

FINAL

ANNUAL MONITORING REPORT – 2012

**MARSH RUN PARK
NEW CUMBERLAND, FAIRVIEW TOWNSHIP,
YORK COUNTY, PENNSYLVANIA
FUDS No. C03PA040301**



**U.S. Army Corps of Engineers
Baltimore District**

EA® EA Engineering, Science,
and Technology, Inc.

JUNE 2014

16 June 2014

Ms. Liza Finley
U.S. Army Corps of Engineers – Baltimore District
10 South Howard Street
10th Floor, Environmental and Munitions Design Center
Baltimore, Maryland 21201

**Subject: Final Periodic Monitoring Letter Report – June 2012
New Cumberland Army Depot Formerly Used Defense Site (FUDS)
at Marsh Run Park
FUDS No. C03PA040301
New Cumberland, Fairview Township, Pennsylvania**

Dear Ms. Finley,

EA Engineering, Science, and Technology, Inc. (EA) prepared this Letter Report to summarize the results of the June 2012 monitoring event as part of the monitoring program for the Marsh Run Park FUDS, Fairview Township, York County, Pennsylvania. This work was completed for the USACE – Baltimore District under contract W912DR-09-D-0018.

BACKGROUND

The objective is to monitor groundwater quality and support demonstration of attainment of the Site-Specific and Statewide Health Standards under Pennsylvania’s Land Recycling and Environmental Remediation Standards Act (Act 2 of 1995 [“Act 2”]), as defined in the 25 PA Code Chapter 250 regulations. Additionally, the objective of the ambient air sampling is to evaluate whether subsurface chlorinated volatile organic compounds (cVOCs) in soils and groundwater have infiltrated through the overburden as vapor phase cVOCs, which could potentially result in inhalation exposure concerns at the surface.

Groundwater samples were collected from two offsite residential supply wells located on recreational parcels along the Susquehanna River. Ambient air samples were also collected. The site and sampling locations are illustrated on Figure 1.

SUMMARY OF FIELD ACTIVITIES

On 14 and 15 June 2012, groundwater and ambient air sampling was completed in accordance with the USACE-approved *June 2012 EA Sampling and Analysis Plan (SAP) for Marsh Run Park, New Cumberland, Fairview Township, York County, Pennsylvania*. The SAP consists of

Volume I: Field Sampling Plan (FSP), Volume II: Quality Assurance Project Plan, and Volume III: Site Specific Addendum to the General Health and Safety Plan. Figure 1 illustrates ambient air and groundwater monitoring locations.

Groundwater Monitoring

Groundwater samples were collected from RW-305¹ and MADW 41-52 on 14 June 2012. Prior to sampling, RW-305 was purged using a submersible pump with dedicated Teflon-lined tubing. At well RW-305, a higher purging rate (up to 1 liter per minute) was utilized than specified in the FSP as directed by the USACE onsite representative (see field notes in Attachment 2). The USACE representative requested the higher purge rate due to the static volume within the hand dug well. Water samples were not collected until the groundwater was visibly clear and field measurement of water quality parameters during monitoring well purging had stabilized. MADW 41-52 is the supply well for the recreational cabin. The water sample was collected from the port at the bottom of the pressure tank located on the second level of the cabin. Therefore, the tap was allowed to run for 15 minutes prior to sample collection. Field purging and sampling forms present details regarding sample ID, depth, and collection interval (Attachment 1).

Groundwater samples were placed on ice, documented, and transported using standard chain-of-custody (COC) procedures and hand delivered to ALS Environmental in Middletown, Pennsylvania. Groundwater samples were submitted for analysis of metals: arsenic, barium, beryllium, cadmium, chromium (total), copper, iron, lead, manganese, mercury, by U.S. Environmental Protection Agency (EPA) Method SW846 6020A. Samples were also submitted for analysis of specific chlorinated volatile organic compounds (cVOCs), consisting of tetrachloroethene (PCE), trichloroethene (TCE), *cis*-1,2-dichloroethene (DCE), *trans*-1,2-DCE, and vinyl chloride via U.S. EPA Method 8260B. Laboratory COCs are presented in Attachment 1.

Purge water generated during sampling of RW-305 was discharged to the ground surface in accordance with the FSP. Purge water from MADW 41-52 was drummed and transported to the site to be discharged to the ground surface pending receipt of analytical results and approval from USACE. Investigation derived wastes, such as personal protective equipment and dedicated tubing, were disposed as municipal waste.

¹ The field chain of custody erroneously identified well RW-305 as EW-305.

Ambient Air Monitoring

On 14 June 2012, ambient air monitoring was conducted by field measurement of ambient methane concentrations and collection of ambient air samples for laboratory analysis of cVOCs through the placement of SUMMA® canisters at four locations at the New Cumberland Army Depot FUDS at Marsh Run Park. Three canisters (AIR 1, AIR 2 and AIR 3) were placed at the FUDS inside the fenced area at locations within the proposed soccer fields. For quality assurance/quality control, one duplicate (DUP-1) was collected at the same location as the AIR 2 sample and one background sample (AIR 4) was collected in a north, north-westerly upwind location between the western fence line and western site boundary. Approximate ambient air sampling locations are identified in Figure 1.

Ambient air samples were collected approximately one foot above ground surface using SUMMA® vacuum canisters regulated to collect samples at a steady rate over the sampling period of twenty-four (24) hours. Ambient air samples were collected, documented and transported using standard COC procedures, then hand-delivered to ALS. The ambient air samples were submitted for laboratory analysis of PCE, TCE, *cis*-1,2-DCE, *trans*-1,2-DCE, and vinyl chloride by U.S. EPA Method TO-15. Laboratory COCs are presented in Attachment 1.

Methane concentrations were measured by traversing the area of the site where the highest concentrations of cVOCs in groundwater were previously reported (e.g., MW-1 and MW-8) and the area of the ethylene propylene diene monomer (EPDM) liner, which coincides with the area of the future soccer fields. Measurements were collected using a lower explosive limit (LEL) meter, rather than the compound-specific methane meter discussed in the FSP. This change was made because the meter met both the objective of determining if concentrations of methane were present, since the LEL meter was calibrated using methane, and if the landfill gases posed an explosive risk. These ambient air screening locations are identified in Figure 1.

ANALYTICAL RESULTS

Groundwater Sampling Results

Following receipt of laboratory data from ALS (Attachment 2), laboratory analytical data from sample RW-305 were submitted for data validation to Environmental Data Services, Inc. (EDS) of Williamsburg, Virginia. Because this is the first time that RW-305 has been sampled since 2009, laboratory data was validated for sample RW-305.

The cVOC and metals analytical results are summarized in Table 1. The analytical results were evaluated by comparing the current data to historical data for the site (Tables 1 and 2, Attachment 3). The laboratory results were also evaluated relative to the Record of Decision (ROD) Remedial Action Objectives (RAOs) and the PADEP medium specific concentrations (MSCs) applicable under Act 2. For all analytes, with the exception of iron and manganese, the RAOs and PADEP MSCs are identical to the U.S. EPA Maximum Contaminant Levels (MCLs). PADEP has an MSC for manganese, but there is no state or federal MCL. No PADEP MSC or EPA MCL has been established for iron. Therefore, laboratory results for iron were evaluated relative to U.S. EPA Secondary MCLs (SMCLs).

No cVOCs were detected in either well above the laboratory detection limit or ROD RAOs or PADEP MSCs (residential setting, used aquifer, total dissolved solids <2,500 parts per million). This is consistent with historical results at MADW 41-52 where cVOC detections above the reporting limit have been limited to one compound (*cis*-1,2-DCE) during one event (9 November 2010) at a concentration well below the applicable MSC¹. This monitoring event was the first sampling event since 2009 that included RW-305 and this event is intended to provide confirmation of no cVOCs at this location.

In this event, samples were tested for total metal concentrations but were compared to the ROD RAOs/MCLs and dissolved metals MSCs². This is a conservative evaluation approach in that suspended solids in the water sample were included in the analysis. All reported total metals concentrations were less than the RAOs and MSCs that are applicable to dissolved metals, with the exception of lead, which was slightly above the RAO and MSC levels. The reported metals concentrations in MADW 41-52 were consistent with historical results.

¹ TCE was also reported in MADW 41-52 at an estimated concentration between the method Detection Limit (DL) and the Limit of Quantitation (LOQ) on two occasions (15 July 2010 and 31 May 2011).

² PADEP MSCs for metals are applicable to dissolved metal concentrations.

QA/QC samples were not required for groundwater at the recreational parcels per the FSP.

Ambient Air Sampling Results

Following receipt of laboratory data from ALS, the data were submitted to EDS for validation. Ambient air sampling results are included in Attachment 2 (laboratory results) and are presented in Table 2. Ambient air sample results were compared to PADEP Indoor Air Criteria MSCs for residential indoor air and to U.S. EPA Regional Screening Levels (RSLs) for residential indoor air, which is appropriate in the absence of applicable State or Federal ambient air standards. The use of indoor air screening levels is appropriate because these criteria evaluate the long-term inhalation of cVOCs in an enclosed building or room with little air mixing or dilution. Additionally, the indoor air screening levels assume a higher level of exposure to the site (i.e., 350 days per year for 24 hours per day) than would be expected for recreational users (i.e., 52 days per year for 2 hours per day).

None of the analyzed contaminants (TCE, *cis*-1,2-DCE, *trans*-1,2-DCE, PCE and vinyl chloride) were detected in the samples and no concentrations exceeded applicable criteria. Although the laboratory detection limit exceeded the residential indoor air RSL for TCE and vinyl chloride, this is not expected to be a concern for human health. Since even though above the EPA RSLs, the detection limits are considered acceptable because if chemicals had been detected at this level, this would equate to a risk of 2×10^{-6} (2 in a million), which is within the U.S. EPA and PADEP acceptable risk range. The detection limits are less than PADEP residential indoor air MSCs.

Since there were no detections of cVOCs in ambient air, there are no concerns for potential exposures to ambient air.

No cVOCs were detected in the duplicate sample (DUP-1) collected for quality assurance.

No landfill gases were measured at any location by the LEL meter.

CONCLUSIONS

None of the reported concentrations of cVOC or metals (except lead) in groundwater samples collected in June 2012 exceed ROD RAOs and PADEP MSCs. Lead was reported at a concentration slightly above the RAO/MS. Based on the limited measured concentrations of cVOCs in overburden soils and the low levels in overburden groundwater, it was not anticipated that cVOCs would migrate through the overburden and be present in ambient air. However, as a conservative approach, ambient air samples were collected from three onsite surface locations; no cVOCs were reported in ambient air. The results of this monitoring event are consistent with previous data measured at the same locations. Additional groundwater sampling is scheduled for fall 2012.

We appreciate the opportunity to continue to support the USACE on this project. Should you have any questions or comments, please do not hesitate to contact me directly at 410-329-5101.

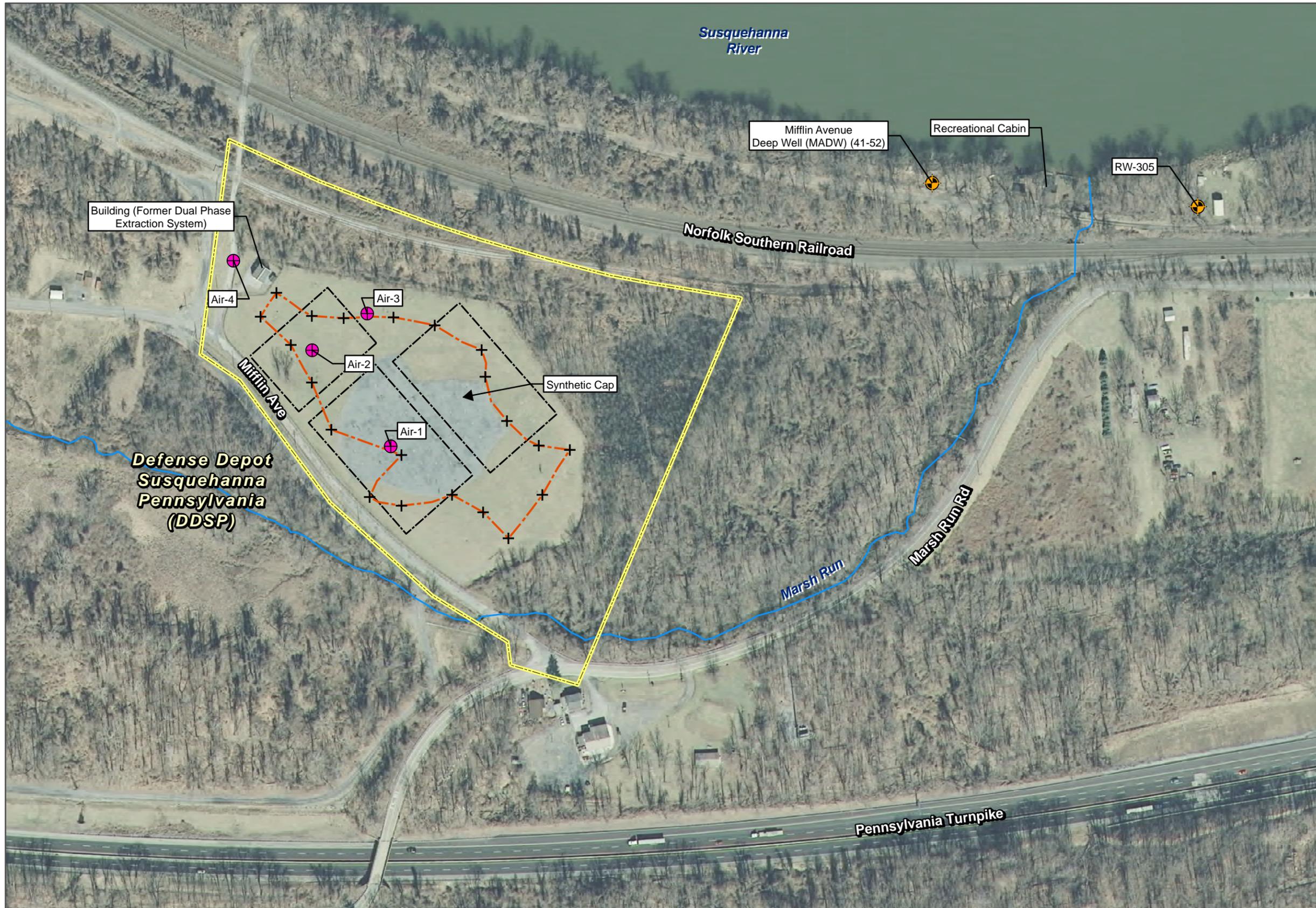
Respectfully yours,

EA Engineering, Science and Technology,
Inc.



H. Gordon Porter
Project Manager

Figure 1 – June 2012 Sample Locations
Table 1 – Groundwater Sample Results June 2012
Table 2 – Ambient Air Sample Results June 2012
Attachment 1 – Field Sampling Logs
Attachment 2 – Laboratory Analytical Reports
Attachment 3 – Historical Data



Legend

- Recreational Property Well Sampling Location
- Ambient Air Sampling Location. Location 4 was placed upwind.
- Ambient Air Screening Location
- Traverse Path for Ambient Air Screening
- Proposed Soccer Fields
- Formerly Used Defense Site (FUDS) Boundary
- Stream

Note:
All air and well sampling locations were confirmed with USACE project manager prior to sampling.

Aerial Photograph Source:
PAMAP Program, PA Department of Conservation and Natural Resources, Bureau of Topographic and Geologic Survey, 2008



New Cumberland Army Depot FUDS at Marsh Run Park
Fairview Township, New Cumberland, Pennsylvania
FUDS Project No. C03PA040301

Project Number:
6233003
Date:
August 2012



0 100 200
Feet

Figure 1
June 2012
Sampling Locations

TABLE 1 - GROUNDWATER SAMPLE RESULTS JUNE 2012

Analyte	Unit	ROD RAOs for Groundwater ¹ /MCL	PADEP MSC ²	Sample Name	
				Date	
				MADW [41-52]	RW-305
				6/14/2012	6/14/2012
Analyte	Unit	ROD RAOs for Groundwater ¹ /MCL	PADEP MSC ²	Result	Result
VOCs (SW846 8260B)					
cis-1,2-dichloroethene	µg/L	70	70	ND (0.75U)	ND (0.75U)
Tetrachloroethene	µg/L	5	5	ND (0.75U)	ND (0.75U)
trans-1,2-dichloroethene	µg/L	100	100	ND (0.75U)	ND (0.75U)
Trichloroethene	µg/L	5	5	ND (0.75U)	ND (0.75U)
Vinyl chloride	µg/L	2	2	ND (0.75U)	ND (0.75U)
Metals (SW846 6020A) ³					
Arsenic, Total	mg/L	0.05	0.01	0.0014J	0.0010J
Barium, Total	mg/L	5	2	0.099	0.12
Beryllium, Total	mg/L	0.0005	0.004	ND (0.00070U)	ND (0.00070U)
Cadmium, Total	mg/L	0.005	0.005	ND (0.00070U)	ND (0.00070U)
Chromium, Total	mg/L	0.1	0.1	ND (0.0015U)	0.0036
Copper, Total	mg/L	1.3	1	0.057	0.0098
Iron, Total	mg/L	0.3 ⁴	- - -	0.084	0.059
Lead, Total	mg/L	0.005	0.005	0.0052	0.00077J
Manganese, Total	mg/L	- - -	0.3	0.031	0.0068
Mercury, Total	mg/L	0.002	0.002	ND (0.00013U)	0.00015J

Notes:

MSC = Medium Specific Concentration.

MCL = Maximum Contaminant Level for Drinking Water.

ND = Not Detected; below the laboratory limit of detection (LOD).

PADEP = Pennsylvania Department of Environmental Protection.

RAO = Remedial Action Objective.

ROD = Record of Decision.

U = Not detected. The associated number indicates the LOD.

J = Analyte present. Indicates an estimated value between the method Detection Limit (DL) and the Limit of Quantitation (LOQ) for the analyte.

mg/L = Milligrams per liter.

µg/L = Micrograms per liter.

VOC = Volatile organic compounds.

Shaded and **Bolded** Results Represent Exceedances of Screening Criteria.

¹ EA. 1991. Final Record of Decision of the New Cumberland Army Depot's Former Landfill, Marsh Run Park, Fairview Township, York County, Pennsylvania. June.

² PADEP MSCs for metals are established as dissolved metals concentrations (January 2011).

³ Sample was unfiltered and tested for total concentrations.

⁴ PADEP Secondary Maximum Contaminant Level (SMCL) (non-enforceable for private wells).

TABLE 2 - AMBIENT AIR SAMPLE RESULTS JUNE 2012

				Sample Name:	AIR 1	AIR 2	AIR DUP	AIR 3	AIR 4
				Parent Sample ID:			AIR 2		
				Sample Date:	6/15/2012	6/15/2012	6/15/2012	6/15/2012	6/15/2012
Analyte (VOCs)	Crit 1	Crit 2	Unit						
cis-1,2-dichloroethene	49	NSA	µg/m ³	ND (0.4U)	ND (0.4U)	ND (0.4U)	ND (0.4U)	ND (0.4U)	ND (0.4U)
Tetrachloroethene	36	9.4	µg/m ³	ND (0.7U)	ND (0.7U)	ND (0.7U)	ND (0.7U)	ND (0.7U)	ND (0.7U)
trans-1,2-dichloroethene	97	63	µg/m ³	ND (0.4U)	ND (0.4U)	ND (0.4U)	ND (0.4U)	ND (0.4U)	ND (0.4U)
Trichloroethene	12	0.43	µg/m ³	ND (0.5U)	ND (0.5U)	ND (0.5U)	ND (0.5U)	ND (0.5U)	ND (0.5U)
Vinyl chloride	2.4	0.16	µg/m ³	ND (0.3U)	ND (0.3U)	ND (0.3U)	ND (0.3U)	ND (0.3U)	ND (0.3U)

Notes:

Crit1: Pennsylvania MSC for residential air, January 2004

Crit 2: U.S. EPA RSL for residential air, November 2013

µg/m³ = Microgram per cubic meter

ND or U: Not detected above the laboratory limit of detection (LOD)

MSC = Medium Specific Concentration

RSL = Regional Screening Level

NSA = No screening level available

ATTACHMENT 1
FIELD SAMPLING LOGS

PLOTS

- 0730 - BPS disjunct
- 0850 - Arr at ALS Envir. Lab EarthStation and SUMMA priority
- 0930 - BPS urgent lab
- 0955 - BPS arr @ Corbath property
- Task: Sample Supply well
- 1005 - EW w/ USACE g-5MCE
- 1010 - Mr. Corbath arr.
- unlock gate and open up well
- submergible pump ¹² installed and plumbed into onsite structure, EW stated could rather collect sample directly from well
- Mr. Corbath noted that ~~he~~ frequently adds chlorine pellets to well to prevent sulfur smell of water but that they don't drink it.
- 1035 - Calibrate YG

PLOTS

	Standard	Reading
Conductivity %Ca	1413	BSS/1410
Turbidity NTU	100	914/100.4
PH (4)	4.0	4.56/3.97
	7.0	6.58/7.01
ORP	231	608/230
1102 - DTW	→ 7.44	
DTB	→ 23.23	
	- Set up groundwater pump and line for low-flow sampling	
	- Speak w/ EW and study w/ will page @ IL (man and sample @ 11:56 am)	
1135 - Begun page		
	- 590-1123 sec	
1137 - 56.75°F	1141-57.40°F	
	617 V/cm	622 V/cm
	0.39 sal	0.39 sal
	6.61 pH	6.77 pH
	645.6 ORP	644.7 dep
	17.4 DO%	16.3%
	17.6 mg/L	16.7 mg/L
	0 NTU	0 NTU

Location Marsh Run Date 6/14/12
 Project / Client USACE
Pg 3 of 5

1145	- Stop pump to check calibration on KST ORP and Cond.		
	- Cond → 1508	ORP reading	1425
	ORP → 227		231
	Turbidity → 105.3		90.9
1206	- DTW → 7.46		
	- Pressure pumping		
	→ rate 500 ml / 22 sec		
	Temp Cond sal pH ORP Turb. DO 2 r/gk		
1210	57.33	597.037	7.03
1214	- DTW → 7.51		
1215	57.20	596.037	6.93
1220	57.40	595.037	6.92
1229	- DTW → 7.54		
	- prep balance		
1235	56.92	594.037	6.95
1242	57.26	597.037	6.96
1247	57.16	596.037	6.94
1252	57.60	600.037	6.99
1254	- DTW → 7.57		
	- rate → 500 ml / 20 sec		
	- reduced rate for sample collection to 1000 ml / min		

Location Marsh Run Date 6/14/12
 Project / Client USACE
Pg 4 of 5

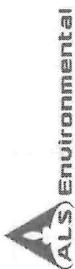
1305	- Collect sample RW-305		
1313	- Stop pump		
1314	- DTW 7.60		
1335	- Pack up and mob to Keller		
	- Begin prep E from base		
	- Pressure tank moved to upstairs		
1350	- Collect Keller supply well sample		
	- Mob to site		
	- Discuss prevailing wind direction w/ EW, Decide on NW, will place Avr 4 on outside of 6" O fence but on SW side of road, per EW, near to proposed loc.		
	- Get AL-4, sample # 5025		
	FC# 04764, 6 L gamma w/ CC set at 3.5 ml/min		
1402	- Initial reading = 301 / Hg		
	Start AL-4 sample collection		

Note: mistakely written on CBC as EW-305, corrected on 7/13/12 - BR3

Air	SUMMAID FC	Initial Reading	Final Reading
Air 1	04795	30"	1449
Air 2	04788	30"	1441
Air 3	04783	30"	1445
DVP-1 (Air 2)	04786	30"	1441

- set up and calibrate multi-gas (VRAE) meter using 2.5% methane (50% LEL), reading → 50.5% LEL
- Discuss traverse across site and reading increments w/ EW of USACE, sample screening locations depicted on separate map
- Complete CO₂ and pycneter lab delivery (SW samples)
- 1800 - BPS + EW offsite
- 1830 - BPS arr @ lab for sample drop-off
- 1645 - BPS decant lab

Air	SUMMAID Final Reading	Stop Time	Notes
Air 1	6"	1511	- Task: Pickup SUMMAS and deliver to lab for analysis
Air 2	5"	1506	
Air 3	2"	1509	
Air 4	4"	1515	
DVP-1	6"	1507	- Pack up SUMMAS and secure for transport
			- Access MW-15 location, install pump w/ 150' of tubing in well and test; purged water pumped through label back into well (< 0.1 gal + 2 gal)
			1615 - BPS offsite
			1645 - BPS arr @ lab and complete sample dropoff
			1655 - decant



Ship to: 34 Dogwood Lane • Middletown, PA 17057 • 717.944.5541 • Fax: 717.944.1430

CHAIN OF CUSTODY/ REQUEST FOR ANALYSIS

ALL SHADED AREAS MUST BE COMPLETED BY THE CLIENT/
SAMPLER. INSTRUCTIONS ON THE BACK

Page _____ of _____
Courier: _____
Tracking #: _____

COC# _____

Co. Name: EA Engineering
Contact (Report to): Sandy Slagion-wald
Address: 15 Loveton Circle
 Sparks, MD 21152

Phone: _____
PO#: _____

Project Name#: Marsh Run
ALS Quote #: _____

TAT: Normal-Standard TAT is 10 business days.
 Rush-Subject to ALS approval and surcharges.

Date Required: _____
Approved By: _____

Email? -Y -N
Fax? -Y -N

Sample Description/Location (as it will appear on the lab report)	Sample Date	Military Time	COC Comments
1 Air 1 [50207]	6/15/12 16:45	14:45	FCH 04785 30'16"
2 Air 2 [1831]	6/15/12 16:45	14:45	FCH 04788 30'15"
3 Air 3 [1209]	6/15/12 16:45	14:45	FCH 04783 30'12"
4 Air 4 [5025]	6/15/12 16:45	14:45	FCH 04784 30'14"
5 DUP-1 [1125]	6/15/12 16:45	14:45	FCH 04786 30'16"
6			
7			
8			

LOGGED BY (signature): _____
REVIEWED BY (signature): _____

Reimquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
Brian B... [Signature]	6/15/12	16:45	2 [Signature]	6/15/12	16:45
			4		
			6		
			8		
			10		

Receipt Information
 Performed by: _____
 Date: _____

Container Information
 Type: _____
 Size: _____
 Preservative: _____

ANALYSES/METHOD REQUESTED

Notes: _____

ALS FIELD SERVICES

State Samples Collected in? MD NJ NY PA

SDWA Form(s)? yes no

Data Deliverables: Standard CLP-like NJ-Reduced NJ-Full

EDS Required? If yes, format type: _____

DOD Criteria Required? _____

Receipt Information
 Performed by: _____
 Date: _____

Container Information
 Type: _____
 Size: _____
 Preservative: _____

ANALYSES/METHOD REQUESTED

Notes: _____

ALS FIELD SERVICES

State Samples Collected in? MD NJ NY PA

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DOD Criteria Required? _____

Receipt Information
 Performed by: _____
 Date: _____

Container Information
 Type: _____
 Size: _____
 Preservative: _____

ANALYSES/METHOD REQUESTED

Notes: _____

ALS FIELD SERVICES

State Samples Collected in? MD NJ NY PA

SDWA Form(s)? yes no

Data Deliverables: Standard CLP-like NJ-Reduced NJ-Full

EDS Required? If yes, format type: _____

DOD Criteria Required? _____



EA Engineering, Science,
and Technology, Inc.

WELL PURGING AND SAMPLING RECORD

WELL ID RW-305 SAMPLE NO. 1

WELL/SITE DESCRIPTION Hand dug supply well

DATE 6/14/12 TIME 1100 AIR TEMP. 78°F

WELL DEPTH 23.23 ft CASING HEIGHT 0 ft
 WATER DEPTH 7.49 ft WELL DIAMETER 36 in
 WATER COL. HEIGHT 15.74 ft SANDPACK DIAM. Unknown in
 EQUIVALENT VOLUME OF STANDING WATER 353.45 (gal) (L)
 PUMP RATE Between 0.1 and 1.5L/min (gpm) (LPM)
 PUMP TIME 1135-1313, 98 min w/ 1 interruption to recal. YSI min
 WELL WENT DRY? () Yes No PUMP TIME 98 min min
 VOL. REMOVED 93.5 (gal) (L) RECOVERY TIME No drawdown Obs min
 PURGE AGAIN? () Yes No TOTAL VOL. REMOVED 93.5 (gal) (L)
 +-0.1 units +-3% +-3% +-10mV +-10% +-10%

Date	Time	Volume Removed	pH	Cond.	Temp.	ORP	Turb.	DO	Depth to Water	Pump Rate
		Unit: L								from TOC
6/14/12	1137	3L	6.81	617	56.75	445.6	0	17.4	7.49	1.34/min
6/14/12	1144	9L	6.77	622	57.40	444.7	0	16.3	7.49	1.3
6/14/12	1145	Stop pump to check YSI ORP and Cond. Calibration								
6/14/12	1206	Resume pumping								
6/14/12	1210	6L	7.03	597	57.33	433.3	0	17.1	-	1.4
6/14/12	1215	7L	6.93	596	57.20	441.9	0	16.0	7.51	1.4
6/14/12	1220	7L	6.92	595	57.40	450.0	0	17.0	-	1.4
6/14/12	1235	22.5L	6.95	594	56.92	459.0	0	15.3	-	1.5
6/14/12	1242	10.5L	6.96	597	57.26	459.0	0	15.3	-	1.5
6/14/12	1247	7.5L	6.94	596	57.16	460.3	0	15.3	-	1.5
6/14/12	1252	7.5L	6.99	600	57.60	461.1	0	15.6	7.57	1.5
6/14/12	1254	Reduce rate for sample collection								
6/14/12	1305	Collect sample								

6/14/12 1313 4h 7.60 0

COMMENTS Purged and sampled using a submersible Grundfos pump with flow controller and dedicated teflon lined tubing

SIGNATURE B. P. Smith

ATTACHMENT 2
LABORATORY ANALYTICAL REPORTS

June 22, 2012

Ms. Sandra Staigerwald
EA Engineering-MD
15 Loveton Circle
Sparks Glencoe, MD 21152

Certificate of Analysis

Project Name:	2011-DOD USACE - MARSH RUN	Workorder:	9972869
Purchase Order:	7739	Workorder ID:	EMS021 2011-DODUSACE-MARSHRU

Dear Ms. Staigerwald,

Enclosed are the analytical results for samples received by the laboratory on Thursday, June 14, 2012.

The ALS Environmental laboratory in Middletown, Pennsylvania is a National Environmental Laboratory Accreditation Program (NELAP) accredited laboratory and as such, certifies that all applicable test results meet the requirements of NELAP.

If you have any questions regarding this certificate of analysis, please contact Denise Brooks (Project Coordinator) or Anna G Milliken (Technical Manager) at (717) 944-5541.

Please visit us at www.analyticalab.com for a listing of ALS' NELAP accreditations and Scope of Work, as well as other links to Water Quality documentation on the internet.

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Anna G Milliken
Technical Manager

ALS Environmental Laboratory Locations Across North America

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SAMPLE SUMMARY

Workorder: 9972869 EMS021|2011-DODUSACE-MARSHRUN

Discard Date: 07/06/2012

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
9972869001	EW-305	Ground Water	6/14/12 13:05	6/14/12 21:20	Customer
9972869002	MADW 41-52	Ground Water	6/14/12 13:50	6/14/12 21:20	Customer

Workorder Comments:

Notes

- Samples collected by ALS personnel are done so in accordance with the procedures set forth in the ALS Field Sampling Plan (20 - Field Services Sampling Plan).
- All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
- All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
- Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
- The Chain of Custody document is included as part of this report.
- All Library Search analytes should be regarded as tentative identifications based on the presumptive evidence of the mass spectra. Concentrations reported are estimated values.
- Parameters identified as "analyze immediately" require analysis within 15 minutes of collection. Any "analyze immediately" parameters not listed under the header "Field Parameters" are performed in the laboratory and are therefore analyzed out of hold time.

Standard Acronyms/Flags

J, B	Indicates an estimated value between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL) for the analyte
U	Indicates that the analyte was Not Detected (ND)
N	Indicates presumptive evidence of the presence of a compound
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
RDL	Reporting Detection Limit
ND	Not Detected - indicates that the analyte was Not Detected at the RDL
Cntr	Analysis was performed using this container
RegLmt	Regulatory Limit
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
%Rec	Percent Recovery
RPD	Relative Percent Difference

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ANALYTICAL RESULTS

Workorder: 9972869 EMS021|2011-DODUSACE-MARSHRUN

Lab ID: **9972869001** Date Collected: 6/14/2012 13:05 Matrix: Ground Water
Sample ID: **EW-305** Date Received: 6/14/2012 21:20

Parameters	Results	Units	Footnotes	LOQ	LOD	DL	Method	Prepared	Analyzed	By	Cntr
VOLATILE ORGANICS											
cis-1,2-Dichloroethene	0.75U	ug/L		1.0	0.75	0.33	SW846 8260B		6/21/12 05:08	DD	B
trans-1,2-Dichloroethene	0.75U	ug/L		1.0	0.75	0.33	SW846 8260B		6/21/12 05:08	DD	B
Tetrachloroethene	0.75U	ug/L		1.0	0.75	0.33	SW846 8260B		6/21/12 05:08	DD	B
Trichloroethene	0.75U	ug/L		1.0	0.75	0.33	SW846 8260B		6/21/12 05:08	DD	B
Vinyl Chloride	0.75U	ug/L		1.0	0.75	0.33	SW846 8260B		6/21/12 05:08	DD	B
METALS											
Arsenic, Total	0.0010J	mg/L		0.0030	0.0020	0.0010	SW846 6020A	6/15/12	6/19/12 04:21	MW O	H1
Barium, Total	0.12	mg/L		0.0056	0.0037	0.0019	SW846 6020A	6/15/12	6/19/12 04:21	MW O	H1
Beryllium, Total	0.00070 U	mg/L		0.0010	0.00070	0.00030	SW846 6020A	6/15/12	6/19/12 04:21	MW O	H1
Cadmium, Total	0.00070 U	mg/L		0.0011	0.00070	0.00037	SW846 6020A	6/15/12	6/20/12 12:11	MW O	H1
Chromium, Total	0.0036	mg/L		0.0022	0.0015	0.00074	SW846 6020A	6/15/12	6/19/12 04:21	MW O	H1
Copper, Total	0.0098	mg/L		0.0056	0.0037	0.0019	SW846 6020A	6/15/12	6/19/12 04:21	MW O	H1
Iron, Total	0.059	mg/L		0.056	0.037	0.019	SW846 6020A	6/15/12	6/19/12 04:21	MW O	H1
Lead, Total	0.00077 J	mg/L		0.0022	0.0015	0.00074	SW846 6020A	6/15/12	6/20/12 12:11	MW O	H1
Manganese, Total	0.0068	mg/L		0.0056	0.0037	0.0019	SW846 6020A	6/15/12	6/19/12 04:21	MW O	H1
Mercury, Total	0.00015 J	mg/L		0.00022	0.00013	0.000074	SW846 6020A	6/15/12	6/20/12 12:11	MW O	H1
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Units</i>	<i>Footnotes</i>	<i>Limits</i>			<i>Method</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	118	%		70-120			SW846 8260B		6/21/12 05:08	DD	B
4-Bromofluorobenzene (S)	111	%		75-120			SW846 8260B		6/21/12 05:08	DD	B
Dibromofluoromethane (S)	116	%	1	85-115			SW846 8260B		6/21/12 05:08	DD	B
Toluene-d8 (S)	106	%		85-120			SW846 8260B		6/21/12 05:08	DD	B
1,2-Dichloroethane-d4 (S)	114	%		70-120			SW846 8260B		6/21/12 20:31	DRS	B
4-Bromofluorobenzene (S)	110	%		75-120			SW846 8260B		6/21/12 20:31	DRS	B
Dibromofluoromethane (S)	111	%		85-115			SW846 8260B		6/21/12 20:31	DRS	B
Toluene-d8 (S)	109	%		85-120			SW846 8260B		6/21/12 20:31	DRS	B

Sample Comments:
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ANALYTICAL RESULTS

Workorder: 9972869 EMS021|2011-DODUSACE-MARSHRUN

Lab ID: **9972869001** Date Collected: 6/14/2012 13:05 Matrix: Ground Water
 Sample ID: **EW-305** Date Received: 6/14/2012 21:20

Parameters	Results	Units	Footnotes	LOQ	LOD	DL	Method	Prepared	Analyzed	By	Cntr
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 Anna G Milliken
 Technical Manager

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ANALYTICAL RESULTS

Workorder: 9972869 EMS021|2011-DODUSACE-MARSHRUN

Lab ID: **9972869002** Date Collected: 6/14/2012 13:50 Matrix: Ground Water
Sample ID: **MADW 41-52** Date Received: 6/14/2012 21:20

Parameters	Results	Units	Footnotes	LOQ	LOD	DL	Method	Prepared	Analyzed	By	Cntr
VOLATILE ORGANICS											
cis-1,2-Dichloroethene	0.75U	ug/L		1.0	0.75	0.33	SW846 8260B		6/21/12 04:45	DD	B
trans-1,2-Dichloroethene	0.75U	ug/L		1.0	0.75	0.33	SW846 8260B		6/21/12 04:45	DD	B
Tetrachloroethene	0.75U	ug/L		1.0	0.75	0.33	SW846 8260B		6/21/12 04:45	DD	B
Trichloroethene	0.75U	ug/L		1.0	0.75	0.33	SW846 8260B		6/21/12 04:45	DD	B
Vinyl Chloride	0.75U	ug/L		1.0	0.75	0.33	SW846 8260B		6/21/12 04:45	DD	B
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Units</i>	<i>Footnotes</i>	<i>Limits</i>			<i>Method</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	115	%		70-120			SW846 8260B		6/21/12 04:45	DD	B
4-Bromofluorobenzene (S)	108	%		75-120			SW846 8260B		6/21/12 04:45	DD	B
Dibromofluoromethane (S)	111	%		85-115			SW846 8260B		6/21/12 04:45	DD	B
Toluene-d8 (S)	108	%		85-120			SW846 8260B		6/21/12 04:45	DD	B
METALS											
Arsenic, Total	0.0014J	mg/L		0.0030	0.0020	0.0010	SW846 6020A	6/15/12	6/19/12 04:36	MW O	H1
Barium, Total	0.099	mg/L		0.0056	0.0037	0.0019	SW846 6020A	6/15/12	6/19/12 04:36	MW O	H1
Beryllium, Total	0.00070 U	mg/L		0.0010	0.00070	0.00030	SW846 6020A	6/15/12	6/19/12 04:36	MW O	H1
Cadmium, Total	0.00070 U	mg/L		0.0011	0.00070	0.00037	SW846 6020A	6/15/12	6/20/12 12:15	MW O	H1
Chromium, Total	0.0015 U	mg/L		0.0022	0.0015	0.00074	SW846 6020A	6/15/12	6/19/12 04:36	MW O	H1
Copper, Total	0.057	mg/L		0.0056	0.0037	0.0019	SW846 6020A	6/15/12	6/19/12 04:36	MW O	H1
Iron, Total	0.084	mg/L		0.056	0.037	0.019	SW846 6020A	6/15/12	6/19/12 04:36	MW O	H1
Lead, Total	0.0052	mg/L		0.0022	0.0015	0.00074	SW846 6020A	6/15/12	6/20/12 12:15	MW O	H1
Manganese, Total	0.031	mg/L		0.0056	0.0037	0.0019	SW846 6020A	6/15/12	6/19/12 04:36	MW O	H1
Mercury, Total	0.00013 U	mg/L		0.00022	0.00013	0.000074	SW846 6020A	6/15/12	6/20/12 12:15	MW O	H1

Sample Comments:
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ANALYTICAL RESULTS

Workorder: 9972869 EMS021|2011-DODUSACE-MARSHRUN

Lab ID: **9972869002** Date Collected: 6/14/2012 13:50 Matrix: Ground Water
 Sample ID: **MADW 41-52** Date Received: 6/14/2012 21:20

Parameters	Results	Units	Footnotes	LOQ	LOD	DL	Method	Prepared	Analyzed	By	Cntr
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 Anna G Milliken
 Technical Manager

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ANALYTICAL RESULTS QUALIFIERS/FLAGS

Workorder: 9972869 EMS021|2011-DODUSACE-MARSHRUN

PARAMETER QUALIFIERS/FLAGS

- [1] The surrogate Dibromofluoromethane for method SW846 8260B was outside of control limits. The % Recovery was reported as 116 and the control limits were 85 to 115. This result was reported at a dilution of 1.

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**DATA VALIDATION SUMMARY REPORT
MARSH RUN PARK, FAIRVIEW TOWNSHIP, PENNSYLVANIA**

Client: EA Engineering, Science & Technology, Inc., Sparks, Maryland
SDG: EMS-021
Laboratory: Analytical Laboratory Services, Middletown, Pennsylvania
Site: Marsh Run Park, Fairview Township, Pennsylvania
Date: July 19, 2011

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	RW-305	9972869001	Water

A full data validation was performed on the analytical data for one water sample collected on June 14, 2011 by EA Engineering at the Marsh Run Park site in Fairview Township, Pennsylvania. The samples were analyzed under the Environmental Protection Agency (USEPA) "Test Methods for the Evaluation of Solid Waste, USEPA SW-846, Third Edition, September 1986, with revisions".

Specific method references are as follows:

Analysis

VOCs
Total Metals/Hg

Method References

USEPA SW-846 Method 8260B
USEPA SW-846 Method 6020A

The data have been validated according to the protocols and quality control (QC) requirements of the analytical methods, the USEPA Region III data validation guidelines as follows:

- The USEPA Region III Modifications to the National Functional Guidelines for Organic Data Review," September 1994;
- The USEPA Region III Modifications to the National Functional Guidelines for Evaluating Inorganic Analyses," April 1003;
- and the reviewer's professional judgment.

The following items/criteria were reviewed for this report:

Organics

- Holding times and sample preservation
- Surrogate Spike recoveries
- Matrix Spike/Matrix Spike Duplicate (MS/MSD) recoveries
- Laboratory Control Sample (LCS) recoveries
- Method blank and field blank contamination
- Gas Chromatography (GC)/Mass Spectroscopy (MS) tuning
- Initial and continuing calibration summaries
- Compound Quantitation

- Internal standard area and retention time summary forms
- Field Duplicate sample precision

Inorganics

- Holding times and sample preservation
- Matrix Spike/Matrix Spike Duplicate (MS/MSD) recoveries
- Laboratory Control Sample (LCS) recoveries
- Method blank and field blank contamination
- Initial and continuing calibration verifications
- Compound Quantitation
- ICP Serial Dilution
- Field Duplicate sample precision

Overall Usability Issues:

There were no rejections of data.

Overall the data is acceptable for the intended purposes as qualified for the deficiencies detailed in this report.

Volatile Organic Compounds (VOC)

Holding Times

- The sample was analyzed within 14 days for a preserved water sample.

Surrogate Spike Recoveries

- All samples exhibited acceptable surrogate %R values except the following.

Sample ID	Surrogate	%R	Qualifier
1	Dibromofluoromethane	116%	None - Sample ND

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recoveries

- A MS/MSD sample was not analyzed.

Laboratory Control Samples

- The LCS samples exhibited acceptable %R values.

Method Blank

- The method blanks were free of contamination.

Field Blank

- Field QC samples were not analyzed.

GC/MS Tuning

- All criteria were met.

Initial Calibration

- The initial calibrations exhibited acceptable %RSD and mean RRF values.

Continuing Calibration

- The continuing calibrations exhibited acceptable %D and RRF values.

Compound Quantitation

- All criteria were met.

Internal Standard (IS) Area Performance

- All internal standards met response and retention time (RT) criteria.

Field Duplicate Sample Precision

- Field duplicate samples were not analyzed.

Total Metals

Holding Times

- All samples were prepared and analyzed within 180 days for all metals.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recoveries

- The MS/MSD sample exhibited acceptable %R and RPD values.

Laboratory Control Samples

- The LCS sample exhibited acceptable recoveries.

Method Blank

- The method blanks were free of contamination.

Field Blank

- Field QC samples were not analyzed.

Initial Calibration Verification

- All initial calibration criteria were met.

Continuing Calibration Verification

- All continuing calibration criteria were met.

Compound Quantitation

- All criteria were met.

ICP Serial Dilution

- ICP serial dilution percent differences (%D) were within acceptance limits.

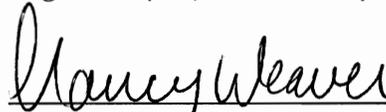
Field Duplicate Sample Precision

- Field duplicate samples were not analyzed.

Package Summary:

Please contact the undersigned at (757) 564-0090 if you have any questions or need further information.

Signed:



Nancy Weaver
Senior Chemist

Dated: 7/20/12

Data Qualifiers

- U = Not detected. The associated number indicates approximate sample concentration necessary to be detected.
- B = Not detected substantially above the level reported in laboratory or field blanks.
- R = Unreliable result. Analyte may or may not be present in the sample. Supporting data necessary to confirm result.
- N = Tentative identification. Consider present. Special methods may be needed to confirm its presence or absence in future sampling efforts..
- J = Analyte present. Reported value may not be accurate or precise.
- K = Analyte present. Reported value may be biased high. Actual value is expected lower.
- L = Analyte present. Reported value may be biased low. Actual value is expected higher.
- UJ = Not detected. Quantitation limit may be inaccurate or imprecise.
- UL = Not detected. Quantitation limit is probably higher.
- Q = No analytical result.
- NJ = Qualitative identification questionable due to poor resolution. Presumptively present at approximate quantity.



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 State Certifications: CT PH-0224 , DE ID 11 , GA 914 , MA PA0102 , MD 128 , LA 04162 , VA 421 , WY EPA Region 8 , WV 343

ANALYTICAL RESULTS

Workorder: 9972869 EMS021|2011-DODUSACE-MARSHRUN

Lab ID: **9972869001** Date Collected: 6/14/2012 13:05 Matrix: Ground Water
 Sample ID: **EW-305** (NW) Date Received: 6/14/2012 21:20

Parameters	Results	Units	Footnotes	LOQ	LOD	DL	Method	Prepared	Analyzed	By	Cntr
VOLATILE ORGANICS											
cis-1,2-Dichloroethene	0.75U	ug/L		1.0	0.75	0.33	SW846 8260B		6/21/12 05:08	DD	B
trans-1,2-Dichloroethene	0.75U	ug/L		1.0	0.75	0.33	SW846 8260B		6/21/12 05:08	DD	B
Tetrachloroethene	0.75U	ug/L		1.0	0.75	0.33	SW846 8260B		6/21/12 05:08	DD	B
Trichloroethene	0.75U	ug/L		1.0	0.75	0.33	SW846 8260B		6/21/12 05:08	DD	B
Vinyl Chloride	0.75U	ug/L		1.0	0.75	0.33	SW846 8260B		6/21/12 05:08	DD	B
METALS											
Arsenic, Total	0.0010J	mg/L		0.0030	0.0020	0.0010	SW846 6020A	6/15/12	6/19/12 04:21	MW	H1
Barium, Total	0.12	mg/L		0.0056	0.0037	0.0019	SW846 6020A	6/15/12	6/19/12 04:21	MW	H1
Beryllium, Total	0.00070 U	mg/L		0.0010	0.00070	0.00030	SW846 6020A	6/15/12	6/19/12 04:21	MW	H1
Cadmium, Total	0.00070 U	mg/L		0.0011	0.00070	0.00037	SW846 6020A	6/15/12	6/20/12 12:11	MW	H1
Chromium, Total	0.0036	mg/L		0.0022	0.0015	0.00074	SW846 6020A	6/15/12	6/19/12 04:21	MW	H1
Copper, Total	0.0098	mg/L		0.0056	0.0037	0.0019	SW846 6020A	6/15/12	6/19/12 04:21	MW	H1
Iron, Total	0.059	mg/L		0.056	0.037	0.019	SW846 6020A	6/15/12	6/19/12 04:21	MW	H1
Lead, Total	0.00077 J	mg/L		0.0022	0.0015	0.00074	SW846 6020A	6/15/12	6/20/12 12:11	MW	H1
Manganese, Total	0.0068	mg/L		0.0056	0.0037	0.0019	SW846 6020A	6/15/12	6/19/12 04:21	MW	H1
Mercury, Total	0.00015 J	mg/L		0.00022	0.00013	0.000074	SW846 6020A	6/15/12	6/20/12 12:11	MW	H1
Surrogate Recoveries	Results	Units	Footnotes	Limits			Method	Prepared	Analyzed	By	Cntr
1,2-Dichloroethane-d4 (S)	118	%		70-120			SW846 8260B		6/21/12 05:08	DD	B
4-Bromofluorobenzene (S)	111	%		75-120			SW846 8260B		6/21/12 05:08	DD	B
Dibromofluoromethane (S)	116	%	1	85-115			SW846 8260B		6/21/12 05:08	DD	B
Toluene-d8 (S)	108	%		85-120			SW846 8260B		6/21/12 05:08	DD	B
1,2-Dichloroethane-d4 (S)	114	%		70-120			SW846 8260B		6/21/12 20:31	DRS	B
4-Bromofluorobenzene (S)	110	%		75-120			SW846 8260B		6/21/12 20:31	DRS	B
Dibromofluoromethane (S)	111	%		85-115			SW846 8260B		6/21/12 20:31	DRS	B
Toluene-d8 (S)	109	%		85-120			SW846 8260B		6/21/12 20:31	DRS	B

Sample Comments:

NW 7/19/12

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 State Certifications: CT PH-0224 , DE ID 11 , GA 914 , MA PA0102 , MD 128 , LA 04162 , VA 421 , WY EPA Region 8 , WV 343

ANALYTICAL RESULTS

Workorder: 9972868 EMS021|2011-DODUSACE-MARSHRUN

Lab ID: 9972869001 Date Collected: 6/14/2012 13:05 Matrix: Ground Water
 Sample ID: ~~FW-305~~ (NW) Date Received: 6/14/2012 21:20

Parameters	Results	Units	Footnotes	LOQ	LOD	DL	Method	Prepared	Analyzed	By	Cntr
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Anna G Milliken
 Anna G Milliken
 Technical Manager

NW 7/19/12

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July 3, 2012

Ms. Sandra Staigerwald
EA Engineering-MD
15 Loveton Circle
Sparks Glencoe, MD 21152

Certificate of Analysis

Project Name:	2011-DOD USACE - MARSH RUN	Workorder:	9973085
Purchase Order:	7739	Workorder ID:	EMS022 DOD USACE - MARSH RUN

Dear Ms. Staigerwald,

Enclosed are the analytical results for samples received by the laboratory on Friday, June 15, 2012.

The ALS Environmental laboratory in Middletown, Pennsylvania is a National Environmental Laboratory Accreditation Program (NELAP) accredited laboratory and as such, certifies that all applicable test results meet the requirements of NELAP.

If you have any questions regarding this certificate of analysis, please contact Denise Brooks (Project Coordinator) or Anna G Milliken (Technical Manager) at (717) 944-5541.

Please visit us at www.analyticalab.com for a listing of ALS' NELAP accreditations and Scope of Work, as well as other links to Water Quality documentation on the internet.

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This page is included as part of the Analytical Report and must be retained as a permanent record thereof.


Anna G Milliken
Technical Manager

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SAMPLE SUMMARY

Workorder: 9973085 EMS022|DOD USACE - MARSH RUN

Discard Date: 07/17/2012

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
9973085001	Air 1[5020]	Air	6/15/12 15:11	6/15/12 19:40	Customer
9973085002	Air 2[1831]	Air	6/15/12 15:06	6/15/12 19:40	Customer
9973085003	Air 3[1209]	Air	6/15/12 15:09	6/15/12 19:40	Customer
9973085004	Air 4[5025]	Air	6/15/12 15:15	6/15/12 19:40	Customer
9973085005	DUP-1[1125]	Air	6/15/12 00:00	6/15/12 19:40	Customer

Workorder Comments:

Notes

- Samples collected by ALS personnel are done so in accordance with the procedures set forth in the ALS Field Sampling Plan (20 - Field Services Sampling Plan).
- All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
- All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
- Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
- The Chain of Custody document is included as part of this report.
- All Library Search analytes should be regarded as tentative identifications based on the presumptive evidence of the mass spectra. Concentrations reported are estimated values.
- Parameters identified as "analyze immediately" require analysis within 15 minutes of collection. Any "analyze immediately" parameters not listed under the header "Field Parameters" are performed in the laboratory and are therefore analyzed out of hold time.

Standard Acronyms/Flags

J, B	Indicates an estimated value between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL) for the analyte
U	Indicates that the analyte was Not Detected (ND)
N	Indicates presumptive evidence of the presence of a compound
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
RDL	Reporting Detection Limit
ND	Not Detected - indicates that the analyte was Not Detected at the RDL
Cntr	Analysis was performed using this container
RegLmt	Regulatory Limit
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
%Rec	Percent Recovery
RPD	Relative Percent Difference

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ANALYTICAL RESULTS

Workorder: 9973085 EMS022|DOD USACE - MARSH RUN

Lab ID: **9973085001** Date Collected: 6/15/2012 15:11 Matrix: Air
Sample ID: **Air 1[5020]** Date Received: 6/15/2012 19:40

Parameters	Results	Units	Footnotes	LOQ	LOD	DL	Method	Prepared	Analyzed	By	Cntr
VOLATILE ORGANICS @ STP											
cis-1,2-Dichloroethene	0.4U	ug/m3		0.8	0.4	0.4	TO-15		7/2/12 19:06	ECB	A
trans-1,2-Dichloroethene	0.4U	ug/m3		0.8	0.4	0.4	TO-15		7/2/12 19:06	ECB	A
Tetrachloroethene	0.7U	ug/m3		1	0.7	0.7	TO-15		7/2/12 19:06	ECB	A
Trichloroethene	0.5U	ug/m3		1	0.5	0.5	TO-15		7/2/12 19:06	ECB	A
Vinyl Chloride	0.3U	ug/m3		0.5	0.3	0.3	TO-15		7/2/12 19:06	ECB	A
cis-1,2-Dichloroethene	0.10U	ppbv		0.20	0.10	0.10	TO-15		7/2/12 19:06	ECB	A
trans-1,2-Dichloroethene	0.10U	ppbv		0.20	0.10	0.10	TO-15		7/2/12 19:06	ECB	A
Tetrachloroethene	0.10U	ppbv		0.20	0.10	0.10	TO-15		7/2/12 19:06	ECB	A
Trichloroethene	0.10U	ppbv		0.20	0.10	0.10	TO-15		7/2/12 19:06	ECB	A
Vinyl Chloride	0.10U	ppbv		0.20	0.10	0.10	TO-15		7/2/12 19:06	ECB	A
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Units</i>	<i>Footnotes</i>	<i>Limits</i>			<i>Method</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
4-Bromofluorobenzene (S)	90	%		70-130			TO-15		7/2/12 19:06	ECB	A

Sample Comments:


Anna G Milliken
Technical Manager

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ANALYTICAL RESULTS

Workorder: 9973085 EMS022|DOD USACE - MARSH RUN

Lab ID: **9973085002** Date Collected: 6/15/2012 15:06 Matrix: Air
Sample ID: **Air 2[1831]** Date Received: 6/15/2012 19:40

Parameters	Results	Units	Footnotes	LOQ	LOD	DL	Method	Prepared	Analyzed	By	Cntr
VOLATILE ORGANICS @ STP											
cis-1,2-Dichloroethene	0.4U	ug/m3		0.8	0.4	0.4	TO-15		7/2/12 19:48	ECB	A
trans-1,2-Dichloroethene	0.4U	ug/m3		0.8	0.4	0.4	TO-15		7/2/12 19:48	ECB	A
Tetrachloroethene	0.7U	ug/m3		1	0.7	0.7	TO-15		7/2/12 19:48	ECB	A
Trichloroethene	0.5U	ug/m3		1	0.5	0.5	TO-15		7/2/12 19:48	ECB	A
Vinyl Chloride	0.3U	ug/m3		0.5	0.3	0.3	TO-15		7/2/12 19:48	ECB	A
cis-1,2-Dichloroethene	0.10U	ppbv		0.20	0.10	0.10	TO-15		7/2/12 19:48	ECB	A
trans-1,2-Dichloroethene	0.10U	ppbv		0.20	0.10	0.10	TO-15		7/2/12 19:48	ECB	A
Tetrachloroethene	0.10U	ppbv		0.20	0.10	0.10	TO-15		7/2/12 19:48	ECB	A
Trichloroethene	0.10U	ppbv		0.20	0.10	0.10	TO-15		7/2/12 19:48	ECB	A
Vinyl Chloride	0.10U	ppbv		0.20	0.10	0.10	TO-15		7/2/12 19:48	ECB	A
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Units</i>	<i>Footnotes</i>	<i>Limits</i>			<i>Method</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
4-Bromofluorobenzene (S)	91	%		70-130			TO-15		7/2/12 19:48	ECB	A

Sample Comments:


Anna G Milliken
Technical Manager

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ANALYTICAL RESULTS

Workorder: 9973085 EMS022|DOD USACE - MARSH RUN

Lab ID: **9973085003** Date Collected: 6/15/2012 15:09 Matrix: Air
Sample ID: **Air 3[1209]** Date Received: 6/15/2012 19:40

Parameters	Results	Units	Footnotes	LOQ	LOD	DL	Method	Prepared	Analyzed	By	Cntr
VOLATILE ORGANICS @ STP											
cis-1,2-Dichloroethene	0.4U	ug/m3		0.8	0.4	0.4	TO-15		7/2/12 20:30	ECB	A
trans-1,2-Dichloroethene	0.4U	ug/m3		0.8	0.4	0.4	TO-15		7/2/12 20:30	ECB	A
Tetrachloroethene	0.7U	ug/m3		1	0.7	0.7	TO-15		7/2/12 20:30	ECB	A
Trichloroethene	0.5U	ug/m3		1	0.5	0.5	TO-15		7/2/12 20:30	ECB	A
Vinyl Chloride	0.3U	ug/m3		0.5	0.3	0.3	TO-15		7/2/12 20:30	ECB	A
cis-1,2-Dichloroethene	0.10U	ppbv		0.20	0.10	0.10	TO-15		7/2/12 20:30	ECB	A
trans-1,2-Dichloroethene	0.10U	ppbv		0.20	0.10	0.10	TO-15		7/2/12 20:30	ECB	A
Tetrachloroethene	0.10U	ppbv		0.20	0.10	0.10	TO-15		7/2/12 20:30	ECB	A
Trichloroethene	0.10U	ppbv		0.20	0.10	0.10	TO-15		7/2/12 20:30	ECB	A
Vinyl Chloride	0.10U	ppbv		0.20	0.10	0.10	TO-15		7/2/12 20:30	ECB	A
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Units</i>	<i>Footnotes</i>	<i>Limits</i>			<i>Method</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
4-Bromofluorobenzene (S)	93	%		70-130			TO-15		7/2/12 20:30	ECB	A

Sample Comments:


Anna G Milliken
Technical Manager

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ANALYTICAL RESULTS

Workorder: 9973085 EMS022|DOD USACE - MARSH RUN

Lab ID: **9973085004** Date Collected: 6/15/2012 15:15 Matrix: Air
Sample ID: **Air 4[5025]** Date Received: 6/15/2012 19:40

Parameters	Results	Units	Footnotes	LOQ	LOD	DL	Method	Prepared	Analyzed	By	Cntr
VOLATILE ORGANICS @ STP											
cis-1,2-Dichloroethene	0.4U	ug/m3		0.8	0.4	0.4	TO-15		7/2/12 21:12	ECB	A
trans-1,2-Dichloroethene	0.4U	ug/m3		0.8	0.4	0.4	TO-15		7/2/12 21:12	ECB	A
Tetrachloroethene	0.7U	ug/m3		1	0.7	0.7	TO-15		7/2/12 21:12	ECB	A
Trichloroethene	0.5U	ug/m3		1	0.5	0.5	TO-15		7/2/12 21:12	ECB	A
Vinyl Chloride	0.3U	ug/m3		0.5	0.3	0.3	TO-15		7/2/12 21:12	ECB	A
cis-1,2-Dichloroethene	0.10U	ppbv		0.20	0.10	0.10	TO-15		7/2/12 21:12	ECB	A
trans-1,2-Dichloroethene	0.10U	ppbv		0.20	0.10	0.10	TO-15		7/2/12 21:12	ECB	A
Tetrachloroethene	0.10U	ppbv		0.20	0.10	0.10	TO-15		7/2/12 21:12	ECB	A
Trichloroethene	0.10U	ppbv		0.20	0.10	0.10	TO-15		7/2/12 21:12	ECB	A
Vinyl Chloride	0.10U	ppbv		0.20	0.10	0.10	TO-15		7/2/12 21:12	ECB	A
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Units</i>	<i>Footnotes</i>	<i>Limits</i>			<i>Method</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
4-Bromofluorobenzene (S)	91	%		70-130			TO-15		7/2/12 21:12	ECB	A

Sample Comments:

Anna G Milliken
Technical Manager

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ANALYTICAL RESULTS

Workorder: 9973085 EMS022|DOD USACE - MARSH RUN

Lab ID: **9973085005** Date Collected: 6/15/2012 00:00 Matrix: Air
Sample ID: **DUP-1[1125]** Date Received: 6/15/2012 19:40

Parameters	Results	Units	Footnotes	LOQ	LOD	DL	Method	Prepared	Analyzed	By	Cntr
VOLATILE ORGANICS @ STP											
cis-1,2-Dichloroethene	0.4U	ug/m3		0.8	0.4	0.4	TO-15		7/2/12 21:53	ECB	A
trans-1,2-Dichloroethene	0.4U	ug/m3		0.8	0.4	0.4	TO-15		7/2/12 21:53	ECB	A
Tetrachloroethene	0.7U	ug/m3		1	0.7	0.7	TO-15		7/2/12 21:53	ECB	A
Trichloroethene	0.5U	ug/m3		1	0.5	0.5	TO-15		7/2/12 21:53	ECB	A
Vinyl Chloride	0.3U	ug/m3		0.5	0.3	0.3	TO-15		7/2/12 21:53	ECB	A
cis-1,2-Dichloroethene	0.10U	ppbv		0.20	0.10	0.10	TO-15		7/2/12 21:53	ECB	A
trans-1,2-Dichloroethene	0.10U	ppbv		0.20	0.10	0.10	TO-15		7/2/12 21:53	ECB	A
Tetrachloroethene	0.10U	ppbv		0.20	0.10	0.10	TO-15		7/2/12 21:53	ECB	A
Trichloroethene	0.10U	ppbv		0.20	0.10	0.10	TO-15		7/2/12 21:53	ECB	A
Vinyl Chloride	0.10U	ppbv		0.20	0.10	0.10	TO-15		7/2/12 21:53	ECB	A
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Units</i>	<i>Footnotes</i>	<i>Limits</i>			<i>Method</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
4-Bromofluorobenzene (S)	90	%		70-130			TO-15		7/2/12 21:53	ECB	A

Sample Comments:

Anna G Milliken
Technical Manager

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Page of _____
 Courier: _____
 Tracking #: _____

CHAIN OF CUSTODY/ REQUEST FOR ANALYSIS

ALL SAMPLES MUST BE COMPLETED BY THE CLIENT!
 SUPPLY INSTRUCTIONS ON THE BACK

ALS Environmental
 Ship to: 34 Dogwood Lane • Middletown, PA 17057 • 717-944-5541 • Fax: 717-944-1430

Co. Name: EA Engineering
 Contact (Report to): Standy Stangerwald
 Address: 15 Loveton Circle
 Sparks, MD 21152
 Phone: _____
 PO#: _____

Project Name#: Marsh Run ALS Quote #: _____
 TAT: Normal-Standard TAT is 10 business days. Date Required: _____
 Rush-Subject to ALS approval and surcharges. Approved By: _____
 Email? Y N
 Fax? Y N

Sample Description/Location <small>(as it will appear on the lab report)</small>	COC Comments	Sample Date	Military Time	Matrix	Enter Number of Containers Per Analysis
1 Air 1 [5020]	FCH 04745 30" x 16" 30" x 15"	6/14/12	1447	A	1
2 Air 2 [1831]	FCH 04748 30" x 15"	6/14/12	1447	A	1
3 Air 3 [1209]	FCH 04783 30" x 2"	6/14/12	1447	A	1
4 Air 4 [5025]	FCH 04784 30" x 4"	6/14/12	1432	A	1
5 DUP - 1 [1125]	FCH 04786 30" x 16"	6/14/12	1515	A	1

Notes: _____
 No. of Coolers: _____
 Cooler Temp: _____
 Therm. ID: _____
 Receipt Information (checked by ALS): _____
 Performed by: _____

Correct containers?	Correct sample volume?	Correct preservation?	Headspace/Volatiles?	Container in good condition?
Y	Y	Y	Y	Y

Circle appropriate Y or N.

ALS FIELD SERVICES:
 Pickup
 Labor
 Composite Sampling
 Rental Equipment
 Other: _____

DATA DELIVERABLES:
 Standard CLP-like NJ-Reduced NJ-Full Other: _____
 If yes, format type: _____

STATS SAMPLES:
 Formity: MD NJ NY PA

LOGGED BY (signature): _____ Date: 6/15/12 Time: 1430
 REVIEWED BY (signature): _____ Date: 6/15/12 Time: 1430

SAMPLED BY (Please Print): Brian Shedd
 Relinquished By / Company Name: Brian Shedd
 Date: 6-15-12 Time: 1045
 Received By / Company Name: Standy Stangerwald
 Date: 6-15-12 Time: 1445

EDS: _____
 POD Criteria Required? _____

Copies: WHITE - ORIGINAL CANARY - CUSTOMER COPY
 *Gr-Grab; C-Composite
 **Matrix: Air-Air; DW-Drinking Water; GW-Groundwater; Oil-Oil; OL-Other Liquid; SL-Sludge; SO-Soil; WP-WPoc; WW-Wastewater
 ***Container Type: AG-Amber Glass; CG-Clear Glass; PL-Plastic; Container Size: 250ml, 500ml, 1L, 5gal, etc. Preservatives: HCl, HNO3, NaOH, etc.

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ALS-Middletown
TO-15 Sample Receipt Checklist

Client ID: EA Engineering Project Name/#: Marsh Run
 Horizon WO#: 9973085 Date/Time received: 6-15-12 1940
 Sample Delivery Group ID: _____ Received By: SM SMITH
 Log In By/Date: 6-15-12 SM SMITH Project Manager Review (date) _____
 (signature) _____ (signature) _____
 Number of Shipping containers received: _____ Courier: ALS

Circle the response below as appropriate.

1. Did kit(s) come with a shipping slip (airbill, etc.)? YES NO NA

If YES, enter airbill numbers: _____

Shipping Container Information:

2. Were shipping containers received without signs of tampering? YES NO NA

Comments _____

3. Were custody seals present and intact? YES NO NA

4. Were custody seals numbers present? YES NO NA

List Custody Seal Numbers: _____

Sample Condition:

5. Were sample containers received intact without signs of tampering? YES NO NA

Comments _____

Chain of Custody:

6. Did COC arrive with the samples? YES NO NA

7. Do sample ID/Sample Description(s) match samples submitted? YES NO NA

8. Is date and time of collection listed on the COC for all samples? YES NO NA

9. Is identification of sampler on COC? YES NO NA

10. Are requested test method(s) on COC? YES NO NA

11. Are necessary signatures on COC? YES NO NA

12. Was Internal COC initiated? (should always be YES) YES NO NA

Sample Integrity Usability:

13. Do sample containers match the COC? YES NO NA

14. Were sample canisters received within 15 days of shipment to client? YES NO NA

Anomalies or Non-Conformances:

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**DATA VALIDATION SUMMARY REPORT
MARSH RUN PARK, FAIRVIEW TOWNSHIP, PENNSYLVANIA**

Client: EA Engineering, Science & Technology, Inc., Sparks, Maryland
SDG: EMS-022
Laboratory: Analytical Laboratory Services, Middletown, Pennsylvania
Site: Marsh Run Park, Fairview Township, Pennsylvania
Date: August 8, 2012

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	AIR 1	9973085001	Air
2	AIR 2	9973085002	Air
3	AIR 3	9973085003	Air
4	AIR 4	9973085004	Air
5	DUP-1	9973085005	Air

A Data Usability Summary Review was performed on the analytical data for five air samples collected on June 15, 2012 by EA Engineering at the Marsh Run Park site in Fairview Township, Pennsylvania. The samples were analyzed under “*Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air, Second Edition January 1999, EPA/625/R-96/010B*”, Compendium Method TO-15, “*Determination Of Volatile Organic Compounds (VOCs) In Air Collected In Specially-Prepared Canisters And Analyzed By Gas Chromatography/Mass Spectrometry (GC/MS)*”.

The data have been evaluated according to the protocols and quality control (QC) requirements of the USEPA Region III Modifications to the National Functional Guidelines for Organic Data Review, September 1994, in conjunction with the USEPA Region II Data Review Standard Operating Procedure (SOP) Number HW-31, Revision 4, October 2006: Validating Air Samples - Volatile Organic Analysis of Ambient Air in Canister and the reviewer's professional judgment.

Organics

The following items/criteria were reviewed for this report:

- Cover letter, Narrative, and Data Reporting Forms
- Canister Certification Blanks
- Canister Certification Pressures Differences
- Chains-of-Custody and Traffic Reports
- Holding Times
- Laboratory Control Samples
- Surrogate Spike Recoveries
- GC/MS Tuning
- Method Blank
- Initial Calibration
- Continuing Calibration

- Compound Quantitation
- Internal Standard (IS) Area Performance
- Field Duplicate Sample Precision

Overall Evaluation of Data and Potential Usability Issues

There were no rejections of data.

Overall the data is acceptable for the intended purposes as qualified for the following deficiencies.

Cover letter, Narrative, and Data Reporting Forms

- All criteria were met

Canister Certification Blanks

- The batch blank checks were non-detect or < RL.

Canister Certification Pressures Differences

- All criteria were met.

Chains-of-Custody and Traffic Reports

- All criteria were met

Holding Times

- All samples were analyzed within 30 days for air samples.

Laboratory Control Samples

- The LCS samples exhibited acceptable percent recoveries except the following.

LCS ID	Compound	%R	Qualifier	Affected Samples
1004075	Tetrachloroethene	142%	None	All ND

Surrogate Spike Recoveries

- All samples exhibited acceptable surrogate %R values.

GC/MS Tuning

- All criteria were met.

Method Blank

- The method blanks were free of contamination.

Field and Trip Blanks

- Field QC samples were not included in this data package.

Initial Calibration

- The initial calibration exhibited acceptable %RSD and mean RRF values.

Continuing Calibration

- The continuing calibrations exhibited acceptable %D and RRF values.

Compound Quantitation

- All criteria were met.

Internal Standard (IS) Area Performance

- All internal standards met response and retention time (RT) criteria.

Field Duplicate Sample Precision

- Field duplicate results are summarized below.

VOCs				
Compound	AIR 2 ppbv	DUP-1 ppbv	RPD	Qualifier
None	ND	ND	-	-

Package Summary:

Please contact the undersigned at (757) 564-0090 if you have any questions or need further information.

Signed: 
Nancy Weaver
Senior Chemist

Dated: 8/8/12

Data Qualifiers

- U = Not detected. The associated number indicates approximate sample concentration necessary to be detected.
- B = Not detected substantially above the level reported in laboratory or field blanks.
- R = Unreliable result. Analyte may or may not be present in the sample. Supporting data necessary to confirm result.
- N = Tentative identification. Consider present. Special methods may be needed to confirm its presence or absence in future sampling efforts..
- J = Analyte present. Reported value may not be accurate or precise.
- K = Analyte present. Reported value may be biased high. Actual value is expected lower.
- L = Analyte present. Reported value may be biased low. Actual value is expected higher.
- UJ = Not detected. Quantitation limit may be inaccurate or imprecise.
- UL = Not detected. Quantitation limit is probably higher.
- Q = No analytical result.
- NJ = Qualitative identification questionable due to poor resolution. Presumptively present at approximate quantity.



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NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01
 State Certifications: CT PH-0224 , DE ID 11 , GA 914 , MA PA0102 , MD 128 , LA 04162 , VA 421 , WY EPA Region 8 , WV 343

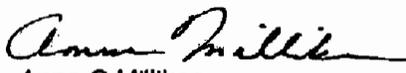
ANALYTICAL RESULTS

Workorder: 9973085 EMS022|DOD USACE - MARSH RUN

Lab ID: **9973085001** Date Collected: 6/15/2012 15:11 Matrix: Air
 Sample ID: **Air 1[5020]** Date Received: 6/15/2012 19:40

Parameters	Results	Units	Footnotes	LOQ	LOD	DL	Method	Prepared	Analyzed	By	Cntr
VOLATILE ORGANICS @ STP											
cis-1,2-Dichloroethene	0.4U	ug/m3		0.8	0.4	0.4	TO-15		7/2/12 19:06	ECB	A
trans-1,2-Dichloroethene	0.4U	ug/m3		0.8	0.4	0.4	TO-15		7/2/12 19:06	ECB	A
Tetrachloroethene	0.7U	ug/m3		1	0.7	0.7	TO-15		7/2/12 19:06	ECB	A
Trichloroethene	0.5U	ug/m3		1	0.5	0.5	TO-15		7/2/12 19:06	ECB	A
Vinyl Chloride	0.3U	ug/m3		0.5	0.3	0.3	TO-15		7/2/12 19:06	ECB	A
cis-1,2-Dichloroethene	0.10U	ppbv		0.20	0.10	0.10	TO-15		7/2/12 19:06	ECB	A
trans-1,2-Dichloroethene	0.10U	ppbv		0.20	0.10	0.10	TO-15		7/2/12 19:06	ECB	A
Tetrachloroethene	0.10U	ppbv		0.20	0.10	0.10	TO-15		7/2/12 19:06	ECB	A
Trichloroethene	0.10U	ppbv		0.20	0.10	0.10	TO-15		7/2/12 19:06	ECB	A
Vinyl Chloride	0.10U	ppbv		0.20	0.10	0.10	TO-15		7/2/12 19:06	ECB	A
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Units</i>	<i>Footnotes</i>	<i>Limits</i>			<i>Method</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
4-Bromofluorobenzene (S)	90	%		70-130			TO-15		7/2/12 19:06	ECB	A

Sample Comments:


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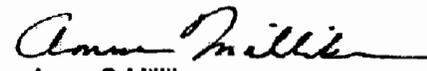
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ANALYTICAL RESULTS

Workorder: 9973085 EMS022[DOD USACE - MARSH RUN]

 Lab ID: 9973085002 Date Collected: 6/15/2012 15:06 Matrix: Air
 Sample ID: Air 2[1831] Date Received: 6/15/2012 19:40

Parameters	Results	Units	Footnotes	LOQ	LOD	DL	Method	Prepared	Analyzed	By	Cntr
VOLATILE ORGANICS @ STP											
cis-1,2-Dichloroethene	0.4U	ug/m3		0.8	0.4	0.4	TO-15		7/2/12 19:48	ECB	A
trans-1,2-Dichloroethene	0.4U	ug/m3		0.8	0.4	0.4	TO-15		7/2/12 19:48	ECB	A
Tetrachloroethene	0.7U	ug/m3		1	0.7	0.7	TO-15		7/2/12 19:48	ECB	A
Trichloroethene	0.5U	ug/m3		1	0.5	0.5	TO-15		7/2/12 19:48	ECB	A
Vinyl Chloride	0.3U	ug/m3		0.5	0.3	0.3	TO-15		7/2/12 19:48	ECB	A
cis-1,2-Dichloroethene	0.10U	ppbv		0.20	0.10	0.10	TO-15		7/2/12 19:48	ECB	A
trans-1,2-Dichloroethene	0.10U	ppbv		0.20	0.10	0.10	TO-15		7/2/12 19:48	ECB	A
Tetrachloroethene	0.10U	ppbv		0.20	0.10	0.10	TO-15		7/2/12 19:48	ECB	A
Trichloroethene	0.10U	ppbv		0.20	0.10	0.10	TO-15		7/2/12 19:48	ECB	A
Vinyl Chloride	0.10U	ppbv		0.20	0.10	0.10	TO-15		7/2/12 19:48	ECB	A
Surrogate Recoveries											
	Results	Units	Footnotes	Limits			Method	Prepared	Analyzed	By	Cntr
4-Bromofluorobenzene (S)	91	%		70-130			TO-15		7/2/12 19:48	ECB	A

Sample Comments:

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ANALYTICAL RESULTS

Workorder: 9973085 EMS022|DOD USACE - MARSH RUN

 Lab ID: **9973085003**
 Sample ID: **Air 3[1209]**

 Date Collected: 6/15/2012 15:09
 Date Received: 6/15/2012 19:40

Matrix: Air

Parameters	Results	Units	Footnotes	LOQ	LOD	DL	Method	Prepared	Analyzed	By	Cntr
VOLATILE ORGANICS @ STP											
cis-1,2-Dichloroethene	0.4U	ug/m3		0.8	0.4	0.4	TO-15		7/2/12 20:30	ECB	A
trans-1,2-Dichloroethene	0.4U	ug/m3		0.8	0.4	0.4	TO-15		7/2/12 20:30	ECB	A
Tetrachloroethene	0.7U	ug/m3		1	0.7	0.7	TO-15		7/2/12 20:30	ECB	A
Trichloroethene	0.5U	ug/m3		1	0.5	0.5	TO-15		7/2/12 20:30	ECB	A
Vinyl Chloride	0.3U	ug/m3		0.5	0.3	0.3	TO-15		7/2/12 20:30	ECB	A
cis-1,2-Dichloroethene	0.10U	ppbv		0.20	0.10	0.10	TO-15		7/2/12 20:30	ECB	A
trans-1,2-Dichloroethene	0.10U	ppbv		0.20	0.10	0.10	TO-15		7/2/12 20:30	ECB	A
Tetrachloroethene	0.10U	ppbv		0.20	0.10	0.10	TO-15		7/2/12 20:30	ECB	A
Trichloroethene	0.10U	ppbv		0.20	0.10	0.10	TO-15		7/2/12 20:30	ECB	A
Vinyl Chloride	0.10U	ppbv		0.20	0.10	0.10	TO-15		7/2/12 20:30	ECB	A
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Units</i>	<i>Footnotes</i>	<i>Limits</i>			<i>Method</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
4-Bromofluorobenzene (S)	93	%		70-130			TO-15		7/2/12 20:30	ECB	A

Sample Comments:

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ANALYTICAL RESULTS

Workorder: 9973085 EMS022|DOD USACE - MARSH RUN

Lab ID: **9973085004** Date Collected: 6/15/2012 15:15 Matrix: Air
 Sample ID: **Air 4[5025]** Date Received: 6/15/2012 19:40

Parameters	Results	Units	Footnotes	LOQ	LOD	DL	Method	Prepared	Analyzed	By	Cntr
VOLATILE ORGANICS @ STP											
cis-1,2-Dichloroethene	0.4U	ug/m3		0.8	0.4	0.4	TO-15		7/2/12 21:12	ECB	A
trans-1,2-Dichloroethene	0.4U	ug/m3		0.8	0.4	0.4	TO-15		7/2/12 21:12	ECB	A
Tetrachloroethene	0.7U	ug/m3		1	0.7	0.7	TO-15		7/2/12 21:12	ECB	A
Trichloroethene	0.5U	ug/m3		1	0.5	0.5	TO-15		7/2/12 21:12	ECB	A
Vinyl Chloride	0.3U	ug/m3		0.5	0.3	0.3	TO-15		7/2/12 21:12	ECB	A
cis-1,2-Dichloroethene	0.10U	ppbv		0.20	0.10	0.10	TO-15		7/2/12 21:12	ECB	A
trans-1,2-Dichloroethene	0.10U	ppbv		0.20	0.10	0.10	TO-15		7/2/12 21:12	ECB	A
Tetrachloroethene	0.10U	ppbv		0.20	0.10	0.10	TO-15		7/2/12 21:12	ECB	A
Trichloroethene	0.10U	ppbv		0.20	0.10	0.10	TO-15		7/2/12 21:12	ECB	A
Vinyl Chloride	0.10U	ppbv		0.20	0.10	0.10	TO-15		7/2/12 21:12	ECB	A
Surrogate Recoveries	Results	Units	Footnotes	Limits			Method	Prepared	Analyzed	By	Cntr
4-Bromofluorobenzene (S)	91	%		70-130			TO-15		7/2/12 21:12	ECB	A

Sample Comments:

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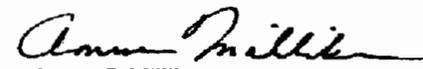
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ANALYTICAL RESULTS

Workorder: 9973085 EMS022|DOD USACE - MARSH RUN

 Lab ID: **9973085005** Date Collected: 6/15/2012 00:00 Matrix: Air
 Sample ID: **DUP-1[1125]** Date Received: 6/15/2012 19:40

Parameters	Results	Units	Footnotes	LOQ	LOD	DL	Method	Prepared	Analyzed	By	Cntr
VOLATILE ORGANICS @ STP											
cis-1,2-Dichloroethene	0.4U	ug/m3		0.8	0.4	0.4	TO-15		7/2/12 21:53	ECB	A
trans-1,2-Dichloroethene	0.4U	ug/m3		0.8	0.4	0.4	TO-15		7/2/12 21:53	ECB	A
Tetrachloroethene	0.7U	ug/m3		1	0.7	0.7	TO-15		7/2/12 21:53	ECB	A
Trichloroethene	0.5U	ug/m3		1	0.5	0.5	TO-15		7/2/12 21:53	ECB	A
Vinyl Chloride	0.3U	ug/m3		0.5	0.3	0.3	TO-15		7/2/12 21:53	ECB	A
cis-1,2-Dichloroethene	0.10U	ppbv		0.20	0.10	0.10	TO-15		7/2/12 21:53	ECB	A
trans-1,2-Dichloroethene	0.10U	ppbv		0.20	0.10	0.10	TO-15		7/2/12 21:53	ECB	A
Tetrachloroethene	0.10U	ppbv		0.20	0.10	0.10	TO-15		7/2/12 21:53	ECB	A
Trichloroethene	0.10U	ppbv		0.20	0.10	0.10	TO-15		7/2/12 21:53	ECB	A
Vinyl Chloride	0.10U	ppbv		0.20	0.10	0.10	TO-15		7/2/12 21:53	ECB	A
Surrogate Recoveries											
	Results	Units	Footnotes	Limits			Method	Prepared	Analyzed	By	Cntr
4-Bromofluorobenzene (S)	90	%		70-130			TO-15		7/2/12 21:53	ECB	A

Sample Comments:

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**ATTACHMENT 3
HISTORICAL DATA**

Attachment 3, Table 1 - Historical VOC Results

Monitoring Well	Date	PCE 5 µg/L	TCE 5 µg/L	Cis 1,2-DCE 70 µg/L	Trans 1,2-DCE 100 µg/L	Vinyl Chloride 2 µg/L
MW-1	4/2/2002	ND	14.0	88.0	16.0	ND
	8/2/2002	ND	7.0	42	5.6	ND
	10/9/2002	ND	3.6	7.1	ND	ND
	2/24/2003	ND	9.2	37.2	5.5	ND
	5/19/2003	ND	9.7	23.4	3.5	ND
	8/18/2003	ND	7.0	20.3	3.0	ND
	11/3/2003	ND	7.1	12.6	1.9	ND
	2/23/2004	ND	5.6	4.4	ND	ND
	5/10/2004	ND	3.6	2.7	ND	ND
	9/13/2004	ND	8.6^(e)	7.7 ^(c)	1.1 ^(c)	ND
	11/8/2004	ND	9.2	14.1	2.2 ^(c)	ND
	3/24/2005	ND	10.5	14.0	2.4	ND
	6/1/2005	ND	9.7	11.4	2.0	ND
	8/24/2005	ND	11.6	18.0	3.9	ND
	11/22/2005	ND	8.2	12.6	2.5	ND
	3/9/2006	ND	7.2	7.1	1.2	ND
	11/22/2006	ND	19.1	37.7	7.3	ND
	3/26/2008	ND	9.8	20.2	3.2	ND
	3/30/2009	ND	19.2	59.0	9.8	ND
	6/2/2011	ND (0.75 U)	15.8	72.0	8.9	0.88 J
MW-1A	4/2/2002	ND	2.6	16.0	2.7	ND
	8/1/2002	ND	1.6	6.3	ND	ND
	10/9/2002	ND	1.3	6.0	ND	ND
	2/25/2003	ND	1.3 ^(c)	10.7	1.7	ND
MW-1A (dup) ^(a)	2/25/2003	ND	1.4 ^(c)	10.3	1.7	ND
	5/19/2003	ND	1.4	10.8	2.0	ND
MW-1A ^(a)	5/19/2003	ND	1.4	9.4	1.8	ND
	8/18/2003	ND	1.9	10.3	1.8	ND
MW-1A (dup) ^(a)	8/18/2003	ND	2.1	9.3	1.7	ND
	11/3/2003	ND	1.6	5.9	ND	ND
MW-1A (dup) ^(a)	11/3/2003	ND	1.8	6.0	1.3	ND
	2/23/2004	ND	2.7	7.7	1.5	ND
MW-1A (dup) ^(a)	2/23/2004	ND	2.5	7.4	1.6	ND
	5/10/2004	ND	ND	6.9	1.2	ND
MW-1A (dup)*	5/10/2004	ND	ND	6.7	1.2	ND
	9/13/2004	ND	2.2 ^(c)	3.8 ^(c)	ND	ND
	11/8/2004	ND	4.2	7.8	1.3	ND
	3/9/2006	ND	13.5	25.3	5.2	ND
	11/22/2006	ND	16.2	35.2	7.4	ND
	3/26/2008	ND	14.0	43.9	7.8	ND
	3/30/2009	ND	12.4	40.7	6.8	ND
	5/31/2011	ND (0.75 U)	10.7 J	53.1 J	6.1 J	0.37 J

Attachment 3, Table 1 - Historical VOC Results

Monitoring Well	Date	PCE 5 µg/L	TCE 5 µg/L	Cis 1,2-DCE 70 µg/L	Trans 1,2- DCE 100 µg/L	Vinyl Chloride 2 µg/L
MW-2	4/2/2002	ND	1.1	2.5	ND	ND
MW-2 (dup) ^(a)	4/2/2002	ND	1.0	2.3	ND	ND
	7/31/2002	ND	ND	ND	ND	ND
	10/9/2002	ND	ND	2.3	ND	ND
	2/26/2003	ND	ND	2.8	ND	ND
	5/20/2003	ND	ND	1.9	ND	ND
	8/20/2003	ND	ND	1.2	ND	ND
	11/4/2003	ND	ND	1.5	ND	ND
	2/24/2004	ND	ND	1.1	ND	ND
	5/12/2004	ND	ND	1.8	ND	ND
	9/13/2004	ND	ND	1.7 ^(c)	ND	ND
	11/9/2004	ND	ND	1.0	ND	ND
	3/25/2005	ND	ND	1.4	ND	ND
	6/1/2005	ND	ND	ND	ND	ND
	8/25/2005	ND	ND	ND	ND	ND
	11/22/2005	ND	ND	1.1	ND	ND
	3/9/2006	ND	ND	1.1	ND	ND
	11/21/2006	ND	ND	1.1	ND	ND
	3/26/2008	ND	ND	1.7	ND	ND
	3/31/2009	ND	ND	1.6	ND	ND
	6/1/2011	ND (0.75 U)	0.79 J	1.1	ND (0.75 U)	ND (0.75 U)
MW-2A	4/3/2002	ND	ND	ND	ND	ND
	7/31/2002	ND	ND	1.4	ND	ND
MW-2A (dup) ^(a)	7/31/2002	ND	ND	1.2	ND	ND
	10/8/2002	ND	1.1	ND	ND	ND
	2/26/2003	ND	1.4	ND	ND	ND
	5/20/2003	ND	ND	ND	ND	ND
	8/20/2003	ND	1.6	ND	ND	ND
	11/4/2003	ND	1.6	ND	ND	ND
	2/24/2004	ND	ND	ND	ND	ND
	5/12/2004	ND	ND	ND	ND	ND
	9/13/2004	ND	ND	ND	ND	ND
	11/9/2004	ND	ND	ND	ND	ND
	3/9/2006	ND	ND	ND	ND	ND
	11/21/2006	ND	1.1	ND	ND	ND
	3/26/2008	ND	1.0	ND	ND	ND
	3/31/2009	ND	ND	ND	ND	ND
	6/1/2011	ND (0.75 U)	0.84 J	ND (0.75 U)	ND (0.75 U)	ND (0.75 U)

Attachment 3, Table 1 - Historical VOC Results

Monitoring Well	Date	PCE 5 µg/L	TCE 5 µg/L	Cis 1,2-DCE 70 µg/L	Trans 1,2- DCE 100 µg/L	Vinyl Chloride 2 µg/L
MW-3A	4/3/2002	ND	ND	1.6	ND	ND
MW-3A (dup) ^(a)	4/3/2002	ND	ND	1.6	ND	ND
	8/1/2002	ND	ND	2.0	1.1	ND
	10/8/2002	ND	ND	3.6	1.9	ND
	2/26/2003	ND	ND	ND	ND	ND
	5/19/2003	ND	ND	ND	ND	ND
	8/19/2003	ND	ND	ND	ND	ND
	11/3/2003	ND	ND	ND	ND	ND
	2/24/2004	ND	ND	ND	ND	ND
	5/10/2004	ND	ND	ND	ND	ND
	9/13/2004	ND	ND	ND	ND	ND
	11/8/2004	ND	ND	ND	ND	ND
	3/9/2006	ND	ND	ND	ND	ND
	11/21/2006	ND	ND	ND	ND	ND
	3/26/2008	ND	ND	ND	ND	ND
	4/3/2009	ND	ND	ND	ND	ND
	5/31/2011	ND (0.75 U)	ND (0.75 U)	ND (0.75 U)	ND (0.75 U)	ND (0.75 U)
MW-4	4/2/2002	6.2	557	65.0	26.0	ND
	8/1/2002	1.7	248	108	32	2.3
	10/10/2002	1.7	339	114	36	ND
MW-4 (dup) ^(a)	10/10/2002	1.8	313	116	37	ND
	2/25/2003	1.7	256	69	22	ND
	5/19/2003	2.9	217	88.0	31.9	ND
	8/19/2003	2.2	288	92.1	31.2	ND
	11/4/2003	ND	147	34.8	10.1	ND
	2/23/2004	2.3	352	119	42.1	ND
	5/12/2004	1.9	429	120	43.1	ND
	9/14/2004	ND	156	34.4	10.8	ND
	11/8/2004	2.2	313	101	37.3	ND
	3/25/2005	2.4	303	111	37.2	ND
	6/1/2005	2.8	434	166	56.5	ND
	8/24/2005	2.2	387	146	50.4	ND
	11/22/2005	2.0	226	33.8	11.5	ND
	3/8/2006	2.3	348^(e)	139^(e)	49.2	ND
	11/22/2006	1.6	145	14.8	5.8	ND
MW-4 (dup) ^(a)	11/22/2006	1.6	145	13.9	5.5	ND
	6/1/2007	2.3	320	83.7	27.5	ND
	6/15/2007	0.5	77.1	26.8	7.2	ND
	3/26/2008	ND	66.4	13.3	4.6	ND
	3/31/2009	ND	91.0^(f)	35.4	10.1 ^(f)	ND
	6/1/2011	ND (0.75 U)	35.3 J	15.0 J	3.3	ND (0.75 U)
MW-4 (dup) ^(a)	6/1/2011	ND (0.75 U)	36	15.5	3.4	ND (0.75 U)

Attachment 3, Table 1 - Historical VOC Results

Monitoring Well	Date	PCE 5 µg/L	TCE 5 µg/L	Cis 1,2-DCE 70 µg/L	Trans 1,2- DCE 100 µg/L	Vinyl Chloride 2 µg/L
MW-4A	4/2/2002	ND	5.7	1.3	ND	ND
	8/2/2002	ND	24.0	10.0	4.1	ND
	10/10/2002	ND	33	13	3.1	ND
	2/25/2003	ND	7.9 ^(c)	17	1.1	ND
	5/19/2003	ND	3.4	ND	ND	ND
	8/19/2003	ND	1.5	3.4	ND	ND
	11/4/2003	ND	ND	1.6	ND	ND
	2/23/2004	ND	1.2	ND	ND	ND
	5/12/2004	ND	ND	ND	ND	ND
	9/14/2004	ND	ND	1.5	ND	ND
	11/8/2004	ND	1.5	ND	ND	ND
	3/25/2005	ND	1.8	ND	ND	ND
	6/1/2005	ND	2.8	ND	ND	ND
	8/25/2005	ND	4.4	1.4	ND	ND
	11/22/2005	ND	31.9	8.7	2.1	ND
	3/8/2006	ND	5.3	11.5	ND	ND
	11/22/2006	ND	14.8	4.9	ND	ND
	4/3/2009	ND	ND	ND	ND	ND
	6/1/2011	ND (3.8 UJ)	ND (3.8 UJ)	ND (3.8 UJ)	ND (3.8 UJ)	ND (3.8 UJ)
MW-5	4/4/2002	ND	ND	ND	ND	ND
	7/29/2002	ND	ND	ND	ND	ND
	10/14/2002	ND	ND	ND	ND	ND
	2/27/2003	ND	ND	ND	ND	ND
	5/22/2003	ND	ND	ND	ND	ND
	8/21/2003	ND	ND	ND	ND	ND
	11/5/2003	ND	ND	ND	ND	ND
	2/25/2004	ND	ND	ND	ND	ND
	5/11/2004	ND	ND	ND	ND	ND
	9/15/2004	ND	ND	ND	ND	ND
	11/9/2004	ND	ND	ND	ND	ND
	3/24/2005	ND	ND	ND	ND	ND
	5/31/2005	ND	ND	ND	ND	ND
	8/23/2005	ND	ND	ND	ND	ND
	11/21/2005	ND	ND	ND	ND	ND
	3/7/2006	ND	ND	ND	ND	ND
	11/21/2006	ND	ND	ND	ND	ND
	4/1/2009	ND	ND	ND	ND	ND

Attachment 3, Table 1 - Historical VOC Results

Monitoring Well	Date	PCE 5 µg/L	TCE 5 µg/L	Cis 1,2-DCE 70 µg/L	Trans 1,2- DCE 100 µg/L	Vinyl Chloride 2 µg/L
MW-5A	4/4/2002	ND	ND	ND	ND	ND
	7/29/2002	ND	ND	ND	ND	ND
	10/14/2002	ND	ND	ND	ND	ND
	2/28/2003	ND	ND	ND	ND	ND
	5/22/2003	ND	ND	ND	ND	ND
	8/21/2003	ND	ND	ND	ND	ND
	11/5/2003	ND	ND	ND	ND	ND
	2/25/2004	ND	ND	ND	ND	ND
	5/11/2004	ND	ND	ND	ND	ND
	9/15/2004	ND	ND	ND	ND	ND
	11/9/2004	ND	ND	ND	ND	ND
	3/24/2005	ND	ND	ND	ND	ND
	5/31/2005	ND	ND	ND	ND	ND
	8/23/2005	ND	ND	ND	ND	ND
	11/21/2005	ND	ND	ND	ND	ND
	3/7/2006	ND	ND	ND	ND	ND
	11/21/2006	ND	ND	ND	ND	ND
	4/1/2009	ND	ND	ND	ND ^(e)	ND
MW-5A (dup) ^(g)	4/1/2009	ND	ND	ND	ND	ND
MW-6	4/4/2002	ND	ND	ND	ND	ND
MW-6 (dup) ^(a)	4/4/2002	ND	ND	ND	ND	ND
	7/30/2002	ND	ND	ND	ND	ND
	10/11/2002	ND	ND	ND	ND	ND
	2/27/2003	ND	ND	ND	ND	ND
	5/21/2003	ND	ND	ND	ND	ND
	8/21/2003	ND	ND	ND	ND	ND
	11/5/2003	ND	ND	ND	ND	ND
	2/25/2004	ND	ND	ND	ND	ND
MW-6	5/11/2004	ND	ND	ND	ND	ND
	9/15/2004	ND	ND	ND	ND	ND
	11/9/2004	ND	ND	ND	ND	ND
	4/1/2009	ND	ND	ND	ND	ND

Attachment 3, Table 1 - Historical VOC Results

Monitoring Well	Date	PCE 5 µg/L	TCE 5 µg/L	Cis 1,2-DCE 70 µg/L	Trans 1,2- DCE 100 µg/L	Vinyl Chloride 2 µg/L
MW-6A	4/4/2002	ND	ND	ND	ND	ND
	7/30/2002	ND	ND	ND	ND	ND
	10/11/2002	ND	ND	ND	ND	ND
	2/26/2003	ND	ND	ND	ND	ND
	5/21/2003	ND	ND	ND	ND	ND
	8/21/2003	ND	ND	ND	ND	ND
	11/5/2003	ND	ND	ND	ND	ND
	2/25/2004	ND	ND	ND	ND	ND
	5/11/2004	ND	ND	ND	ND	ND
	9/15/2004	ND	ND	ND	ND	ND
	11/9/2004	ND	ND	ND	ND	ND
	4/1/2009	ND	ND	ND	ND	ND
MW-7	4/4/2002	ND	ND	ND	ND	ND
	7/30/2002	ND	ND	ND	ND	ND
	10/14/2002	ND	ND	ND	ND	ND
	2/28/2003	ND	ND	ND	ND	ND
	5/22/2003	ND	ND	ND	ND	ND
	8/21/2003	ND	ND	ND	ND	ND
	11/5/2003	ND	ND	ND	ND	ND
	2/25/2004	ND	ND	ND	ND	ND
	5/11/2004	ND	ND	ND	ND	ND
	9/15/2004	ND	ND	ND	ND	ND
	11/9/2004	ND	ND	ND	ND	ND
	4/1/2009	ND	ND	ND	ND	ND
MW-7A	4/3/2002	ND	ND	ND	ND	ND
	7/31/2002	ND	ND	ND	ND	ND
	10/10/2002	ND	ND	ND	ND	ND
	2/25/2003	ND	ND	ND	ND	ND
	5/20/2003	ND	ND	ND	ND	ND
	8/20/2003	ND	ND	ND	ND	ND
	11/5/2003	ND	ND	ND	ND	ND
	2/24/2004	ND	ND	ND	ND	ND
	5/10/2004	ND	ND	ND	ND	ND
	9/14/2004	ND	ND	ND	ND	ND
	11/8/2004	ND	ND	1.5	ND	ND
	4/1/2009	ND	ND	ND	ND	ND

Attachment 3, Table 1 - Historical VOC Results

Monitoring Well	Date	PCE 5 µg/L	TCE 5 µg/L	Cis 1,2-DCE 70 µg/L	Trans 1,2- DCE 100 µg/L	Vinyl Chloride 2 µg/L
MW-8 ^(b)	5/21/2003	2.4	376	449.0	99.7	2.5
	8/18/2003	1.5	276	371	81.9	2.5
	11/3/2003	2.0	302	423	104	3.4
	2/23/2004	ND	334	507	126	2.9
	5/11/2004	1.5	386	476	106	2.0
	9/13/2004	2.4 ^(c)	412 ^(c)	570	115 ^(c)	1.6
MW-8 (dup) ^(a)	9/13/2004	2.7 ^(c)	373 ^(c)	549	120 ^(c)	1.4
	11/8/2004	1.8	315	507	91	1.1
MW-8 (dup) ^(a)	11/8/2004	1.7	321	525	92.5	1.1
	3/24/2005	2.2	280	426	99.8	2.0
MW-8 (dup) ^(a)	3/24/2005	2.0	289	438	97.6	2.0
	6/1/2005	1.5	326	514 ^(c)	111	2.6
	8/24/2005	1.4	309	453	84.6	1.9
MW-8 (dup) ^(a)	8/24/2005	1.9	285	418	92.6	2.2
	11/22/2005	1.1	254	457	81.7	1.6
	3/8/2006	1.4	259	357	83.1	1.5
MW-8 (dup) ^(a)	3/8/2006	1.5	259	359	86.9	1.5
	11/22/2006	1.9	261	386	73.8	1.1
	6/1/2007	2.1	236	376	76.7	ND
	6/15/2007	1.9	229	206	51.3	ND
	3/27/2008	2.1	271	368	83.2	2.1
	4/2/2009	1.9	269	328	65.6	1.5
	7/15/2010	0.85J	307	316	64.2	0.56J
	11/9/2010	ND (3.8U)	264	280	51.3	ND (3.8U)
	6/1/2011	0.93 J	199 J	197 J	40.0 J	0.75 J
MW-8A ^(b)	5/20/2003	ND	ND	ND	ND	ND
	8/18/2003	ND	ND	ND	ND	ND
	11/3/2003	ND	ND	ND	ND	ND
	2/23/2004	ND	ND	ND	ND	ND
	5/11/2004	ND	ND	ND	ND	ND
	9/13/2004	ND	ND	ND	ND	ND
	11/8/2004	ND	ND	ND	ND	ND
	3/8/2006	ND	ND	ND	ND	ND
	11/22/2006	ND	ND	ND	ND	ND
	3/26/2008	ND	ND	ND	ND	ND
MW-8 (dup) ^(a)	3/26/2008	ND	ND	ND	ND	ND
	4/2/2009	ND	ND	2.9	ND	ND
	6/1/2011	ND (0.75 U)	ND (0.75 U)	ND (0.75 U)	ND (0.75 U)	ND (0.75 U)
MW-8 (dup) ^(a)	6/1/2011	ND (0.75 U)	ND (0.75 U)	ND (0.75 U)	ND (0.75 U)	ND (0.75 U)

Attachment 3, Table 1 - Historical VOC Results

Monitoring Well	Date	PCE 5 µg/L	TCE 5 µg/L	Cis 1,2-DCE 70 µg/L	Trans 1,2- DCE 100 µg/L	Vinyl Chloride 2 µg/L
MW-9 ^(b)	5/21/2003	ND	13.0	3.4	1.7	ND
	8/19/2003	ND	19.4	4.6	2.3	ND
	11/4/2003	ND	22.2	4.8	2.8	ND
	2/24/2004	ND	19.0	3.3	2.1	ND
	5/10/2004	ND	19.5	5.2	2.7	ND
	9/14/2004	ND	19.7	3.9	2.2	ND
	11/9/2004	ND	17.5	3.0	2.0	ND
	3/24/2005	ND	16.6	3.7	2.0	ND
	6/1/2005	ND	22.1	5.3	3.0	ND
	8/25/2005	ND	29.4	8.8	4.8	ND
	11/21/2005	ND	22.2	5.1	3.3	ND
	3/8/2006	ND	21.9	4.5	2.5	ND
	11/22/2006	ND	16.7	3.7	2.0	ND
	3/27/2008	ND	14.0	2.7	1.5	ND
	4/2/2009	ND	10.6	2.4	1.4	ND
	7/15/2010	ND	16.2	3.4	2.3	ND
	11/9/2010	ND	15.8	2.8	1.7	ND
	6/1/2011	ND (0.75 UJ)	17.1 J	5.7 J	1.3 J	ND (0.75 UJ)
MW-9A ^(b)	5/21/2003	ND	ND	ND	ND	ND
	8/19/2003	ND	ND	ND	ND	ND
	11/4/2003	ND	ND	ND	ND	ND
	2/24/2004	ND	ND	ND	ND	ND
	5/10/2004	ND	ND	ND	ND	ND
	9/14/2004	ND	ND	ND	ND	ND
	11/9/2004	ND	ND	ND	ND	ND
	3/8/2006	ND	ND	ND	ND	ND
	11/21/2006	ND	ND	ND	ND	ND
	3/27/2008	ND	ND	ND	ND	ND
4/2/2009	ND	ND	ND	ND	ND	
	6/1/2011	ND (0.75 UJ)	ND (0.75 UJ)	ND (0.75 UJ)	ND (0.75 UJ)	ND (0.75 UJ)
MW-10 ^(d)	4/18/2005	ND	ND	ND	ND	ND
	6/1/2005	ND	ND	ND	ND	ND
	8/24/2005	ND	ND	ND	ND	ND
	11/22/2005	ND	ND	ND	ND	ND
	3/9/2006	ND	ND	ND	ND	ND
	11/21/2006	ND	ND	ND	ND	ND
	3/26/2008	ND	ND	ND	ND	ND
	3/30/2009	ND	ND	ND	ND	ND
MW-11 ^(d)	4/18/2005	ND	1.5	ND	ND	ND
	6/1/2005	ND	ND	ND	ND	ND
	8/24/2005	ND	ND	ND	ND	ND
	11/22/2005	ND	8.9	2.3	ND	ND
	3/9/2006	ND	3.0	1.8	ND	ND
	11/20/2006	ND	2.1	1.4	ND	ND
	3/26/2008	ND	2.7	2.5	ND	ND
3/30/2009	ND	ND	ND	ND	ND	

Attachment 3, Table 1 - Historical VOC Results

Monitoring Well	Date	PCE 5 µg/L	TCE 5 µg/L	Cis 1,2-DCE 70 µg/L	Trans 1,2- DCE 100 µg/L	Vinyl Chloride 2 µg/L
MW-12 ^(d)	4/18/2005	ND	8.3	ND	ND	ND
	5/31/2005	ND	14.4	1.3	ND	ND
	8/23/2005	ND	30.4	2.0	ND	ND
	11/21/2005	ND	17.6	1.7	ND	ND
	3/7/2006	ND	16.7	2.3	ND	ND
	11/20/2006	ND	15.0	3.0	ND	ND
	3/27/2008	ND	4.9	2.1	ND	ND
	4/2/2009	ND	3.7	2.9	2.0	ND
	5/31/2011	ND (0.75 UJ)	6.3 J	2.0 J	0.87 J	ND (0.75 UJ)
MW-13 ^(d)	4/18/2005	ND	1.1	ND	ND	ND
MW-13 (dup) ^(a)	4/18/2005	ND	1.1	ND	ND	ND
	5/31/2005	ND	ND	ND	ND	ND
MW-13 (dup) ^(a)	5/31/2005	ND	1.0	ND	ND	ND
	8/25/2005	ND	12.3	2.2	ND	ND
	11/21/2005	ND	8.9	2.1	ND	ND
MW-13 (dup) ^(a)	11/21/2005	ND	9.8	2.7	ND	ND
	3/10/2006	ND	2.5	ND	ND	ND
	11/21/2006	ND	3.8	1.6	ND	ND
	3/27/2008	ND	1.8	1.2	ND	ND
	4/3/2009	ND	ND	ND	ND	ND
MW-14 ^(d)	4/18/2005	ND	ND	ND	ND	ND
	5/31/2005	ND	ND	ND	ND	ND
	8/25/2005	ND	ND	ND	ND	ND
	11/21/2005	ND	ND	ND	ND	ND
	3/10/2006	ND	ND	ND	ND	ND
	11/21/2006	ND	ND	ND	ND	ND
	3/27/2008	ND	1.8	ND	ND	ND
	4/3/2009	ND	ND	ND	ND	ND
MW-14 (dup) ^(g)	4/3/2009	ND	ND	ND	ND	ND
	7/15/2010	ND	ND	ND	ND	ND
	11/9/2010	ND	ND	ND	ND	ND
	5/31/2011	ND (0.75 UJ)	0.46 J	(0.75 UJ)	(0.75 UJ)	ND (0.75 UJ)
MW-15	7/15/2010	ND	0.85 J	1.6	ND	ND
	11/9/2010	ND	0.55J	0.63J	ND	ND
	5/31/2011	ND (0.75 UJ)	1.4 J	2.1 J	0.36 J	ND (0.75 UJ)

Attachment 3, Table 1 - Historical VOC Results

Monitoring Well	Date	PCE 5 µg/L	TCE 5 µg/L	Cis 1,2-DCE 70 µg/L	Trans 1,2- DCE 100 µg/L	Vinyl Chloride 2 µg/L
PW-1	NS	NS	NS	NS	NS	NS
EW-1	4/3/2009	ND	23.3	60.7 ^(e)	10.4	ND
EW-2	3/31/2009	ND	11.9^(f)	554	42.5 ^(f)	14.9
EW-3	4/3/2009	ND	18.8	29.0	4.2	ND
270A	3/30/2009	ND	ND	ND	ND	ND
270B	3/30/2009	ND	ND	ND	ND	ND
284A	3/30/2009	ND	ND	ND	ND	ND
284B	3/30/2009	ND	ND	ND	ND	ND
288A	3/30/2009	ND	ND	ND	ND	ND
288B	3/30/2009	ND	ND	ND	ND	ND
302A	3/30/2009	ND	ND	ND	ND	ND
302B	3/30/2009	ND	ND	ND	ND	ND
305	1/29/2003	ND	ND	ND	ND	ND
305	3/30/2009	ND	ND	ND	ND	ND
		ND	ND	ND	ND	ND
RW-305	6/14/2012	(0.75U)	(0.75U)	(0.75U)	(0.75U)	(0.75U)
MADW 41-52	7/15/2010	ND	0.64J	ND	ND	ND
DUP-1 (MADW 41-52)	7/15/2010	ND	ND	ND	ND	ND
	11/9/2010	ND	ND	1.2	ND	ND
		ND	ND	ND	ND	ND
	5/31/2011	(0.75 UJ)	2.3 J	(0.75 UJ)	(0.75 UJ)	(0.75 UJ)
		ND	ND	ND	ND	ND
	6/14/2012	(0.75U)	(0.75U)	(0.75U)	(0.75U)	(0.75U)
MADW 121-132	7/15/2010	ND	17.5	ND	ND	ND
	11/9/2010	ND	17.4	0.37J	ND	ND
DUP-1 (MADW 121-132)	11/9/2010	ND	17.2	0.40J	ND	ND
		ND	ND	ND	ND	ND
	5/31/2011	(0.75 UJ)	18.0 J	0.59 J	(0.75 UJ)	(0.75 UJ)
MADW 170-181	7/15/2010	3.5	432	7.6	3.9	ND
	11/9/2010	3.8	580	9.1	4.4	ND
		ND	ND	ND	ND	ND
	5/31/2011	3.0	358	6.7	3.3	(0.75U)
MADW 184-195	7/15/2010	0.90 J	270	6.4	3.0	ND
	11/9/2010	1.9	351	7.7	3.5	ND
		ND	ND	ND	ND	ND
	5/31/2011	1.5	245	13.6	3.0	(0.75 U)

Attachment 3, Table 1 - Historical VOC Results

Monitoring Well	Date	PCE 5 µg/L	TCE 5 µg/L	Cis 1,2-DCE 70 µg/L	Trans 1,2-DCE 100 µg/L	Vinyl Chloride 2 µg/L
MACW ¹	8/21/2003	ND	10.8	ND	ND	ND
	11/3/2003	ND	21.2	ND	ND	ND
	2/23/2004	ND	23.4	ND	ND	ND
	5/10/2004	ND	13.3	ND	ND	ND
	9/13/2004	ND	16.0^(c)	ND	ND	ND
	11/9/2004	ND	3.0	ND	ND	ND
	3/24/2005	ND	7.8	ND	ND	ND
	4/18/2005	ND	21.1	ND	ND	ND
	5/31/2005	ND	15.4	ND	ND	ND
	8/23/2005	ND	29.5	ND	ND	ND
	11/21/2005	ND	18.0	ND	ND	ND
	3/7/2006	ND	30.1	ND	ND	ND
	11/20/2006	ND	23.2	ND	ND	ND
	3/28/2008	ND	9.8	ND	ND	ND
	3/31/2009	ND	6.8	ND	ND	ND
	7/15/2010	ND	10.0	ND	ND	ND
	11/9/2010	ND	4.6	ND	ND	ND
	5/31/2011	ND (0.75 U)	20.4	ND (0.75 U)	ND (0.75 U)	ND (0.75 U)

Notes:

Shaded and **Bolded** results represent exceedances of 2011 PADEP RDC MSC/Record of Decision (ROD) Remedial Action Objectives (RAOS)

¹ Monitoring well MACW was abandoned on 26 August 2011.

PADEP = Pennsylvania Department of Environmental Protection

MSC = Medium Specific Concentration

RDC = Residential Direct Contact

ND = Not detected above the laboratory limit of detection (LOD)

NA = Not available

NS = Not sampled

a) Duplicate samples were submitted to the laboratory as blind duplicates.

b) Wells installed February 2003.

c) This compound was recovered above quality control criteria in the QC associated with this sample. The data user is cautioned that results may be biased high.

d) Wells installed March 2005.

e) This compound failed set criteria for the associated matrix spike and/or matrix spike duplicate but passed in the laboratory control sample, satisfying method criteria.

f) Laboratory result may be biased higher than the actual result

g) Duplicate samples were submitted as field duplicates

All analytical results are in micrograms per liter (µg/L)

TCE = Trichloroethene

Cis 1,2-DCE = Cis 1,2-dichloroethylene

Trans 1,2-DCE = Trans 1,2-dichloroethylene

PCE = Tetrachloroethene

U = Not detected. The associated number indicates the laboratory LOD.

J = Analyte present. Indicates an estimated value between the method Detection Limit (DL) and the Limit of Quantitation (LOQ) for the analyte.

UJ = Not detected. LOQ may be inaccurate or imprecise.

MADW = Mifflin Avenue Deep Well

MACW = Mifflin Avenue Cabin Well (previously referred to as the Mifflin Avenue Residential Well)

Attachment 3, Table 2 - Historical Metals Results

Sample ID	Date	Analyte (PADEP MSC/ROD RAO) [mg/L]									
		Arsenic (0.01/0.05)	Barium (2/1)	Beryllium (0.004/0.0005)	Cadmium (0.005/0.01)	Chromium (0.1/0.05)	Copper (1/1.3)	Iron (0.3*/NA)	Lead (0.005/0.005)	Manganese (0.3*/NA)	
MW-1 ¹	4/2/2002	ND	0.56	ND	ND	0.007	ND	3.5	ND	0.16	
	8/2/2002	ND	0.3	ND	ND	ND	ND	0.26	ND	0.2	
	10/9/2002	ND	0.3	ND	ND	ND	ND	0.16	ND	0.006	
	2/24/2003	ND	0.31	ND	ND	ND	ND	0.5	ND	0.023	
	5/19/2003	ND	0.358	ND	ND	ND	ND	1.06	ND	0.035	
	8/18/2003	ND	0.371	ND	ND	ND	ND	0.91	ND	0.45	
	11/3/2003	ND	0.308	ND	ND	ND	ND	0.45	ND	0.018	
	2/23/2004	ND	0.327	ND	ND	ND	ND	1.81	ND	0.047	
	5/10/2004	ND	0.301	ND	ND	ND	0.025	0.68	ND	0.023	
	9/13/2004	ND	0.31	ND	ND	0.008	0.013	0.59	ND	0.02	
	11/8/2004	ND	0.364	ND	ND	ND	ND	1	ND	0.023	
**	6/2/2011	ND (0.0020 U)	0.095 J	ND (0.00067 U)	ND (0.00067 U)	ND (0.0013 U)	0.0057 B	0.20 B	ND (0.0013 U)	0.060 B	
MW-1A	4/2/2002	ND	0.04	ND	ND	ND	0.018	0.1	ND	0.008	
	8/1/2002	ND	0.052	ND	ND	ND	ND	0.87	ND	0.043	
	10/9/2002	ND	0.6	ND	ND	ND	ND	1.4	ND	0.063	
	2/25/2003	ND	0.046	ND	ND	ND	ND	0.4	ND	0.08	
	MW-1A (DUP)	2/25/2003	ND	0.05	ND	ND	ND	ND	0.94	ND	0.131
	5/19/2003	ND	0.049	ND	ND	ND	ND	0.26	ND	0.057	
	MW-1A (DUP)	5/19/2003	ND	0.045	ND	ND	ND	ND	0.12	ND	0.076
	8/18/2003	ND	0.053	ND	ND	ND	ND	ND	ND	0.014	
	MW-1A (DUP)	8/18/2003	ND	0.053	ND	ND	ND	ND	ND	ND	0.014
	11/3/2003	ND	0.047	ND	ND	ND	ND	ND	ND	0.093	
	MW-1A (DUP)	11/3/2003	ND	0.047	ND	ND	ND	ND	ND	ND	0.091
2/23/2004	ND	0.047	ND	ND	ND	ND	0.15	ND	0.038		
MW-1A (DUP)	2/23/2004	ND	0.046	ND	ND	ND	ND	0.15	ND	0.041	
5/10/2004	ND	0.051	ND	ND	ND	0.015	0.12	ND	0.028		
9/13/2004	ND	0.052	ND	ND	ND	ND	0.13	ND	0.03		
11/8/2004	ND	0.056	ND	ND	ND	ND	0.08	ND	0.409		
MW-1A (DUP)	5/10/2004	ND	0.05	ND	ND	ND	0.015	0.11	ND	0.025	
**	6/1/2011	ND (0.0020 U)	0.033 J	ND (0.00067 U)	ND (0.00067 U)	0.0014 J (0.0013 U)	ND (0.0033 U)	0.13	ND (0.0013 U)	0.0088	
MW-2	4/2/2002	ND	0.16	ND	ND	ND	ND	0.16	ND	ND	
	7/31/2002	ND	0.1	ND	ND	ND	ND	ND	ND	ND	
	10/9/2002	ND	0.18	ND	ND	ND	ND	ND	ND	ND	
	2/26/2003	ND	0.15	ND	ND	ND	ND	ND	ND	ND	
	5/20/2003	ND	0.13	ND	ND	ND	ND	ND	ND	ND	
	8/20/2003	ND	0.126	ND	ND	ND	ND	0.22	ND	ND	
	11/4/2003	ND	0.117	ND	ND	ND	ND	ND	ND	ND	
	2/24/2004	ND	0.12	ND	ND	ND	ND	ND	ND	ND	
	5/12/2004	ND	0.131	ND	ND	ND	ND	ND	ND	ND	
	9/13/2004	ND	0.109	ND	ND	ND	ND	ND	ND	ND	
	11/9/2004	ND	0.117	ND	ND	ND	ND	ND	ND	ND	
MW-2 (DUP)	4/2/2002	ND	0.16	ND	ND	ND	ND	ND	ND	ND	
**	6/1/2011	0.0014 K	0.10 J	ND (0.00067 U)	ND (0.00067 U)	ND (0.0013 U)	ND (0.0033)	0.24	ND (0.0013 U)	ND (0.0033 U)	
MW-2A	4/3/2002	ND	0.08	ND	ND	ND	0.033	0.23	ND	0.098	
	7/31/2002	ND	0.07	ND	0.002	ND	0.029	1.2	ND	2.4	
	10/8/2002	ND	0.07	ND	0.002	ND	0.19	0.91	ND	2.6	
	2/26/2003	ND	0.042	ND	ND	ND	0.04	1.02	0.007	0.103	
	5/20/2003	ND	0.068	ND	ND	ND	0.05	2.11	0.007	1.23	
	8/20/2003	ND	0.099	ND	ND	ND	0.065	1.02	ND	1.05	
	11/4/2003	ND	0.084	ND	ND	ND	0.035	1.15	ND	0.58	
	2/24/2004	ND	0.061	ND	ND	ND	0.042	4.3	0.008	0.166	
	5/12/2004	ND	0.1	ND	ND	ND	0.105	15.6	0.03	1.4	
	9/13/2004	ND	0.129	ND	ND	ND	0.09	3.65	0.009	1.16	
	11/9/2004	ND	0.15	ND	ND	ND	0.064	3.55	ND	0.888	
MW-2A (DUP)	7/31/2002	ND	0.07	ND	0.002	ND	0.027	1.1	ND	2.4	
**	6/1/2011	0.0020 J	0.087 J	ND (0.00067 U)	ND (0.00067 U)	0.00095 J	0.021	0.31	ND (0.0013 U)	0.24	
MW-3	4/3/2002	ND	0.07	ND	ND	ND	ND	ND	ND	ND	
	MW-3 (DUP)	4/3/2002	ND	0.07	ND	ND	ND	ND	ND	ND	
MW-3	8/1/2002	ND	0.078	ND	ND	ND	ND	ND	ND	ND	
	10/8/2002	ND	0.088	ND	ND	ND	ND	ND	ND	ND	
	2/26/2003	ND	0.052	ND	ND	ND	ND	ND	ND	ND	
	5/19/2003	ND	0.078	ND	ND	ND	ND	ND	ND	ND	
	8/19/2003	ND	0.053	ND	ND	0.008	ND	ND	ND	ND	
	11/3/2003	ND	0.059	ND	ND	ND	ND	ND	ND	ND	
2/24/2004	ND	0.043	ND	ND	ND	ND	ND	ND	ND		

Attachment 3, Table 2 - Historical Metals Results

Sample ID	Date	Analyte (PADEP MSC/ROD RAO) [mg/L]								
		Arsenic (0.01/0.05)	Barium (2/1)	Beryllium (0.004/0.0005)	Cadmium (0.005/0.01)	Chromium (0.1/0.05)	Copper (1/1.3)	Iron (0.3*/NA)	Lead (0.005/0.005)	Manganese (0.3*/NA)
	5/10/2004	ND	0.052	ND	ND	ND	ND	0.08	ND	ND
	9/13/2004	ND	0.052	ND	ND	ND	ND	ND	ND	ND
	11/8/2004	ND	0.072	ND	ND	ND	ND	ND	ND	ND
MW-3A **	5/31/2011	ND (0.0020 U)	0.084 J	ND (0.00067 U)	0.0003 J	0.011	0.0018 J	0.26	ND (0.0013 U)	ND
MW-4	4/2/2002	ND	0.21	ND	ND	ND	ND	ND	ND	ND
	8/1/2002	ND	0.21	ND	ND	ND	ND	ND	ND	ND
	10/10/2002	ND	0.22	ND	ND	ND	ND	ND	ND	ND
MW-4 (DUP)	10/10/2002	ND	0.23	ND	ND	ND	ND	ND	ND	ND
	2/25/2003	ND	0.19	ND	ND	ND	ND	ND	ND	ND
	5/19/2003	ND	0.189	ND	ND	ND	ND	ND	ND	ND
	8/19/2003	ND	0.189	ND	ND	ND	ND	ND	ND	ND
	11/4/2003	ND	0.168	ND	ND	0.014	ND	ND	ND	ND
	2/23/2004	ND	0.186	ND	ND	ND	ND	ND	ND	ND
	5/12/2004	ND	0.191	ND	ND	ND	ND	ND	ND	ND
	9/14/2004	ND	0.164	ND	ND	ND	ND	ND	ND	ND
	11/8/2004	ND	0.186	ND	ND	ND	ND	ND	ND	ND
**	6/1/2011	ND (0.0020 U)	0.14 J	ND (0.00067 U)	ND (0.00067 U)	0.0029	ND (0.0033 U)	0.16 B	ND (0.0013 U)	0.074 B
MW-4A	4/2/2002	0.062	0.88	0.17	0.028	0.98	0.15	160	0.31	2.2
	8/2/2002	ND	0.082	ND	ND	ND	ND	7.6	0.021	1.6
	10/10/2002	ND	0.099	ND	ND	0.007	ND	12	0.27	1.1
	2/25/2003	0.01	0.144	ND	ND	0.011	0.018	25	0.03	2.2
	5/19/2003	ND	0.088	ND	ND	0.011	0.021	14.7	0.024	0.335
	8/19/2003	0.014	0.046	ND	ND	ND	ND	15.3	ND	3.19
	11/4/2003	ND	0.056	ND	ND	ND	0.031	11.6	ND	3.97
	2/23/2004	ND	0.039	ND	ND	ND	0.063	4.6	0.03	0.216
	5/12/2004	ND	0.048	ND	ND	ND	0.04	5.23	0.019	0.306
	9/14/2004	ND	0.051	ND	ND	ND	0.02	8.92	ND	4.7
	11/8/2004	ND	0.049	ND	ND	ND	0.034	2.71	0.008	1.39
**	6/1/2011	0.002	0.031 J	ND (0.0067 U)	ND (0.0067 U)	0.0016 J	ND (0.0033 U)	1.3	ND (0.0013 U)	0.43
MW-5	4/4/2002	ND	0.05	ND	ND	ND	ND	0.3	ND	0.01
	7/29/2002	ND	0.22	ND	ND	ND	ND	0.33	ND	0.064
	10/14/2002	ND	0.29	ND	ND	ND	ND	ND	ND	0.013
	2/27/2003	ND	0.26	ND	ND	ND	ND	0.07	ND	ND
	5/22/2003	ND	0.23	ND	0.001	ND	0.014	ND	ND	0.01
	8/21/2003	ND	0.252	ND	ND	0.05	0.012	0.6	ND	0.032
	11/5/2003	ND	0.288	ND	ND	0.151	ND	1.3	ND	0.357
	2/25/2004	ND	0.256	ND	ND	0.573	0.037	5.53	ND	0.087
	5/11/2004	ND	0.212	ND	ND	0.074	0.049	0.69	ND	0.013
	9/15/2004	ND	0.237	ND	ND	0.097	0.039	0.93	ND	0.017
	11/9/2004	ND	0.168	ND	0.002	0.023	0.053	1.36	0.025	0.033
MW-5A	4/4/2002	ND	0.14	ND	0.006	ND	ND	33	0.012	4.8
	7/29/2002	ND	0.14	ND	ND	ND	ND	29	ND	4.1
	10/14/2002	ND	0.14	ND	ND	ND	ND	26	ND	4.1
	2/28/2003	ND	0.22	ND	0.003	0.017	0.03	41.8	0.015	4.38
	5/22/2003	ND	0.18	ND	0.002	0.009	ND	35.2	0.011	4.57
	8/21/2003	ND	0.143	ND	ND	ND	ND	29.3	ND	4.25
	11/5/2003	ND	0.148	ND	ND	ND	0.011	36.9	ND	4.76
	2/25/2004	ND	0.146	ND	ND	ND	0.011	31.4	ND	4.57
	5/11/2004	ND	0.147	ND	ND	ND	0.012	30.2	ND	4.42
MW-6	9/15/2004	ND	0.16	ND	ND	ND	0.041	23	ND	3.85
	11/9/2004	ND	0.148	ND	ND	ND	0.039	28.1	ND	3.72
	4/4/2002	ND	0.5	ND	ND	ND	ND	ND	ND	0.06
MW-6 (DUP)	4/4/2002	ND	0.43	ND	ND	ND	ND	0.09	ND	0.03
	7/30/2002	ND	0.063	ND	ND	ND	ND	2.6	ND	0.19

Attachment 3, Table 2 - Historical Metals Results

Sample ID	Date	Analyte (PADEP MSC/ROD RAO) [mg/L]								
		Arsenic (0.01/0.05)	Barium (2/1)	Beryllium (0.004/0.0005)	Cadmium (0.005/0.01)	Chromium (0.1/0.05)	Copper (1/1.3)	Iron (0.3*/NA)	Lead (0.005/0.005)	Manganese (0.3*/NA)
MW-6	10/11/2002	ND	0.52	ND	ND	ND	ND	ND	ND	0.088
	2/27/2003	ND	0.519	ND	ND	ND	ND	ND	ND	0.057
	5/21/2003	ND	0.485	ND	ND	ND	ND	ND	ND	0.024
	8/21/2003	ND	0.472	ND	ND	0.008	ND	0.31	ND	0.043
	11/5/2003	ND	0.515	ND	ND	ND	ND	0.47	ND	0.054
	2/25/2004	ND	0.448	ND	ND	ND	ND	0.09	ND	0.026
	5/11/2004	ND	0.444	ND	ND	ND	ND	0.08	ND	0.013
	9/15/2004	ND	0.41	ND	ND	ND	ND	ND	ND	0.019
	11/9/2004	ND	0.295	ND	ND	ND	0.013	0.97	0.007	0.044
MW-6A	4/4/2002	ND	0.059	ND	ND	ND	ND	0.82	ND	0.01
	7/30/2002	ND	0.5	ND	ND	ND	ND	ND	ND	0.096
	10/11/2002	ND	0.076	ND	ND	ND	ND	3.1	ND	0.33
	2/26/2003	ND	0.069	ND	ND	ND	0.028	0.85	0.009	0.022
	5/21/2003	ND	0.085	ND	ND	ND	0.062	4.37	0.032	0.172
	8/21/2003	ND	0.1	ND	ND	ND	0.124	1.92	0.02	0.054
	11/5/2003	ND	0.062	ND	ND	ND	ND	1.89	ND	0.216
	2/25/2004	ND	0.052	ND	ND	ND	0.014	1.06	ND	1.02
	5/11/2004	ND	0.073	ND	ND	ND	ND	1.32	ND	0.92
	9/15/2004	ND	0.074	ND	ND	0.006	0.538	4.69	0.055	0.138
	11/9/2004	ND	0.064	ND	ND	ND	ND	2.96	ND	0.737
MW-7	4/4/2002	ND	0.42	ND	ND	ND	ND	ND	ND	0.027
	7/30/2002	ND	0.24	ND	ND	ND	0.012	ND	ND	ND
	10/14/2002	ND	0.27	ND	ND	ND	ND	ND	ND	ND
	2/28/2003	ND	0.362	ND	ND	ND	ND	ND	ND	ND
	5/22/2003	ND	0.246	ND	ND	ND	ND	ND	ND	ND
	8/21/2003	ND	0.257	ND	ND	ND	ND	ND	ND	ND
	11/5/2003	ND	0.248	ND	ND	0.009	ND	0.15	ND	ND
	2/25/2004	ND	0.228	ND	ND	ND	ND	0.1	ND	ND
	5/11/2004	ND	0.251	ND	ND	0.015	ND	0.08	ND	ND
	9/15/2004	ND	0.25	ND	ND	ND	ND	0.39	ND	ND
	11/9/2004	ND	0.257	ND	ND	0.006	ND	0.33	ND	ND
MW-7A	4/3/2002	ND	0.092	ND	ND	ND	ND	ND	ND	ND
	7/31/2002	ND	0.54	ND	ND	ND	ND	ND	ND	0.13
	10/10/2002	ND	0.51	ND	ND	ND	ND	ND	ND	0.16
	2/25/2003	ND	0.332	ND	ND	ND	0.044	1.54	ND	0.038
	5/20/2003	ND	0.119	ND	ND	ND	0.018	0.11	ND	ND
	8/20/2003	ND	0.115	ND	ND	ND	ND	ND	ND	ND
	11/5/2003	ND	0.119	ND	ND	ND	0.017	0.48	ND	0.014
	2/24/2004	ND	0.1	ND	ND	ND	ND	ND	ND	ND
	5/10/2004	ND	0.084	ND	ND	ND	0.02	0.09	ND	ND
	9/14/2004	ND	0.114	ND	ND	ND	ND	0.22	ND	0.046
	11/8/2004	ND	0.135	ND	ND	ND	ND	0.11	ND	0.317
MW-8	5/21/2003	ND	0.134	ND	ND	ND	ND	6.19	ND	0.223
	8/18/2003	ND	0.143	ND	ND	ND	ND	3.32	ND	0.429
	11/3/2003	ND	0.126	ND	ND	ND	ND	4.94	ND	0.178
	2/23/2004	ND	0.12	ND	ND	ND	ND	0.8	ND	0.085
	5/11/2004	ND	0.108	ND	ND	ND	ND	0.19	ND	0.066
	9/13/2004	ND	0.106	ND	ND	ND	ND	0.08	ND	0.049
MW-8 (DUP)	9/13/2004	ND	0.105	ND	ND	ND	ND	0.1	ND	0.049
	11/8/2004	ND	0.106	ND	ND	ND	ND	0.1	ND	0.051
MW-8 (DUP)	11/8/2004	ND	0.109	ND	ND	ND	ND	0.13	ND	0.058
**	6/1/2011	0.0017 J	0.071 J	ND (0.0067 U)	ND (0.0067 U)	0.004	ND (0.0033 U)	0.20	ND (0.0013 U)	0.046
MW-8A	5/20/2003	ND	0.043	ND	ND	ND	ND	0.26	ND	0.217
	8/18/2003	ND	0.048	ND	ND	ND	ND	0.25	ND	0.063
	11/3/2003	ND	0.046	ND	ND	ND	ND	0.23	ND	0.037
	2/23/2004	ND	0.046	ND	ND	ND	ND	0.2	ND	0.01
	5/11/2004	ND	0.05	ND	ND	ND	ND	0.25	ND	0.012
	9/13/2004	ND	0.062	ND	ND	ND	ND	ND	ND	ND
	11/8/2004	ND	0.054	ND	ND	ND	ND	ND	ND	ND
MW-8A (DUP)**	6/1/2011	ND	0.087 J	ND	ND	0.0015 J	0.02	0.32	ND	0.24
MW-9	5/21/2003	ND	0.217	ND	ND	ND	ND	2.26	ND	0.046
	8/19/2003	ND	0.338	ND	ND	ND	ND	0.76	ND	0.025
MW-9	11/4/2003	0.011	0.358	ND	ND	ND	ND	0.19	ND	0.01
	2/24/2004	ND	0.339	ND	ND	ND	ND	ND	ND	ND
	5/10/2004	0.01	0.367	ND	ND	0.012	ND	ND	0.009	ND
	9/14/2004	ND	0.346	ND	ND	ND	ND	ND	ND	ND
	11/9/2004	0.01	0.356	ND	ND	ND	ND	0.13	ND	ND
**	6/1/2011	0.0012 K	0.40 J	ND (0.00067 U)	ND (0.00067 U)	ND (0.0013 U)	ND (0.0033 U)	0.25	ND (0.0013 U)	ND (0.0033 U)

Attachment 3, Table 2 - Historical Metals Results

Sample ID	Date	Analyte (PADEP MSC/ROD RAO) [mg/L]									
		Arsenic (0.01/0.05)	Barium (2/1)	Beryllium (0.004/0.0005)	Cadmium (0.005/0.01)	Chromium (0.1/0.05)	Copper (1/1.3)	Iron (0.3*/NA)	Lead (0.005/0.005)	Manganese (0.3*/NA)	
MW-9A	5/21/2003	ND	0.04	ND	ND	ND	ND	1.15	ND	0.189	
	8/19/2003	ND	0.054	ND	0.002	ND	ND	1.6	ND	0.322	
	11/4/2003	ND	0.039	ND	ND	ND	0.015	0.17	ND	0.119	
	2/24/2004	ND	0.07	ND	ND	ND	ND	0.14	ND	0.024	
	5/10/2004	ND	0.087	ND	ND	0.01	0.013	6.71	ND	0.18	
	9/14/2004	ND	0.061	ND	ND	ND	ND	2.56	ND	0.152	
	11/9/2004	ND	0.047	ND	ND	ND	ND	1.22	ND	0.052	
**	6/1/2011	ND (0.0020 U)	0.018 J	ND (0.00067 U)	ND (0.00067 U)	ND (0.0013 U)	0.0047 J	0.081	ND (0.0013 U)	0.088	
LW-1	3/31/2009	ND	ND	0.115	ND	ND	ND	8.331	ND	0.391	
**	MADW 41-52	7/15/2010**	0.0044J	0.12	ND	ND	ND	ND	0.0032J	0.031	
	5/31/2011	0.0015 K	0.14 K	0.00031 J	ND (0.0007 U)	0.0016 J	ND (0.0037 U)	0.18	ND (0.0015 U)	ND (0.0037 U)	
	6/14/2012	0.0014J	0.099	ND (0.00070U)	ND (0.00070U)	ND (0.0015U)	0.057	0.084	0.0052	0.031	
MACW ¹	8/21/2003	ND	0.07	ND	ND	ND	ND	ND	ND	ND	
	11/3/2003	ND	0.075	ND	ND	ND	0.013	0.23	ND	ND	
	2/23/2004	ND	0.075	ND	ND	ND	ND	1.48	ND	0.055	
	5/10/2004	ND	0.067	ND	ND	ND	0.028	0.53	ND	ND	
	9/13/2004	ND	0.065	ND	ND	ND	ND	0.1	ND	ND	
	11/9/2004	ND	0.059	ND	ND	ND	ND	ND	ND	ND	
	3/31/2009	ND	0.064	ND	ND	ND	ND	0.049	ND	ND	
	7/15/2010	ND (0.0059 U)	0.073	ND (0.0029 U)	ND (0.0014 U)	ND (0.0014U)	0.04	ND (0.045 U)	0.0094	ND (0.0037 U)	
	11/9/2010	0.0035	0.06	ND (0.0007 U)	ND (0.0007 U)	0.0016J	0.0024 J	1.2	ND (0.0015 U)	0.028	
	5/31/2011	0.0011 K	0.077 K	0.00033 J	ND (0.0007 U)	0.0016 J	0.088	0.36 K	0.011 K	0.043 K	
MW-15	**	5/31/2011	0.0029 J	0.30 J	ND (0.00067 U)	ND (0.00067 U)	0.0011 J	ND (0.0033 U)	0.18	ND (0.0013 U)	ND (0.0033 U)
RW-305		3/31/2009	ND	ND	ND	ND	ND	0.077	ND	ND	
		6/14/2012	0.0010J	0.12	ND (0.00070U)	ND (0.00070U)	0.0036	0.0098	0.059	0.00077J	0.0068

Notes:

¹ Monitoring well MACW was abandoned on 26 August 2011.

U = Not detected above the laboratory limit of detection (LOD).

K = Analyte present. Reported value may be biased high. Actual value is expected lower.

J = Analyte present. Indicates an estimated value between the method Detection Limit (DL) and the Limit of Quantitation (LOQ) for the analyte.

B = Not detected substantially above the level reported in laboratory or field blanks.

MW-5, 5A, 6, 6A, 7, and 7A are located offsite and upgradient. Wells with an "A" designator are overburden wells.

All concentrations are total metals unless noted

All concentrations are milligrams per liter (mg/L)

Analysis included target analyte list metals, only detected metals shown on table

ROD = Record of Decision

RAO = Remedial Action Objective, valid for overburden wells

* = Secondary contaminant MSC, included for reference

** = Dissolved concentrations

PADEP = Pennsylvania Department of Environmental Protection

MSC - Medium specific concentration

NA = Not Applicable (no RAO required for analyte)

Shading indicates concentration above primary MSC, **bold text** indicates concentration exceeds RAO. Note that the MSCs are applicable only to the dissolved fraction,

but shading has been added to those concentrations in the total fraction exceeding the MSC for reference.

ND = Not detected above the laboratory limit of detection (LOD)

MADW = Mifflin Avenue Deep Well

MACW = Mifflin Avenue Cabin Well (previously referred to as the Mifflin Avenue Residential Well)

June 16, 2014

Ms. Liza Finley
U.S. Army Corps of Engineers – Baltimore District
10 South Howard Street
10th Floor, Environmental and Munitions Design Center
Baltimore, Maryland 21201

**Subject: Final Periodic Monitoring Letter Report – November 2012
New Cumberland Army Depot Formerly Used Defense Site (FUDS)
at Marsh Run Park
FUDS No. C03PA040301
New Cumberland, Fairview Township, Pennsylvania**

Dear Ms. Finley,

EA Engineering, Science, and Technology, Inc. (EA) prepared this Letter Report to summarize the results of the November 2012 monitoring event as part of the monitoring program for the Marsh Run Park FUDS, Fairview Township, York County, Pennsylvania. This work was completed for the USACE – Baltimore District under contract W912DR-09-D-0018.

BACKGROUND

The objective is to monitor groundwater quality and support demonstration of attainment of the Record of Decision (ROD) Remedial Action Objectives (RAOs).

A groundwater sample was collected from an offsite residential supply well (MADW 41-52) located on a recreational parcel along the Susquehanna River. The site and sampling location are shown on Figure 1.

SUMMARY OF FIELD ACTIVITIES

On 8 November 2012, groundwater sampling was completed in accordance with the USACE-approved *June 2012 EA Sampling and Analysis Plan (SAP) for Marsh Run Park, New Cumberland, Fairview Township, York County, Pennsylvania*. The SAP consists of Volume I: Field Sampling Plan (FSP), Volume II: Quality Assurance Project Plan, and Volume III: Site Specific Addendum to the General Health and Safety Plan.

Groundwater Monitoring

A groundwater sample was collected from MADW 41-52 on 8 November 2012. MADW 41-52 is the supply well for a recreational cabin. The water sample was collected from the port at the bottom of the pressure tank located on the second level of the cabin and the tap was allowed to run for 15 minutes prior to sample collection. In addition, water was collected for an MS/MSD sample. Field purging and sampling forms present the details regarding sample ID, depth, and collection interval (Attachment 1).

The groundwater sample was placed on ice, documented, and transported using standard chain-of-custody procedures and hand delivered to ALS Environmental in Middletown, Pennsylvania. A trip blank accompanied the sample cooler. The groundwater sample was submitted for analysis of metals: arsenic, barium, beryllium, cadmium, chromium (total), copper, iron, lead, manganese, mercury, by U.S. Environmental Protection Agency (EPA) Method SW846 6020A. The sample was also submitted for analysis of specific chlorinated volatile organic compounds (cVOCs), consisting of tetrachloroethene (PCE), trichloroethene (TCE), *cis*-1,2-dichloroethene (DCE), *trans*-1,2-DCE, and vinyl chloride via U.S. EPA Method 8260B. The laboratory chain-of-custody is presented in Attachment 1.

Investigation derived wastes, such as personal protective equipment, were disposed as municipal waste.

ANALYTICAL RESULTS

Groundwater Sampling Results

Following receipt of the laboratory analysis results from ALS Environmental (Attachment 2), the data were submitted for validation to Environmental Data Services, Inc. (EDS) of Williamsburg, Virginia. The data validation report did not indicate any data usability issues with the analytical results.

The cVOC and metals analytical results are summarized in Table 1. The analytical results were evaluated by comparing the current data to historical data for the site (Tables 1 and 2, Attachment 3). The laboratory results were also evaluated relative to the ROD RAOs/Federal Maximum Contaminant Levels (MCLs) and the Pennsylvania Department of Environmental Protection (PADEP) medium specific concentrations (MSCs) applicable under Act 2. For analytes without established RAOs/MCLs or PADEP MSCs, Federal and PADEP Secondary Maximum Contaminant Levels (SMCLs) were used for data comparison.

No cVOCs were detected at concentrations greater than the ROD RAOs or PADEP MSCs (residential setting, used aquifer, total dissolved solids <2,500 parts per million).

Trichloroethene (TCE) had previously been reported in MADW 41-52 at an estimated concentration between the method Detection Limit (DL) and the Limit of Quantitation (LOQ) on two occasions (15 July 2010 and 31 May 2011). The current result is consistent with historical results at MADW 41-52, where cVOC detections were reported at a concentration less than the MCL or the PADEP MSC.

In this event, the sample was tested for total metal concentrations but was compared to the dissolved metals MSCs¹ or MCLs. This is a conservative evaluation approach in that suspended solids in the water sample were included in the analysis. All reported concentrations were less than state and federal health standards for public drinking water, with the exception of the total lead concentration, as discussed below.

- The total measured lead concentration of 0.011 mg/L is greater than the ROD RAO and the dissolved lead PADEP MSC of 0.005 mg/L. However, this concentration is less than the U.S. EPA Action Level established for lead of 0.015 mg/L (typically used to evaluate public water systems).

The measured total iron concentration of 0.42 mg/L in the cabin supply well was above the state and federal SMCL of 0.30 mg/L. SMCLs are based on aesthetics such as smell, taste, odor, color, and staining potential rather than health based, and are non-enforceable for private water wells.

The reported metals concentrations in MADW 41-52 were consistent with historical results, which are provided in Attachment 3.

¹ PADEP MSCs for metals are applicable to dissolved metal concentrations.

CONCLUSIONS

The results of this monitoring event are consistent with previous data measured at MADW 41-52. Additional sampling is scheduled for spring 2013.

We appreciate the opportunity to continue to support the USACE on this project. Should you have any questions or comments, please do not hesitate to contact me directly at 410-329-5128.

Respectfully yours,

EA Engineering, Science and Technology,
Inc.



H. Gordon Porter

Project Manager

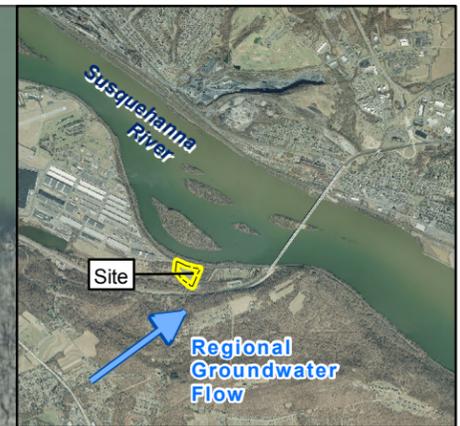
Figure 1 – November 2012 Sample Location

Table 1 – Groundwater Sample Results November 2012

Attachment 1 – Field Sampling Logs

Attachment 2 – Laboratory Analytical Reports

Attachment 3 – Historical Data



Legend

- Recreational Property Well Sampling Location
- Proposed Soccer Fields
- Formerly Used Defense Site (FUDS) Boundary
- Stream

Aerial Photograph Source:
 PAMAP Program, PA Department of
 Conservation and Natural Resources,
 Bureau of Topographic and Geologic
 Survey, 2008



New Cumberland Army Depot FUDS at Marsh Run Park
 Fairview Township, New Cumberland, Pennsylvania
 FUDS Project No. C03PA040301

Project Number:
 6233003
 Date:
 December 2012

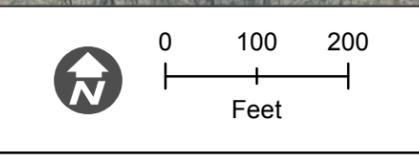


Figure 1
 November 2012
 Sampling Location

TABLE 1 - GROUNDWATER SAMPLE RESULTS NOVEMBER 2012

				Sample Name	MADW 41-52
				Date	11/8/2012
Analyte	Unit	ROD RAOs for Groundwater ¹	PADEP MSC ²	Result	
VOCs (SW846 8260B)					
cis-1,2-dichloroethene	µg/L	70	70	ND (0.75U)	
Tetrachloroethene	µg/L	5	5	ND (0.75U)	
trans-1,2-dichloroethene	µg/L	100	100	ND (0.75U)	
Trichloroethene	µg/L	5	5	0.50 J	
Vinyl chloride	µg/L	2	2	ND (0.75U)	
Metals (SW846 6020A)³					
Arsenic, Total	mg/L	0.05	0.01	ND (0.0020 U)	
Barium, Total	mg/L	5	2	0.11	
Beryllium, Total	mg/L	0.0005	0.004	ND (0.00070 U)	
Cadmium, Total	mg/L	0.005	0.005	ND (0.00070 U)	
Chromium, Total	mg/L	0.1	0.1	0.0013 J	
Copper, Total	mg/L	1.3	1	0.098	
Iron, Total	mg/L	0.3 ⁴	- - -	0.42	
Lead, Total	mg/L	0.005	0.005	0.011	
Manganese, Total	mg/L	- - -	0.3	0.067	
Mercury, Total	mg/L	0.002	0.002	ND (0.00013 U)	

Notes:

MSC = Medium Specific Concentration.

mg/L = Milligrams per liter.

MCL = Maximum Contaminant Level for Drinking Water

µg/L = Micrograms per liter.

ND = Below the laboratory limit of detection (LOD).

VOC = Volatile organic compounds.

PADEP = Pennsylvania Department of Environmental Protection.

RAO = Remedial Action Objective

ROD = Record of Decision

U = Not detected. The associated number indicates the laboratory LOD.

J = Analyte present. Indicates an estimated value between the method Detection Limit (DL) and the Limit of Quantitation (LOQ) for the analyte.

Shaded and **Bolded** Results Represent Exceedances of Screening Criteria.

¹ EA. 1991. Final Record of Decision of the New Cumberland Army Depot's Former Landfill, Marsh Run Park, Fairview Township, York County, Pennsylvania. June.

² PADEP MSCs for metals are established as dissolved metals concentrations (January 2011).

³ Sample was unfiltered and tested for total concentrations.

⁴ PADEP Secondary Maximum Contaminant Level (SMCL) (non-enforceable for private wells).

**ATTACHMENT 1
FIELD SAMPLING LOGS**



Ice @ Ruttlers

Onsite @ 1:55

Mr. Votters onsite

Bottles labeled, ice in cooler bag

* Look up river level in office

2:22 Ethan Weikel/USFCE onsite

2:23 Purge of sink started ^{in kitchen} → purged sink for 15 minutes

2:38

Sampled @ 2:40 ^{14:} → completed by 1:50

↳ Ethan talking to John Walker ReUCA
in front porch

Offsite @ 3:20

Lab @ 3:50

ATTACHMENT 2
LABORATORY ANALYTICAL REPORTS

November 13, 2012

Ms. Sandra Staigerwald
EA Engineering-MD
15 Loveton Circle
Sparks Glencoe, MD 21152

Certificate of Analysis

Project Name:	2011-DOD USACE - MARSH RUN	Workorder:	9997475
Purchase Order:	7739	Workorder ID:	EMS023 2011-DODUSAC -MARSH

Dear Ms. Staigerwald,

Enclosed are the analytical results for samples received by the laboratory on Thursday, November 08, 2012.

The ALS Environmental laboratory in Middletown, Pennsylvania is a National Environmental Laboratory Accreditation Program (NELAP) accredited laboratory and as such, certifies that all applicable test results meet the requirements of NELAP.

If you have any questions regarding this certificate of analysis, please contact Denise Brooks (Project Coordinator) or Anna G Milliken (Technical Manager) at (717) 944-5541.

Please visit us at www.analyticalab.com for a listing of ALS' NELAP accreditations and Scope of Work, as well as other links to Water Quality documentation on the internet.

This laboratory report may not be reproduced, except in full, without the written approval of ALS Environmental.

This page is included as part of the Analytical Report and must be retained as a permanent record thereof.


Anna G Milliken
Technical Manager

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SAMPLE SUMMARY

Workorder: 9997475 EMS023|2011-DODUSAC -MARSH RUN

Discard Date: 11/27/2012

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
9997475001	MADW-41-52	Ground Water	11/8/12 14:40	11/8/12 21:15	Denise Wilt
9997475002	TRIP BLANK	Ground Water	11/8/12 00:00	11/8/12 21:15	Denise Wilt

Workorder Comments:

Notes

- Samples collected by ALS personnel are done so in accordance with the procedures set forth in the ALS Field Sampling Plan (20 - Field Services Sampling Plan).
- All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
- All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
- Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
- The Chain of Custody document is included as part of this report.
- All Library Search analytes should be regarded as tentative identifications based on the presumptive evidence of the mass spectra. Concentrations reported are estimated values.
- Parameters identified as "analyze immediately" require analysis within 15 minutes of collection. Any "analyze immediately" parameters not listed under the header "Field Parameters" are performed in the laboratory and are therefore analyzed out of hold time.

Standard Acronyms/Flags

J, B	Indicates an estimated value between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL) for the analyte
U	Indicates that the analyte was Not Detected (ND)
N	Indicates presumptive evidence of the presence of a compound
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
RDL	Reporting Detection Limit
ND	Not Detected - indicates that the analyte was Not Detected at the RDL
Cntr	Analysis was performed using this container
RegLmt	Regulatory Limit
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
%Rec	Percent Recovery
RPD	Relative Percent Difference

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Vancouver Waterloo · Winnipeg · Yellowknife United States: Cincinnati · Everett · Fort Collins · Holland · Houston · Middletown · Salt Lake City · Spring City · York Mexico: Monterrey

ANALYTICAL RESULTS

Workorder: 9997475 EMS023|2011-DODUSAC -MARSH RUN

Lab ID: 9997475001 **Date Collected:** 11/8/2012 14:40 **Matrix:** Ground Water
Sample ID: MADW-41-52 **Date Received:** 11/8/2012 21:15

Parameters	Results	Units	Footnotes	LOQ	LOD	DL	Method	Prepared	Analyzed	By	Cntr
VOLATILE ORGANICS											
cis-1,2-Dichloroethene	0.75U	ug/L		1.0	0.75	0.33	SW846 8260B		11/13/12 05:38	GLQ	C
trans-1,2-Dichloroethene	0.75U	ug/L		1.0	0.75	0.33	SW846 8260B		11/13/12 05:38	GLQ	C
Tetrachloroethene	0.75U	ug/L		1.0	0.75	0.33	SW846 8260B		11/13/12 05:38	GLQ	C
Trichloroethene	0.50J	ug/L		1.0	0.75	0.33	SW846 8260B		11/13/12 05:38	GLQ	C
Vinyl Chloride	0.75U	ug/L		1.0	0.75	0.33	SW846 8260B		11/13/12 05:38	GLQ	C
<i>Surrogate Recoveries</i>	<i>Results</i>	<i>Units</i>	<i>Footnotes</i>	<i>Limits</i>			<i>Method</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>By</i>	<i>Cntr</i>
1,2-Dichloroethane-d4 (S)	85	%		70-120			SW846 8260B		11/13/12 05:38	GLQ	C
4-Bromofluorobenzene (S)	101	%		75-120			SW846 8260B		11/13/12 05:38	GLQ	C
Dibromofluoromethane (S)	90.7	%		85-115			SW846 8260B		11/13/12 05:38	GLQ	C
Toluene-d8 (S)	88.1	%		85-120			SW846 8260B		11/13/12 05:38	GLQ	C
METALS											
Arsenic, Total	0.0020 U	mg/L		0.0030	0.0020	0.0010	SW846 6020A	11/13/12	11/13/12 14:08	MW O	A1
Barium, Total	0.11	mg/L		0.0056	0.0037	0.0019	SW846 6020A	11/13/12	11/13/12 14:08	MW O	A1
Beryllium, Total	0.00070 U	mg/L		0.0010	0.00070	0.00030	SW846 6020A	11/13/12	11/13/12 14:08	MW O	A1
Cadmium, Total	0.00070 U	mg/L		0.0011	0.00070	0.00037	SW846 6020A	11/13/12	11/13/12 14:08	MW O	A1
Chromium, Total	0.0013J	mg/L		0.0022	0.0015	0.00074	SW846 6020A	11/13/12	11/13/12 14:08	MW O	A1
Copper, Total	0.098	mg/L		0.0056	0.0037	0.0019	SW846 6020A	11/13/12	11/13/12 14:08	MW O	A1
Iron, Total	0.42	mg/L		0.056	0.037	0.019	SW846 6020A	11/13/12	11/13/12 14:08	MW O	A1
Lead, Total	0.011	mg/L		0.0022	0.0015	0.00074	SW846 6020A	11/13/12	11/13/12 14:08	MW O	A1
Manganese, Total	0.067	mg/L		0.0056	0.0037	0.0019	SW846 6020A	11/13/12	11/13/12 14:08	MW O	A1
Mercury, Total	0.00013 U	mg/L		0.00022	0.00013	0.000074	SW846 6020A	11/13/12	11/13/12 14:08	MW O	A1

Sample Comments:

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ANALYTICAL RESULTS

Workorder: 9997475 EMS023|2011-DODUSAC -MARSH RUN

Lab ID: **9997475001** Date Collected: 11/8/2012 14:40 Matrix: Ground Water
 Sample ID: **MADW-41-52** Date Received: 11/8/2012 21:15

Parameters	Results	Units	Footnotes	LOQ	LOD	DL	Method	Prepared	Analyzed	By	Cntr
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 Anna G Milliken
 Technical Manager

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**DATA VALIDATION SUMMARY REPORT
MARSH RUN PARK, FAIRVIEW TOWNSHIP, PENNSYLVANIA**

Client: EA Engineering, Science & Technology, Inc., Sparks, Maryland
SDG: EMS-023
Laboratory: Analytical Laboratory Services, Middletown, Pennsylvania
Site: Marsh Run Park, Fairview Township, Pennsylvania
Date: November 26, 2012

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	MADW-41-52	9997475001	Water
1MS	MADW-41-52MS	9997475001MS	Water
1MSD	MADW-41-52MSD	9997475001MSD	Water
2	TRIP BLANK	9997475002	Water

A full data validation was performed on the analytical data for one water sample and one aqueous trip blank sample collected on November 8, 2012 by EA Engineering at the Marsh Run Park site in Fairview Township, Pennsylvania. The samples were analyzed under the Environmental Protection Agency (USEPA) "Test Methods for the Evaluation of Solid Waste, USEPA SW-846, Third Edition, September 1986, with revisions".

Specific method references are as follows:

Analysis
VOCs

Method References
USEPA SW-846 Method 8260B

The data have been validated according to the protocols and quality control (QC) requirements of the analytical methods, the USEPA Region III data validation guidelines as follows:

- The USEPA Region III Modifications to the National Functional Guidelines for Organic Data Review," September 1994;
- and the reviewer's professional judgment.

The following items/criteria were reviewed for this report:

Organics

- Holding times and sample preservation
- Surrogate Spike recoveries
- Matrix Spike/Matrix Spike Duplicate (MS/MSD) recoveries
- Laboratory Control Sample (LCS) recoveries
- Method blank and field blank contamination
- Gas Chromatography (GC)/Mass Spectroscopy (MS) tuning

- Initial and continuing calibration summaries
- Compound Quantitation
- Internal standard area and retention time summary forms
- Field Duplicate sample precision

Overall Usability Issues:

There were no rejections of data.

Overall the data is acceptable for the intended purposes. There were no qualifications.

Volatile Organic Compounds (VOC)

Holding Times

- The sample was analyzed within 14 days for a preserved water sample.

Surrogate Spike Recoveries

- All samples exhibited acceptable surrogate %R values.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recoveries

- The MS/MSD sample exhibited acceptable %R and RPD values.

Laboratory Control Samples

- The LCS samples exhibited acceptable %R values.

Method Blank

- The method blanks were free of contamination.

Field Blank

- Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Action Level ug/L	Qualifier	Affected Samples
TRIP BLANK	None - ND	-	-	-	-

GC/MS Tuning

- All criteria were met.

Initial Calibration

- The initial calibrations exhibited acceptable %RSD and mean RRF values.

Continuing Calibration

- The continuing calibrations exhibited acceptable %D and RRF values.

Compound Quantitation

- All criteria were met.

Internal Standard (IS) Area Performance

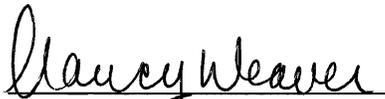
- All internal standards met response and retention time (RT) criteria.

Field Duplicate Sample Precision

- Field duplicate samples were not analyzed.

Please contact the undersigned at (757) 564-0090 if you have any questions or need further information.

Signed:



Nancy Weaver
Senior Chemist

Dated: 11/26/12

Data Qualifiers

- U = Not detected. The associated number indicates approximate sample concentration necessary to be detected.
- B = Not detected substantially above the level reported in laboratory or field blanks.
- R = Unreliable result. Analyte may or may not be present in the sample. Supporting data necessary to confirm result.
- N = Tentative identification. Consider present. Special methods may be needed to confirm its presence or absence in future sampling efforts..
- J = Analyte present. Reported value may not be accurate or precise.
- K = Analyte present. Reported value may be biased high. Actual value is expected lower.
- L = Analyte present. Reported value may be biased low. Actual value is expected higher.
- UJ = Not detected. Quantitation limit may be inaccurate or imprecise.
- UL = Not detected. Quantitation limit is probably higher.
- Q = No analytical result.
- NJ = Qualitative identification questionable due to poor resolution. Presumptively present at approximate quantity.

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

MADW-41-52

Lab Name: ALS - Middletown Contract: _____
 Lab Code: PA-010 Case No.: _____ SAS No.: _____ SDG No.: EMS-023
 Matrix (soil/water): WATER Lab Sample ID: 9997475001
 Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 1111276.D
 Level (low/med): _____ Date Received: 11/8/12
 Moisture: not dec. 100.0 Date Analyzed: 11/13/12
 GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0
 Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS:

CAS No.	Compound	(ug/L or ug/Kg) UG/L	Q
156-59-2	cis-1,2-Dichloroethene	0.75	U
156-60-5	trans-1,2-Dichloroethene	0.75	U
127-18-4	Tetrachloroethene	0.75	U
79-01-6	Trichloroethene	0.50	J
75-01-4	Vinyl Chloride	0.75	U

NW 11/26/12

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

2

SAMPLE NO.

TRIP BLANK

Lab Name: ALS - Middletown Contract: _____

Lab Code: PA-010 Case No.: _____ SAS No.: _____ SDG No.: EMS-023

Matrix (soil/water): WATER Lab Sample ID: 9997475002

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: 1111275.D

Level (low/med): _____ Date Received: 11/8/12

Moisture: not dec. 100.0 Date Analyzed: 11/13/12

GC Column: RTXVMS ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS:

CAS No.	Compound	(ug/L or ug/Kg) UG/L	Q
156-59-2	cis-1,2-Dichloroethene	0.75	U
156-60-5	trans-1,2-Dichloroethene	0.75	U
127-18-4	Tetrachloroethene	0.75	U
79-01-6	Trichloroethene	0.75	U
75-01-4	Vinyl Chloride	0.75	U

NW 11/26/12

**ATTACHMENT 3
HISTORICAL DATA**

Attachment 3, Table 1 - Historical VOC Results

Monitoring Well	Date	PCE 5 µg/L	TCE 5 µg/L	Cis 1,2-DCE 70 µg/L	Trans 1,2- DCE 100 µg/L	Vinyl Chloride 2 µg/L
MW-1	4/2/2002	ND	14.0	88.0	16.0	ND
	8/2/2002	ND	7.0	42	5.6	ND
	10/9/2002	ND	3.6	7.1	ND	ND
	2/24/2003	ND	9.2	37.2	5.5	ND
	5/19/2003	ND	9.7	23.4	3.5	ND
	8/18/2003	ND	7.0	20.3	3.0	ND
	11/3/2003	ND	7.1	12.6	1.9	ND
	2/23/2004	ND	5.6	4.4	ND	ND
	5/10/2004	ND	3.6	2.7	ND	ND
	9/13/2004	ND	8.6 ^(c)	7.7 ^(c)	1.1 ^(c)	ND
	11/8/2004	ND	9.2	14.1	2.2 ^(c)	ND
	3/24/2005	ND	10.5	14.0	2.4	ND
	6/1/2005	ND	9.7	11.4	2.0	ND
	8/24/2005	ND	11.6	18.0	3.9	ND
	11/22/2005	ND	8.2	12.6	2.5	ND
	3/9/2006	ND	7.2	7.1	1.2	ND
	11/22/2006	ND	19.1	37.7	7.3	ND
	3/26/2008	ND	9.8	20.2	3.2	ND
	3/30/2009	ND	19.2	59.0	9.8	ND
	6/2/2011	ND (0.75 U)	15.8	72.0	8.9	0.88 J
MW-1A	4/2/2002	ND	2.6	16.0	2.7	ND
	8/1/2002	ND	1.6	6.3	ND	ND
	10/9/2002	ND	1.3	6.0	ND	ND
	2/25/2003	ND	1.3 ^(c)	10.7	1.7	ND
MW-1A (dup) ^(a)	2/25/2003	ND	1.4 ^(c)	10.3	1.7	ND
	5/19/2003	ND	1.4	10.8	2.0	ND
MW-1A ^(a)	5/19/2003	ND	1.4	9.4	1.8	ND
	8/18/2003	ND	1.9	10.3	1.8	ND
MW-1A (dup) ^(a)	8/18/2003	ND	2.1	9.3	1.7	ND
	11/3/2003	ND	1.6	5.9	ND	ND
MW-1A (dup) ^(a)	11/3/2003	ND	1.8	6.0	1.3	ND
	2/23/2004	ND	2.7	7.7	1.5	ND
MW-1A (dup) ^(a)	2/23/2004	ND	2.5	7.4	1.6	ND
	5/10/2004	ND	ND	6.9	1.2	ND
MW-1A (dup)*	5/10/2004	ND	ND	6.7	1.2	ND
	9/13/2004	ND	2.2 ^(c)	3.8 ^(c)	ND	ND
	11/8/2004	ND	4.2	7.8	1.3	ND
	3/9/2006	ND	13.5	25.3	5.2	ND
	11/22/2006	ND	16.2	35.2	7.4	ND
	3/26/2008	ND	14.0	43.9	7.8	ND
	3/30/2009	ND	12.4	40.7	6.8	ND
	5/31/2011	ND (0.75 U)	10.7 J	53.1 J	6.1 J	0.37 J

Attachment 3, Table 1 - Historical VOC Results

Monitoring Well	Date	PCE 5 µg/L	TCE 5 µg/L	Cis 1,2-DCE 70 µg/L	Trans 1,2-DCE 100 µg/L	Vinyl Chloride 2 µg/L
MW-2	4/2/2002	ND	1.1	2.5	ND	ND
MW-2 (dup) ^(a)	4/2/2002	ND	1.0	2.3	ND	ND
	7/31/2002	ND	ND	ND	ND	ND
	10/9/2002	ND	ND	2.3	ND	ND
	2/26/2003	ND	ND	2.8	ND	ND
	5/20/2003	ND	ND	1.9	ND	ND
	8/20/2003	ND	ND	1.2	ND	ND
	11/4/2003	ND	ND	1.5	ND	ND
	2/24/2004	ND	ND	1.1	ND	ND
	5/12/2004	ND	ND	1.8	ND	ND
	9/13/2004	ND	ND	1.7 ^(c)	ND	ND
	11/9/2004	ND	ND	1.0	ND	ND
	3/25/2005	ND	ND	1.4	ND	ND
	6/1/2005	ND	ND	ND	ND	ND
	8/25/2005	ND	ND	ND	ND	ND
	11/22/2005	ND	ND	1.1	ND	ND
	3/9/2006	ND	ND	1.1	ND	ND
	11/21/2006	ND	ND	1.1	ND	ND
	3/26/2008	ND	ND	1.7	ND	ND
	3/31/2009	ND	ND	1.6	ND	ND
	6/1/2011	ND (0.75 U)	0.79 J	1.1	ND (0.75 U)	ND (0.75 U)
MW-2A	4/3/2002	ND	ND	ND	ND	ND
	7/31/2002	ND	ND	1.4	ND	ND
MW-2A (dup) ^(a)	7/31/2002	ND	ND	1.2	ND	ND
	10/8/2002	ND	1.1	ND	ND	ND
	2/26/2003	ND	1.4	ND	ND	ND
	5/20/2003	ND	ND	ND	ND	ND
	8/20/2003	ND	1.6	ND	ND	ND
	11/4/2003	ND	1.6	ND	ND	ND
	2/24/2004	ND	ND	ND	ND	ND
	5/12/2004	ND	ND	ND	ND	ND
	9/13/2004	ND	ND	ND	ND	ND
	11/9/2004	ND	ND	ND	ND	ND
	3/9/2006	ND	ND	ND	ND	ND
	11/21/2006	ND	1.1	ND	ND	ND
	3/26/2008	ND	1.0	ND	ND	ND
	3/31/2009	ND	ND	ND	ND	ND
	6/1/2011	ND (0.75 U)	0.84 J	ND (0.75 U)	ND (0.75 U)	ND (0.75 U)

Attachment 3, Table 1 - Historical VOC Results

Monitoring Well	Date	PCE 5 µg/L	TCE 5 µg/L	Cis 1,2-DCE 70 µg/L	Trans 1,2- DCE 100 µg/L	Vinyl Chloride 2 µg/L
MW-3A	4/3/2002	ND	ND	1.6	ND	ND
MW-3A (dup) ^(a)	4/3/2002	ND	ND	1.6	ND	ND
	8/1/2002	ND	ND	2.0	1.1	ND
	10/8/2002	ND	ND	3.6	1.9	ND
	2/26/2003	ND	ND	ND	ND	ND
	5/19/2003	ND	ND	ND	ND	ND
	8/19/2003	ND	ND	ND	ND	ND
	11/3/2003	ND	ND	ND	ND	ND
	2/24/2004	ND	ND	ND	ND	ND
	5/10/2004	ND	ND	ND	ND	ND
	9/13/2004	ND	ND	ND	ND	ND
	11/8/2004	ND	ND	ND	ND	ND
	3/9/2006	ND	ND	ND	ND	ND
	11/21/2006	ND	ND	ND	ND	ND
	3/26/2008	ND	ND	ND	ND	ND
	4/3/2009	ND	ND	ND	ND	ND
	5/31/2011	ND (0.75 U)	ND (0.75 U)	ND (0.75 U)	ND (0.75 U)	ND (0.75 U)
MW-4	4/2/2002	6.2	557	65.0	26.0	ND
	8/1/2002	1.7	248	108	32	2.3
	10/10/2002	1.7	339	114	36	ND
MW-4 (dup) ^(a)	10/10/2002	1.8	313	116	37	ND
	2/25/2003	1.7	256	69	22	ND
	5/19/2003	2.9	217	88.0	31.9	ND
	8/19/2003	2.2	288	92.1	31.2	ND
	11/4/2003	ND	147	34.8	10.1	ND
	2/23/2004	2.3	352	119	42.1	ND
	5/12/2004	1.9	429	120	43.1	ND
	9/14/2004	ND	156	34.4	10.8	ND
	11/8/2004	2.2	313	101	37.3	ND
	3/25/2005	2.4	303	111	37.2	ND
	6/1/2005	2.8	434	166	56.5	ND
	8/24/2005	2.2	387	146	50.4	ND
	11/22/2005	2.0	226	33.8	11.5	ND
	3/8/2006	2.3	348^(e)	139^(e)	49.2	ND
	11/22/2006	1.6	145	14.8	5.8	ND
MW-4 (dup) ^(a)	11/22/2006	1.6	145	13.9	5.5	ND
	6/1/2007	2.3	320	83.7	27.5	ND
	6/15/2007	0.5	77.1	26.8	7.2	ND
	3/26/2008	ND	66.4	13.3	4.6	ND
	3/31/2009	ND	91.0^(f)	35.4	10.1 ^(f)	ND
	6/1/2011	ND (0.75 U)	35.3 J	15.0 J	3.3	ND (0.75 U)
MW-4 (dup) ^(a)	6/1/2011	ND (0.75 U)	36	15.5	3.4	ND (0.75 U)

Attachment 3, Table 1 - Historical VOC Results

Monitoring Well	Date	PCE 5 µg/L	TCE 5 µg/L	Cis 1,2-DCE 70 µg/L	Trans 1,2- DCE 100 µg/L	Vinyl Chloride 2 µg/L
MW-4A	4/2/2002	ND	5.7	1.3	ND	ND
	8/2/2002	ND	24.0	10.0	4.1	ND
	10/10/2002	ND	33	13	3.1	ND
	2/25/2003	ND	7.9 ^(c)	17	1.1	ND
	5/19/2003	ND	3.4	ND	ND	ND
	8/19/2003	ND	1.5	3.4	ND	ND
	11/4/2003	ND	ND	1.6	ND	ND
	2/23/2004	ND	1.2	ND	ND	ND
	5/12/2004	ND	ND	ND	ND	ND
	9/14/2004	ND	ND	1.5	ND	ND
	11/8/2004	ND	1.5	ND	ND	ND
	3/25/2005	ND	1.8	ND	ND	ND
	6/1/2005	ND	2.8	ND	ND	ND
	8/25/2005	ND	4.4	1.4	ND	ND
	11/22/2005	ND	31.9	8.7	2.1	ND
	3/8/2006	ND	5.3	11.5	ND	ND
	11/22/2006	ND	14.8	4.9	ND	ND
	4/3/2009	ND	ND	ND	ND	ND
	6/1/2011	ND (3.8 UJ)	ND (3.8 UJ)	ND (3.8 UJ)	ND (3.8 UJ)	ND (3.8 UJ)
MW-5	4/4/2002	ND	ND	ND	ND	ND
	7/29/2002	ND	ND	ND	ND	ND
	10/14/2002	ND	ND	ND	ND	ND
	2/27/2003	ND	ND	ND	ND	ND
	5/22/2003	ND	ND	ND	ND	ND
	8/21/2003	ND	ND	ND	ND	ND
	11/5/2003	ND	ND	ND	ND	ND
	2/25/2004	ND	ND	ND	ND	ND
	5/11/2004	ND	ND	ND	ND	ND
	9/15/2004	ND	ND	ND	ND	ND
	11/9/2004	ND	ND	ND	ND	ND
	3/24/2005	ND	ND	ND	ND	ND
	5/31/2005	ND	ND	ND	ND	ND
	8/23/2005	ND	ND	ND	ND	ND
	11/21/2005	ND	ND	ND	ND	ND
	3/7/2006	ND	ND	ND	ND	ND
	11/21/2006	ND	ND	ND	ND	ND
	4/1/2009	ND	ND	ND	ND	ND

Attachment 3, Table 1 - Historical VOC Results

Monitoring Well	Date	PCE 5 µg/L	TCE 5 µg/L	Cis 1,2-DCE 70 µg/L	Trans 1,2- DCE 100 µg/L	Vinyl Chloride 2 µg/L
MW-5A	4/4/2002	ND	ND	ND	ND	ND
	7/29/2002	ND	ND	ND	ND	ND
	10/14/2002	ND	ND	ND	ND	ND
	2/28/2003	ND	ND	ND	ND	ND
	5/22/2003	ND	ND	ND	ND	ND
	8/21/2003	ND	ND	ND	ND	ND
	11/5/2003	ND	ND	ND	ND	ND
	2/25/2004	ND	ND	ND	ND	ND
	5/11/2004	ND	ND	ND	ND	ND
	9/15/2004	ND	ND	ND	ND	ND
	11/9/2004	ND	ND	ND	ND	ND
	3/24/2005	ND	ND	ND	ND	ND
	5/31/2005	ND	ND	ND	ND	ND
	8/23/2005	ND	ND	ND	ND	ND
	11/21/2005	ND	ND	ND	ND	ND
	3/7/2006	ND	ND	ND	ND	ND
	11/21/2006	ND	ND	ND	ND	ND
	4/1/2009	ND	ND	ND	ND ^(e)	ND
MW-5A (dup) ^(g)	4/1/2009	ND	ND	ND	ND	ND
MW-6	4/4/2002	ND	ND	ND	ND	ND
MW-6 (dup) ^(a)	4/4/2002	ND	ND	ND	ND	ND
	7/30/2002	ND	ND	ND	ND	ND
	10/11/2002	ND	ND	ND	ND	ND
	2/27/2003	ND	ND	ND	ND	ND
	5/21/2003	ND	ND	ND	ND	ND
	8/21/2003	ND	ND	ND	ND	ND
	11/5/2003	ND	ND	ND	ND	ND
	2/25/2004	ND	ND	ND	ND	ND
MW-6	5/11/2004	ND	ND	ND	ND	ND
	9/15/2004	ND	ND	ND	ND	ND
	11/9/2004	ND	ND	ND	ND	ND
	4/1/2009	ND	ND	ND	ND	ND

Attachment 3, Table 1 - Historical VOC Results

Monitoring Well	Date	PCE 5 µg/L	TCE 5 µg/L	Cis 1,2-DCE 70 µg/L	Trans 1,2- DCE 100 µg/L	Vinyl Chloride 2 µg/L
MW-6A	4/4/2002	ND	ND	ND	ND	ND
	7/30/2002	ND	ND	ND	ND	ND
	10/11/2002	ND	ND	ND	ND	ND
	2/26/2003	ND	ND	ND	ND	ND
	5/21/2003	ND	ND	ND	ND	ND
	8/21/2003	ND	ND	ND	ND	ND
	11/5/2003	ND	ND	ND	ND	ND
	2/25/2004	ND	ND	ND	ND	ND
	5/11/2004	ND	ND	ND	ND	ND
	9/15/2004	ND	ND	ND	ND	ND
	11/9/2004	ND	ND	ND	ND	ND
	4/1/2009	ND	ND	ND	ND	ND
MW-7	4/4/2002	ND	ND	ND	ND	ND
	7/30/2002	ND	ND	ND	ND	ND
	10/14/2002	ND	ND	ND	ND	ND
	2/28/2003	ND	ND	ND	ND	ND
	5/22/2003	ND	ND	ND	ND	ND
	8/21/2003	ND	ND	ND	ND	ND
	11/5/2003	ND	ND	ND	ND	ND
	2/25/2004	ND	ND	ND	ND	ND
	5/11/2004	ND	ND	ND	ND	ND
	9/15/2004	ND	ND	ND	ND	ND
	11/9/2004	ND	ND	ND	ND	ND
	4/1/2009	ND	ND	ND	ND	ND
MW-7A	4/3/2002	ND	ND	ND	ND	ND
	7/31/2002	ND	ND	ND	ND	ND
	10/10/2002	ND	ND	ND	ND	ND
	2/25/2003	ND	ND	ND	ND	ND
	5/20/2003	ND	ND	ND	ND	ND
	8/20/2003	ND	ND	ND	ND	ND
	11/5/2003	ND	ND	ND	ND	ND
	2/24/2004	ND	ND	ND	ND	ND
	5/10/2004	ND	ND	ND	ND	ND
	9/14/2004	ND	ND	ND	ND	ND
	11/8/2004	ND	ND	1.5	ND	ND
	4/1/2009	ND	ND	ND	ND	ND

Attachment 3, Table 1 - Historical VOC Results

Monitoring Well	Date	PCE 5 µg/L	TCE 5 µg/L	Cis 1,2-DCE 70 µg/L	Trans 1,2- DCE 100 µg/L	Vinyl Chloride 2 µg/L
MW-8 ^(b)	5/21/2003	2.4	376	449.0	99.7	2.5
	8/18/2003	1.5	276	371	81.9	2.5
	11/3/2003	2.0	302	423	104	3.4
	2/23/2004	ND	334	507	126	2.9
	5/11/2004	1.5	386	476	106	2.0
	9/13/2004	2.4 ^(c)	412 ^(c)	570	115 ^(c)	1.6
MW-8 (dup) ^(a)	9/13/2004	2.7 ^(c)	373 ^(c)	549	120 ^(c)	1.4
	11/8/2004	1.8	315	507	91	1.1
MW-8 (dup) ^(a)	11/8/2004	1.7	321	525	92.5	1.1
	3/24/2005	2.2	280	426	99.8	2.0
MW-8 (dup) ^(a)	3/24/2005	2.0	289	438	97.6	2.0
	6/1/2005	1.5	326	514 ^(c)	111	2.6
	8/24/2005	1.4	309	453	84.6	1.9
MW-8 (dup) ^(a)	8/24/2005	1.9	285	418	92.6	2.2
	11/22/2005	1.1	254	457	81.7	1.6
	3/8/2006	1.4	259	357	83.1	1.5
MW-8 (dup) ^(a)	3/8/2006	1.5	259	359	86.9	1.5
	11/22/2006	1.9	261	386	73.8	1.1
	6/1/2007	2.1	236	376	76.7	ND
	6/15/2007	1.9	229	206	51.3	ND
	3/27/2008	2.1	271	368	83.2	2.1
	4/2/2009	1.9	269	328	65.6	1.5
	7/15/2010	0.85J	307	316	64.2	0.56J
	11/9/2010	ND (3.8U)	264	280	51.3	ND (3.8U)
	6/1/2011	0.93 J	199 J	197 J	40.0 J	0.75 J
MW-8A ^(b)	5/20/2003	ND	ND	ND	ND	ND
	8/18/2003	ND	ND	ND	ND	ND
	11/3/2003	ND	ND	ND	ND	ND
	2/23/2004	ND	ND	ND	ND	ND
	5/11/2004	ND	ND	ND	ND	ND
	9/13/2004	ND	ND	ND	ND	ND
	11/8/2004	ND	ND	ND	ND	ND
	3/8/2006	ND	ND	ND	ND	ND
	11/22/2006	ND	ND	ND	ND	ND
	3/26/2008	ND	ND	ND	ND	ND
MW-8 (dup) ^(a)	3/26/2008	ND	ND	ND	ND	ND
	4/2/2009	ND	ND	2.9	ND	ND
	6/1/2011	ND (0.75 U)	ND (0.75 U)	ND (0.75 U)	ND (0.75 U)	ND (0.75 U)
MW-8 (dup) ^(a)	6/1/2011	ND (0.75 U)	ND (0.75 U)	ND (0.75 U)	ND (0.75 U)	ND (0.75 U)

Attachment 3, Table 1 - Historical VOC Results

Monitoring Well	Date	PCE 5 µg/L	TCE 5 µg/L	Cis 1,2-DCE 70 µg/L	Trans 1,2-DCE 100 µg/L	Vinyl Chloride 2 µg/L
MW-9 ^(b)	5/21/2003	ND	13.0	3.4	1.7	ND
	8/19/2003	ND	19.4	4.6	2.3	ND
	11/4/2003	ND	22.2	4.8	2.8	ND
	2/24/2004	ND	19.0	3.3	2.1	ND
	5/10/2004	ND	19.5	5.2	2.7	ND
	9/14/2004	ND	19.7	3.9	2.2	ND
	11/9/2004	ND	17.5	3.0	2.0	ND
	3/24/2005	ND	16.6	3.7	2.0	ND
	6/1/2005	ND	22.1	5.3	3.0	ND
	8/25/2005	ND	29.4	8.8	4.8	ND
	11/21/2005	ND	22.2	5.1	3.3	ND
	3/8/2006	ND	21.9	4.5	2.5	ND
	11/22/2006	ND	16.7	3.7	2.0	ND
	3/27/2008	ND	14.0	2.7	1.5	ND
	4/2/2009	ND	10.6	2.4	1.4	ND
	7/15/2010	ND	16.2	3.4	2.3	ND
	11/9/2010	ND	15.8	2.8	1.7	ND
	6/1/2011	ND (0.75 UJ)	17.1 J	5.7 J	1.3 J	ND (0.75 UJ)
MW-9A ^(b)	5/21/2003	ND	ND	ND	ND	ND
	8/19/2003	ND	ND	ND	ND	ND
	11/4/2003	ND	ND	ND	ND	ND
	2/24/2004	ND	ND	ND	ND	ND
	5/10/2004	ND	ND	ND	ND	ND
	9/14/2004	ND	ND	ND	ND	ND
	11/9/2004	ND	ND	ND	ND	ND
	3/8/2006	ND	ND	ND	ND	ND
	11/21/2006	ND	ND	ND	ND	ND
	3/27/2008	ND	ND	ND	ND	ND
4/2/2009	ND	ND	ND	ND	ND	
	6/1/2011	ND (0.75 UJ)	ND (0.75 UJ)	ND (0.75 UJ)	ND (0.75 UJ)	ND (0.75 UJ)
MW-10 ^(d)	4/18/2005	ND	ND	ND	ND	ND
	6/1/2005	ND	ND	ND	ND	ND
	8/24/2005	ND	ND	ND	ND	ND
	11/22/2005	ND	ND	ND	ND	ND
	3/9/2006	ND	ND	ND	ND	ND
	11/21/2006	ND	ND	ND	ND	ND
	3/26/2008	ND	ND	ND	ND	ND
	3/30/2009	ND	ND	ND	ND	ND
MW-11 ^(d)	4/18/2005	ND	1.5	ND	ND	ND
	6/1/2005	ND	ND	ND	ND	ND
	8/24/2005	ND	ND	ND	ND	ND
	11/22/2005	ND	8.9	2.3	ND	ND
	3/9/2006	ND	3.0	1.8	ND	ND
	11/20/2006	ND	2.1	1.4	ND	ND
	3/26/2008	ND	2.7	2.5	ND	ND
3/30/2009	ND	ND	ND	ND	ND	

Attachment 3, Table 1 - Historical VOC Results

Monitoring Well	Date	PCE 5 µg/L	TCE 5 µg/L	Cis 1,2-DCE 70 µg/L	Trans 1,2- DCE 100 µg/L	Vinyl Chloride 2 µg/L
MW-12 ^(d)	4/18/2005	ND	8.3	ND	ND	ND
	5/31/2005	ND	14.4	1.3	ND	ND
	8/23/2005	ND	30.4	2.0	ND	ND
	11/21/2005	ND	17.6	1.7	ND	ND
	3/7/2006	ND	16.7	2.3	ND	ND
	11/20/2006	ND	15.0	3.0	ND	ND
	3/27/2008	ND	4.9	2.1	ND	ND
	4/2/2009	ND	3.7	2.9	2.0	ND
	5/31/2011	ND (0.75 UJ)	6.3 J	2.0 J	0.87 J	ND (0.75 UJ)
MW-13 ^(d)	4/18/2005	ND	1.1	ND	ND	ND
MW-13 (dup) ^(a)	4/18/2005	ND	1.1	ND	ND	ND
	5/31/2005	ND	ND	ND	ND	ND
MW-13 (dup) ^(a)	5/31/2005	ND	1.0	ND	ND	ND
	8/25/2005	ND	12.3	2.2	ND	ND
	11/21/2005	ND	8.9	2.1	ND	ND
MW-13 (dup) ^(a)	11/21/2005	ND	9.8	2.7	ND	ND
	3/10/2006	ND	2.5	ND	ND	ND
	11/21/2006	ND	3.8	1.6	ND	ND
	3/27/2008	ND	1.8	1.2	ND	ND
	4/3/2009	ND	ND	ND	ND	ND
MW-14 ^(d)	4/18/2005	ND	ND	ND	ND	ND
	5/31/2005	ND	ND	ND	ND	ND
	8/25/2005	ND	ND	ND	ND	ND
	11/21/2005	ND	ND	ND	ND	ND
	3/10/2006	ND	ND	ND	ND	ND
	11/21/2006	ND	ND	ND	ND	ND
	3/27/2008	ND	1.8	ND	ND	ND
	4/3/2009	ND	ND	ND	ND	ND
MW-14 (dup) ^(g)	4/3/2009	ND	ND	ND	ND	ND
	7/15/2010	ND	ND	ND	ND	ND
	11/9/2010	ND	ND	ND	ND	ND
	5/31/2011	ND (0.75 UJ)	0.46 J	ND (0.75 UJ)	ND (0.75 UJ)	ND (0.75 UJ)
MW-15	7/15/2010	ND	0.85 J	1.6	ND	ND
	11/9/2010	ND	0.55J	0.63J	ND	ND
	5/31/2011	ND (0.75 UJ)	1.4 J	2.1 J	0.36 J	ND (0.75 UJ)

Attachment 3, Table 1 - Historical VOC Results

Monitoring Well	Date	PCE 5 µg/L	TCE 5 µg/L	Cis 1,2-DCE 70 µg/L	Trans 1,2- DCE 100 µg/L	Vinyl Chloride 2 µg/L
PW-1	NS	NS	NS	NS	NS	NS
EW-1	4/3/2009	ND	23.3	60.7 ^(e)	10.4	ND
EW-2	3/31/2009	ND	11.9^(f)	554	42.5 ^(f)	14.9
EW-3	4/3/2009	ND	18.8	29.0	4.2	ND
270A	3/30/2009	ND	ND	ND	ND	ND
270B	3/30/2009	ND	ND	ND	ND	ND
284A	3/30/2009	ND	ND	ND	ND	ND
284B	3/30/2009	ND	ND	ND	ND	ND
288A	3/30/2009	ND	ND	ND	ND	ND
288B	3/30/2009	ND	ND	ND	ND	ND
302A	3/30/2009	ND	ND	ND	ND	ND
302B	3/30/2009	ND	ND	ND	ND	ND
305	1/29/2003	ND	ND	ND	ND	ND
305	3/30/2009	ND	ND	ND	ND	ND
	6/14/2012	ND	ND	ND	ND	ND
RW-305		(0.75U)	(0.75U)	(0.75U)	(0.75U)	(0.75U)
MADW 41-52	7/15/2010	ND	0.64J	ND	ND	ND
DUP-1 (MADW 41-52)	7/15/2010	ND	ND	ND	ND	ND
	11/9/2010	ND	ND	1.2	ND	ND
	5/31/2011	ND (0.75 UJ)	2.3 J	ND (0.75 UJ)	ND (0.75 UJ)	ND (0.75 UJ)
	6/14/2012	ND (0.75U)	ND (0.75U)	ND (0.75U)	ND (0.75U)	ND (0.75U)
	11/8/2012	ND (0.75U)	0.50 J	ND (0.75U)	ND (0.75U)	ND (0.75 UJ)
MADW 121-132	7/15/2010	ND	17.5	ND	ND	ND
	11/9/2010	ND	17.4	0.37J	ND	ND
DUP-1 (MADW 121-132)	11/9/2010	ND	17.2	0.40J	ND	ND
	5/31/2011	ND (0.75 UJ)	18.0 J	0.59 J	ND (0.75 UJ)	ND (0.75 UJ)
MADW 170-181	7/15/2010	3.5	432	7.6	3.9	ND
	11/9/2010	3.8	580	9.1	4.4	ND
	5/31/2011	3.0	358	6.7	3.3	ND (0.75U)
MADW 184-195	7/15/2010	0.90 J	270	6.4	3.0	ND
	11/9/2010	1.9	351	7.7	3.5	ND
	5/31/2011	1.5	245	13.6	3.0	ND (0.75 U)

Attachment 3, Table 1 - Historical VOC Results

Monitoring Well	Date	PCE 5 µg/L	TCE 5 µg/L	Cis 1,2-DCE 70 µg/L	Trans 1,2-DCE 100 µg/L	Vinyl Chloride 2 µg/L
MACW	8/21/2003	ND	10.8	ND	ND	ND
	11/3/2003	ND	21.2	ND	ND	ND
	2/23/2004	ND	23.4	ND	ND	ND
	5/10/2004	ND	13.3	ND	ND	ND
	9/13/2004	ND	16.0^(c)	ND	ND	ND
	11/9/2004	ND	3.0	ND	ND	ND
	3/24/2005	ND	7.8	ND	ND	ND
	4/18/2005	ND	21.1	ND	ND	ND
	5/31/2005	ND	15.4	ND	ND	ND
	8/23/2005	ND	29.5	ND	ND	ND
	11/21/2005	ND	18.0	ND	ND	ND
	3/7/2006	ND	30.1	ND	ND	ND
	11/20/2006	ND	23.2	ND	ND	ND
	3/28/2008	ND	9.8	ND	ND	ND
	3/31/2009	ND	6.8	ND	ND	ND
	7/15/2010	ND	10.0	ND	ND	ND
	11/9/2010	ND	4.6	ND	ND	ND
	5/31/2011	ND (0.75 U)	20.4	ND (0.75 U)	ND (0.75 U)	ND (0.75 U)

Notes:

Shaded and **Bolded** results represent exceedances of 2011 PADEP RDC MSC/Record of Decision (ROD) Remedial Action Objectives (RAOS)

¹ Monitoring well MACW was abandoned on 26 August 2011.

PADEP = Pennsylvania Department of Environmental Protection

MSC = Medium Specific Concentration

RDC = Residential Direct Contact

ND = Not Detected above the laboratory limit of detection (LOD)

NA = Not available

NS = Not sampled

a) Duplicate samples were submitted to the laboratory as blind duplicates.

b) Wells installed February 2003.

c) This compound was recovered above quality control criteria in the QC associated with this sample. The data user is cautioned that results may be biased high.

d) Wells installed March 2005.

e) This compound failed set criteria for the associated matrix spike and/or matrix spike duplicate but passed in the laboratory control sample, satisfying method criteria.

f) Laboratory result may be biased higher than the actual result

g) Duplicate samples were submitted as field duplicates

All analytical results are in micrograms per liter (µg/L)

TCE = Trichloroethene

Cis 1,2-DCE = Cis 1,2-dichloroethylene

Trans 1,2-DCE = Trans 1,2-dichloroethylene

PCE = Tetrachloroethene

U = Not detected. The associated number indicates the laboratory LOD.

J = Analyte present. Indicates an estimated value between the method Detection Limit (DL) and the Limit of Quantitation (LOQ) for the analyte.

UJ = Not detected. LOQ may be inaccurate or imprecise.

MADW = Mifflin Avenue Deep Well

MACW = Mifflin Avenue Cabin Well (previously referred to as the Mifflin Avenue Residential Well)

Attachment 3, Table 2 - Historical Metals Results

Sample ID	Date	Analyte (PADEP MSC/ROD RAO) [mg/L]								
		Arsenic (0.01/0.05)	Barium (2/1)	Beryllium (0.004/0.0005)	Cadmium (0.005/0.01)	Chromium (0.1/0.05)	Copper (1/1.3)	Iron (0.3*/NA)	Lead (0.005/0.005)	Manganese (0.3*/NA)
MW-1	4/2/2002	ND	0.56	ND	ND	0.007	ND	3.5	ND	0.16
	8/2/2002	ND	0.3	ND	ND	ND	ND	0.26	ND	0.2
	10/9/2002	ND	0.3	ND	ND	ND	ND	0.16	ND	0.006
	2/24/2003	ND	0.31	ND	ND	ND	ND	0.5	ND	0.023
	5/19/2003	ND	0.358	ND	ND	ND	ND	1.06	ND	0.035
	8/18/2003	ND	0.371	ND	ND	ND	ND	0.91	ND	0.45
	11/3/2003	ND	0.308	ND	ND	ND	ND	0.45	ND	0.018
	2/23/2004	ND	0.327	ND	ND	ND	ND	1.81	ND	0.047
	5/10/2004	ND	0.301	ND	ND	ND	0.025	0.68	ND	0.023
	9/13/2004	ND	0.31	ND	ND	0.008	0.013	0.59	ND	0.02
	11/8/2004	ND	0.364	ND	ND	ND	ND	1	ND	0.023
**	6/2/2011	ND (0.0020 U)	0.095 J	ND (0.00067 U)	ND (0.00067 U)	ND (0.0013 U)	0.0057 B	0.20 B	ND (0.0013 U)	0.060 B
MW-1A	4/2/2002	ND	0.04	ND	ND	ND	0.018	0.1	ND	0.008
	8/1/2002	ND	0.052	ND	ND	ND	ND	0.87	ND	0.043
	10/9/2002	ND	0.6	ND	ND	ND	ND	1.4	ND	0.063
	2/25/2003	ND	0.046	ND	ND	ND	ND	0.4	ND	0.08
MW-1A (DUP)	2/25/2003	ND	0.05	ND	ND	ND	ND	0.94	ND	0.131
	5/19/2003	ND	0.049	ND	ND	ND	ND	0.26	ND	0.057
MW-1A (DUP)	5/19/2003	ND	0.045	ND	ND	ND	ND	0.12	ND	0.076
	8/18/2003	ND	0.053	ND	ND	ND	ND	ND	ND	0.014
MW-1A (DUP)	8/18/2003	ND	0.053	ND	ND	ND	ND	ND	ND	0.014
	11/3/2003	ND	0.047	ND	ND	ND	ND	ND	ND	0.093
MW-1A (DUP)	11/3/2003	ND	0.047	ND	ND	ND	ND	ND	ND	0.091
	2/23/2004	ND	0.047	ND	ND	ND	ND	0.15	ND	0.038
MW-1A (DUP)	2/23/2004	ND	0.046	ND	ND	ND	ND	0.15	ND	0.041
	5/10/2004	ND	0.051	ND	ND	ND	0.015	0.12	ND	0.028
	9/13/2004	ND	0.052	ND	ND	ND	ND	0.13	ND	0.03
	11/8/2004	ND	0.056	ND	ND	ND	ND	0.08	ND	0.409
MW-1A (DUP)	5/10/2004	ND	0.05	ND	ND	ND	0.015	0.11	ND	0.025
**	6/1/2011	ND (0.0020 U)	0.033 J	ND (0.00067 U)	ND (0.00067 U)	0.0014 J	ND (0.0033 U)	0.13	ND (0.0013 U)	0.0088
MW-2	4/2/2002	ND	0.16	ND	ND	ND	ND	0.16	ND	ND
	7/31/2002	ND	0.1	ND	ND	ND	ND	ND	ND	ND
	10/9/2002	ND	0.18	ND	ND	ND	ND	ND	ND	ND
	2/26/2003	ND	0.15	ND	ND	ND	ND	ND	ND	ND
	5/20/2003	ND	0.13	ND	ND	ND	ND	ND	ND	ND
	8/20/2003	ND	0.126	ND	ND	ND	ND	0.22	ND	ND
	11/4/2003	ND	0.117	ND	ND	ND	ND	ND	ND	ND
	2/24/2004	ND	0.12	ND	ND	ND	ND	ND	ND	ND
	5/12/2004	ND	0.131	ND	ND	ND	ND	ND	ND	ND
	9/13/2004	ND	0.109	ND	ND	ND	ND	ND	ND	ND
	11/9/2004	ND	0.117	ND	ND	ND	ND	ND	ND	ND
MW-2 (DUP)	4/2/2002	ND	0.16	ND	ND	ND	ND	ND	ND	ND
**	6/1/2011	0.0014 K	0.10 J	ND (0.00067 U)	ND (0.00067 U)	ND (0.0013 U)	ND (0.0033)	0.24	ND (0.0013 U)	ND (0.0033 U)
MW-2A	4/3/2002	ND	0.08	ND	ND	ND	0.033	0.23	ND	0.098
	7/31/2002	ND	0.07	ND	0.002	ND	0.029	1.2	ND	2.4
	10/8/2002	ND	0.07	ND	0.002	ND	0.19	0.91	ND	2.6
	2/26/2003	ND	0.042	ND	ND	ND	0.04	1.02	0.007	0.103
	5/20/2003	ND	0.068	ND	ND	ND	0.05	2.11	0.007	1.23
	8/20/2003	ND	0.099	ND	ND	ND	0.065	1.02	ND	1.05
	11/4/2003	ND	0.084	ND	ND	ND	0.035	1.15	ND	0.58
	2/24/2004	ND	0.061	ND	ND	ND	0.042	4.3	0.008	0.166
	5/12/2004	ND	0.1	ND	ND	ND	0.105	15.6	0.03	1.4
	9/13/2004	ND	0.129	ND	ND	ND	0.09	3.65	0.009	1.16
	11/9/2004	ND	0.15	ND	ND	ND	0.064	3.55	ND	0.888
MW-2A (DUP)	7/31/2002	ND	0.07	ND	0.002	ND	0.027	1.1	ND	2.4
**	6/1/2011	0.0020 J	0.087 J	ND (0.00067 U)	ND (0.00067 U)	0.00095 J	0.021	0.31	ND (0.0013 U)	0.24

Attachment 3, Table 2 - Historical Metals Results

Sample ID	Date	Analyte (PADEP MSC/ROD RAO) [mg/L]								
		Arsenic (0.01/0.05)	Barium (2/1)	Beryllium (0.004/0.0005)	Cadmium (0.005/0.01)	Chromium (0.1/0.05)	Copper (1/1.3)	Iron (0.3*/NA)	Lead (0.005/0.005)	Manganese (0.3*/NA)
MW-3	4/3/2002	ND	0.07	ND	ND	ND	ND	ND	ND	ND
MW-3 (DUP)	4/3/2002	ND	0.07	ND	ND	ND	ND	ND	ND	ND
	8/1/2002	ND	0.078	ND	ND	ND	ND	ND	ND	ND
MW-3	10/8/2002	ND	0.088	ND	ND	ND	ND	ND	ND	ND
	2/26/2003	ND	0.052	ND	ND	ND	ND	ND	ND	ND
	5/19/2003	ND	0.078	ND	ND	ND	ND	ND	ND	ND
	8/19/2003	ND	0.053	ND	ND	0.008	ND	ND	ND	ND
	11/3/2003	ND	0.059	ND	ND	ND	ND	ND	ND	ND
	2/24/2004	ND	0.043	ND	ND	ND	ND	ND	ND	ND
	5/10/2004	ND	0.052	ND	ND	ND	ND	0.08	ND	ND
	9/13/2004	ND	0.052	ND	ND	ND	ND	ND	ND	ND
	11/8/2004	ND	0.072	ND	ND	ND	ND	ND	ND	ND
MW-3A	** 5/31/2011	ND (0.0020 U)	0.084 J	ND (0.00067 U)	0.0003 J	0.011	0.0018 J	0.26	ND (0.0013 U)	ND
MW-4	4/2/2002	ND	0.21	ND	ND	ND	ND	ND	ND	ND
	8/1/2002	ND	0.21	ND	ND	ND	ND	ND	ND	ND
	10/10/2002	ND	0.22	ND	ND	ND	ND	ND	ND	ND
MW-4 (DUP)	10/10/2002	ND	0.23	ND	ND	ND	ND	ND	ND	ND
	2/25/2003	ND	0.19	ND	ND	ND	ND	ND	ND	ND
	5/19/2003	ND	0.189	ND	ND	ND	ND	ND	ND	ND
	8/19/2003	ND	0.189	ND	ND	ND	ND	ND	ND	ND
	11/4/2003	ND	0.168	ND	ND	0.014	ND	ND	ND	ND
	2/23/2004	ND	0.186	ND	ND	ND	ND	ND	ND	ND
	5/12/2004	ND	0.191	ND	ND	ND	ND	ND	ND	ND
	9/14/2004	ND	0.164	ND	ND	ND	ND	ND	ND	ND
	11/8/2004	ND	0.186	ND	ND	ND	ND	ND	ND	ND
	** 6/1/2011	ND (0.0020 U)	0.14 J	ND (0.00067 U)	ND (0.00067 U)	0.0029	ND (0.0033 U)	0.16 B	ND (0.0013 U)	0.074 B
MW-4A	4/2/2002	0.062	0.88	0.17	0.028	0.98	0.15	160	0.31	2.2
	8/2/2002	ND	0.082	ND	ND	ND	ND	7.6	0.021	1.6
	10/10/2002	ND	0.099	ND	ND	0.007	ND	12	0.27	1.1
	2/25/2003	0.01	0.144	ND	ND	0.011	0.018	25	0.03	2.2
	5/19/2003	ND	0.088	ND	ND	0.011	0.021	14.7	0.024	0.335
	8/19/2003	0.014	0.046	ND	ND	ND	ND	15.3	ND	3.19
	11/4/2003	ND	0.056	ND	ND	ND	0.031	11.6	ND	3.97
	2/23/2004	ND	0.039	ND	ND	ND	0.063	4.6	0.03	0.216
	5/12/2004	ND	0.048	ND	ND	ND	0.04	5.23	0.019	0.306
	9/14/2004	ND	0.051	ND	ND	ND	0.02	8.92	ND	4.7
	11/8/2004	ND	0.049	ND	ND	ND	0.034	2.71	0.008	1.39
	** 6/1/2011	0.002	0.031 J	ND (0.0067 U)	ND (0.0067 U)	0.0016 J	ND (0.0033 U)	1.3	ND (0.0013 U)	0.43
MW-5	4/4/2002	ND	0.05	ND	ND	ND	ND	0.3	ND	0.01
	7/29/2002	ND	0.22	ND	ND	ND	ND	0.33	ND	0.064
	10/14/2002	ND	0.29	ND	ND	ND	ND	ND	ND	0.013
	2/27/2003	ND	0.26	ND	ND	ND	ND	0.07	ND	ND
	5/22/2003	ND	0.23	ND	0.001	ND	0.014	ND	ND	0.01
	8/21/2003	ND	0.252	ND	ND	0.05	0.012	0.6	ND	0.032
	11/5/2003	ND	0.288	ND	ND	0.151	ND	1.3	ND	0.357
	2/25/2004	ND	0.256	ND	ND	0.573	0.037	5.53	ND	0.087
	5/11/2004	ND	0.212	ND	ND	0.074	0.049	0.69	ND	0.013
	9/15/2004	ND	0.237	ND	ND	0.097	0.039	0.93	ND	0.017
	11/9/2004	ND	0.168	ND	0.002	0.023	0.053	1.36	0.025	0.033
MW-5A	4/4/2002	ND	0.14	ND	0.006	ND	ND	33	0.012	4.8
	7/29/2002	ND	0.14	ND	ND	ND	ND	29	ND	4.1
	10/14/2002	ND	0.14	ND	ND	ND	ND	26	ND	4.1
	2/28/2003	ND	0.22	ND	0.003	0.017	0.03	41.8	0.015	4.38
	5/22/2003	ND	0.18	ND	0.002	0.009	ND	35.2	0.011	4.57
	8/21/2003	ND	0.143	ND	ND	ND	ND	29.3	ND	4.25
	11/5/2003	ND	0.148	ND	ND	ND	0.011	36.9	ND	4.76
	2/25/2004	ND	0.146	ND	ND	ND	0.011	31.4	ND	4.57
	5/11/2004	ND	0.147	ND	ND	ND	0.012	30.2	ND	4.42

Attachment 3, Table 2 - Historical Metals Results

Sample ID	Date	Analyte (PADEP MSC/ROD RAO) [mg/L]								
		Arsenic (0.01/0.05)	Barium (2/1)	Beryllium (0.004/0.0005)	Cadmium (0.005/0.01)	Chromium (0.1/0.05)	Copper (1/1.3)	Iron (0.3*/NA)	Lead (0.005/0.005)	Manganese (0.3*/NA)
MW-6	9/15/2004	ND	0.16	ND	ND	ND	0.041	23	ND	3.85
	11/9/2004	ND	0.148	ND	ND	ND	0.039	28.1	ND	3.72
	4/4/2002	ND	0.5	ND	ND	ND	ND	ND	ND	0.06
MW-6 (DUP)	4/4/2002	ND	0.43	ND	ND	ND	ND	0.09	ND	0.03
	7/30/2002	ND	0.063	ND	ND	ND	ND	2.6	ND	0.19
MW-6	10/11/2002	ND	0.52	ND	ND	ND	ND	ND	ND	0.088
	2/27/2003	ND	0.519	ND	ND	ND	ND	ND	ND	0.057
	5/21/2003	ND	0.485	ND	ND	ND	ND	ND	ND	0.024
	8/21/2003	ND	0.472	ND	ND	0.008	ND	0.31	ND	0.043
	11/5/2003	ND	0.515	ND	ND	ND	ND	0.47	ND	0.054
	2/25/2004	ND	0.448	ND	ND	ND	ND	0.09	ND	0.026
	5/11/2004	ND	0.444	ND	ND	ND	ND	0.08	ND	0.013
	9/15/2004	ND	0.41	ND	ND	ND	ND	ND	ND	0.019
	11/9/2004	ND	0.295	ND	ND	ND	0.013	0.97	0.007	0.044
MW-6A	4/4/2002	ND	0.059	ND	ND	ND	ND	0.82	ND	0.01
	7/30/2002	ND	0.5	ND	ND	ND	ND	ND	ND	0.096
	10/11/2002	ND	0.076	ND	ND	ND	ND	3.1	ND	0.33
	2/26/2003	ND	0.069	ND	ND	ND	0.028	0.85	0.009	0.022
	5/21/2003	ND	0.085	ND	ND	ND	0.062	4.37	0.032	0.172
	8/21/2003	ND	0.1	ND	ND	ND	0.124	1.92	0.02	0.054
	11/5/2003	ND	0.062	ND	ND	ND	ND	1.89	ND	0.216
	2/25/2004	ND	0.052	ND	ND	ND	0.014	1.06	ND	1.02
	5/11/2004	ND	0.073	ND	ND	ND	ND	1.32	ND	0.92
	9/15/2004	ND	0.074	ND	ND	0.006	0.538	4.69	0.055	0.138
	11/9/2004	ND	0.064	ND	ND	ND	ND	2.96	ND	0.737
MW-7	4/4/2002	ND	0.42	ND	ND	ND	ND	ND	ND	0.027
	7/30/2002	ND	0.24	ND	ND	ND	0.012	ND	ND	ND
	10/14/2002	ND	0.27	ND	ND	ND	ND	ND	ND	ND
	2/28/2003	ND	0.362	ND	ND	ND	ND	ND	ND	ND
	5/22/2003	ND	0.246	ND	ND	ND	ND	ND	ND	ND
	8/21/2003	ND	0.257	ND	ND	ND	ND	ND	ND	ND
	11/5/2003	ND	0.248	ND	ND	0.009	ND	0.15	ND	ND
	2/25/2004	ND	0.228	ND	ND	ND	ND	0.1	ND	ND
	5/11/2004	ND	0.251	ND	ND	0.015	ND	0.08	ND	ND
	9/15/2004	ND	0.25	ND	ND	ND	ND	0.39	ND	ND
	11/9/2004	ND	0.257	ND	ND	0.006	ND	0.33	ND	ND
MW-7A	4/3/2002	ND	0.092	ND	ND	ND	ND	ND	ND	ND
	7/31/2002	ND	0.54	ND	ND	ND	ND	ND	ND	0.13
	10/10/2002	ND	0.51	ND	ND	ND	ND	ND	ND	0.16
	2/25/2003	ND	0.332	ND	ND	ND	0.044	1.54	ND	0.038
	5/20/2003	ND	0.119	ND	ND	ND	0.018	0.11	ND	ND
	8/20/2003	ND	0.115	ND	ND	ND	ND	ND	ND	ND
	11/5/2003	ND	0.119	ND	ND	ND	0.017	0.48	ND	0.014
	2/24/2004	ND	0.1	ND	ND	ND	ND	ND	ND	ND
	5/10/2004	ND	0.084	ND	ND	ND	0.02	0.09	ND	ND
	9/14/2004	ND	0.114	ND	ND	ND	ND	0.22	ND	0.046
	11/8/2004	ND	0.135	ND	ND	ND	ND	0.11	ND	0.317

Attachment 3, Table 2 - Historical Metals Results

Sample ID	Date	Analyte (PADEP MSC/ROD RAO) [mg/L]								
		Arsenic (0.01/0.05)	Barium (2/1)	Beryllium (0.004/0.0005)	Cadmium (0.005/0.01)	Chromium (0.1/0.05)	Copper (1/1.3)	Iron (3.3*/NA)	Lead (0.005/0.005)	Manganese (0.3*/NA)
MW-8	5/21/2003	ND	0.134	ND	ND	ND	ND	6.19	ND	0.223
	8/18/2003	ND	0.143	ND	ND	ND	ND	3.32	ND	0.429
	11/3/2003	ND	0.126	ND	ND	ND	ND	4.94	ND	0.178
	2/23/2004	ND	0.12	ND	ND	ND	ND	0.8	ND	0.085
	5/11/2004	ND	0.108	ND	ND	ND	ND	0.19	ND	0.066
	9/13/2004	ND	0.106	ND	ND	ND	ND	0.08	ND	0.049
MW-8 (DUP)	9/13/2004	ND	0.105	ND	ND	ND	ND	0.1	ND	0.049
	11/8/2004	ND	0.106	ND	ND	ND	ND	0.1	ND	0.051
MW-8 (DUP)	11/8/2004	ND	0.109	ND	ND	ND	ND	0.13	ND	0.058
**	6/1/2011	0.0017 J	0.071 J	ND (0.0067 U)	ND (0.0067 U)	0.004	ND (0.0033 U)	0.20	ND (0.0013 U)	0.046
MW-8A	5/20/2003	ND	0.043	ND	ND	ND	ND	0.26	ND	0.217
	8/18/2003	ND	0.048	ND	ND	ND	ND	0.25	ND	0.063
	11/3/2003	ND	0.046	ND	ND	ND	ND	0.23	ND	0.037
	2/23/2004	ND	0.046	ND	ND	ND	ND	0.2	ND	0.01
	5/11/2004	ND	0.05	ND	ND	ND	ND	0.25	ND	0.012
	9/13/2004	ND	0.062	ND	ND	ND	ND	ND	ND	ND
	11/8/2004	ND	0.054	ND	ND	ND	ND	ND	ND	ND
MW-8A (DUP)**	6/1/2011	ND	0.087 J	ND	ND	0.0015 J	0.02	0.32	ND	0.24
MW-9	5/21/2003	ND	0.217	ND	ND	ND	ND	2.26	ND	0.046
	8/19/2003	ND	0.338	ND	ND	ND	ND	0.76	ND	0.025
MW-9	11/4/2003	0.011	0.358	ND	ND	ND	ND	0.19	ND	0.01
	2/24/2004	ND	0.339	ND	ND	ND	ND	ND	ND	ND
	5/10/2004	0.01	0.367	ND	ND	ND	0.012	ND	0.009	ND
	9/14/2004	ND	0.346	ND	ND	ND	ND	ND	ND	ND
	11/9/2004	0.01	0.356	ND	ND	ND	ND	0.13	ND	ND
**	6/1/2011	0.0012 K	0.40 J	ND (0.00067 U)	ND (0.00067 U)	ND (0.0013 U)	ND (0.0033 U)	0.25	ND (0.0013 U)	ND (0.0033 U)
MW-9A	5/21/2003	ND	0.04	ND	ND	ND	ND	1.15	ND	0.189
	8/19/2003	ND	0.054	ND	0.002	ND	ND	1.6	ND	0.322
	11/4/2003	ND	0.039	ND	ND	ND	0.015	0.17	ND	0.119
	2/24/2004	ND	0.07	ND	ND	ND	ND	0.14	ND	0.024
	5/10/2004	ND	0.087	ND	ND	0.01	0.013	6.71	ND	0.18
	9/14/2004	ND	0.061	ND	ND	ND	ND	2.56	ND	0.152
	11/9/2004	ND	0.047	ND	ND	ND	ND	1.22	ND	0.052
**	6/1/2011	ND (0.0020 U)	0.018 J	ND (0.00067 U)	ND (0.00067 U)	ND (0.0013 U)	0.0047 J	0.081	ND (0.0013 U)	0.088
EW-1 **	3/31/2009	ND	ND	0.115	ND	ND	ND	8.331	ND	0.391
MADW 41-52	7/15/2010**	0.0044J	0.12	ND	ND	ND	ND	ND	0.0032J	0.031
	5/31/2011	0.0015 K	0.14 K	0.00031 J	ND (0.0007 U)	0.0016 J	ND (0.0037 U)	0.18	ND (0.0015 U)	ND (0.0037 U)
	6/14/2012	0.0014J	0.099	ND (0.00070U)	ND (0.00070U)	ND (0.0015U)	0.057	0.084	0.0052	0.031
	11/8/2012	ND (0.0020 U)	0.11	ND (0.00070 U)	ND (0.00070 U)	0.0013 J	0.098	0.42	0.011	0.067
MACW	8/21/2003	ND	0.07	ND	ND	ND	ND	ND	ND	ND
	11/3/2003	ND	0.075	ND	ND	ND	0.013	0.23	ND	ND
	2/23/2004	ND	0.075	ND	ND	ND	ND	1.48	ND	0.055
	5/10/2004	ND	0.067	ND	ND	ND	0.028	0.53	ND	ND
	9/13/2004	ND	0.065	ND	ND	ND	ND	0.1	ND	ND
	11/9/2004	ND	0.059	ND	ND	ND	ND	ND	ND	ND
	3/31/2009	ND	0.064	ND	ND	ND	ND	0.049	ND	ND
	7/15/2010	ND (0.0059 U)	0.073	ND (0.0029 U)	ND (0.0014 U)	ND (0.0014U)	0.04	ND (0.045 U)	0.0094	ND (0.0037 U)
	11/9/2010	0.0035	0.06	ND (0.0007 U)	ND (0.0007 U)	0.0016J	0.0024 J	1.2	ND (0.0015 U)	0.028
	5/31/2011	0.0011 K	0.077 K	0.00033 J	ND (0.0007 U)	0.0016 J	0.088	0.36 K	0.011 K	0.043 K

Attachment 3, Table 2 - Historical Metals Results

		Analyte (PADEP MSC/ROD RAO) [mg/L]								
Sample ID	Date	Arsenic (0.01/0.05)	Barium (2/1)	Beryllium (0.004/0.0005)	Cadmium (0.005/0.01)	Chromium (0.1/0.05)	Copper (1/1.3)	Iron (0.3*/NA)	Lead (0.005/0.005)	Manganese (0.3*/NA)
MW-15 **	5/31/2011	0.0029 J	0.30 J	ND (0.00067 U)	ND (0.00067 U)	0.0011 J	ND (0.0033 U)	0.18	ND (0.0013 U)	ND (0.0033 U)
RW-305	3/31/2009	ND	ND	ND	ND	ND	ND	0.077	ND	ND
	6/14/2012	0.0010J	0.12	ND (0.00070U)	ND (0.00070U)	0.0036	0.0098	0.059	0.00077J	0.0068

Notes:

¹ Monitoring well MACW was abandoned on 26 August 2011.

ND = Not detected above the laboratory limit of detection (LOD)

K = Analyte present. Reported value may be biased high. Actual value is expected lower.

J = Analyte present. Indicates an estimated value between the method Detection Limit (DL) and the Limit of Quantitation (LOQ) for the analyte.

B = Not detected substantially above the level reported in laboratory or field blanks.

MW-5, 5A, 6, 6A, 7, and 7A are located offsite and upgradient. Wells with an "A" designator are overburden wells.

All concentrations are total metals unless noted

All concentrations are milligrams per liter (mg/L)

Analysis included target analyte list metals, only detected metals shown on table

ROD = Record of Decision

RAO = Remedial Action Objective, valid for overburden wells

* = Secondary contaminant MSC, included for reference

** = Dissolved concentrations

PADEP = Pennsylvania Department of Environmental Protection

MSC - Medium specific concentration

NA = Not Applicable (no RAO required for analyte)

Shading indicates concentration above primary MSC, **bold text** indicates concentration exceeds RAO. Note that the MSCs are applicable only to the dissolved fraction,

but shading has been added to those concentrations in the total fraction exceeding the MSC for reference.

U = Not detected. The associated number indicates the laboratory LOD.

MADW = Mifflin Avenue Deep Well

MACW = Mifflin Avenue Cabin Well (previously referred to as the Mifflin Avenue Residential Well)