

AECOM Environment
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September 10, 2010

Mr. Charles Burke
National Fuel Gas Distribution Corporation
Building 8
365 Mineral Springs Road
Buffalo, NY 14210

**Subject: Groundwater and Surface Water Monitoring Results
April 2010
Mineral Springs Road MGP Site**

Dear Mr. Burke,

This report provides the results of a groundwater and surface water sampling event completed by AECOM Environment (AECOM) on April 21-22, 2010, at the Mineral Springs Road former manufactured gas plant (MGP) site in West Seneca (Buffalo), New York.

The work at the Mineral Springs site is being conducted under a New York State Department of Environmental Conservation (NYSDEC) Voluntary Cleanup Agreement (number B9-0538-98-08) as described in the Remedial Design, dated February 10, 1999, and the Final Engineering Report, Volume II – Operations and Maintenance Plan, dated May 2002.

Summary

A total of 13 groundwater samples were collected and analyzed. A total of 14 depth-to-water measurements were taken (including a surface water measurement). Sampling locations are shown on the attached figure. Analytical results are summarized in the attached table.

Groundwater elevations in the monitoring wells averaged 1.11 ft higher during the April 2010 sampling event than in the August 2009 sampling event. Groundwater elevations in the monitoring wells averaged 1.12 ft higher during the April 2010 sampling event than the April 2009 sampling event.

Concentrations of benzene, ethylbenzene, toluene, and xylene (BTEX) and/or polycyclic aromatic hydrocarbon (PAH) compounds were above NYSDEC standard or guidance values in three of the five onsite groundwater samples.

Total cyanide concentrations exceeded the NYSDEC groundwater standard of 200 ug/L in eight of the nine groundwater samples analyzed. Free cyanide was detected in one of the nine groundwater samples.

BTEX and/or PAH compounds were not detected in the two surface water samples collected, with the exception of toluene in SW-2. The concentration of toluene in SW-2 was 0.18 ug/L, well below the standard of 6,000 ug/L. Total cyanide concentrations in the surface water samples were also below the NYSDEC Class D Stream Standard. Free cyanide was detected in surface water sample SW-01 at 2.6

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ug/L, below the standard of 22 ug/L. Free cyanide was not detected above method reporting limits in surface water sample SW-02.

Groundwater elevations

Depth-to-water measurements were taken at 14 monitoring wells. The measurements were used to construct the groundwater contours shown in the attached figure. Groundwater elevations in the monitoring wells averaged 1.11 ft higher during the April 2010 sampling event than in the previous groundwater sampling event in August 2009. Groundwater elevations in the monitoring wells averaged 1.12 feet higher during the April 2010 sampling event than in the April 2009 sampling events. The groundwater flow direction remained similar to the last two sampling events.

At the time of the sampling, groundwater flowed onto the site from the east-southeast, and then flowed to the west-northwest towards Calais Street and Mineral Springs Road. Onsite groundwater usually appears to also discharge to the Class D Stream, which in turn discharges to the Calais Street storm sewer and the municipal wastewater treatment system.

Sampling and analysis

A total of 13 monitoring wells were purged and sampled by an AECOM geologist. Sampling locations are shown on the attached figure.

Test America (formerly Severn Trent Laboratories [STL]) of Pittsburgh, PA, performed the analyses of the groundwater samples for hydrocarbon compounds of concern. Test America is currently certified to perform the requested analyses under the NYSDOH Environmental Laboratory Approval Program. The samples were analyzed for manufactured gas plant (MGP) indicators using the following methods:

BTEX	Method SW846 8260B
PAHs	Method SW846 8270C

Samples were also sent to Clarkson University of Potsdam, NY (Clarkson) for cyanide analysis using the following methods:

Cyanide (free)	Method ASTM D4282-02
Cyanide (total)	Method APHA 4500-CN-

All sampling and analyses were conducted according to AECOM's Standard Operating Procedures as provided in the project Quality Assurance Plan (QAP) of June 11, 1999. Additionally, the cyanide samples were protected from light during collection to prevent the dissociation of metal-cyanide compounds, which would artificially elevate free cyanide results. The cyanide samples were also treated with lead carbonate and filtered to remove potential sulfide interferences.

Analytical results and conclusions

The results of the laboratory analyses are summarized in the attached table. The laboratory reports and the chain-of-custody forms are attached as well. The locations, sampling objectives, and a discussion of the analytical results for each of the specific areas of interest at the site are provided in the following sections.

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Upgradient site perimeter

Well MW-17 is located in the southeast corner of the site and monitors upgradient groundwater quality. The results of the analyses indicate that no BTEX or PAH compounds were detected. Total cyanide was detected at a concentration of 242 ug/L, above the NYSDEC groundwater standard of 200 ug/L. Free cyanide was not detected.

Downgradient site perimeter

Wells MW-20 and MW-21 are located downgradient of the western boundary of the site on Calais Street. Wells MW-13, MW-14, MW-22 and MW-23 are located just inside the northern property boundary near Mineral Springs Road. These six "sentinel" wells monitor groundwater quality downgradient of the site. The groundwater samples from these six wells were analyzed for total and free cyanide.

Five of the six wells were found to contain total cyanide in concentrations above the NYSDEC groundwater standard of 200 µg/L. Concentrations ranged from non-detect at MW-13 to 771 ug/L at MW-22. Free cyanide was not detected in the six sentinel wells above method detection limits. Free cyanide was detected in one the six sentinel wells during the August 2009 sampling round. These concentrations are generally consistent with previous results with the following exceptions:

- The total cyanide concentration in MW-13 decreased from 327 ug/L in August 2009 to non-detect in April 2010. The concentration of total cyanide seems to vary with the seasonal fluctuation in groundwater elevations. Total cyanide during the April 2009 sampling event was 27 ug/L.
- Free cyanide was not detected above method detection limits in the six sentinel wells. Free cyanide was detected in one sentinel well in August 2009, two wells in April 2009 and four wells in September 2008. Free cyanide appears to be decreasing in the six sentinel wells over the last four sampling events.

On-site purifier residuals impacted areas

Wells MW-12 and MW-16 monitor groundwater quality at locations of known subsurface deposits of purifier box residuals. These deposits were remediated by capping. Samples from these two wells were analyzed for total and free cyanide.

Total cyanide concentrations were 550 ug/L at MW-12 and 566 ug/L at MW-16. Free cyanide was detected in MW-16 at 2.4 ug/L and was not detected at MW-12.

On-site hydrocarbon NAPL impacted areas

Wells MW-7, MW-10, MW-11A, and MW-19 monitor on-site groundwater quality downgradient of subsurface soils impacted with hydrocarbon non-aqueous phase liquid (NAPL). Samples from these wells were analyzed for BTEX and PAH compounds.

BTEX and PAHs were not detected at MW-10. Consistent with previous results, BTEX and PAH compounds were detected above the NYSDEC groundwater standards in MW-7 and MW-19. BTEX compounds were detected in MW-11A above NYSDEC standards. Several PAH compounds were detected in MW-11A, but none were detected above NYSDEC standards. All PAH compounds detected

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in MW-11A had a J qualifier, indicating the results were an estimated value below method detection limits.

Surface water

Two surface water samples were collected from the Class D Stream running along the south side of the site. BTEX and PAHs were not detected in either of the surface water samples with the exception of toluene in SW-02. Toluene was detected in SW-02 at 0.18 ug/L, the NYSDEC standard for toluene in a class D stream is 6,000 ug/L. The value for toluene had a J qualifier, indicating it is an estimated value below method detection limits.

Total cyanide was detected in both surface water samples but did not exceed the NYSDEC standard. Free cyanide was detected in SW-01 at 2.6 ug/L and was not detected in SW-02 at a concentration greater than the method detection limits. The standard for free cyanide in a class D stream is 22 ug/L.

QA/QC samples

Quality control samples were collected during the sampling event to meet the requirements of the project QAP.

An equipment blank (EB) was prepared using organic free water supplied by the laboratory. The water was run through the peristaltic pump tubing. No compounds were detected in the equipment blank.

A trip blank (TB) sample was prepared by the laboratory and was stored in the sample cooler throughout the sampling event and during transportation back to the laboratory. The trip blank was analyzed for BTEX. No BTEX compounds were detected in trip blank.

Duplicate samples were collected from MW-7 and MW-16. The duplicate sample from MW-7 was submitted for analysis of BTEX and PAHs. The duplicate sample from MW-16 was submitted for analysis of total and free cyanide. All duplicate sample results were within an acceptable range.

All sample bottles were provided by Test America of Pittsburgh, PA. Some sample bottles contained preservatives to stabilize the sample, depending on the analyses being performed. These preservatives raise or lower the pH. All samples were received at laboratory within the acceptable pH range.

DNAPL recovery test well (RTW-1)

During this groundwater sampling event, the Recovery System at RTW-1 was operated to assess whether dense non-aqueous phase liquid (DNAPL) had accumulated since the August 2009 sampling event. Approximately a ½ gallon of water was pumped out. The water contained only trace amounts of NAPL blebs, less than 10% of total volume.

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If you have any questions or comments, please do not hesitate to call me at (607) 277-5716.

Sincerely yours,

A handwritten signature in black ink that reads "Jesse Lloyd". The signature is fluid and cursive, with the first name "Jesse" and last name "Lloyd" clearly distinguishable.

Jesse Lloyd
Geologist
Project Manager

A handwritten signature in blue ink that reads "Thomas P. Clark". The signature is stylized and cursive, with the first letters of the first and last names being prominent.

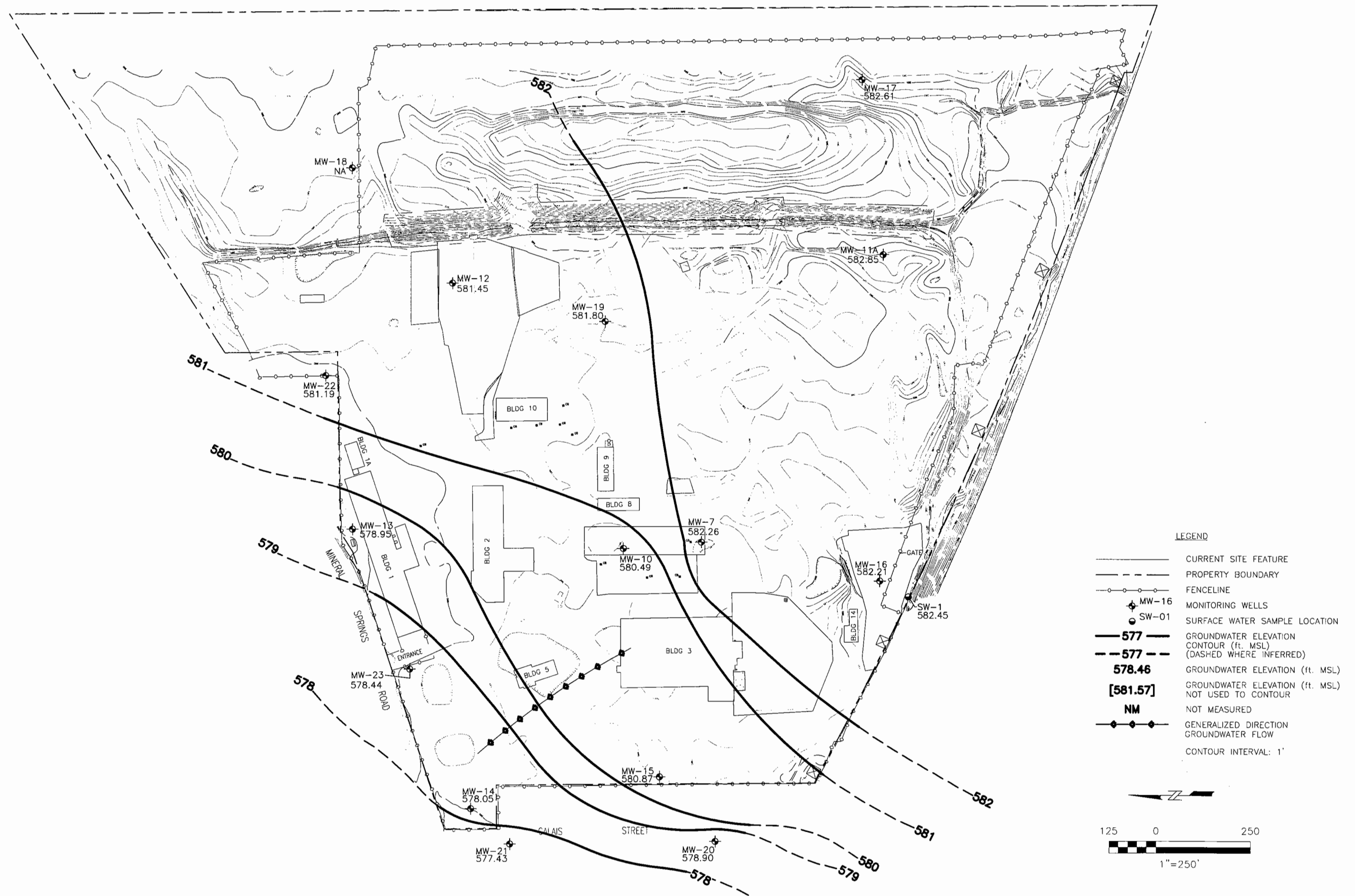
Thomas P. Clark, P.E.
Project Engineer

Encl: Groundwater Contours (figure)
Laboratory Results Summary (table)
Laboratory Reports

cc: T. Alexander - NFG
R. Kennedy - Hodgson, Russ LLP
D. Szymanski - NYSDEC
C. O'Connor - NYSDOH (w. figure/table only)
G. Litwin - NYSDOH (w. figure/table only)

Figure 1
Groundwater Contour Map

Plotfile: Jul 26, 2010 5:07pm Xref's:



AECOM

NATIONAL FUEL GAS
MINERAL SPRINGS ROAD MGP SITE
04870-026-300

GROUNDWATER CONTOURS
APRIL 2010

FIGURE 1

Table 1
Laboratory Results Summary

Groundwater and Surface Water Monitoring Results
Mineral Springs Road MGP Site
April, 2010

PARAMETER	GROUNDWATER															SURFACE WATER			QA / QC				
	Sample ID :	MW-07	MW-10	MW-11A	MW-12	MW-13	MW-14	MW-15	MW-16	MW-17	MW-19	MW-20	MW-21	MW-22	MW-23	Groundwater	SW-01	SW-02	Class D Stream	TB	EB	MW-07 Dup	MW-16 Dup
	Sample Date :	04/22/10	04/22/10	04/21/10	04/21/10	04/21/10	04/21/10	04/22/10	04/21/10	04/22/10	04/22/10	04/21/10	04/21/10	04/21/10	04/21/10	04/21/10	Standard ⁽¹⁾	04/21/10	04/21/10	Standard ⁽¹⁾	04/22/10	04/21/10	04/22/10
<u>BTEX (µg/L)</u>																							
Benzene		330	nd	77	---	---	---	---	---	nd	4300	---	---	---	---	1	nd	nd	10	nd	nd	300	---
Toluene		96	nd	0.78 J	---	---	---	---	---	nd	nd	---	---	---	---	5	nd	0.18 J	6000	nd	nd	84	---
Ethylbenzene		520	nd	35	---	---	---	---	---	nd	290	---	---	---	---	5	nd	nd	150 *	nd	nd	450	---
Xylene (sum of isomers)		360	nd	21	---	---	---	---	---	nd	340 J	---	---	---	---	5 (each)	nd	nd	590 *	nd	nd	310	---
BTEX total		1306	nd	133.78	---	---	---	---	---	nd	4930	---	---	---	---	---	nd	0.18	---	nd	nd	1144	---
<u>PAHs (µg/L)</u>																							
Naphthalene		650	nd	0.78 J	---	---	---	---	---	nd	3300	---	---	---	---	10 *	nd	nd	110 *	---	nd	600	---
Acenaphthylene		nd	nd	2.4 J	---	---	---	---	---	nd	nd	---	---	---	---	NL *	nd	nd	NL	---	nd	nd	---
Acenaphthene		15	nd	3.1 J	---	---	---	---	---	nd	nd	---	---	---	---	20 *	nd	nd	48 *	---	nd	15	---
Fluorene		2.7 J	nd	0.72 J	---	---	---	---	---	nd	nd	---	---	---	---	50 *	nd	nd	4.8 *	---	nd	2.8 J	---
Phenanthrene		2.1 J	nd	nd	---	---	---	---	---	nd	nd	---	---	---	---	50 *	nd	nd	45 *	---	nd	2.2 J	---
Anthracene		0.23 J	nd	nd	---	---	---	---	---	nd	nd	---	---	---	---	50 *	nd	nd	35 *	---	nd	0.3 J	---
Fluoranthene		0.2 J	nd	0.24 J	---	---	---	---	---	nd	nd	---	---	---	---	50 *	nd	nd	NL	---	nd	nd	---
Pyrene		nd	nd	0.27 J	---	---	---	---	---	nd	nd	---	---	---	---	50 *	nd	nd	42 *	---	nd	nd	---
Benzo(a)anthracene		nd	nd	nd	---	---	---	---	---	nd	nd	---	---	---	---	0.002 *	nd	nd	0.23 *	---	nd	nd	---
Chrysene		nd	nd	nd	---	---	---	---	---	nd	nd	---	---	---	---	0.002 *	nd	nd	NL	---	nd	nd	---
Benzo(b)fluoranthene		nd	nd	nd	---	---	---	---	---	nd	nd	---	---	---	---	0.002 *	nd	nd	NL	---	nd	nd	---
Benzo(k)fluoranthene		nd	nd	nd	---	---	---	---	---	nd	nd	---	---	---	---	0.002 *	nd	nd	NL	---	nd	nd	---
Benzo(a)pyrene		nd	nd	nd	---	---	---	---	---	nd	nd	---	---	---	---	NL	nd	nd	0.0012 *	---	nd	nd	---
Indeno(1,2,3-cd)pyrene		nd	nd	nd	---	---	---	---	---	nd	nd	---	---	---	---	0.002 *	nd	nd	NL	---	nd	nd	---
Dibenz(a,h)anthracene		nd	nd	nd	---	---	---	---	---	nd	nd	---	---	---	---	NL	nd	nd	NL	---	nd	nd	---
Benzo(g,h,i)perylene		nd	nd	nd	---	---	---	---	---	nd	nd	---	---	---	---	NL	nd	nd	NL	---	nd	nd	---
2-Methylnaphthalene		33	nd	nd	---	---	---	---	---	nd	7.2 J	---	---	---	---	NL	nd	nd	NL	---	nd	33	---
PAHs total		703.23	nd	7.51	---	---	---	---	---	nd	3307.2	---	---	---	---	---	nd	nd	---	---	nd	653.3	---
<u>CYANIDE (µg/L)</u>																							
Cyanide, total		---	---		550	nd	480	---	566	242	---	495	508	771	277	200	3.6	4.4	9000	---	nd	---	564
Cyanide, free		---	---		nd	nd	nd	---	2.4	nd	---	nd	nd	nd	nd	NL	2.6	nd	22	---	nd	---	3.3
Water Elevation (feet)		582.26	580.49	582.85	581.45	579.65	578.05	580.87	582.21	582.61	581.8	578.9	577.43	581.19	578.44	NL	582.25	---	NL	---	---	---	---

Notes:

- NL Not listed
- nd Not detected above method detection limit
-
- Not analyzed
- J, E Indicates laboratory estimated value
- (1) NYSDEC Division of Water Technical and Operational Guidance Series (1.1.1)
- * Groundwater or Surface Water Guidance Value (no Standard value listed).
- Concentrations exceeding NYSDEC regulatory standard or guidance value.

Laboratory Reports

TestAmerica Laboratories, Inc.

ANALYTICAL REPORT

PROJECT NO. 04870-026-300

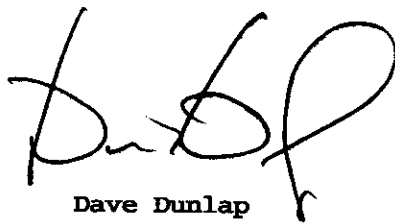
AECOM, Mineral Springs

Lot #: C0D240484

Helen Jones

AECOM, Inc

TESTAMERICA LABORATORIES, INC.



Dave Dunlap
Project Manager

May 5, 2010



NELAC REPORTING:

At the time of analysis the laboratory was in compliance with the current NELAC standards and held accreditation for all analyses performed unless noted by a qualifier. The labs accreditation numbers are listed below. The format and contents of the report meets all applicable NELAC standards except as noted in the narrative and shall not be reproduced except in full, without the written approval of the laboratory. The table below presents a summary of the certifications held by TestAmerica Pittsburgh. Our primary accreditation authority for the Non-potable water and Solid & Hazardous waste programs is Pennsylvania DEP. A more detailed parameter list is available upon request. Please ask your project manager for this information when required.

Certifying State/Program	Certificate #	Program Types	TestAmerica
DoD ELAP	ADE-1442	WW	X
US Dept of Agriculture	(#P330-07-00101)	HW	X
Arkansas	(#88-0690)	Foreign Soil Import Permit	X
		WW	X
		HW	X
California – NELAC	04224CA	WW	X
		HW	X
Connecticut	(#PH-0688)	WW	X
		HW	X
Florida – NELAC	(#E871008)	WW	X
		HW	X
Illinois – NELAC	(#002319)	WW	X
		HW	X
Kansas – NELAC	(#E-10350)	WW	X
		HW	X
Louisiana – NELAC	(#04041)	WW	X
		HW	X
New Hampshire – NELAC	(#203010)	WW	X
		–	–
New Jersey – NELAC	(PA-005)	WW	X
		HW	X
New York – NELAC	(#11182)	WW	X
		HW	X
North Carolina	(#434)	WW	X
		HW	X
Pennsylvania - NELAC	(#02-00416)	WW	X
		HW	X
South Carolina	(#89014002)	WW	X
		HW	X
Utah – NELAC	(STLP)	WW	X
		HW	X
West Virginia	(#142)	WW	X
		HW	X
Wisconsin	998027800	WW	X
		HW	X

The codes utilized for program types are described below:

HW Hazardous Waste certification
 WW Non-potable Water and/or Wastewater certification
 X Laboratory has some form of certification under the specific program. Many states certify laboratories for specific parameters or tests within a category. The information in the table indicates the lab is certified in a general category of testing. Please contact the laboratory if parameter specific certification information is required.

Updated: 4/6/2010 C:\Documents and Settings\derubeisn\My Documents\NELAC NARRATIVE Pttsburgh.doc

CASE NARRATIVE

AECOM Mineral Springs

Lot # C0D240484

Sample Receiving:

Samples were received at TestAmerica's Pittsburgh laboratory on April 24, 2010. The coolers were received within the proper temperature range.

If project specific QC was not required for samples contained in this report, when batch QC was completed on these samples, anomalous results will be discussed below.

GC/MS Volatiles:

Due to the concentration of target compounds detected, several samples were analyzed at a dilution.

GC/MS Semivolatiles:

Due to the concentration of target compounds detected, several samples were analyzed at a dilution.

The surrogates in the dilution of sample MW-19 were diluted out.

METHODS SUMMARY

C0D240484

<u>PARAMETER</u>	<u>ANALYTICAL METHOD</u>	<u>PREPARATION METHOD</u>
Semivolatile Organic Compounds by GC/MS	SW846 8270C	SW846 3520C
Volatile Organics by GC/MS	SW846 8260B	SW846 5030B

References:

SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 and its updates.

SAMPLE SUMMARY

C0D240484

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
L0HDC	001	MW-10	04/22/10	08:30
L0HDE	002	MW-7	04/22/10	09:40
L0HDF	003	MW-107	04/22/10	09:00
L0HDG	004	MW-11A	04/21/10	13:15
L0HDH	005	SW2	04/21/10	13:30
L0HDJ	006	EB042110	04/21/10	13:45
L0HDK	007	SW1	04/21/10	14:50
L0HDL	008	MW-19	04/22/10	10:38
L0HDN	009	MW-17	04/22/10	09:45
L0HEE	010	TB042110	04/22/10	14:00

NOTE(S) :

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

AECOM, Inc

Client Sample ID: MW-10

GC/MS Volatiles

Lot-Sample #...: C0D240484-001 Work Order #...: L0HDC1AA Matrix.....: WG
 Date Sampled...: 04/22/10 Date Received..: 04/24/10 MS Run #.....: 0122027
 Prep Date.....: 05/02/10 Analysis Date..: 05/02/10
 Prep Batch #...: 0122042
 Dilution Factor: 1 Method.....: SW846 8260B

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u>	<u>LIMIT</u>	<u>UNITS</u>
Benzene	ND	1.0	ug/L	
Ethylbenzene	ND	1.0	ug/L	
Toluene	ND	1.0	ug/L	
Xylenes (total)	ND	3.0	ug/L	

<u>SURROGATE</u>	<u>PERCENT</u>	<u>RECOVERY</u>
	<u>RECOVERY</u>	<u>LIMITS</u>
Toluene-d8	109	(71 - 118)
1,2-Dichloroethane-d4	95	(64 - 135)
4-Bromofluorobenzene	108	(70 - 118)
Dibromofluoromethane	99	(70 - 128)

AECOM, Inc

Client Sample ID: MW-7

GC/MS Volatiles

Lot-Sample #...: C0D240484-002	Work Order #...: L0HDE1AA	Matrix.....: WG
Date Sampled...: 04/22/10	Date Received...: 04/24/10	MS Run #.....: 0122027
Prep Date.....: 05/02/10	Analysis Date...: 05/02/10	
Prep Batch #...: 0122042		
Dilution Factor: 25	Method.....: SW846 8260B	

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u>	
		<u>LIMIT</u>	<u>UNITS</u>
Benzene	330	25	ug/L
Ethylbenzene	520	25	ug/L
Toluene	96	25	ug/L
Xylenes (total)	360	75	ug/L

<u>SURROGATE</u>	<u>PERCENT</u>		<u>RECOVERY</u>
	<u>RECOVERY</u>		<u>LIMITS</u>
Toluene-d8	106		(71 - 118)
1,2-Dichloroethane-d4	95		(64 - 135)
4-Bromofluorobenzene	116		(70 - 118)
Dibromofluoromethane	98		(70 - 128)

AECOM, Inc

Client Sample ID: MW-107

GC/MS Volatiles

Lot-Sample #...: C0D240484-003 Work Order #...: L0HDF1AA Matrix.....: WG
 Date Sampled...: 04/22/10 Date Received..: 04/24/10 MS Run #.....: 0122027
 Prep Date.....: 05/02/10 Analysis Date..: 05/02/10
 Prep Batch #...: 0122042
 Dilution Factor: 25 Method.....: SW846 8260B

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>UNITS</u>
Benzene	300	25	ug/L
Ethylbenzene	450	25	ug/L
Toluene	84	25	ug/L
Xylenes (total)	310	75	ug/L

<u>SURROGATE</u>	<u>PERCENT</u> <u>RECOVERY</u>	<u>RECOVERY</u> <u>LIMITS</u>
Toluene-d8	108	(71 - 118)
1,2-Dichloroethane-d4	101	(64 - 135)
4-Bromofluorobenzene	109	(70 - 118)
Dibromofluoromethane	98	(70 - 128)

AECOM, Inc

Client Sample ID: MW-11A

GC/MS Volatiles

Lot-Sample #...: C0D240484-004 Work Order #...: L0HDG1AA Matrix.....: WG
 Date Sampled...: 04/21/10 Date Received..: 04/24/10 MS Run #.....: 0122027
 Prep Date.....: 05/02/10 Analysis Date..: 05/02/10
 Prep Batch #...: 0122042
 Dilution Factor: 4 Method.....: SW846 8260B

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>UNITS</u>
Benzene	77	4.0	ug/L
Ethylbenzene	35	4.0	ug/L
Toluene	0.78 J	4.0	ug/L
Xylenes (total)	21	12	ug/L

<u>SURROGATE</u>	<u>PERCENT</u> <u>RECOVERY</u>	<u>RECOVERY</u> <u>LIMITS</u>
Toluene-d8	109	(71 - 118)
1,2-Dichloroethane-d4	93	(64 - 135)
4-Bromofluorobenzene	111	(70 - 118)
Dibromofluoromethane	95	(70 - 128)

NOTE(S):

J Estimated result. Result is less than RL.

AECOM, Inc

Client Sample ID: SW2

GC/MS Volatiles

Lot-Sample #...: C0D240484-005 Work Order #...: L0HHDH1AA Matrix.....: WS
 Date Sampled...: 04/21/10 Date Received..: 04/24/10 MS Run #.....: 0124059
 Prep Date.....: 05/04/10 Analysis Date..: 05/04/10
 Prep Batch #...: 0124117
 Dilution Factor: 1 Method.....: SW846 8260B

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u>	
		<u>LIMIT</u>	<u>UNITS</u>
Benzene	ND	1.0	ug/L
Ethylbenzene	ND	1.0	ug/L
Toluene	0.18 J	1.0	ug/L
Xylenes (total)	ND	3.0	ug/L

<u>SURROGATE</u>	<u>PERCENT</u>	<u>RECOVERY</u>
	<u>RECOVERY</u>	<u>LIMITS</u>
Toluene-d8	97	(71 - 118)
1,2-Dichloroethane-d4	85	(64 - 135)
4-Bromofluorobenzene	104	(70 - 118)
Dibromofluoromethane	82	(70 - 128)

NOTE(S):

J Estimated result. Result is less than RL.

AECOM, Inc

Client Sample ID: EB042110

GC/MS Volatiles

Lot-Sample #...: C0D240484-006 Work Order #...: L0HDJ1AA Matrix.....: WQ
 Date Sampled...: 04/21/10 Date Received..: 04/24/10 MS Run #.....: 0122027
 Prep Date.....: 05/02/10 Analysis Date..: 05/02/10
 Prep Batch #...: 0122042
 Dilution Factor: 1 Method.....: SW846 8260B

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u>	
		<u>LIMIT</u>	<u>UNITS</u>
Benzene	ND	1.0	ug/L
Ethylbenzene	ND	1.0	ug/L
Toluene	ND	1.0	ug/L
Xylenes (total)	ND	3.0	ug/L

<u>SURROGATE</u>	<u>PERCENT</u>		<u>RECOVERY</u>
	<u>RECOVERY</u>		<u>LIMITS</u>
Toluene-d8	107		(71 - 118)
1,2-Dichloroethane-d4	100		(64 - 135)
4-Bromofluorobenzene	113		(70 - 118)
Dibromofluoromethane	95		(70 - 128)

AECOM, Inc

Client Sample ID: SW1

GC/MS Volatiles

Lot-Sample #...: C0D240484-007 Work Order #...: L0HDK1AA Matrix.....: WS
 Date Sampled...: 04/21/10 Date Received...: 04/24/10 MS Run #.....: 0122027
 Prep Date.....: 05/02/10 Analysis Date...: 05/02/10
 Prep Batch #...: 0122042
 Dilution Factor: 1 Method.....: SW846 8260B

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>UNITS</u>
Benzene	ND	1.0	ug/L
Ethylbenzene	ND	1.0	ug/L
Toluene	ND	1.0	ug/L
Xylenes (total)	ND	3.0	ug/L

<u>SURROGATE</u>	<u>PERCENT</u> <u>RECOVERY</u>	<u>RECOVERY</u> <u>LIMITS</u>
Toluene-d8	104	(71 - 118)
1,2-Dichloroethane-d4	102	(64 - 135)
4-Bromofluorobenzene	115	(70 - 118)
Dibromofluoromethane	101	(70 - 128)

AECOM, Inc

Client Sample ID: MW-19

GC/MS Volatiles

Lot-Sample #...: C0D240484-008 Work Order #...: L0HDL1AA Matrix.....: WG
 Date Sampled...: 04/22/10 Date Received..: 04/24/10 MS Run #.....: 0122027
 Prep Date.....: 05/02/10 Analysis Date..: 05/02/10
 Prep Batch #...: 0122042
 Dilution Factor: 200 Method.....: SW846 8260B

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNITS</u>
Benzene	4300	200	ug/L
Ethylbenzene	290	200	ug/L
Toluene	ND	200	ug/L
Xylenes (total)	340 J	600	ug/L

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
Toluene-d8	104	(71 - 118)
1,2-Dichloroethane-d4	95	(64 - 135)
4-Bromofluorobenzene	117	(70 - 118)
Dibromofluoromethane	95	(70 - 128)

NOTE(S):

J Estimated result. Result is less than RL.

AECOM, Inc

Client Sample ID: MW-17

GC/MS Volatiles

Lot-Sample #...: C0D240484-009 Work Order #...: L0HDN1AA Matrix.....: WG
 Date Sampled...: 04/22/10 Date Received..: 04/24/10 MS Run #.....: 0122027
 Prep Date.....: 05/02/10 Analysis Date..: 05/02/10
 Prep Batch #...: 0122042
 Dilution Factor: 1 Method.....: SW846 8260B

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u>	
		<u>LIMIT</u>	<u>UNITS</u>
Benzene	ND	1.0	ug/L
Ethylbenzene	ND	1.0	ug/L
Toluene	ND	1.0	ug/L
Xylenes (total)	ND	3.0	ug/L

<u>SURROGATE</u>	<u>PERCENT</u>	<u>RECOVERY</u>
	<u>RECOVERY</u>	<u>LIMITS</u>
Toluene-d8	109	(71 - 118)
1,2-Dichloroethane-d4	96	(64 - 135)
4-Bromofluorobenzene	114	(70 - 118)
Dibromofluoromethane	97	(70 - 128)

AECOM, Inc

Client Sample ID: TB042110

GC/MS Volatiles

Lot-Sample #...: C0D240484-010 Work Order #...: L0HEE1AA Matrix.....: WQ
 Date Sampled...: 04/22/10 Date Received...: 04/24/10 MS Run #.....: 0122027
 Prep Date.....: 05/02/10 Analysis Date...: 05/02/10
 Prep Batch #...: 0122042
 Dilution Factor: 1 Method.....: SW846 8260B

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u>	
		<u>LIMIT</u>	<u>UNITS</u>
Benzene	ND	1.0	ug/L
Ethylbenzene	ND	1.0	ug/L
Toluene	ND	1.0	ug/L
Xylenes (total)	ND	3.0	ug/L

<u>SURROGATE</u>	<u>PERCENT</u>		<u>RECOVERY</u>
	<u>RECOVERY</u>	<u>LIMITS</u>	
Toluene-d8	107	(71 - 118)	
1,2-Dichloroethane-d4	96	(64 - 135)	
4-Bromofluorobenzene	116	(70 - 118)	
Dibromofluoromethane	96	(70 - 128)	

METHOD BLANK REPORT

GC/MS Volatiles

Client Lot #...: C0D240484 Work Order #...: L0WFJ1AA Matrix.....: WATER
 MB Lot-Sample #: C0E020000-042
 Prep Date.....: 05/02/10
 Analysis Date...: 05/02/10 Prep Batch #...: 0122042
 Dilution Factor: 1

PARAMETER	RESULT	REPORTING		METHOD
		LIMIT	UNITS	
Benzene	ND	1.0	ug/L	SW846 8260B
Ethylbenzene	ND	1.0	ug/L	SW846 8260B
Toluene	ND	1.0	ug/L	SW846 8260B
Xylenes (total)	ND	3.0	ug/L	SW846 8260B

SURROGATE	PERCENT RECOVERY	RECOVERY	
		LIMITS	
Toluene-d8	105	(71 - 118)	
1,2-Dichloroethane-d4	87	(64 - 135)	
4-Bromofluorobenzene	113	(70 - 118)	
Dibromofluoromethane	94	(70 - 128)	

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

METHOD BLANK REPORT

GC/MS Volatiles

Client Lot #...: C0D240484 Work Order #...: L0XTW1AA Matrix.....: WATER
 MB Lot-Sample #: C0E040000-117
 Prep Date.....: 05/04/10
 Analysis Date...: 05/04/10 Prep Batch #...: 0124117
 Dilution Factor: 1

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u>		
		<u>LIMIT</u>	<u>UNITS</u>	<u>METHOD</u>
Benzene	ND	1.0	ug/L	SW846 8260B
Ethylbenzene	ND	1.0	ug/L	SW846 8260B
Toluene	ND	1.0	ug/L	SW846 8260B
Xylenes (total)	ND	3.0	ug/L	SW846 8260B

<u>SURROGATE</u>	<u>PERCENT</u>	<u>RECOVERY</u>
	<u>RECOVERY</u>	<u>LIMITS</u>
Toluene-d8	97	(71 - 118)
1,2-Dichloroethane-d4	85	(64 - 135)
4-Bromofluorobenzene	105	(70 - 118)
Dibromofluoromethane	86	(70 - 128)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Volatiles

Client Lot #...: C0D240484 Work Order #...: L0WFJ1AC Matrix.....: WATER
 LCS Lot-Sample#: C0E020000-042
 Prep Date.....: 05/02/10 Analysis Date...: 05/02/10
 Prep Batch #...: 0122042
 Dilution Factor: 1

<u>PARAMETER</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>	<u>METHOD</u>
Benzene	106	(80 - 120)	SW846 8260B
Toluene	105	(80 - 123)	SW846 8260B
1,1-Dichloroethene	107	(65 - 136)	SW846 8260B
Chlorobenzene	104	(80 - 120)	SW846 8260B
Trichloroethene	102	(73 - 120)	SW846 8260B

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
Toluene-d8	100	(71 - 118)
1,2-Dichloroethane-d4	93	(64 - 135)
4-Bromofluorobenzene	105	(70 - 118)
Dibromofluoromethane	101	(70 - 128)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Volatiles

Client Lot #...: C0D240484 Work Order #...: L0XTW1AC Matrix.....: WATER
 LCS Lot-Sample#: C0E040000-117
 Prep Date.....: 05/04/10 Analysis Date...: 05/04/10
 Prep Batch #...: 0124117
 Dilution Factor: 1

<u>PARAMETER</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>	<u>METHOD</u>
Benzene	100	(80 - 120)	SW846 8260B
Toluene	105	(80 - 123)	SW846 8260B
1,1-Dichloroethene	91	(65 - 136)	SW846 8260B
Chlorobenzene	101	(80 - 120)	SW846 8260B
Trichloroethene	94	(73 - 120)	SW846 8260B

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
Toluene-d8	92	(71 - 118)
1,2-Dichloroethane-d4	91	(64 - 135)
4-Bromofluorobenzene	102	(70 - 118)
Dibromofluoromethane	90	(70 - 128)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

MATRIX SPIKE SAMPLE EVALUATION REPORT

GC/MS Volatiles

Client Lot #...: C0D240484 Work Order #...: L0HDC1AE-MS Matrix.....: WG
 MS Lot-Sample #: C0D240484-001 L0HDC1AF-MSD
 Date Sampled...: 04/22/10 Date Received...: 04/24/10 MS Run #.....: 0122027
 Prep Date.....: 05/02/10 Analysis Date...: 05/02/10
 Prep Batch #...: 0122042
 Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Benzene	111	(80 - 120)			SW846 8260B
	116	(80 - 120)	4.5	(0-32)	SW846 8260B
Toluene	111	(80 - 123)			SW846 8260B
	101	(80 - 123)	9.8	(0-35)	SW846 8260B
1,1-Dichloroethene	116	(65 - 136)			SW846 8260B
	116	(65 - 136)	0.17	(0-35)	SW846 8260B
Chlorobenzene	108	(80 - 120)			SW846 8260B
	101	(80 - 120)	6.7	(0-29)	SW846 8260B
Trichloroethene	106	(73 - 120)			SW846 8260B
	111	(73 - 120)	3.8	(0-35)	SW846 8260B

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Toluene-d8	107	(71 - 118)
	98	(71 - 118)
1,2-Dichloroethane-d4	102	(64 - 135)
	108	(64 - 135)
4-Bromofluorobenzene	108	(70 - 118)
	112	(70 - 118)
Dibromofluoromethane	98	(70 - 128)
	108	(70 - 128)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

MATRIX SPIKE SAMPLE EVALUATION REPORT

GC/MS Volatiles

Client Lot #...: C0D240484 Work Order #...: L0MT51D6-MS Matrix.....: WATER
 MS Lot-Sample #: C0D280458-001 L0MT51D7-MSD
 Date Sampled...: 04/27/10 Date Received...: 04/28/10 MS Run #.....: 0124059
 Prep Date.....: 05/04/10 Analysis Date...: 05/04/10
 Prep Batch #...: 0124117
 Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Benzene	106	(80 - 120)			SW846 8260B
	102	(80 - 120)	3.8	(0-32)	SW846 8260B
Toluene	109	(80 - 123)			SW846 8260B
	107	(80 - 123)	1.7	(0-35)	SW846 8260B
1,1-Dichloroethene	108	(65 - 136)			SW846 8260B
	100	(65 - 136)	8.0	(0-35)	SW846 8260B
Chlorobenzene	107	(80 - 120)			SW846 8260B
	106	(80 - 120)	0.84	(0-29)	SW846 8260B
Trichloroethene	104	(73 - 120)			SW846 8260B
	98	(73 - 120)	6.6	(0-35)	SW846 8260B

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Toluene-d8	99	(71 - 118)
	106	(71 - 118)
1,2-Dichloroethane-d4	101	(64 - 135)
	108	(64 - 135)
4-Bromofluorobenzene	103	(70 - 118)
	107	(70 - 118)
Dibromofluoromethane	96	(70 - 128)
	102	(70 - 128)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

AECOM, Inc

Client Sample ID: MW-10

GC/MS Semivolatiles

Lot-Sample #...: C0D240484-001 Work Order #...: L0HDC1AC Matrix.....: WG
 Date Sampled...: 04/22/10 Date Received...: 04/24/10 MS Run #.....:
 Prep Date.....: 04/28/10 Analysis Date...: 04/29/10
 Prep Batch #...: 0118169
 Dilution Factor: 1.01 Method.....: SW846 8270C

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u>	
		<u>LIMIT</u>	<u>UNITS</u>
Acenaphthene	ND	10	ug/L
Acenaphthylene	ND	10	ug/L
Anthracene	ND	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Chrysene	ND	10	ug/L
Fluoranthene	ND	10	ug/L
Fluorene	ND	10	ug/L
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
2-Methylnaphthalene	ND	10	ug/L
Naphthalene	ND	10	ug/L
Phenanthrene	ND	10	ug/L
Pyrene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L

<u>SURROGATE</u>	<u>PERCENT</u>	<u>RECOVERY</u>
	<u>RECOVERY</u>	<u>LIMITS</u>
2,4,6-Tribromophenol	65	(33 - 122)
2-Fluorobiphenyl	61	(35 - 108)
2-Fluorophenol	62	(26 - 100)
Nitrobenzene-d5	60	(37 - 104)
Phenol-d5	62	(30 - 102)
Terphenyl-d14	52	(25 - 130)

AECOM, Inc

Client Sample ID: MW-7

GC/MS Semivolatiles

Lot-Sample #...: C0D240484-002 Work Order #...: L0HDE1AC Matrix.....: WG
 Date Sampled...: 04/22/10 Date Received...: 04/24/10 MS Run #.....:
 Prep Date.....: 04/28/10 Analysis Date...: 04/29/10
 Prep Batch #...: 0118169
 Dilution Factor: 1.01 Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING	
		LIMIT	UNITS
Acenaphthene	15	10	ug/L
Acenaphthylene	ND	10	ug/L
Anthracene	0.23 J	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Chrysene	ND	10	ug/L
Fluoranthene	0.20 J	10	ug/L
Fluorene	2.7 J	10	ug/L
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
2-Methylnaphthalene	33	10	ug/L
Naphthalene	560 E	10	ug/L
Phenanthrene	2.1 J	10	ug/L
Pyrene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L

SURROGATE	PERCENT	
	RECOVERY	RECOVERY LIMITS
2,4,6-Tribromophenol	63	(33 - 122)
2-Fluorobiphenyl	64	(35 - 108)
2-Fluorophenol	66	(26 - 100)
Nitrobenzene-d5	63	(37 - 104)
Phenol-d5	64	(30 - 102)
Terphenyl-d14	47	(25 - 130)

NOTE(S):

J Estimated result. Result is less than RL.

E Estimated result. Result concentration exceeds the calibration range.

AECOM, Inc

Client Sample ID: MW-7

GC/MS Semivolatiles

Lot-Sample #...: C0D240484-002 Work Order #...: L0HDE2AC Matrix.....: WG
 Date Sampled...: 04/22/10 Date Received...: 04/24/10 MS Run #.....:
 Prep Date.....: 04/28/10 Analysis Date...: 04/30/10
 Prep Batch #...: 0118169
 Dilution Factor: 5.05 Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING	
		LIMIT	UNITS
Acenaphthene	15 J	50	ug/L
Acenaphthylene	ND	50	ug/L
Anthracene	ND	50	ug/L
Benzo(a)anthracene	ND	50	ug/L
Benzo(b)fluoranthene	ND	50	ug/L
Benzo(k)fluoranthene	ND	50	ug/L
Benzo(ghi)perylene	ND	50	ug/L
Benzo(a)pyrene	ND	50	ug/L
Chrysene	ND	50	ug/L
Fluoranthene	ND	50	ug/L
Fluorene	ND	50	ug/L
Indeno(1,2,3-cd)pyrene	ND	50	ug/L
2-Methylnaphthalene	38 J	50	ug/L
Naphthalene	650	50	ug/L
Phenanthrene	ND	50	ug/L
Pyrene	ND	50	ug/L
Dibenzo(a,h)anthracene	ND	50	ug/L

SURROGATE	PERCENT	
	RECOVERY	RECOVERY LIMITS
2,4,6-Tribromophenol	66	(33 - 122)
2-Fluorobiphenyl	68	(35 - 108)
2-Fluorophenol	68	(26 - 100)
Nitrobenzene-d5	62	(37 - 104)
Phenol-d5	65	(30 - 102)
Terphenyl-d14	46	(25 - 130)

NOTE(S):

J Estimated result. Result is less than RL.

AECOM, Inc

Client Sample ID: MW-107

GC/MS Semivolatiles

Lot-Sample #...: C0D240484-003 Work Order #...: L0HDF1AC Matrix.....: WG
 Date Sampled...: 04/22/10 Date Received...: 04/24/10 MS Run #.....:
 Prep Date.....: 04/28/10 Analysis Date...: 04/29/10
 Prep Batch #...: 0118169
 Dilution Factor: 1 Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING	
		LIMIT	UNITS
Acenaphthene	15	10	ug/L
Acenaphthylene	ND	10	ug/L
Anthracene	0.30 J	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Chrysene	ND	10	ug/L
Fluoranthene	ND	10	ug/L
Fluorene	2.8 J	10	ug/L
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
2-Methylnaphthalene	33	10	ug/L
Naphthalene	620 E	10	ug/L
Phenanthrene	2.2 J	10	ug/L
Pyrene	ND	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L

SURROGATE	PERCENT	RECOVERY
	RECOVERY	LIMITS
2,4,6-Tribromophenol	65	(33 - 122)
2-Fluorobiphenyl	63	(35 - 108)
2-Fluorophenol	63	(26 - 100)
Nitrobenzene-d5	62	(37 - 104)
Phenol-d5	61	(30 - 102)
Terphenyl-d14	48	(25 - 130)

NOTE(S):

J Estimated result. Result is less than RL.

E Estimated result. Result concentration exceeds the calibration range.

AECOM, Inc

Client Sample ID: MW-107

GC/MS Semivolatiles

Lot-Sample #...: C0D240484-003 Work Order #...: L0HDF2AC Matrix.....: WG
 Date Sampled...: 04/22/10 Date Received...: 04/24/10 MS Run #.....:
 Prep Date.....: 04/28/10 Analysis Date...: 04/30/10
 Prep Batch #...: 0118169
 Dilution Factor: 5 Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING	
		LIMIT	UNITS
Acenaphthene	16 J	50	ug/L
Acenaphthylene	ND	50	ug/L
Anthracene	ND	50	ug/L
Benzo(a)anthracene	ND	50	ug/L
Benzo(b)fluoranthene	ND	50	ug/L
Benzo(k)fluoranthene	ND	50	ug/L
Benzo(ghi)perylene	ND	50	ug/L
Benzo(a)pyrene	ND	50	ug/L
Chrysene	ND	50	ug/L
Fluoranthene	ND	50	ug/L
Fluorene	2.2 J	50	ug/L
Indeno(1,2,3-cd)pyrene	ND	50	ug/L
2-Methylnaphthalene	32 J	50	ug/L
Naphthalene	600	50	ug/L
Phenanthrene	ND	50	ug/L
Pyrene	ND	50	ug/L
Dibenzo(a,h)anthracene	ND	50	ug/L

SURROGATE	PERCENT	
	RECOVERY	RECOVERY LIMITS
2,4,6-Tribromophenol	59	(33 - 122)
2-Fluorobiphenyl	60	(35 - 108)
2-Fluorophenol	57	(26 - 100)
Nitrobenzene-d5	56	(37 - 104)
Phenol-d5	55	(30 - 102)
Terphenyl-d14	45	(25 - 130)

NOTE(S):

J Estimated result. Result is less than RL.

AECOM, Inc

Client Sample ID: MW-11A

GC/MS Semivolatiles

Lot-Sample #...: C0D240484-004 Work Order #...: L0HDG1AC Matrix.....: WG
 Date Sampled...: 04/21/10 Date Received...: 04/24/10 MS Run #.....:
 Prep Date.....: 04/28/10 Analysis Date...: 04/29/10
 Prep Batch #...: 0118169
 Dilution Factor: 1 Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING	
		LIMIT	UNITS
Acenaphthene	3.1 J	10	ug/L
Acenaphthylene	2.4 J	10	ug/L
Anthracene	ND	10	ug/L
Benzo(a)anthracene	ND	10	ug/L
Benzo(b)fluoranthene	ND	10	ug/L
Benzo(k)fluoranthene	ND	10	ug/L
Benzo(ghi)perylene	ND	10	ug/L
Benzo(a)pyrene	ND	10	ug/L
Chrysene	ND	10	ug/L
Fluoranthene	0.24 J	10	ug/L
Fluorene	0.72 J	10	ug/L
Indeno(1,2,3-cd)pyrene	ND	10	ug/L
2-Methylnaphthalene	ND	10	ug/L
Naphthalene	0.78 J	10	ug/L
Phenanthrene	ND	10	ug/L
Pyrene	0.27 J	10	ug/L
Dibenzo(a,h)anthracene	ND	10	ug/L

SURROGATE	PERCENT	
	RECOVERY	RECOVERY LIMITS
2,4,6-Tribromophenol	62	(33 - 122)
2-Fluorobiphenyl	63	(35 - 108)
2-Fluorophenol	57	(26 - 100)
Nitrobenzene-d5	59	(37 - 104)
Phenol-d5	57	(30 - 102)
Terphenyl-d14	39	(25 - 130)

NOTE(S):

J Estimated result. Result is less than RL.

AECOM, Inc

Client Sample ID: SW2

GC/MS Semivolatiles

Lot-Sample #...: C0D240484-005 Work Order #...: L0HDH1AC Matrix.....: WS
 Date Sampled...: 04/21/10 Date Received...: 04/24/10 MS Run #.....:
 Prep Date.....: 04/28/10 Analysis Date...: 04/29/10
 Prep Batch #...: 0118169
 Dilution Factor: 0.99 Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING	
		LIMIT	UNITS
Acenaphthene	ND	9.9	ug/L
Acenaphthylene	ND	9.9	ug/L
Anthracene	ND	9.9	ug/L
Benzo(a)anthracene	ND	9.9	ug/L
Benzo(b)fluoranthene	ND	9.9	ug/L
Benzo(k)fluoranthene	ND	9.9	ug/L
Benzo(ghi)perylene	ND	9.9	ug/L
Benzo(a)pyrene	ND	9.9	ug/L
Chrysene	ND	9.9	ug/L
Fluoranthene	ND	9.9	ug/L
Fluorene	ND	9.9	ug/L
Indeno(1,2,3-cd)pyrene	ND	9.9	ug/L
2-Methylnaphthalene	ND	9.9	ug/L
Naphthalene	ND	9.9	ug/L
Phenanthrene	ND	9.9	ug/L
Pyrene	ND	9.9	ug/L
Dibenzo(a,h)anthracene	ND	9.9	ug/L

SURROGATE	PERCENT	RECOVERY
	RECOVERY	LIMITS
2,4,6-Tribromophenol	59	(33 - 122)
2-Fluorobiphenyl	68	(35 - 108)
2-Fluorophenol	66	(26 - 100)
Nitrobenzene-d5	64	(37 - 104)
Phenol-d5	65	(30 - 102)
Terphenyl-d14	46	(25 - 130)

AECOM, Inc

Client Sample ID: EB042110

GC/MS Semivolatiles

Lot-Sample #...: C0D240484-006 Work Order #...: L0HDJ1AC Matrix.....: WQ
 Date Sampled...: 04/21/10 Date Received...: 04/24/10 MS Run #.....:
 Prep Date.....: 04/28/10 Analysis Date...: 04/29/10
 Prep Batch #...: 0118169
 Dilution Factor: 0.94 Method.....: SW846 8270C

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u>	
		<u>LIMIT</u>	<u>UNITS</u>
Acenaphthene	ND	9.4	ug/L
Acenaphthylene	ND	9.4	ug/L
Anthracene	ND	9.4	ug/L
Benzo(a)anthracene	ND	9.4	ug/L
Benzo(b)fluoranthene	ND	9.4	ug/L
Benzo(k)fluoranthene	ND	9.4	ug/L
Benzo(ghi)perylene	ND	9.4	ug/L
Benzo(a)pyrene	ND	9.4	ug/L
Chrysene	ND	9.4	ug/L
Fluoranthene	ND	9.4	ug/L
Fluorene	ND	9.4	ug/L
Indeno(1,2,3-cd)pyrene	ND	9.4	ug/L
2-Methylnaphthalene	ND	9.4	ug/L
Naphthalene	ND	9.4	ug/L
Phenanthrene	ND	9.4	ug/L
Pyrene	ND	9.4	ug/L
Dibenzo(a,h)anthracene	ND	9.4	ug/L

<u>SURROGATE</u>	<u>PERCENT</u>	<u>RECOVERY</u>
	<u>RECOVERY</u>	<u>LIMITS</u>
2,4,6-Tribromophenol	69	(33 - 122)
2-Fluorobiphenyl	76	(35 - 108)
2-Fluorophenol	73	(26 - 100)
Nitrobenzene-d5	73	(37 - 104)
Phenol-d5	74	(30 - 102)
Terphenyl-d14	72	(25 - 130)

AECOM, Inc

Client Sample ID: SW1

GC/MS Semivolatiles

Lot-Sample #...: C0D240484-007 Work Order #...: L0HDK1AC Matrix.....: WS
 Date Sampled...: 04/21/10 Date Received...: 04/24/10 MS Run #.....:
 Prep Date.....: 04/28/10 Analysis Date...: 04/29/10
 Prep Batch #...: 0118169
 Dilution Factor: 0.99 Method.....: SW846 8270C

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u>	
		<u>LIMIT</u>	<u>UNITS</u>
Acenaphthene	ND	9.9	ug/L
Acenaphthylene	ND	9.9	ug/L
Anthracene	ND	9.9	ug/L
Benzo(a)anthracene	ND	9.9	ug/L
Benzo(b)fluoranthene	ND	9.9	ug/L
Benzo(k)fluoranthene	ND	9.9	ug/L
Benzo(ghi)perylene	ND	9.9	ug/L
Benzo(a)pyrene	ND	9.9	ug/L
Chrysene	ND	9.9	ug/L
Fluoranthene	ND	9.9	ug/L
Fluorene	ND	9.9	ug/L
Indeno(1,2,3-cd)pyrene	ND	9.9	ug/L
2-Methylnaphthalene	ND	9.9	ug/L
Naphthalene	ND	9.9	ug/L
Phenanthrene	ND	9.9	ug/L
Pyrene	ND	9.9	ug/L
Dibenzo(a,h)anthracene	ND	9.9	ug/L

<u>SURROGATE</u>	<u>PERCENT</u>	<u>RECOVERY</u>
	<u>RECOVERY</u>	<u>LIMITS</u>
2,4,6-Tribromophenol	61	(33 - 122)
2-Fluorobiphenyl	69	(35 - 108)
2-Fluorophenol	69	(26 - 100)
Nitrobenzene-d5	63	(37 - 104)
Phenol-d5	72	(30 - 102)
Terphenyl-d14	56	(25 - 130)

AECOM, Inc

Client Sample ID: MW-19

GC/MS Semivolatiles

Lot-Sample #...: C0D240484-008 Work Order #...: L0HDL1AC Matrix.....: WG
 Date Sampled...: 04/22/10 Date Received...: 04/24/10 MS Run #.....:
 Prep Date.....: 04/28/10 Analysis Date...: 04/29/10
 Prep Batch #...: 0118169
 Dilution Factor: 1.08 Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING	
		LIMIT	UNITS
Acenaphthene	ND	11	ug/L
Acenaphthylene	ND	11	ug/L
Anthracene	ND	11	ug/L
Benzo(a)anthracene	ND	11	ug/L
Benzo(b)fluoranthene	ND	11	ug/L
Benzo(k)fluoranthene	ND	11	ug/L
Benzo(ghi)perylene	ND	11	ug/L
Benzo(a)pyrene	ND	11	ug/L
Chrysene	ND	11	ug/L
Fluoranthene	ND	11	ug/L
Fluorene	ND	11	ug/L
Indeno(1,2,3-cd)pyrene	ND	11	ug/L
2-Methylnaphthalene	7.2 J	11	ug/L
Naphthalene	1100 E	11	ug/L
Phenanthrene	ND	11	ug/L
Pyrene	ND	11	ug/L
Dibenzo(a,h)anthracene	ND	11	ug/L

SURROGATE	PERCENT	RECOVERY
	RECOVERY	LIMITS
2,4,6-Tribromophenol	65	(33 - 122)
2-Fluorobiphenyl	63	(35 - 108)
2-Fluorophenol	61	(26 - 100)
Nitrobenzene-d5	55	(37 - 104)
Phenol-d5	60	(30 - 102)
Terphenyl-d14	38	(25 - 130)

NOTE(S):

J Estimated result. Result is less than RL.

E Estimated result. Result concentration exceeds the calibration range.

AECOM, Inc

Client Sample ID: MW-19

GC/MS Semivolatiles

Lot-Sample #...: C0D240484-008 Work Order #...: L0HDL2AC Matrix.....: WG
 Date Sampled...: 04/22/10 Date Received...: 04/24/10 MS Run #.....:
 Prep Date.....: 04/28/10 Analysis Date...: 04/30/10
 Prep Batch #...: 0118169
 Dilution Factor: 21.5 Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING	
		LIMIT	UNITS
Acenaphthene	ND	220	ug/L
Acenaphthylene	ND	220	ug/L
Anthracene	ND	220	ug/L
Benzo(a)anthracene	ND	220	ug/L
Benzo(b)fluoranthene	ND	220	ug/L
Benzo(k)fluoranthene	ND	220	ug/L
Benzo(ghi)perylene	ND	220	ug/L
Benzo(a)pyrene	ND	220	ug/L
Chrysene	ND	220	ug/L
Fluoranthene	ND	220	ug/L
Fluorene	ND	220	ug/L
Indeno(1,2,3-cd)pyrene	ND	220	ug/L
2-Methylnaphthalene	8.1 J	220	ug/L
Naphthalene	3300	220	ug/L
Phenanthrene	ND	220	ug/L
Pyrene	ND	220	ug/L
Dibenzo(a,h)anthracene	ND	220	ug/L

SURROGATE	PERCENT	RECOVERY
	RECOVERY	LIMITS
2,4,6-Tribromophenol	NC,DIL	(33 - 122)
2-Fluorobiphenyl	NC,DIL	(35 - 108)
2-Fluorophenol	NC,DIL	(26 - 100)
Nitrobenzene-d5	NC,DIL	(37 - 104)
Phenol-d5	NC,DIL	(30 - 102)
Terphenyl-d14	NC,DIL	(25 - 130)

NOTE(S):

NC The recovery and/or RPD were not calculated.

DIL The concentration is estimated or not reported due to dilution or the presence of interfering analytes.

J Estimated result. Result is less than RL.

AECOM, Inc

Client Sample ID: MW-17

GC/MS Semivolatiles

Lot-Sample #...: C0D240484-009 Work Order #...: L0HDN1AC Matrix.....: WG
 Date Sampled...: 04/22/10 Date Received...: 04/24/10 MS Run #.....:
 Prep Date.....: 04/28/10 Analysis Date...: 04/30/10
 Prep Batch #...: 0118169
 Dilution Factor: 1.25 Method.....: SW846 8270C

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u>	
		<u>LIMIT</u>	<u>UNITS</u>
Acenaphthene	ND	12	ug/L
Acenaphthylene	ND	12	ug/L
Anthracene	ND	12	ug/L
Benzo(a)anthracene	ND	12	ug/L
Benzo(b)fluoranthene	ND	12	ug/L
Benzo(k)fluoranthene	ND	12	ug/L
Benzo(ghi)perylene	ND	12	ug/L
Benzo(a)pyrene	ND	12	ug/L
Chrysene	ND	12	ug/L
Fluoranthene	ND	12	ug/L
Fluorene	ND	12	ug/L
Indeno(1,2,3-cd)pyrene	ND	12	ug/L
2-Methylnaphthalene	ND	12	ug/L
Naphthalene	ND	12	ug/L
Phenanthrene	ND	12	ug/L
Pyrene	ND	12	ug/L
Dibenzo(a,h)anthracene	ND	12	ug/L

<u>SURROGATE</u>	<u>PERCENT</u>	<u>RECOVERY</u>
	<u>RECOVERY</u>	<u>LIMITS</u>
2,4,6-Tribromophenol	64	(33 - 122)
2-Fluorobiphenyl	65	(35 - 108)
2-Fluorophenol	67	(26 - 100)
Nitrobenzene-d5	66	(37 - 104)
Phenol-d5	68	(30 - 102)
Terphenyl-d14	48	(25 - 130)

METHOD BLANK REPORT

GC/MS Semivolatiles

Client Lot #...: C0D240484
MB Lot-Sample #: C0D280000-169

Work Order #...: L0ME21AA

Matrix.....: WATER

Analysis Date...: 04/29/10

Prep Date.....: 04/28/10

Prep Batch #...: 0118169

Dilution Factor: 1

PARAMETER	RESULT	REPORTING		
		LIMIT	UNITS	METHOD
Acenaphthene	ND	10	ug/L	SW846 8270C
Acenaphthylene	ND	10	ug/L	SW846 8270C
Anthracene	ND	10	ug/L	SW846 8270C
Benzo(a)anthracene	ND	10	ug/L	SW846 8270C
Benzo(b)fluoranthene	ND	10	ug/L	SW846 8270C
Benzo(k)fluoranthene	ND	10	ug/L	SW846 8270C
Benzo(ghi)perylene	ND	10	ug/L	SW846 8270C
Benzo(a)pyrene	ND	10	ug/L	SW846 8270C
Chrysene	ND	10	ug/L	SW846 8270C
Fluoranthene	ND	10	ug/L	SW846 8270C
Fluorene	ND	10	ug/L	SW846 8270C
Indeno(1,2,3-cd)pyrene	ND	10	ug/L	SW846 8270C
2-Methylnaphthalene	ND	10	ug/L	SW846 8270C
Naphthalene	ND	10	ug/L	SW846 8270C
Phenanthrene	ND	10	ug/L	SW846 8270C
Pyrene	ND	10	ug/L	SW846 8270C
Dibenzo(a,h)anthracene	ND	10	ug/L	SW846 8270C

SURROGATE	PERCENT	RECOVERY
	RECOVERY	LIMITS
2,4,6-Tribromophenol	62	(33 - 122)
2-Fluorobiphenyl	68	(35 - 108)
2-Fluorophenol	74	(26 - 100)
Nitrobenzene-d5	65	(37 - 104)
Phenol-d5	75	(30 - 102)
Terphenyl-d14	66	(25 - 130)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: C0D240484 Work Order #...: L0ME21AC-LCS Matrix.....: WATER
 LCS Lot-Sample#: C0D280000-169 L0ME21AD-LCSD
 Prep Date.....: 04/28/10 Analysis Date...: 04/29/10
 Prep Batch #...: 0118169
 Dilution Factor: 1

<u>PARAMETER</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>	<u>RPD</u>	<u>RPD LIMITS</u>	<u>METHOD</u>
1,2,4-Trichloro- benzene	73	(36 - 97)			SW846 8270C
	73	(36 - 97)	0.50	(0-32)	SW846 8270C
1,4-Dichlorobenzene	70	(32 - 94)			SW846 8270C
	73	(32 - 94)	4.6	(0-33)	SW846 8270C
2,4-Dinitrotoluene	73	(41 - 117)			SW846 8270C
	74	(41 - 117)	2.2	(0-32)	SW846 8270C
Acenaphthene	72	(39 - 106)			SW846 8270C
	72	(39 - 106)	0.45	(0-32)	SW846 8270C
2-Chlorophenol	69	(34 - 100)			SW846 8270C
	71	(34 - 100)	2.9	(0-31)	SW846 8270C
4-Chloro-3-methylphenol	74	(40 - 107)			SW846 8270C
	72	(40 - 107)	3.0	(0-32)	SW846 8270C
4-Nitrophenol	74	(29 - 120)			SW846 8270C
	67	(29 - 120)	10	(0-39)	SW846 8270C
N-Nitrosodi-n-propyl- amine	69	(37 - 106)			SW846 8270C
	71	(37 - 106)	2.6	(0-36)	SW846 8270C
Pentachlorophenol	74	(10 - 118)			SW846 8270C
	73	(10 - 118)	1.4	(0-49)	SW846 8270C
Phenol	69	(35 - 98)			SW846 8270C
	71	(35 - 98)	3.7	(0-35)	SW846 8270C
Butyl benzyl phthalate	67	(34 - 110)			SW846 8270C
	69	(34 - 110)	1.7	(0-35)	SW846 8270C
4-Bromophenyl phenyl ether	72	(38 - 108)			SW846 8270C
	75	(38 - 108)	3.6	(0-40)	SW846 8270C
4-Methylphenol	70	(34 - 104)			SW846 8270C
	72	(34 - 104)	2.7	(0-34)	SW846 8270C
Hexachloroethane	69	(27 - 94)			SW846 8270C
	73	(27 - 94)	4.8	(0-43)	SW846 8270C
Naphthalene	72	(35 - 98)			SW846 8270C
	71	(35 - 98)	1.2	(0-39)	SW846 8270C
Pyrene	67	(36 - 115)			SW846 8270C
	71	(36 - 115)	5.0	(0-38)	SW846 8270C

(Continued on next page)

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: C0D240484 Work Order #...: L0ME21AC-LCS Matrix.....: WATER
 LCS Lot-Sample#: C0D280000-169 L0ME21AD-LCSD

<u>SURROGATE</u>	PERCENT <u>RECOVERY</u>	RECOVERY <u>LIMITS</u>
2,4,6-Tribromophenol	71	(33 - 122)
	73	(33 - 122)
2-Fluorobiphenyl	73	(35 - 108)
	73	(35 - 108)
2-Fluorophenol	75	(26 - 100)
	76	(26 - 100)
Nitrobenzene-d5	69	(37 - 104)
	68	(37 - 104)
Phenol-d5	77	(30 - 102)
	78	(30 - 102)
Terphenyl-d14	76	(25 - 130)
	79	(25 - 130)

NOTE(S) :

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

August 9, 2010

Jesse Lloyd
AECOM, Inc.
1001 W. Seneca St. Suite 204
Ithaca, NY 14850

Re: Groundwater samples analyzed for cyanide by Eleanor Hopke, Clarkson University

Dear Mr. Lloyd:

Thirteen groundwater samples from the Mineral Springs site were received from AECOM on April 23, 2010. They arrived cold and in brown plastic bottles, two 250-ml bottles for each sample. Requested analyses were Total Cyanide and Free Cyanide by Microdiffusion.

The duplicate sample containers were composited before analysis. pH's of the samples were all greater than pH 13. All laboratory manipulations of the samples were carried out under GOLD lights to prevent decomposition of cyanide complexes to free cyanide. Laboratory matrix spikes and matrix spike duplicates, check standards, continuing calibration verification standards, and reagent blanks were analyzed along with the samples.

The following methods were used to analyze the samples:

Total Cyanide – *APHA Standard Methods* 4500-CN⁻ C. "Total Cyanide after Distillation" and *APHA Standard Methods* 4500-CN⁻ E., "Colorimetric Method."

Free Cyanide - *ASTM D4282-02*. "Standard Test Method for Determination of Free Cyanide in Water and Wastewater by Microdiffusion." using lower concentration standards to better bracket the sample concentrations, and substituting *APHA 4500-CN⁻ D.* to standardize the stock cyanide standard. Sample pH's were reduced by adding sulfuric acid so that the buffer would adequately reduce the pH during the analysis. I have had success with doing this.

For Diffusible and Total Cyanide, the stock cyanide standard was calibrated using *APHA Standard Methods*, 4500-CN⁻ D., "Titrimetric Method."

The analytical results follow:

**Groundwater Samples
TOTAL CYANIDE and FREE CYANIDE
Results in $\mu\text{g CN}^-/\text{L}$ (ppb)**

ID	Free Cyanide	Total Cyanide
MW-12	<2.3	550
MW-13	<2.3	<3
MW-14	<2.3	480
MW-16	2.4	566
MW-17	<2.3	242
MW-20	<2.3	495
MW-21	<2.3	508
MW-22	<2.3	771
MW-23	<2.3	277
MW-160	3.3	564
SW-01	2.6	3.6
SW-02	<2.3	4.4
EB042110	<2.3	<3
Matrix Spike and Matrix Spike Duplicate	97.1%, 97.1 % (MW-22)	107.2%, 97.9 % (MW-14)
Reagent Blank	<2.3	<3
Check Std	101.1%	99.5%

Analytical Dates

ID	Sampling Date	Arrival Date	Free CN Analysis Date	Total CN Analysis Date
MW-12	4/21/10	4/23/10	4/26/10	4/26/10
MW-13	4/21/10	4/23/10	4/26/10	4/26/10
MW-14	4/21/10	4/23/10	4/26/10	4/26/10
MW-16	4/21/10	4/23/10	4/26/10	4/26/10
MW-17	4/22/10	4/23/10	4/26/10	4/26/10
MW-20	4/21/10	4/23/10	4/26/10	4/26/10
MW-21	4/21/10	4/23/10	4/26/10	4/26/10
MW-22	4/21/10	4/23/10	4/26/10	4/27/10
MW-23	4/21/10	4/23/10	4/26/10	4/27/10
MW-160	4/21/10	4/23/10	4/26/10	4/27/10
SW-01	4/21/10	4/23/10	4/26/10	4/26/10
SW-02	4/21/10	4/23/10	4/26/10	4/26/10
EB042110	4/21/10	4/23/10	4/26/10	4/23/10

I will be very glad to answer any questions you might have about these results. Thank you very much for sending them to Clarkson for analysis.

Sincerely,

Eleanor Hopke
Research Technician
Clarkson University
Box 5710
Potsdam, NY 13699

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e-mail: hopkeef@clarkson.edu