Elev:** 308.8 ft.

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	OVM Readings (ppm)	Remarks
		ML CL	**FILL** Brown SILT & CLAY, some fmc Sand, some fm Gravel (sub-rounded). Occ thin Black layers. Damp.	/-12-8-8	1	-	0'-1' Concrete pad
							1'-3' Bentonite seal
		ML CL	Brown SILT & CLAY, some fm Gravel (rounded to sub-angular), some mfc Sand. Occ. pockets of ash or dark Brown soil. Damp.	6-8-14-20	2	-	3.0'-3.5' Choker sand (00)
		ML CL		9-20-20-18	3	-	3.5'-15.0' Filter sand (1)
5		ML CL	As above.				
		ML CL	@ 5.2' **GLACIAL TILL** Tan-gray SILT & CLAY, some fm Gravel (quartz, granite, sandstone.), some mfc Sand. Slightly dense. Damp.	22-50/0.4	4	-	6'-8' Soil sample sent for laboratory analysis
		SP	As above, Brown-tan. Damp.	17-59	5	-	
			Saturated. Tan-brown mfc SAND, some Clayey Silt, some fm Gravel. Piece of Gray sandstone @ 9.0'. Dense.				4.5'-14.5' 0.02" Slot screen
10		SP	Tan mcf SAND, some Clayey Silt, some fm Gravel. Dense.	73	6	-	
		SP	Gray mcf SAND and SILT & CLAY, some (-) fm Gravel (dark Gray sandstone, rounded/sub-rounded).	23-59	7	-	
		SP	As above. Gravel is composed of Gray, greenish sandstone, fractured or rounded/sub-rounded. Very dense.	34-50/0.3	8	-	
15							15' End of borehole.