UNDERGROUND STORAGE TANK ASSESSMENT

GSA BROOKLYN MOTOR POOL

850 Third Avenue
Brooklyn, New York

Prepared For:

U.S. GENERAL SERVICES ADMINISTRATION

Contract Number: GS-10F-0157K

On behalf of:

U.S. General Services Administration Office of Property Disposal
United States of America

Prepared By:

MACTEC ENGINEERING AND CONSULTING, INC.
511 Congress Street
Portland, Maine, 04101

November 20, 2008

MACTEC PROJECT: 3612082116

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LIST OF ACRONYMS

bgs	below ground surface
GSA	General Services Administration
LTANKS	Leaking Underground Storage Tanks
MACTEC	MACTEC Engineering and Consulting, Inc.
MCLs	Maximum Contaminant Limits
mg/kg	milligrams per kilogram
NYSDEC	New York State Department of Environmental Conservation
PAHs	polycyclic aromatic hydrocarbons
PID	photo ionization detector
SVOC	semi- volatile organic compounds
TAGM 4046	Technical Administrative Guidance Memorandum #4046
USTs	underground storage tanks
µg/L	micrograms per liter
VOC	volatile organic compounds

1.0 INTRODUCTION

1.1 PURPOSE AND SCOPE

This report presents analytical results of soil and groundwater samples collected to assess potential petroleum contamination associated with three underground storage tanks (USTs) at the U.S. General Services Administration (GSA) Motor Pool in Brooklyn, New York. MACTEC Engineering and Consulting, Inc. (MACTEC) prepared this report for the GSA Office of Real Property Disposal, which is in the process of disposing of the property. The sampling results provide a basis for recommendations for additional actions that will be necessary to complete an UST Closure Report for all the USTs at the site.

1.2 BACKGROUND

The GSA Motor Pool is located at 850 Third Avenue, Brooklyn, New York (Figure 1), and consists of an approximately 40,000 square feet lot containing a one-story concrete block building with garage facilities surrounded by a paved vehicle parking area. The building was heated using fuel oil that was stored in three 20,000-gallon USTs. The USTs are enclosed under a concrete apron with metal access plates. Records indicate that the USTs were installed in 1994, and their certification expired in 1998. Before these USTs were installed, three other USTs, installed between 1930 and 1960 and closed in 1994, occupied the same location. Reportedly, one of the three remaining USTs contains approximately 4,850 gallons of material assumed to be fuel oil.

On October 19, 1999, a spill was reported to the Leaking Underground Storage Tanks (LTANKS) database due to a tank test failure (Langan, 2007). This spill was assigned number 9908767. Two other spills were reported for the site, in 1993 and 1994, but these are believed to have been associated with the previous tanks that were closed in 1994. The sampling described in this report was conducted to address the open spill report (No. 9908767) and assess the presence of petroleum contamination in support of tank closure.

2.0 SAMPLING DESCRIPTION

Soil and groundwater sampling at the Brooklyn Motor Pool site was conducted from September 3rd through the 4th, 2008. Twelve soil borings were advanced in the vicinity of the ends of the USTs at approximately six foot intervals (Figure 2). Borings were completed by the direct-push method using a Series 66, self-propelled, Geoprobe™ system operated by Aquifer Drilling and Testing, Inc. The borings were completed down to 16 feet below ground surface (bgs), ensuring the hole was below the water table.

Discreet soil samples were collected from each boring at the water table for volatile organic compounds (VOC) analysis using EPA Method 8021 STARS. A composite sample from each boring was collected for semivolatile organic compounds (SVOC) analysis using EPA Method 8270 STARS. The composite sample was collected from six inches above to six inches below the water table interface. Samples from each boring were screened in the field using a Minirae 2000 photo ionization detector (PID). PID results and soil descriptions for each boring are presented in Table 1. The water table was identified as being the point at which the soils removed from the boring were first saturated with groundwater.

Groundwater samples were obtained from six of the borings and were taken by placing a temporary one-inch, pvc riser, with a 10 feet screen, into the boring. The water was then extracted using a peristaltic pump, and grab samples were taken for VOCs and SVOCs. The direct push equipment was decontaminated between each boring and new, temporary, pvc risers were used for each groundwater sample. The excess sample material from each boring was returned to the boring from which it came, and the boreholes were backfilled to the ground surface with cement grout.

3.0 RESULTS

Analytical results for the soil and groundwater samples collected adjacent to the three USTs are presented in tabular form in Appendix A. Soil results were compared to the Recommended Soil Cleanup Objective values from the New York State Department of Environmental Conservation *Technical and Administrative Guidance and Memorandum #4046 (*TAGM 4046*)* and the Unrestricted Use Soil Cleanup Objectives from *Subpart 375-6: Remedial Program Soil Cleanup Objectives.* Groundwater results were compared to *New York State Part 703 Surface Water and Ground Water Quality Standards.* Several VOCs and semivolatile organic compounds SVOCs were detected in both soil and groundwater samples, but these results do not necessarily show impacts from releases from the USTs.

3.1 SOIL RESULTS

VOCs were detected in eight out of the 12 soil samples collected adjacent to the USTs. The VOCs detected in at least one soil sample include:

- Toluene
- Xylene
- P-Cymene
- Isopropylbenzene

Although the first two VOCs are typically associated with petroleum products, the detected concentrations were very low (less than 0.35 milligrams per kilogram[mg/kg]), and no VOC concentrations exceeding soil cleanup criteria were detected in any of the samples. Higher concentrations of p-cymene and isopropylbenzene (up to 0.4 mg/kg and 35 mg/kg, respectively) were detected, but these VOCs are generally not associated with fuel oil. Isopropyl benzene can be a minor component of hydrocarbon fuels, but no other fuel component compounds were detected in the sample with the highest concentration (B5), making it unlikely that a fuel release is the source of this contaminant.

A large number of the SVOCs known as polycyclic aromatic hydrocarbons (PAHs) were detected in several of the soil samples. The highest concentrations were detected in the samples from

borings B5 and B6, where concentrations exceeding soil cleanup criteria for the following PAHs were detected:

- Benzo(a)anthracene
- Benzo(a)pyrene
- Benzo(b)fluoranthene
- Benzo(k)fluoranthene
- Chrysene
- Dibenzo(a,h)anthracene
- Indeno(1,2,3-cd)pyrene

Although the presence of PAHs can indicate petroleum contamination, these compounds are also components of asphalt, which was observed as being prevalent in the fill soils around the tanks. The absence of significant VOC concentrations suggests that the PAH detections are likely not associated with releases of fuel oil from the USTs.

3.2 GROUNDWATER RESULTS

No VOCs were detected in two out of the six groundwater samples, and only trace concentrations (less than 3 micrograms per liter [µg/L]) were detected in three of the samples. The sample from Boring B6 contained the highest VOC concentrations, which ranged up to 15 µg/L (total xylenes) but were all well below federal drinking water standards (Maximum Contaminant Limits [MCLs]).

Trace concentrations of PAHs were detected in all six of the groundwater samples, with the highest concentrations detected in the sample from Boring B11. Only one individual PAH concentration exceeded 5 µg/L (9 µg/L of phenanthrene at GW-11), but the total PAH concentrations in two samples (GW-06 and GW-11) exceeded the MCL of 5 µg/L for PAHs.

4.0 CONCLUSIONS AND RECOMMENDATIONS

4.1 CONCLUSIONS

Based on the sampling results and other available information, MACTEC presents the following conclusions:

- Soil and groundwater samples collected at the water table at both ends of each UST were appropriately located to reflect impacts of petroleum releases from the USTs.
- Detections of low concentrations of VOCs and SVOCs in soil and groundwater could indicate that releases of petroleum hydrocarbons have occurred in the vicinity of the three USTs, but more likely reflect impacts from the placement of fill material at the site.
- Although the USTs failed a leak test in 1999, greater impacts to soil and groundwater than those detected would be expected if the tanks had a significant leak for the nine years since the test failure.
- The absence of evidence of significant releases from the USTs supports the possible closure of the tanks in place.

4.2 RECOMMENDATIONS

To complete closure in place for all three USTs, MACTEC recommends the following:

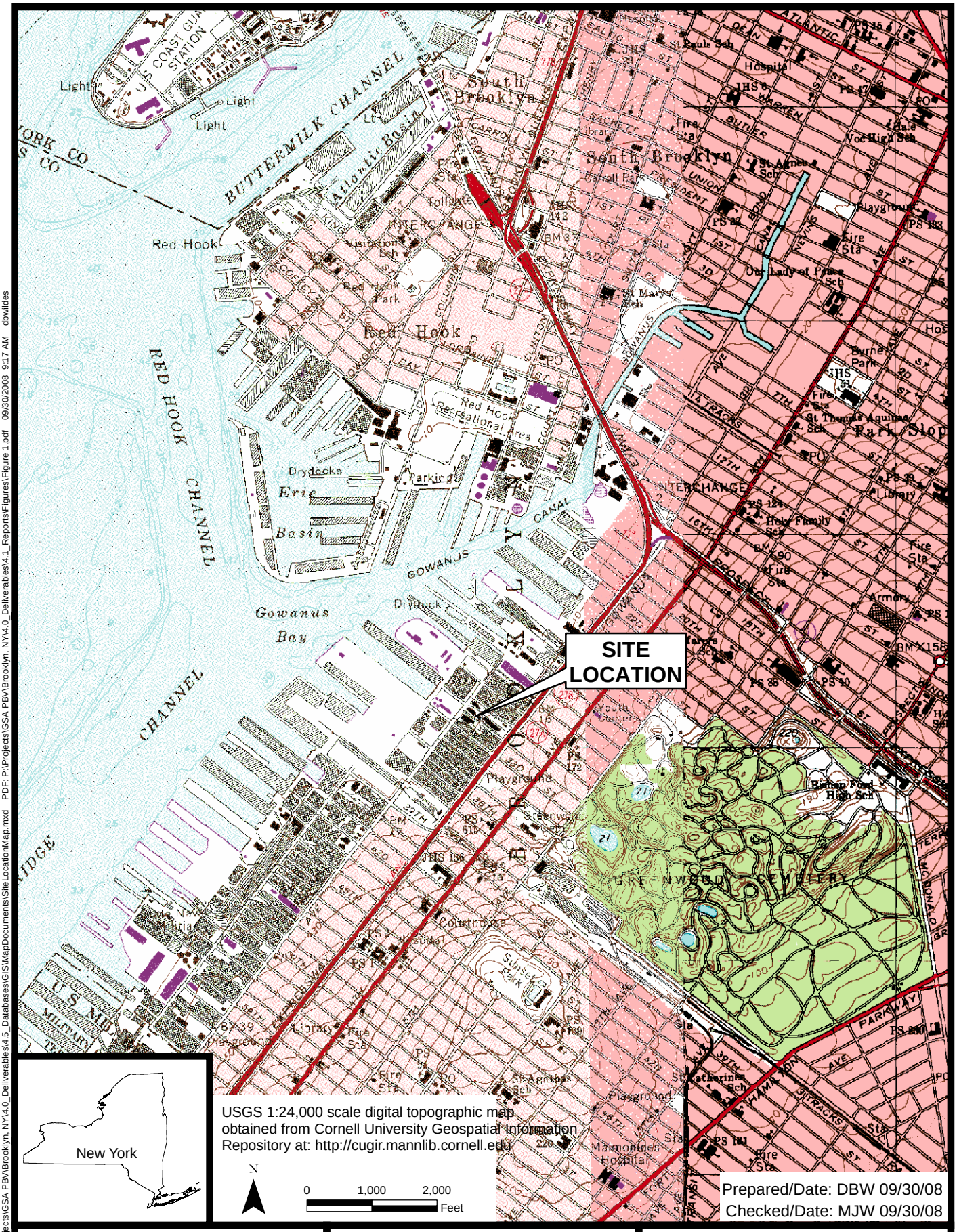
- Remove all product remaining in the tanks, and clean the tanks of any remaining liquids and accumulated sludge.
- Remove any piping associated with the tanks, including fill pipes, vents, and feed lines.
- Fill each tank with an inert solid material such as sand or cement.
- Notify the New York State Department of Environmental Conservation (NYSDEC) and the New York City Fire Department at least 30 days before initiating closure actions, and confirm closure on a modified Bulk Storage Application form submitted to NYSDEC within 30 days of completing the work.

These actions will also be required if GSA decides to remove the tanks rather than closing them in place.

5.0 REFERENCES

Langan, 2007. *Investigation Summary Report. Motor Pool Parcel, 870 Third Avenue, Brooklyn, NY.* Prepared for Time Equities, Inc. 55 5th Avenue, New York, NY 10003. Prepared by Langan Engineering and Environmental Services, P.C. 360 West 31st Street, New York, NY 10001. August 20, 2007.

FIGURES



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GSA
GSA Motor Pool
Brooklyn, New York

MACTEC

Site Location Map
Project 3612-08-2112
Figure 1

Underground Storage Tank Assessment
GSA Motor Pool
Brooklyn, New York

MACTEC

Sample Locations
Leaking Tank Investigation
3612-08-2112 Figure 2

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TABLES

Table 1
Soil and Groundwater Sample Summary

Boring	PID[1] Reading (PPM)[2]	Depth (feet)	Samples taken	Description at sample location
1	<0.1	13.5	soil	Asphalt like, silty sand with large cobbles, dark grey to black.
2	<0.1	13	soil & water	Orange silt/fine sand with some coarse sand.
3	0.8	13	soil	Orange to dark grey, medium to fine sand with some gravel.
4	1.5	13	soil & water	Black to dark grey, gravel and coarse sand, grading to medium to fine sand.
5	13.8	13	soil	Black to dark grey, coarse sand and gravel. Very little recovery.
6	5.6	13	soil & water	Black to dark grey coarse sand and gravel, grading to grey medium/fine sand.
7	0.2	13	soil	Dark orange to grey, medium/fine sand and silt with some cobbles.
8	0.2	13	soil & water	Dark orange to grey, medium/fine sand with some pockets of green. Also had gravel and some cobbles.
9	0.1	14	soil	Dark orange to grey, medium/fine sand with some gravel and cobbles.
10	0.2	14	soil	Dark orange to grey, medium/fine sand with some gravel and cobbles.
11	0.2	14	soil & water	Dark orange to grey, medium/fine sand with some gravel and cobbles.
12	0.1	14	soil & water	Dark orange to grey, medium/fine sand with some gravel and cobbles.

Notes:

Prepared by: MJW 9/30/08
Checked by: SRW 9/30/08

Samples were taken at the groundwater table.
All soil and groundwater samples were analyzed for volatile organic compounds (VOCs) and semivolatile organic compounds (SVOCs).
1. PID=photoionization detector
2. PPM=parts per million

APPENDIX A
TABULATED LABORATORY ANALYTICAL RESULTS

BROOKLYN, NY UST
Brooklyn, NY UST
METHOD 8021 - VOLATILE ORGANICS (STARS)

Client ID		B1		B10		B11		B12	
Job No / Lab ID		A08-A852	A8A85201	A08-A852	A8A85216	A08-A852	A8A85217	A08-A852	A8A85219
Sample Date		09/03/2008		09/04/2008		09/04/2008		09/04/2008	
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Benzene	UG/KG	ND	5.6	ND	4.4	ND	5.3	ND	4.8
Ethylbenzene	UG/KG	ND	11	ND	8.7	ND	10	ND	9.6
Toluene	UG/KG	340	11	ND	8.7	ND	10	38	9.6
o-Xylene	UG/KG	ND	11	ND	8.7	ND	10	ND	9.6
m-Xylene	UG/KG	12 1	11	ND	8.7	ND	10	ND	9.6
p-Xylene	UG/KG	ND 1	11	ND	8.7	ND	10	ND	9.6
Total Xylenes	UG/KG	12	11	ND	8.7	ND	10	ND	9.6
Isopropylbenzene	UG/KG	ND	11	ND	8.7	ND	10	ND	9.6
n-Propylbenzene	UG/KG	ND	11	ND	8.7	ND	10	ND	9.6
p-Cymene	UG/KG	360	11	ND	8.7	ND	10	ND	9.6
1,2,4-Trimethylbenzene	UG/KG	ND	11	ND	8.7	ND	10	ND	9.6
1,3,5-Trimethylbenzene	UG/KG	ND	11	ND	8.7	ND	10	ND	9.6
n-Butylbenzene	UG/KG	ND	11	ND	8.7	ND	10	ND	9.6
sec-Butylbenzene	UG/KG	ND	11	ND	8.7	ND	10	ND	9.6
tert-Butylbenzene	UG/KG	ND	11	ND	8.7	ND	10	ND	9.6
Methyl-t-Butyl Ether (MTBE)	UG/KG	ND	28	ND	22	ND	26	ND	24
SURROGATE(S)									
p-Bromofluorobenzene	%	104	66-138	105	66-138	106	66-138	100	66-138
a,a,a-Trifluorotoluene	%	97	66-141	96	66-141	97	66-141	91	66-141

NA = Not Applicable ND = Not Detected

Date: 09/16/2008
Time: 09:11:36

BROOKLYN, NY UST
Brooklyn, NY UST
METHOD 8021 - VOLATILE ORGANICS (STARS)

Rept: AN0326

Client ID		B2		B3		B4		B5	
Job No	Lab ID	A08-A852	A8A85202	A08-A852	A8A85204	A08-A852	A8A85205	A08-A852	A8A85207
Sample Date		09/03/2008		09/03/2008		09/03/2008		09/03/2008	

Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Benzene	UG/KG	ND	4.8	ND	3.6	ND	6.3	ND	66
Ethylbenzene	UG/KG	ND	9.6	ND	7.3	ND	12	ND	130
Toluene	UG/KG	ND	9.6	53	7.3	460	12	ND	130
o-Xylene	UG/KG	ND	9.6	ND	7.3	ND	12	ND	130
m-Xylene	UG/KG	ND	9.6	8.8 1	7.3	ND	12	ND	130
p-Xylene	UG/KG	ND	9.6	ND 1	7.3	ND	12	ND	130
Total Xylenes	UG/KG	ND	9.6	8.8	7.3	ND	12	ND	130
Isopropylbenzene	UG/KG	ND	9.6	ND	7.3	ND	12	35000	130
n-Propylbenzene	UG/KG	ND	9.6	ND	7.3	ND	12	ND	130
p-Cymene	UG/KG	ND	9.6	ND	7.3	510	12	ND	130
1,2,4-Trimethylbenzene	UG/KG	ND	9.6	ND	7.3	ND	12	ND	130
1,3,5-Trimethylbenzene	UG/KG	ND	9.6	ND	7.3	ND	12	ND	130
n-Butylbenzene	UG/KG	ND	9.6	ND	7.3	ND	12	ND	130
sec-Butylbenzene	UG/KG	ND	9.6	ND	7.3	59	12	ND	130
tert-Butylbenzene	UG/KG	ND	9.6	ND	7.3	ND	12	ND	130
Methyl-t-Butyl Ether (MTBE)	UG/KG	ND	24	ND	18	ND	31	ND	330
==SURROGATE(S)==									
p-Bromofluorobenzene	%	101	66-138	100	66-138	112	66-138	47 *	66-138
a,a,a-Trifluorotoluene	%	94	66-141	94	66-141	103	66-141	38 *	66-141

NA = Not Applicable ND = Not Detected

TestAmerica Lab

Client ID Job No Sample Date	Lab ID	B6 A08-A852 09/03/2008	A8A85208	B7 A08-A852 09/04/2008	A8A85210	B8 A08-A852 09/04/2008	A8A85211	B8 DUP A08-A852 09/04/2008	A8A85212
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Benzene	UG/KG	ND	7.1	ND	3.7	ND	4.4	ND	5.1
Ethylbenzene	UG/KG	ND	14	ND	7.4	ND	8.8	ND	10
Toluene	UG/KG	190	14	ND	7.4	ND	8.8	ND	10
o-Xylene	UG/KG	190	14	ND	7.4	ND	8.8	ND	10
m-Xylene	UG/KG	36 1	14	ND	7.4	ND	8.8	ND	10
p-Xylene	UG/KG	ND 1	14	ND	7.4	ND	8.8	ND	10
Total Xylenes	UG/KG	230	14	ND	7.4	ND	8.8	ND	10
Isopropylbenzene	UG/KG	ND	14	ND	7.4	ND	8.8	ND	10
n-Propylbenzene	UG/KG	ND	14	ND	7.4	ND	8.8	ND	10
p-Cymene	UG/KG	400	14	200	7.4	ND	8.8	ND	10
1,2,4-Trimethylbenzene	UG/KG	ND	14	ND	7.4	ND	8.8	ND	10
1,3,5-Trimethylbenzene	UG/KG	ND	14	ND	7.4	ND	8.8	ND	10
n-Butylbenzene	UG/KG	ND	14	ND	7.4	ND	8.8	ND	10
sec-Butylbenzene	UG/KG	ND	14	ND	7.4	ND	8.8	ND	10
tert-Butylbenzene	UG/KG	ND	14	ND	7.4	ND	8.8	ND	10
Methyl-t-Butyl Ether (MTBE)	UG/KG	ND	35	ND	19	ND	22	ND	26
SURROGATE(S)									
p-Bromofluorobenzene	%	80	66-138	104	66-138	100	66-138	102	66-138
a,a,a-Trifluorotoluene	%	70	66-141	96	66-141	92	66-141	94	66-141

NA = Not Applicable ND = Not Detected

Client ID		B9							
Job No	Lab ID	A08-A852	A8A85215						
Sample Date		09/04/2008							
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Benzene	UG/KG	ND	7.5	NA		NA		NA	
Ethylbenzene	UG/KG	ND	15	NA		NA		NA	
Toluene	UG/KG	ND	15	NA		NA		NA	
o-Xylene	UG/KG	ND	15	NA		NA		NA	
m-Xylene	UG/KG	ND	15	NA		NA		NA	
p-Xylene	UG/KG	ND	15	NA		NA		NA	
Total Xylenes	UG/KG	ND	15	NA		NA		NA	
Isopropylbenzene	UG/KG	ND	15	NA		NA		NA	
n-Propylbenzene	UG/KG	ND	15	NA		NA		NA	
p-Cymene	UG/KG	260	15	NA		NA		NA	
1,2,4-Trimethylbenzene	UG/KG	ND	15	NA		NA		NA	
1,3,5-Trimethylbenzene	UG/KG	ND	15	NA		NA		NA	
n-Butylbenzene	UG/KG	ND	15	NA		NA		NA	
sec-Butylbenzene	UG/KG	ND	15	NA		NA		NA	
tert-Butylbenzene	UG/KG	ND	15	NA		NA		NA	
Methyl-t-Butyl Ether (MTBE)	UG/KG	ND	37	NA		NA		NA	
SURROGATE(S)									
p-Bromofluorobenzene	%	95	66-138	NA		NA		NA	
a,a,a-Trifluorotoluene	%	89	66-141	NA		NA		NA	

NA = Not Applicable ND = Not Detected

Date: 09/16/2008
Time: 09:11:36

BROOKLYN, NY UST
Brooklyn, NY UST
METHOD 8021 - VOLATILE ORGANICS (STARS)

Rept: AN0326

Client ID		GW-02		GW-04		GW-06		GW-08	
Job No	Lab ID	A08-A852	A8A85203	A08-A852	A8A85206	A08-A852	A8A85209	A08-A852	A8A85213
Sample Date		09/03/2008		09/03/2008		09/03/2008		09/04/2008	
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Benzene	UG/L	0.28	0.20	ND	0.20	ND	0.20	ND	0.20
Ethylbenzene	UG/L	ND	0.20	ND	0.20	ND	0.20	ND	0.20
Toluene	UG/L	ND	0.20	ND	0.20	ND	0.20	ND	0.20
o-Xylene	UG/L	ND	0.20	ND	0.20	11	0.20	ND	0.20
m-Xylene	UG/L	ND	0.40	ND	0.40	3.8 1	0.40	ND	0.40
p-Xylene	UG/L	ND	0.40	ND	0.40	ND 1	0.40	ND	0.40
Total Xylenes	UG/L	ND	0.60	ND	0.60	15	0.60	ND	0.60
Isopropylbenzene	UG/L	ND	0.20	ND	0.20	ND	0.20	ND	0.20
n-Propylbenzene	UG/L	ND	0.20	ND	0.20	ND	0.20	ND	0.20
p-Cymene	UG/L	ND	0.40	ND	0.40	ND	0.40	ND	0.40
1,2,4-Trimethylbenzene	UG/L	ND	0.20	ND	0.20	ND	0.20	ND	0.20
1,3,5-Trimethylbenzene	UG/L	ND	0.20	ND	0.20	ND	0.20	ND	0.20
n-Butylbenzene	UG/L	ND	0.40	ND	0.40	2.0	0.40	ND	0.40
sec-Butylbenzene	UG/L	ND	0.40	ND	0.40	6.6	0.40	ND	0.40
tert-Butylbenzene	UG/L	ND	0.40	ND	0.40	ND	0.40	ND	0.40
Methyl-t-Butyl Ether (MTBE)	UG/L	ND	0.40	ND	0.40	ND	0.40	0.21 J	0.40
SURROGATE(S)									
p-Bromofluorobenzene	%	98	79-115	98	79-115	110	79-115	97	79-115
a,a,a-Trifluorotoluene	%	98	79-118	98	79-118	100	79-118	96	79-118

NA = Not Applicable ND = Not Detected

TestAmerica Lab

Date: 09/16/2008
Time: 09:11:36

BROOKLYN, NY UST
Brooklyn, NY UST
METHOD 8021 - VOLATILE ORGANICS (STARS)

Rept: AN0326

Client ID		GW-08 DUP		GW-11		GW-12			
Job No	Lab ID	A08-A852	A8A85214	A08-A852	A8A85218	A08-A852	A8A85220		
Sample Date		09/04/2008		09/04/2008		09/04/2008			
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Benzene	UG/L	ND	0.20	ND	0.20	ND	0.20	NA	
Ethylbenzene	UG/L	ND	0.20	ND	0.20	ND	0.20	NA	
Toluene	UG/L	ND	0.20	ND	0.20	ND	0.20	NA	
o-Xylene	UG/L	ND	0.20	0.31	0.20	ND	0.20	NA	
m-Xylene	UG/L	ND	0.40	ND	0.40	ND	0.40	NA	
p-Xylene	UG/L	ND	0.40	ND	0.40	ND	0.40	NA	
Total Xylenes	UG/L	ND	0.60	0.31 J	0.60	ND	0.60	NA	
Isopropylbenzene	UG/L	ND	0.20	1.0	0.20	ND	0.20	NA	
n-Propylbenzene	UG/L	ND	0.20	1.2	0.20	ND	0.20	NA	
p-Cymene	UG/L	ND	0.40	ND	0.40	ND	0.40	NA	
1,2,4-Trimethylbenzene	UG/L	ND	0.20	ND	0.20	ND	0.20	NA	
1,3,5-Trimethylbenzene	UG/L	ND	0.20	ND	0.20	ND	0.20	NA	
n-Butylbenzene	UG/L	ND	0.40	1.6	0.40	ND	0.40	NA	
sec-Butylbenzene	UG/L	ND	0.40	2.5	0.40	ND	0.40	NA	
tert-Butylbenzene	UG/L	ND	0.40	0.30 J	0.40	ND	0.40	NA	
Methyl-t-Butyl Ether (MTBE)	UG/L	0.22 J	0.40	ND	0.40	ND	0.40	NA	
SURROGATE(S)									
p-Bromofluorobenzene	%	96	79-115	100	79-115	99	79-115	NA	
a,a,a-Trifluorotoluene	%	97	79-118	100	79-118	100	79-118	NA	

NA = Not Applicable ND = Not Detected

TestAmerica Lab

Client ID		TRIP BLANK							
Job No	Lab ID	A08-A852	A8A85221						
Sample Date		09/03/2008							
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Benzene	UG/L	ND	0.20	NA		NA		NA	
Ethylbenzene	UG/L	ND	0.20	NA		NA		NA	
Toluene	UG/L	ND	0.20	NA		NA		NA	
o-Xylene	UG/L	ND	0.20	NA		NA		NA	
m-Xylene	UG/L	ND	0.40	NA		NA		NA	
p-Xylene	UG/L	ND	0.40	NA		NA		NA	
Total Xylenes	UG/L	ND	0.60	NA		NA		NA	
Isopropylbenzene	UG/L	ND	0.20	NA		NA		NA	
n-Propylbenzene	UG/L	ND	0.20	NA		NA		NA	
p-Cymene	UG/L	ND	0.40	NA		NA		NA	
1,2,4-Trimethylbenzene	UG/L	ND	0.20	NA		NA		NA	
1,3,5-Trimethylbenzene	UG/L	ND	0.20	NA		NA		NA	
n-Butylbenzene	UG/L	ND	0.40	NA		NA		NA	
sec-Butylbenzene	UG/L	ND	0.40	NA		NA		NA	
tert-Butylbenzene	UG/L	ND	0.40	NA		NA		NA	
Methyl-t-Butyl Ether (MTBE)	UG/L	ND	0.40	NA		NA		NA	
SURROGATE(S)									
p-Bromofluorobenzene	%	101	79-115	NA		NA		NA	
a,a,a-Trifluorotoluene	%	102	79-118	NA		NA		NA	

NA = Not Applicable ND = Not Detected

Client ID		B1		B10		B11		B12	
Job No	Lab ID	A08-A852	A8A85201	A08-A852	A8A85216	A08-A852	A8A85217	A08-A852	A8A85219
Sample Date		09/03/2008		09/04/2008		09/04/2008		09/04/2008	
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Acenaphthene	UG/KG	ND	860	18 J	200	16 J	200	34 J	200
Anthracene	UG/KG	54 J	860	170 J	200	41 J	200	64 J	200
Benzo(a)anthracene	UG/KG	170 J	860	390	200	140 J	200	260	200
Benzo(b)fluoranthene	UG/KG	170 J	860	360	200	150 J	200	250	200
Benzo(k)fluoranthene	UG/KG	55 J	860	140 J	200	50 J	200	89 J	200
Benzo(ghi)perylene	UG/KG	84 J	860	150 J	200	66 J	200	94 J	200
Benzo(a)pyrene	UG/KG	170 J	860	350	200	120 J	200	220	200
Chrysene	UG/KG	240 BJ	860	350 B	200	140 BJ	200	250 B	200
Dibenzo(a,h)anthracene	UG/KG	ND	860	43 J	200	ND	200	32 J	200
Fluoranthene	UG/KG	280 J	860	710	200	240	200	350	200
Fluorene	UG/KG	ND	860	25 J	200	14 J	200	34 J	200
Indeno(1,2,3-cd)pyrene	UG/KG	65 J	860	140 J	200	53 J	200	92 J	200
Naphthalene	UG/KG	ND	860	16 J	200	11 J	200	26 J	200
Phenanthrene	UG/KG	160 J	860	370	200	140 J	200	250	200
Pyrene	UG/KG	250 J	860	650	200	230	200	370	200
IS/SURROGATE(S)									
1,4-Dichlorobenzene-D4	%	91	50-200	106	50-200	103	50-200	92	50-200
Naphthalene-D8	%	92	50-200	108	50-200	106	50-200	93	50-200
Acenaphthene-D10	%	96	50-200	108	50-200	108	50-200	95	50-200
Phenanthrene-D10	%	92	50-200	105	50-200	102	50-200	92	50-200
Chrysene-D12	%	93	50-200	104	50-200	102	50-200	92	50-200
Perylene-D12	%	115	50-200	130	50-200	129	50-200	116	50-200
Nitrobenzene-D5	%	51	35-120	62	35-120	57	35-120	68	35-120
2-Fluorobiphenyl	%	57	43-120	63	43-120	62	43-120	67	43-120
p-Terphenyl-d14	%	57	51-125	72	51-125	76	51-125	70	51-125
Phenol-D5	%	51	38-120	62	38-120	58	38-120	65	38-120
2-Fluorophenol	%	41	30-120	55	30-120	49	30-120	56	30-120
2,4,6-Tribromophenol	%	60	46-129	85	46-129	89	46-129	83	46-129

NA = Not Applicable ND = Not Detected

Client ID		B2		B3		B4		B5	
Job No	Lab ID	A08-A852	A8A85202	A08-A852	A8A85204	A08-A852	A8A85205	A08-A852	A8A85207
Sample Date		09/03/2008		09/03/2008		09/03/2008		09/03/2008	
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Acenaphthene	UG/KG	ND	190	ND	1900	ND	2100	220 J	1900
Anthracene	UG/KG	ND	190	ND	1900	140 J	2100	590 J	1900
Benzo(a)anthracene	UG/KG	9 J	190	120 J	1900	450 J	2100	3600	1900
Benzo(b)fluoranthene	UG/KG	11 J	190	94 J	1900	510 J	2100	4000	1900
Benzo(k)fluoranthene	UG/KG	ND	190	ND	1900	240 J	2100	1500 J	1900
Benzo(ghi)perylene	UG/KG	ND	190	ND	1900	140 J	2100	1900	1900
Benzo(a)pyrene	UG/KG	ND	190	84 J	1900	340 J	2100	3200	1900
Chrysene	UG/KG	30 BJ	190	300 BJ	1900	900 BJ	2100	4100 B	1900
Dibenzo(a,h)anthracene	UG/KG	ND	190	ND	1900	ND	2100	540 J	1900
Fluoranthene	UG/KG	12 J	190	120 J	1900	720 J	2100	8500	1900
Fluorene	UG/KG	ND	190	ND	1900	ND	2100	210 J	1900
Indeno(1,2,3-cd)pyrene	UG/KG	ND	190	ND	1900	140 J	2100	1700 J	1900
Naphthalene	UG/KG	ND	190	ND	1900	ND	2100	190 J	1900
Phenanthrene	UG/KG	10 J	190	ND	1900	590 J	2100	4800	1900
Pyrene	UG/KG	11 J	190	120 J	1900	720 J	2100	7500	1900
IS/SURROGATE(S)									
1,4-Dichlorobenzene-04	%	98	50-200	86	50-200	101	50-200	93	50-200
Naphthalene-D8	%	102	50-200	90	50-200	101	50-200	95	50-200
Acenaphthene-D10	%	102	50-200	93	50-200	103	50-200	96	50-200
Phenanthrene-D10	%	102	50-200	90	50-200	100	50-200	95	50-200
Chrysene-D12	%	105	50-200	94	50-200	112	50-200	93	50-200
Perylene-D12	%	132	50-200	118	50-200	117	50-200	114	50-200
Nitrobenzene-D5	%	62	35-120	47	35-120	60	35-120	46	35-120
2-Fluorobiphenyl	%	63	43-120	52	43-120	65	43-120	57	43-120
p-Terphenyl-d14	%	77	51-125	65	51-125	60	51-125	70	51-125
Phenol-D5	%	62	38-120	53	38-120	62	38-120	56	38-120
2-Fluorophenol	%	53	30-120	43	30-120	53	30-120	44	30-120
2,4,6-Tribromophenol	%	87	46-129	59	46-129	65	46-129	59	46-129

Client ID		B6		B7		B8		B9	
Job No	Lab ID	A08-A852	A8A85208	A08-A852	A8A85210	A08-A852	A8A85211	A08-A852	A8A85215
Sample Date		09/03/2008		09/04/2008		09/04/2008		09/04/2008	

Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Acenaphthene	UG/KG	440 J	1200	ND	190	ND	200	11 J	190
Anthracene	UG/KG	920 J	1200	ND	190	19 J	200	35 J	190
Benzo(a)anthracene	UG/KG	1700	1200	ND	190	77 J	200	110 J	190
Benzo(b)fluoranthene	UG/KG	1600	1200	ND	190	79 J	200	120 J	190
Benzo(k)fluoranthene	UG/KG	580 J	1200	ND	190	24 J	200	44 J	190
Benzo(ghi)perylene	UG/KG	760 J	1200	ND	190	38 J	200	54 J	190
Benzo(a)pyrene	UG/KG	1400	1200	ND	190	68 J	200	100 J	190
Chrysene	UG/KG	1700 B	1200	30 BJ	190	85 BJ	200	130 BJ	190
Dibenzo(a,h)anthracene	UG/KG	200 J	1200	ND	190	12 J	200	17 J	190
Fluoranthene	UG/KG	3400	1200	ND	190	130 J	200	200	190
Fluorene	UG/KG	380 J	1200	ND	190	8 J	200	11 J	190
Indeno(1,2,3-cd)pyrene	UG/KG	690 J	1200	ND	190	34 J	200	42 J	190
Naphthalene	UG/KG	200 J	1200	ND	190	ND	200	18 J	190
Phenanthrene	UG/KG	3300	1200	ND	190	67 J	200	100 J	190
Pyrene	UG/KG	3300	1200	ND	190	140 J	200	190	190
IS/SURROGATE(S)									
1,4-Dichlorobenzene-D4	%	109	50-200	101	50-200	108	50-200	95	50-200
Naphthalene-D8	%	112	50-200	103	50-200	115	50-200	98	50-200
Acenaphthene-D10	%	112	50-200	107	50-200	115	50-200	97	50-200
Phenanthrene-D10	%	106	50-200	104	50-200	110	50-200	94	50-200
Chrysene-D12	%	105	50-200	102	50-200	109	50-200	96	50-200
Perylene-D12	%	127	50-200	123	50-200	134	50-200	120	50-200
Nitrobenzene-D5	%	60	35-120	54	35-120	46	35-120	71	35-120
2-Fluorobiphenyl	%	65	43-120	56	43-120	51	43-120	70	43-120
p-Terphenyl-d14	%	60	51-125	74	51-125	69	51-125	66	51-125
Phenol-D5	%	62	38-120	55	38-120	50	38-120	71	38-120
2-Fluorophenol	%	55	30-120	47	30-120	42	30-120	64	30-120
2,4,6-Tribromophenol	%	66	46-129	81	46-129	74	46-129	80	46-129

Client ID		GW-02		GW-04		GW-06		GW-08	
Job No	Lab ID	A08-A852	A8A85203	A08-A852	A8A85206	A08-A852	A8A85209	A08-A852	A8A85213
Sample Date		09/03/2008		09/03/2008		09/03/2008		09/04/2008	
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Acenaphthene	UG/L	ND	5	0.1 J	5	0.6 J	5	ND	5
Anthracene	UG/L	0.1 J	5	ND	5	0.8 J	5	ND	5
Benzo(a)anthracene	UG/L	0.4 J	5	0.1 J	5	1 J	5	0.3 J	5
Benzo(b)fluoranthene	UG/L	0.5 J	5	ND	5	2 J	5	0.3 J	5
Benzo(k)fluoranthene	UG/L	ND	5	ND	5	0.6 J	5	0.1 J	5
Benzo(ghi)perylene	UG/L	0.2 J	5	ND	5	1 J	5	0.2 J	5
Benzo(a)pyrene	UG/L	0.3 J	5	ND	5	2 J	5	0.2 J	5
Chrysene	UG/L	ND	5	ND	5	1 J	5	ND	5
Dibenzo(a,h)anthracene	UG/L	ND	5	ND	5	0.3 J	5	ND	5
Fluoranthene	UG/L	0.5 J	5	0.1 J	5	3 J	5	0.4 J	5
Fluorene	UG/L	ND	5	ND	5	0.4 J	5	ND	5
Indeno(1,2,3-cd)pyrene	UG/L	0.2 J	5	ND	5	1 J	5	0.1 J	5
Naphthalene	UG/L	0.1 BJ	5	0.1 BJ	5	0.8 BJ	5	0.3 BJ	5
Phenanthrene	UG/L	0.4 J	5	0.2 J	5	3 J	5	0.3 J	5
Pyrene	UG/L	0.4 J	5	0.2 J	5	3 J	5	0.3 J	5
IS/SURROGATE(S)									
1,4-Dichlorobenzene-D4	%	86	50-200	86	50-200	86	50-200	80	50-200
Naphthalene-D8	%	86	50-200	85	50-200	86	50-200	80	50-200
Acenaphthene-D10	%	85	50-200	84	50-200	84	50-200	80	50-200
Phenanthrene-D10	%	87	50-200	85	50-200	87	50-200	82	50-200
Chrysene-D12	%	91	50-200	86	50-200	89	50-200	82	50-200
Perylene-D12	%	89	50-200	86	50-200	90	50-200	84	50-200
Nitrobenzene-D5	%	68	46-120	70	46-120	74	46-120	74	46-120
2-Fluorobiphenyl	%	66	48-120	62	48-120	64	48-120	70	48-120
p-Terphenyl-d14	%	48	24-136	48	24-136	42	24-136	54	24-136

NA = Not Applicable ND = Not Detected

Client ID		GW-08 DUP		GW-11		GW-12			
Job No	Lab ID	A08-A852	A8A85214	A08-A852	A8A85218	A08-A852	A8A85220		
Sample Date		09/04/2008		09/04/2008		09/04/2008			
Analyte	Units	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit	Sample Value	Reporting Limit
Acenaphthene	UG/L	ND	5	5	5	0.4 J	5	NA	
Anthracene	UG/L	ND	5	1 J	5	1 J	5	NA	
Benzo(a)anthracene	UG/L	0.1 J	5	2 J	5	1 J	5	NA	
Benzo(b)fluoranthene	UG/L	ND	5	2 J	5	2 J	5	NA	
Benzo(k)fluoranthene	UG/L	ND	5	0.7 J	5	ND	5	NA	
Benzo(ghi)perylene	UG/L	ND	5	2 J	5	0.8 J	5	NA	
Benzo(a)pyrene	UG/L	ND	5	2 J	5	1 J	5	NA	
Chrysene	UG/L	ND	5	1 J	5	0.8 J	5	NA	
Dibenzo(a,h)anthracene	UG/L	ND	5	0.4 J	5	0.2 J	5	NA	
Fluoranthene	UG/L	ND	5	3 J	5	3 J	5	NA	
Fluorene	UG/L	ND	5	4 J	5	0.3 J	5	NA	
Indeno(1,2,3-cd)pyrene	UG/L	ND	5	1 J	5	0.6 J	5	NA	
Naphthalene	UG/L	0.1 BJ	5	0.6 BJ	5	0.4 BJ	5	NA	
Phenanthrene	UG/L	0.1 J	5	9	5	2 J	5	NA	
Pyrene	UG/L	ND	5	3 J	5	4 J	5	NA	
IS/SURROGATE(S)									
1,4-Dichlorobenzene-D4	%	87	50-200	88	50-200	79	50-200	NA	
Naphthalene-D8	%	86	50-200	84	50-200	78	50-200	NA	
Acenaphthene-D10	%	85	50-200	82	50-200	79	50-200	NA	
Phenanthrene-D10	%	83	50-200	82	50-200	81	50-200	NA	
Chrysene-D12	%	87	50-200	88	50-200	84	50-200	NA	
Perylene-D12	%	88	50-200	94	50-200	85	50-200	NA	
Nitrobenzene-D5	%	69	46-120	73	46-120	70	46-120	NA	
2-Fluorobiphenyl	%	64	48-120	68	48-120	61	48-120	NA	
p-Terphenyl-d14	%	44	24-136	45	24-136	48	24-136	NA	

NA = Not Applicable ND = Not Detected