CON 12-15
Doc # 7105

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March 29 2006
EA-06-022

Mr. Cal Lundberg
Iowa Department of Natural Resources
Wallace State Office Building
502 East 9th Street
Des Moines, Iowa 50319

Proj: Boone, Chariton, and Vinton Former Manufactured Gas Plant Sites
Subj: Issues with Possible Sample Switch at Analytical Laboratory
File: SPF-116.A06D, SPF-116.A06R, SPF-116.A06I

Dear Mr. Lundberg:

This letter is to inform you of two analytical data issues that deal with logging in and tracking samples during analysis by TestAmerica, Inc. It has come to our attention that analytical results for samples may have been incorrectly associated with another sample identification. While there is no documentation available to verify that the samples collected from the Boone, Chariton, and Vinton former manufactured gas plant (MGP) sites were switched, the circumstantial evidence in either case is sufficient to suspect that the sample numbers were switched.

It is important to note that while the results for specific samples collected during two 4th quarter 2005 sampling events are suspect, the results collected from these locations prior to and subsequent to the event in question are similar to each other and further support the anomalous nature of the results from this particular event.

We are informing you of these issues because you will soon receive the 2005 ground water monitoring reports for two of the affected sites. The issues presented here were identified during the data review and report preparation by Black & Veatch for the sites in question, and have been reviewed with TestAmerica. Based on discussions with TestAmerica, the incidents appear to be isolated to a short time frame following the implementation of a new laboratory information management system and changes to laboratory protocols that were associated with this change. Black & Veatch confirmed this by completing a thorough check on all sample data generated by TestAmerica during the 4th quarter of 2005 and the 1st quarter of 2006.

The following paragraphs present the evidence of possible sample switching in more detail.

Discussion of Evidence

The possible sample switch was first suspected while reviewing the results for samples collected at the Boone and Chariton MGP sites in November 2005. The sample collected

from source well MW-3 in Chariton on 11/19/05 and received at the laboratory on 11/22/05, contained only trace amounts of polycyclic aromatic hydocarbons (PAHs) (< 1 µg/L). As noted in Table 1, this well has consistently contained naphthalene at concentrations near 10,000 µg/L. Other PAHs were also detected at concentrations uncharacteristically low in comparison to historical trends. In contrast to this apparent sudden reduction in PAH concentrations, benzene, ethylbenzene, toluene, and total xylenes (BTEX) results were all reported at concentrations similar to historical results.

While this by itself is not sufficient evidence to suspect that sample numbers were switched, an examination of the data from storm sewer sampling in Boone revealed the reversed situation. In sample STW-1 collected from the storm sewer on 11/17/05 and received by the laboratory on 11/19/05, several PAHs were detected at concentrations that were orders of magnitude higher than historical concentrations for this location. While no BTEX analysis was completed for this sample for comparison, these results are characteristic of what has been detected in well MW-3 at the Chariton MGP site. Therefore, it appears that the sample numbers for Boone sample STW-1 and Chariton sample MW-3 may have been mistakenly switched during analysis.

According to Mike McGee, the laboratory manager for the Cedar Falls laboratory, a laboratory sample identification (ID) is transcribed from one vessel to another four times during sample extraction and preparation for analysis of semivolatile organic compounds by SW846 Method 8270C-SIM. Both samples have the same analytical batch ID, which means that they were analyzed by TestAmerica together. In addition, the laboratory sample IDs assigned by the laboratory for internal tracking are similar (COK1178-02 for the sample from well MW-3 and COK1107-02 for the sample from STW-1).

A second instance of possible sample number switching occurred within the SDG for samples collected from the Vinton MGP site in October 2005. In this case, the PAH results forthe primary and duplicate samples collected from well MW-12 differed significantly in comparison to the variation in results for BTEXs and several monitored natural attenuation parameters. As shown on the attached pages from the data summary report from TestAmerica, a comparison of the PAH results to the historical data for well MW-12 indicate that the duplicate sample results are more consistent with historical results for the well. An additional anomaly was observed in the sample collected from background well MW-8: the PAH results for this sampling event were uncharacteristically high when compared with historical data. As additional sample volume was collected from well MW-8 for matrix spike/matrix spike duplicate analysis, these results were evaluated further. While the PAH results for these quality control samples reflect the spike quantity, the results did not reflect the additional contamination that was observed in the primary sample. If the concentrations reported for the primary sample from well MW-8 were indicative of the matrix prior to spiking, then they should have been visible in the matrix spike and matrix spike duplicate results. Therefore, it appears that the sample numbers for samples collected from wells MW-8 and MW-12 were switched. After providing this information to

TestAmerica, the laboratory came to the same conclusion and provided a letter of explanation, which is attached.

Conclusions and Future Actions

While there is no hard evidence to verify that the samples were switched, the information provided is sufficient to make these specific sampling results suspect. TestAmerica is aware of the concern and has taken appropriate measures to prevent the possibility of a switch occurring in the future. This includes additional training of the analysts as well as requiring additional documentation during extraction and analysis. We believe this to be an isolated incidence based on the overall performance of TestAmerica in the last several years. However, we will continue to carefully review data received from TestAmerica and notify all parties in the event that any further issues are identified. In regards to the ground water monitoring reports that you will soon receive for the Boone and Chariton MGP sites, we will not use the analytical data in question in the trend analysis. However, the results will be included on figures and in the appendix for reference. Based on the letter from TestAmerica regarding Vinton, the ground water data results for the two affected wells will be presented based on historical data results.

Sincerely,

Dean A. Hargens

Dean A. Hargens, P.E.
Senior Environmental Consultant
MGP Project Coordinator

Enclosures

cc: B. Butler-B&V
M. McGee-TestAmerica

TABLE 1
HISTORICAL DATA FOR MONITORING WELL MW-3
Chariton MGP Site

Sample Date	07/01/97	07/13/02	07/13/02	11/13/03	11/13/03	02/22/04	02/22/04	05/17/04	08/16/04	11/17/04	02/21/05	05/09/05	08/17/05	11/19/
BTEXs	P	P	D	P	D	P	D	P	P	P	P	P	P	P
Benzene	*15000*	*9700*	*9300*	*10100*	*9970*	*9470*	*9560*	*9950*	*8780*	*10600*	*8390*	*8220*	*10100*	*1060
Ethylbenzene	660	<25	<25	661	683	542	501	640	849	1060	680	550	912	106(
Toluene	*17000*	*9600*	*9200*	*8820*	*9030*	*8270*	*8960*	*9650*	*8920*	*10900*	*8500*	*7310*	*9660*	*1030
Total Xylenes	8900	<25	<25	4500	1820	5050	4280	6070	5800	7500	5500	4320	5780	692(
PAHs														
Acenaphthene	<38	15	15	34.5	41.6	17.5	NA	14.8	<0.79	17.7	23.1	26.1	15.8	0.33
Acenaphthylene	*4200*	260	670	978	*1250*	494	NA	536	275	952	700	121	366	0.75
Anthracene	<38	5.6	6.3	67.9	79.5	7.32	NA	9.17	7.68	16.4	13.6	19.2	12.4	0.30
Benzo(a)anthracene	<38	<0.1	0.5	*43.4*	*50.2*	R	NA	1.6	0.685	3.11	3.07	4.08	<0.86	<0.01
Benzo(a)pyrene	<38	<0.48	<0.48	*48.8*	*55.4*	R	NA	<0.029	<0.32	*4.01*	3.62	*5.97*	<1	<0.02
Benzo(b)fluoranthene	<38	<0.1	<0.1	*21.1*	*22.1*	R	NA	<0.038	<0.41	2.10	2.01	2.41	<0.34	<0.01
Benzo(g,h,i)perylene	<38	<0.08	<0.08	30.3	32.3	R	NA	<0.036	<0.39	2.88	1.84	2.92	<0.93	<0.01
Benzo(k)fluoranthene	<38	<0.1	<0.1	14.4	17.2	R	NA	<0.14	<1.5	0.978	1.1	<0.25	<0.36	<0.00
Chrysene	<38	0.43	0.37	46.6	44.1	R	NA	<0.03	0.67	3.07	2.73	3.45	<0.9	<0.01
Dibenzo(a,h)anthracene	<38	<0.1	<0.1	*3.75*	*4.50*	R	NA	<0.025	<0.27	0.303	0.243	*0.504*	<0.71	<0.01
Fluoranthene	<38	2.6	1.9	106	121	R	NA	<0.067	3.8	12.3	13.2	17.6	<0.36	0.25
Fluorene	100	39.0	110	182	222	58	NA	<0.026	56.5	124	83.3	95.7	63	0.28
Indeno(1,2,3-cd)pyrene	<38	<0.1	<0.1	*26.9*	*26.7*	R	NA	<0.038	<0.41	1.98	1.74	3	<0.6	<0.01
Naphthalene	*8800*	*5700*	*5600*	*12300*	*15900*	*8420*	NA	*11500*	*7830*	*13200*	*8220*	*8630*	*11400*	<0.1
Phenanthrene	49	31	36	247	291	33.5	NA	49.5	34.2	75.0	60.1	72.2	58.7	0.17
Pyrene	<38	2.8	3.3	108	127	2.58	NA	5.76	3.63	8.44	12	38.5	5.81	0.27

Abbreviations:

BTEXs	benzene, ethylbenzene, toluene, total xylenes
NA	Not Analyzed
R	Result was rejected by data validation
PAHs	polycyclic aromatic hydrocarbons
P	primary sample
D	duplicate sample
<	Parameter was not detected above the associated detection.
*	Value bounded by "*" exceeds the respective ground water compliance standards for the site.

TABLE 2
HISTORICAL DATA FOR STORM SEWER SAMPLE LOCATION STW-1
Boone MGP Site

Sample Date	07/22/02	07/22/03	07/22/03	02/23/05	05/10/05	08/15/05	11/17/05
	P	P	D	P	P	P	P
Acenaphthene	<0.056	<0.083	<0.083	0.231	<0.05	<0.05	12.8
Acenaphthylene	<0.12	<0.050	<0.050	0.453	<0.05	<0.05	*299*
Anthracene	<0.11	<0.19	<0.19	<0.01	<0.05	<0.05	11.2
Benzo(a)anthracene	<0.13	<0.028	<0.028	<0.021	<0.05	<0.086	*0.975*
Benzo(a)pyrene	<0.13	<0.046	<0.046	<0.021	<0.05	<0.1	*0.855*
Benzo(b)fluoranthene	<0.057	<0.040	<0.040	<0.04	<0.05	<0.034	*0.583*
Benzo(g,h,i)perylene	<0.081	<0.069	<0.069	<0.035	<0.05	<0:093	0.431
Benzo(k)fluoranthene	<0.057	<0.12	<0.12	<0.025	<0.05	<0.036	0.574
Chrysene	<0.059	<0.028	<0.028	<0.022	<0.05	<0.09	0.421
Dibenzo(a,h)anthracene	<0.057	<0.040	<0.040	<0.036	<0.017	<0.017	<0.034
Fluoranthene	<0.12	<0.15	<0.15	<0.035	<0.05	<0.036	4.87
Fluorene	<0.12	<0.072	<0.072	0.363	<0.05	<0.05	55.3
Indeno(1,2,3-cd)pyrene	<0.088	<0.032	<0.032	<0.041	<0.05	<0.06	*0.62*
Naphthalene	0.27	<0.067	<0.067	1.19	<0.05	<0.05	*10000*
Phenanthrene	<0.077	<0.030	<0.030	0.26	<0.05	<0.016	48.6
Pyrene	<0.092	<0.074	<0.074	<0.039	<0.05	<0.038	5.18

Abbreviations:
P Primary Sample
D Duplicate Sample
< Parameter was not detected above the associated detection
* Value bounded by "*" exceeds the respective ground water compliance standard.

TestAmerica
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February 20, 2006

Joshua Kadrmas
Environmental Engineer
Black & Veatch
8400 Ward Parkway
Kansas City, MO 64115

Re: Non-Agreement of Duplicate Results COJ0408-02 and COJ0408-03
Samples VTMW12W01P and VTMW12W01D
Review and Explanation

Dear Mr. Kadrmas:

The purpose of this correspondence is to provide the results of an investigation regarding the non-agreement of the above referenced duplicate samples from the IPL Vinton MGP Site.

Background

Lab Work Order COJ0408 was the first Black & Veatch project that the Cedar Falls laboratory processed through a new LIMS installation in the fall of 2005. The "live" date for the LIMS installation was October 19, 2005. This project was received on October 28, 2005, which was nine calendar days into the LIMS implementation. Despite an extensive amount of planning and preparation to minimize any errors, we were still learning the new LIMS system, and several errors were made with this project.

Review and Explanation

There was very good agreement and duplication of results for all of the test methods utilized for Samples VTMW12W01P and VTMW12W01D, with the exception of the PAH compounds by SIM GCMS. On sample VTMW12W01P there were no PAH compounds detected. On sample VTMW12W01D, there were positive detections for 6 PAH compounds. From a review of the data, there is obviously not very good agreement between these two results.

Historical data was reviewed for this sample description from samples collected from this same site in May 2005. This review indicated that the results for VTMW12W01D correlated very well with the historical data from May 2005, but the results for VTMW12W01P did not, with regard to PAH compounds. Of the duplicate results for

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these two samples, it would appear that the results for VTMW12W01D are the correct results for this sample.

Analytical sequences, analytical data and prep log information was reviewed, with no indications that there were any data entry errors. At this stage it was speculated that the physical sample for the PAH analysis for VTMW12W01P was inadvertently switched with another sample. Historical data was reviewed against all of the sample data in lab work order COJ0408, and a candidate for the sample switch was identified as VTMW08W01P. Circumstantial evidence for this possibility includes the following:

> There were no detections for PAH compounds for May 2005 for Sample VTMW08W01P, but there were detections for most of the PAH compounds that should have been in VTMW12W01P from the October 2005 sample.
>
> Sample VTMW08W01P was used for the MS/MSD for the October samples. The recoveries duplicated very well, but it appears as though the recoveries are from a sample that had no detections for the PAH compounds of interest.

While there is some supportive evidence that the PAH portion of sample VTMW12W01P was switched with VTMW08W01P, we do not believe that the evidence is conclusive enough to switch the actual laboratory results on a laboratory report.

I hope this provides you with the information that you require. Please contact me if you have questions, or if you require additional information.

Sincerely,

Michael K. McGee
Laboratory Manager

Cc: Mark McGowan – Quality Assurance Officer, TestAmerica

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BLACK & VEATCH - KANSAS CITY
8400 Ward Parkway
Kansas City, MO 64114
Gordon Abell

Work Order: COK1107
Project: IPL Boone MGP Site
Project Number: 140732.700

Received: 11/19/05
Reported: 02/07/06 10:15

ANALYTICAL REPORT

Analyte	Sample Result	Data Qualifiers	Units	MDL	Quan Limit	Dilution Factor	Date Analyzed	Analyst	Seq/ Batch	Method
Sample ID: COK1107-02RE1 (BOSTW01W01P - Ground Water)						**Sampled: 11/17/05 13:40**			**Recvd: 11/19/05 09:30**	
PAH Compounds by SIM GCMS										
Acenaphthene	12.8		ug/L	0.0380	0.200	2.13	12/02/05 10:35	ake	5110942	SW 8270C
Acenaphthylene	299		ug/L	3.60	20.0	213	12/02/05 11:40	ake	5110942	SW 8270C
Anthracene	11.2	LR	ug/L	0.0380	0.200	2.13	12/02/05 10:35	ake	5110942	SW 8270C
Benzo (a) anthracene	0.975	LR	ug/L	0.172	0.200	2.13	12/02/05 10:35	ake	5110942	SW 8270C
Benzo (b) fluoranthene	0.583	LR	ug/L	0.0680	0.200	2.13	12/02/05 10:35	ake	5110942	SW 8270C
Benzo (k) fluoranthene	0.574	LR	ug/L	0.0720	0.200	2.13	12/02/05 10:35	ake	5110942	SW 8270C
Benzo (a) pyrene	0.855	LR	ug/L	0.200	0.200	2.13	12/02/05 10:35	ake	5110942	SW 8270C
Benzo (g,h,i) perylene	0.431	LR	ug/L	0.186	0.200	2.13	12/02/05 10:35	ake	5110942	SW 8270C
Chrysene	0.421		ug/L	0.180	0.200	2.13	12/02/05 10:35	ake	5110942	SW 8270C
Dibenzo (a,h) anthracene	<0.0340	LR	ug/L	0.0340	0.200	2.13	12/02/05 10:35	ake	5110942	SW 8270C
Fluoranthene	4.87	LR	ug/L	0.0720	0.200	2.13	12/02/05 10:35	ake	5110942	SW 8270C
Fluorene	55.3		ug/L	0.300	2.00	21.3	12/02/05 11:07	ake	5110942	SW 8270C
Indeno (1,2,3-cd) pyrene	0.620	LR	ug/L	0.120	0.200	2.13	12/02/05 10:35	ake	5110942	SW 8270C
Naphthalene	10000	B	ug/L	42.0	200	2130	12/02/05 16:35	ake	5110942	SW 8270C
Phenanthrene	48.6		ug/L	0.320	2.00	21.3	12/02/05 11:07	ake	5110942	SW 8270C
Pyrene	5.18	LR	ug/L	0.0760	0.200	2.13	12/02/05 10:35	ake	5110942	SW 8270C
Surr: 2-Fluorobiphenyl (10-105%)	*87 %*									
Surr: Nitrobenzene-d5 (10-105%)	*105 %*	*LR*								
Surr: Terphenyl-d14 (25-120%)	*63 %*	*LR*								

TestAmerica Analytical - Cedar Falls
Derrick Klinkenberg
Organics Manager

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BLACK & VEATCH - KANSAS CITY
8400 Ward Parkway
Kansas City, MO 64114
Gordon Abell

Work Order: COK1178
Project: IPL Chariton MGP Site
Project Number: 140737.700

Received: 11/22/05
Reported: 02/08/06 11:00

ANALYTICAL REPORT

Analyte	Sample Result	Data Qualifiers	Units	MDL	Quan Limit	Dilution Factor	Date Analyzed	Analyst	Seq/ Batch	Method
Sample ID: COK1178-02 (CTMW03W01P - Ground Water)						**Sampled: 11/19/05 08:45**			**Recvd: 11/22/05 09:40**	
PAH Compounds by SIM GCMS										
Acenaphthene	0.334		ug/L	0.0100	0.100	1.09	12/02/05 02:46	ake	5110942	SW 8270C
Acenaphthylene	0.752	LR	ug/L	0.0150	0.100	1.09	12/02/05 02:46	ake	5110942	SW 8270C
Anthracene	0.302	LR	ug/L	0.0120	0.100	1.09	12/02/05 02:46	ake	5110942	SW 8270C
Benzo (a) anthracene	<0.0140	LR	ug/L	0.0140	0.100	1.09	12/02/05 02:46	ake	5110942	SW 8270C
Benzo (b) fluoranthene	<0.0160	LR	ug/L	0.0160	0.100	1.09	12/02/05 02:46	ake	5110942	SW 8270C
Benzo (k) fluoranthene	<0.00880	LR	ug/L	0.00880	0.100	1.09	12/02/05 02:46	ake	5110942	SW 8270C
Benzo (a) pyrene	<0.0210	LR	ug/L	0.0210	0.100	1.09	12/02/05 02:46	ake	5110942	SW 8270C
Benzo (g,h,i) perylene	<0.0190	LR	ug/L	0.0190	0.100	1.09	12/02/05 02:46	ake	5110942	SW 8270C
Chrysene	<0.0140		ug/L	0.0140	0.100	1.09	12/02/05 02:46	ake	5110942	SW 8270C
Dibenzo (a,h) anthracene	<0.0170	LR	ug/L	0.0170	0.100	1.09	12/02/05 02:46	ake	5110942	SW 8270C
Fluoranthene	0.258	LR	ug/L	0.00740	0.100	1.09	12/02/05 02:46	ake	5110942	SW 8270C
Fluorene	0.283		ug/L	0.0150	0.100	1.09	12/02/05 02:46	ake	5110942	SW 8270C
Indeno (1,2,3-cd) pyrene	<0.0150	LR	ug/L	0.0150	0.100	1.09	12/02/05 02:46	ake	5110942	SW 8270C
Naphthalene	0.0934	B, J	ug/L	0.0120	0.100	1.09	12/02/05 02:46	ake	5110942	SW 8270C
Phenanthrene	0.170		ug/L	0.0140	0.100	1.09	12/02/05 02:46	ake	5110942	SW 8270C
Pyrene	0.270	LR	ug/L	0.0120	0.100	1.09	12/02/05 02:46	ake	5110942	SW 8270C
Surr: 2-Fluorobiphenyl (10-105%)	*62 %*									
Surr: Nitrobenzene-d5 (10-105%)	*82 %*	*LR*								
Surr: Terphenyl-d14 (25-120%)	*69 %*	*LR*								
UST Volatile Compounds by GC										
Benzene	10600		ug/L	8.00	50.0	25	11/29/05 16:43	mmk	5120118	OA-1 - 8021B
Toluene	10300		ug/L	8.00	50.0	25	11/29/05 16:43	mmk	5120118	OA-1 - 8021B
Ethylbenzene	1060		ug/L	8.50	50.0	25	11/29/05 16:43	mmk	5120118	OA-1 - 8021B
Xylenes, total	6920		ug/L	9.00	75.0	25	11/29/05 16:43	mmk	5120118	OA-1 - 8021B
Surr: 4-Bromofluorobenzene (70-125%)	*90 %*									
VOC Preservation Check										
pH	<2.00		units	2.00	2.00	1	11/29/05 13:35	sjn	5111043	SW

TestAmerica Analytical - Cedar Falls
Derrick Klinkenberg
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BLACK & VEATCH - KANSAS CITY
8400 Ward Parkway
Kansas City, MO 64114
Barbara Butler

Work Order: COJ0480
Project: IPL Vinton MGP Site
Project Number: 140752.425

Received: 10/28/05
Reported: 02/16/06 16:04

ANALYTICAL REPORT

Analyte	Sample Result	Data Qualifiers	Units	MDL	Quan Limit	Dilution Factor	Date Analyzed	Analyst	Seq/ Batch	Method
Sample ID: COJ0480-02 (VTMW12W01P - Water - NonPotable)						**Sampled: 10/25/05 14:15**			**Recvd: 10/28/05 09:35**	
General Chemistry Parameters										
Alkalinity, bicarb (CaCO3)	260		mg/L	5.00	5.00	1	11/07/05 14:44	jcf	5110297	SM2320B
Alkalinity, carb (CaCO3)	<5.00		mg/L	5.00	5.00	1	11/07/05 14:44	jcf	5110297	SM2310B
Alkalinity, Phenol. (CaCO3)	<5.00		mg/L	5.00	5.00	1	11/07/05 14:44	jcf	5110297	SM 2320B
Alkalinity, Total (CaCO3)	260		mg/L	0.740	5.00	1	11/07/05 14:34	jcf	5110296	SM 2320B
Nitrate/Nitrite as N	<0.0250		mg/L	0.0250	0.100	1	11/04/05 14:15	mdk	5110265	EPA 353.3
Sulfate	88.2		mg/L	18.0	50.0	5	11/08/05 10:56	lbb	5110319	ASTM D516-90
Sulfide	<1.00		mg/L	1.00	1.00	1	11/01/05 17:20	mdk	5110195	EPA 376.1
Total Organic Carbon	1.43		mg/L	0.310	1.10	1	11/02/05 10:52	jcf	5110150	SW 9060
Carbon Dioxide	20.0	H3	mg/L	5.00	5.00	1	10/28/05 17:19	jcf	5100264	SM4500 CO2C
Total Metals by SW 846 Series Methods										
Iron	2.27		mg/L	0.0170	0.100	1	11/02/05 13:44	llw	5110023	SW 6010B
Manganese	1.57		mg/L	0.00130	0.0100	1	11/02/05 13:44	llw	5110023	SW 6010B
Dissolved Metals by SW 846 Series Methods										
Iron	<0.0170		mg/L	0.0170	0.100	1	11/14/05 13:12	llw	5110504	SW 6010B
Manganese	1.57		mg/L	0.00130	0.0100	1	11/14/05 13:11	llw	5110504	SW 6010B
PAH Compounds by SIM GCMS										
Acenaphthene	<0.0100		ug/L	0.0100	0.100	1.06	11/08/05 00:39	ake	5110047	SW 8270C
Acenaphthylene	<0.0150		ug/L	0.0150	0.100	1.06	11/08/05 00:39	ake	5110047	SW 8270C
Anthracene	<0.0120	LR	ug/L	0.0120	0.100	1.06	11/08/05 00:39	ake	5110047	SW 8270C
Benzo (a) anthracene	<0.0140	LR	ug/L	0.0140	0.100	1.06	11/08/05 00:39	ake	5110047	SW 8270C
Benzo (b) fluoranthene	<0.0160	LR	ug/L	0.0160	0.100	1.06	11/08/05 00:39	ake	5110047	SW 8270C
Benzo (k) fluoranthene	<0.00880	LR	ug/L	0.00880	0.100	1.06	11/08/05 00:39	ake	5110047	SW 8270C
Benzo (a) pyrene	<0.0210	LR	ug/L	0.0210	0.100	1.06	11/08/05 00:39	ake	5110047	SW 8270C
Benzo (g,h,i) perylene	<0.0190	LR	ug/L	0.0190	0.100	1.06	11/08/05 00:39	ake	5110047	SW 8270C
Chrysene	<0.0140		ug/L	0.0140	0.100	1.06	11/08/05 00:39	ake	5110047	SW 8270C
Dibenzo (a,h) anthracene	<0.0170	LR	ug/L	0.0170	0.100	1.06	11/08/05 00:39	ake	5110047	SW 8270C
Fluoranthene	<0.00740		ug/L	0.00740	0.100	1.06	11/08/05 00:39	ake	5110047	SW 8270C
Fluorene	<0.0150		ug/L	0.0150	0.100	1.06	11/08/05 00:39	ake	5110047	SW 8270C
Indeno (1,2,3-cd) pyrene	<0.0150	LR	ug/L	0.0150	0.100	1.06	11/08/05 00:39	ake	5110047	SW 8270C
Naphthalene	<0.0120	B	ug/L	0.0120	0.100	1.06	11/08/05 00:39	ake	5110047	SW 8270C
Phenanthrene	<0.0140		ug/L	0.0140	0.100	1.06	11/08/05 00:39	ake	5110047	SW 8270C
Pyrene	<0.0120		ug/L	0.0120	0.100	1.06	11/08/05 00:39	ake	5110047	SW 8270C
Surr: 2-Fluorobiphenyl (21-111%)	*50 %*									
Surr: Nitrobenzene-d5 (30-120%)	*69 %*									
Surr: Terphenyl-d14 (31-121%)	*70 %*									
UST Volatile Compounds by GC										
Benzene	32.7		ug/L	0.243	2.00	1	11/03/05 12:24	mmk	5110226	OA-1 - 8021B
Toluene	4.85		ug/L	0.264	2.00	1	11/03/05 12:24	mmk	5110226	OA-1 - 8021B
Ethylbenzene	10.8		ug/L	0.299	2.00	1	11/03/05 12:24	mmk	5110226	OA-1 - 8021B
Xylenes, total	58.1		ug/L	0.311	3.00	1	11/03/05 12:24	mmk	5110226	OA-1 - 8021B
Surr: 4-Bromofluorobenzene (70-125%)	*97 %*									
VOC Preservation Check										
pH	<2.00		units	2.00	2.00	1	11/07/05 12:41	sju	5110285	SW
Methane, Ethane, and Ethene by GC										
Ethane	<15.0		ug/L	15.0	26.0	1	11/04/05 17:30	KMR	5110433	RSK 175
Ethene	<18.0		ug/L	18.0	26.0	1	11/04/05 17:30	KMR	5110433	RSK 175
Methane	<5.00		ug/L	5.00	26.0	1	11/04/05 17:30	KMR	5110433	RSK 175
Surr: Acetylene (70-130%)	*93 %*									

TestAmerica Analytical - Cedar Falls
Derrick Klinkenberg
Organics Manager

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BLACK & VEATCH - KANSAS CITY
8400 Ward Parkway
Kansas City, MO 64114
Barbara Butler

Work Order: COJ0480
Project: IPL Vinton MGP Site
Project Number: 140752.425

Received: 10/28/05
Reported: 02/16/06 16:04

ANALYTICAL REPORT

Analyte	Sample Result	Data Qualifiers	Units	MDL	Quan Limit	Dilution Factor	Date Analyzed	Analyst	Seq/ Batch	Method
Sample ID: COJ0480-03 (VTMW12W01D - Water - NonPotable)						**Sampled: 10/25/05 14:15**			**Recvd: 10/28/05 09:35**	
General Chemistry Parameters										
Alkalinity, bicarb (CaCO3)	260		mg/L	5.00	5.00	1	11/07/05 14:44	jcf	5110297	SM2320B
Alkalinity, carb (CaCO3)	<5.00		mg/L	5.00	5.00	1	11/07/05 14:44	jcf	5110297	SM2310B
Alkalinity, Phenol. (CaCO3)	<5.00		mg/L	5.00	5.00	1	11/07/05 14:44	jcf	5110297	SM 2320B
Alkalinity, Total (CaCO3)	260		mg/L	0.740	5.00	1	11/07/05 14:34	jcf	5110296	SM 2320B
Nitrate/Nitrite as N	<0.0250		mg/L	0.0250	0.100	1	11/04/05 14:15	mdk	5110265	EPA 353.3
Sulfate	87.9		mg/L	18.0	50.0	5	11/08/05 10:56	lbb	5110319	ASTM D516-90
Sulfide	<1.00		mg/L	1.00	1.00	1	11/01/05 17:20	mdk	5110195	EPA 376.1
Total Organic Carbon	1.51		mg/L	0.310	1.10	1	11/02/05 10:52	jcf	5110150	SW 9060
Carbon Dioxide	16.0	H3	mg/L	5.00	5.00	1	10/28/05 17:19	jcf	5100264	SM4500 CO2C
Total Metals by SW 846 Series Methods										
Iron	2.28		mg/L	0.0170	0.100	1	11/02/05 13:49	llw	5110023	SW 6010B
Manganese	1.53		mg/L	0.00130	0.0100	1	11/02/05 13:49	llw	5110023	SW 6010B
Dissolved Metals by SW 846 Series Methods										
Iron	<0.0170		mg/L	0.0170	0.100	1	11/14/05 13:17	llw	5110504	SW 6010B
Manganese	1.59		mg/L	0.00130	0.0100	1	11/14/05 13:16	llw	5110504	SW 6010B
PAH Compounds by SIM GCMS										
Acenaphthene	6.16		ug/L	0.0100	0.100	1.06	11/08/05 01:12	ake	5110047	SW 8270C
Acenaphthylene	6.33		ug/L	0.0150	0.100	1.06	11/08/05 01:12	ake	5110047	SW 8270C
Anthracene	0.238	LR	ug/L	0.0120	0.100	1.06	11/08/05 01:12	ake	5110047	SW 8270C
Benzo (a) anthracene	<0.0140	LR	ug/L	0.0140	0.100	1.06	11/08/05 01:12	ake	5110047	SW 8270C
Benzo (b) fluoranthene	<0.0160	LR	ug/L	0.0160	0.100	1.06	11/08/05 01:12	ake	5110047	SW 8270C
Benzo (k) fluoranthene	<0.00880	LR	ug/L	0.00880	0.100	1.06	11/08/05 01:12	ake	5110047	SW 8270C
Benzo (a) pyrene	0.318	LR	ug/L	0.0210	0.100	1.06	11/08/05 01:12	ake	5110047	SW 8270C
Benzo (g,h,i) perylene	<0.0190	LR	ug/L	0.0190	0.100	1.06	11/08/05 01:12	ake	5110047	SW 8270C
Chrysene	<0.0140		ug/L	0.0140	0.100	1.06	11/08/05 01:12	ake	5110047	SW 8270C
Dibenzo (a,h) anthracene	<0.0170	LR	ug/L	0.0170	0.100	1.06	11/08/05 01:12	ake	5110047	SW 8270C
Fluoranthene	<0.00740		ug/L	0.00740	0.100	1.06	11/08/05 01:12	ake	5110047	SW 8270C
Fluorene	<0.0150		ug/L	0.0150	0.100	1.06	11/08/05 01:12	ake	5110047	SW 8270C
Indeno (1,2,3-cd) pyrene	<0.0150	LR	ug/L	0.0150	0.100	1.06	11/08/05 01:12	ake	5110047	SW 8270C
Naphthalene	34.0	B	ug/L	0.120	1.00	10.6	11/08/05 15:06	ake	5110047	SW 8270C
Phenanthrene	0.0588	J	ug/L	0.0140	0.100	1.06	11/08/05 01:12	ake	5110047	SW 8270C
Pyrene	<0.0120		ug/L	0.0120	0.100	1.06	11/08/05 01:12	ake	5110047	SW 8270C
Surr: 2-Fluorobiphenyl (21-111%)	*46 %*									
Surr: 2-Fluorobiphenyl (21-111%)	*45 %*									
Surr: Nitrobenzene-d5 (30-120%)	*66 %*									
Surr: Nitrobenzene-d5 (30-120%)	*	*LR, Z*								
Surr: Terphenyl-d14 (31-121%)	*55 %*									
Surr: Terphenyl-d14 (31-121%)	*45 %*									
UST Volatile Compounds by GC										
Benzene	32.1		ug/L	0.243	2.00	1	11/03/05 13:00	mmk	5110226	OA-1 - 8021B
Toluene	4.68		ug/L	0.264	2.00	1	11/03/05 13:00	mmk	5110226	OA-1 - 8021B
Ethylbenzene	10.7		ug/L	0.299	2.00	1	11/03/05 13:00	mmk	5110226	OA-1 - 8021B
Xylenes, total	58.5		ug/L	0.311	3.00	1	11/03/05 13:00	mmk	5110226	OA-1 - 8021B
Surr: 4-Bromofluorobenzene (70-125%)	*97 %*									
VOC Preservation Check										
pH	<2.00		units	2.00	2.00	1	11/07/05 12:41	sjn	5110285	SW
Methane, Ethane, and Ethene by GC										
Ethane	<15.0		ug/L	15.0	26.0	1	11/04/05 17:32	KMR	5110433	RSK 175
Ethene	<18.0		ug/L	18.0	26.0	1	11/04/05 17:32	KMR	5110433	RSK 175

TestAmerica Analytical - Cedar Falls
Derrick Klinkenberg
Organics Manager

BLACK & VEATCH - KANSAS CITY
8400 Ward Parkway
Kansas City, MO 64114
Barbara Butler

Work Order: COJ0480
Project: IPL Vinton MGP Site
Project Number: 140752.425

Received: 10/28/05
Reported: 02/16/06 16:04

ANALYTICAL REPORT

Analyte	Sample Result	Data Qualifiers	Units	MDL	Quan Limit	Dilution Factor	Date Analyzed	Analyst	Seq/ Batch	Method
Sample ID: COJ0480-03 (VTMW12W01D - Water - NonPotable) - cont.						**Sampled: 10/25/05 14:15**			**Recvd: 10/28/05 09:35**	
Methane, Ethane, and Ethene by GC - cont.										
Methane	<5.00		ug/L	5.00	26.0	1	11/04/05 17:32	KMR	5110433	RSK 175
Surr: Acetylene (70-130%)	*93 %*									

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ANALYTICAL REPORT

Analyte	Sample Result	Data Qualifiers	Units	MDL	Quan Limit	Dilution Factor	Date Analyzed	Analyst	Seq/ Batch	Method
Sample ID: COJ0480-05 (VTMW08W01P - Water - NonPotable)						**Sampled: 10/26/05 08:20**			**Recvd: 10/28/05 09:35**	
General Chemistry Parameters										
Alkalinity, bicarb (CaCO3)	230		mg/L	5.00	5.00	1	11/08/05 16:18	jcf	5110352	SM2320B
Alkalinity, carb (CaCO3)	<5.00		mg/L	5.00	5.00	1	11/08/05 16:13	jcf	5110351	SM2310B
Alkalinity, Phenol. (CaCO3)	<5.00		mg/L	5.00	5.00	1	11/08/05 16:12	jcf	5110350	SM 2320B
Alkalinity, Total (CaCO3)	230		mg/L	0.740	5.00	1	11/08/05 16:08	jcf	5110349	SM 2320B
Nitrate/Nitrite as N	3.91		mg/L	0.312	1.25	12.5	11/04/05 14:15	mdk	5110265	EPA 353.3
Sulfate	88.8		mg/L	18.0	50.0	5	11/08/05 10:56	lbb	5110319	ASTM D516-90
Sulfide	<1.00		mg/L	1.00	1.00	1	11/01/05 17:20	mdk	5110195	EPA 376.1
Total Organic Carbon	0.953	J	mg/L	0.310	1.10	1	11/02/05 10:52	jcf	5110150	SW 9060
Carbon Dioxide	20.0	H3	mg/L	5.00	5.00	1	10/28/05 17:19	jcf	5100264	SM4500 CO2C
Total Metals by SW 846 Series Methods										
Iron	0.210		mg/L	0.0170	0.100	1	11/02/05 13:58	llw	5110023	SW 6010B
Manganese	0.00685	J	mg/L	0.00130	0.0100	1	11/02/05 13:58	llw	5110023	SW 6010B
Dissolved Metals by SW 846 Series Methods										
Iron	<0.0170		mg/L	0.0170	0.100	1	11/14/05 13:26	llw	5110504	SW 6010B
Manganese	0.00429	J	mg/L	0.00130	0.0100	1	11/14/05 13:26	llw	5110504	SW 6010B
PAH Compounds by SIM GCMS										
Acenaphthene	6.71		ug/L	0.0100	0.100	1.05	11/08/05 02:17	ake	5110047	SW 8270C
Acenaphthylene	5.21		ug/L	0.0150	0.100	1.05	11/08/05 02:17	ake	5110047	SW 8270C
Anthracene	<0.0120	LR	ug/L	0.0120	0.100	1.05	11/08/05 02:17	ake	5110047	SW 8270C
Benzo (a) anthracene	<0.0140	LR	ug/L	0.0140	0.100	1.05	11/08/05 02:17	ake	5110047	SW 8270C
Benzo (b) fluoranthene	<0.0160	LR	ug/L	0.0160	0.100	1.05	11/08/05 02:17	ake	5110047	SW 8270C
Benzo (k) fluoranthene	<0.00880	LR	ug/L	0.00880	0.100	1.05	11/08/05 02:17	ake	5110047	SW 8270C
Benzo (a) pyrene	<0.0210	LR	ug/L	0.0210	0.100	1.05	11/08/05 02:17	ake	5110047	SW 8270C
Benzo (g,h,i) perylene	<0.0190	LR	ug/L	0.0190	0.100	1.05	11/08/05 02:17	ake	5110047	SW 8270C
Chrysene	<0.0140		ug/L	0.0140	0.100	1.05	11/08/05 02:17	ake	5110047	SW 8270C
Dibenzo (a,h) anthracene	<0.0170	LR	ug/L	0.0170	0.100	1.05	11/08/05 02:17	ake	5110047	SW 8270C
Fluoranthene	<0.00740		ug/L	0.00740	0.100	1.05	11/08/05 02:17	ake	5110047	SW 8270C
Fluorene	<0.0150		ug/L	0.0150	0.100	1.05	11/08/05 02:17	ake	5110047	SW 8270C
Indeno (1,2,3-cd) pyrene	<0.0150	LR	ug/L	0.0150	0.100	1.05	11/08/05 02:17	ake	5110047	SW 8270C
Naphthalene	55.0	B	ug/L	0.120	1.00	10.5	11/08/05 16:12	ake	5110047	SW 8270C
Phenanthrene	<0.0140		ug/L	0.0140	0.100	1.05	11/08/05 02:17	ake	5110047	SW 8270C
Pyrene	<0.0120		ug/L	0.0120	0.100	1.05	11/08/05 02:17	ake	5110047	SW 8270C
Surr: 2-Fluorobiphenyl (21-111%)	*53 %*									
Surr: 2-Fluorobiphenyl (21-111%)	*50 %*									
Surr: Nitrobenzene-d5 (30-120%)	*73 %*									
Surr: Nitrobenzene-d5 (30-120%)	*	Z, LR								
Surr: Terphenyl-d14 (31-121%)	*69 %*									
Surr: Terphenyl-d14 (31-121%)	*50 %*									
UST Volatile Compounds by GC										
Benzene	<0.243		ug/L	0.243	2.00	1	11/03/05 08:50	mmk	5110226	OA-1 - 8021B
Toluene	0.314		ug/L	0.264	2.00	1	11/03/05 08:50	mmk	5110226	OA-1 - 8021B
Ethylbenzene	<0.299		ug/L	0.299	2.00	1	11/03/05 08:50	mmk	5110226	OA-1 - 8021B
Xylenes, total	0.736		ug/L	0.311	3.00	1	11/03/05 08:50	mmk	5110226	OA-1 - 8021B
Surr: 4-Bromofluorobenzene (70-125%)	*95 %*									
VOC Preservation Check										
pH	<2.00		units	2.00	2.00	1	11/07/05 12:41	sjn	5110285	SW
Methane, Ethane, and Ethene by GC										
Ethane	<15.0		ug/L	15.0	26.0	1	11/04/05 17:37	KMR	5110433	RSK 175
Ethene	<18.0		ug/L	18.0	26.0	1	11/04/05 17:37	KMR	5110433	RSK 175

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Work Order: COJ0480
Project: IPL Vinton MGP Site
Project Number: 140752.425

Received: 10/28/05
Reported: 02/16/06 16:04

ANALYTICAL REPORT

Analyte	Sample Result	Data Qualifiers	Units	MDL	Quan Limit	Dilution Factor	Date Analyzed	Analyst	Seq/ Batch	Method
Sample ID: COJ0480-05 (VTMW08W01P - Water - NonPotable) - cont.						**Sampled: 10/26/05 08:20**			**Recvd: 10/28/05 09:35**	
Methane, Ethane, and Ethene by GC - cont.										
Methane	<5.00		ug/L	5.00	26.0	1	11/04/05 17:37	KMR	5110433	RSK 175
Surr: Acetylene (70-130%)	92 %									
Surr: Acetylene (70-130%)	92 %									