



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION III  
ENVIRONMENTAL SCIENCE CENTER  
701 MAPES ROAD  
FORT MEADE, MARYLAND 20755-5350

DATE : October 2, 2008  
SUBJECT: Region III Data QA Review  
FROM : Colleen Walling *Colleen C. Walling*  
Region III ESAT RPO (3EA20)  
TO : Christine Wagner  
Regional Project Manager (3HS32)

Attached is the inorganic data validation report for the Battlefield Golf Club site (Case # [REDACTED] SDG # [REDACTED] completed by the Region III Environmental Services Assistance Team (ESAT) contractor under the direction of Region III EAID.

If you have any questions regarding this review, please call me at (410) 305-2763.

Attachment

cc: [REDACTED] (TTEMI)

TO File #: [REDACTED]

TDF#: [REDACTED]

OFFICE OF ANALYTICAL SERVICES AND QUALITY ASSURANCE



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ESAT Region 3  
US EPA Environmental Science Center  
701 Mapes Road Ft. Meade, MD 20755-5350  
Telephone 410-305-3037 Facsimile 410-305-3597

**DATE:** October 2, 2008

**SUBJECT:** Inorganic Data Validation (IM2 Level)  
Case: [REDACTED]  
SDG: [REDACTED]  
Site: Battlefield Golf Club

**FROM:** [REDACTED]  
Inorganic Data Reviewer  
[REDACTED]  
Senior Oversight Chemist

**TO:** Colleen Walling  
ESAT Region 3 Project Officer

**OVERVIEW**

Case [REDACTED] Sample Delivery Group (SDG) [REDACTED] consisted of twenty (20) aqueous samples analyzed for total metals by Chemtech Consulting Group (CHEM). The sample set included two (2) field duplicate pairs. Samples were analyzed in accordance with Contract Laboratory Program (CLP) Statement of Work (SOW) ILM05.4 through the Routine Analytical Services (RAS) program.

**SUMMARY**

Data were validated according to Region III Modifications to the National Functional Guidelines for Inorganic Data Review, Level IM2. Areas of concern with respect to data usability are listed below.

Samples in this SDG were analyzed by the ICP-MS method which does not include analysis for aluminum (Al), calcium (Ca), iron (Fe), magnesium (Mg), mercury (Hg), potassium (K) and sodium (Na). Hg was analyzed in SDG [REDACTED] using a cold vapor technique. The remaining analytes were analyzed by the ICP-AES method for which the results are provided in separate SDG [REDACTED]

Data in this case have been impacted by outliers present in the laboratory blanks as well as the matrix spike analysis. Details of these outliers are discussed under "Minor Problems", specific samples affected are outlined in "Table 1A" and qualified analytical results for all samples are summarized on the Data Summary Forms (DSFs).

**MINOR PROBLEMS**

Continuing calibration (CCB) and/or preparation (PB) blanks had reported results greater than the Method Detection Limits (MDLs) for the analytes listed below. Positive results for these analytes in affected samples which are less than or equal to five times ( $\leq 5X$ ) the blank concentrations may be biased high and have been qualified "B" on the DSFs.

**Blank    Affected Analytes**

CCB    antimony (Sb), arsenic (As), cadmium (Cd), chromium (Cr), lead (Pb),  
silver (Ag)

PB      barium (Ba), cobalt (Co), nickel (Ni), vanadium (V)

CCBs had negative results greater than the absolute value of the MDL for selenium (Se). Quantitation limits for this analyte in affected samples may be biased low and have been qualified "UL" on the DSFs.

The matrix spike recovery was low (<75% but >30%) for Ag. The low recovery may be attributed to matrix interferences or analyte lost during the digestion process. Positive results for this analyte in affected samples may be biased low. The "L" qualifier for this outlier has been superseded by "B" on the DSFs. Quantitation limits for this analyte in affected samples may be biased low and have been qualified "UL" on the DSFs.

**NOTES**

Reported results between MDLs and Contract Required Quantitation Limits (CRQLs) were qualified "J" on the DSFs unless superseded by "B".

The laboratory failed to submit raw data for concentration intensities to calculate the percent relative intensities (%RI) reported on Form XV, ICP-MS Internal Standards Relative Intensity Summary. However, all %RI reported on this form were inside the required limits of 60%-125%.

The laboratory failed to record the pH values of the samples on the Sample Log-In Sheet (From DC-1) upon receipt. The chain of custody (COC) records indicate that the samples were preserved properly by the sampler. Additionally, the laboratory's preparation sheet for total metals analyses listed the pH as less than two (<2) prior to digestion. No data were qualified based on this finding.

The post-digestion spike recovery was high (>125%) for Ag; however, data are not qualified based on the post-digestion spike recovery.

Reported results for field duplicate pair [REDACTED] were within 20% RPD,  $\pm$ CRQL for all analytes except copper (Cu), Pb and zinc (Zn).

Reported results for field duplicate pair [REDACTED] were within 20% RPD,  $\pm$ CRQL for all analytes except Cu.

Data for Case [REDACTED] SDG [REDACTED] were reviewed in accordance with the National Functional Guidelines for Evaluating Inorganic Analyses with Modifications for use within Region III.

**ATTACHMENTS**

**INFORMATION REGARDING REPORT CONTENT**

Table 1A is a summary of qualifiers applied to the laboratory-generated results during data validation.

TABLE 1A	SUMMARY OF QUALIFIERS ON DATA SUMMARY FORMS AFTER DATA VALIDATION
TABLE 1B	CODES USED IN COMMENTS COLUMN OF TABLE 1A
APPENDIX A	GLOSSARY OF DATA QUALIFIER CODES
APPENDIX B	DATA SUMMARY FORMS
APPENDIX C	CHAIN OF CUSTODY RECORDS
APPENDIX D	LABORATORY CASE NARRATIVE

DCN: [REDACTED]

**TABLE 1A  
SUMMARY OF QUALIFIERS ON DATA SUMMARY  
FORM AFTER DATA VALIDATION**

Case [REDACTED], SDG [REDACTED]

<u>ANALYTE</u>	<u>SAMPLES AFFECTED</u>	<u>POSITIVE VALUES</u>	<u>NON-DETECTED VALUES</u>	<u>BIAS</u>	<u>COMMENTS*</u>
Sb	[REDACTED]	B		High	CCB (0.317 J $\mu\text{g/L}$ )
	[REDACTED]	B		High	CCB (0.383 J $\mu\text{g/L}$ )
As	[REDACTED]	B		High	CCB (0.303 J $\mu\text{g/L}$ )
	[REDACTED]	B		High	CCB (0.270 J $\mu\text{g/L}$ )
Ba	All Samples Except [REDACTED]	B		High	PB (1.143 J $\mu\text{g/L}$ )
	[REDACTED]	B		High	CCB (0.207 J $\mu\text{g/L}$ )
Cd	[REDACTED]	B		High	CCB (0.183 J $\mu\text{g/L}$ )
	[REDACTED]	B		High	CCB (0.183 J $\mu\text{g/L}$ )
Cr	[REDACTED]	B		High	CCB (0.183 J $\mu\text{g/L}$ )

\* See explanation of comments in Table 1B

**TABLE 1A  
SUMMARY OF QUALIFIERS ON DATA SUMMARY  
FORM AFTER DATA VALIDATION**

Case [REDACTED] SDG [REDACTED]

<u>ANALYTE</u>	<u>SAMPLES AFFECTED</u>	<u>POSITIVE VALUES</u>	<u>NON-DETECTED VALUES</u>	<u>BIAS</u>	<u>COMMENTS*</u>
Co	[REDACTED]	B		High	PB (0.200 J µg/L)
Pb	[REDACTED]	B		High	CCB (0.110 J µg/L)
	[REDACTED]	B		High	CCB (0.123 J µg/L)
Ni	[REDACTED]	B		High	PB (0.190 J µg/L)
Se	[REDACTED]		UL	Low	CBN (-0.330 J µg/L)
	[REDACTED]		UL	Low	CBN (-0.293 J µg/L)
	[REDACTED]		UL	Low	CBN (-0.407 J µg/L)
Ag	[REDACTED]	B		High	CCB (0.090 J µg/L) MSL (48%)

\* See explanation of comments in Table 1B

**TABLE 1A  
SUMMARY OF QUALIFIERS ON DATA SUMMARY  
FORM AFTER DATA VALIDATION**

Case: ██████████ SDG ██████████

<u>ANALYTE</u>	<u>SAMPLES AFFECTED</u>	<u>POSITIVE VALUES</u>	<u>NON-DETECTED VALUES</u>	<u>BIAS</u>	<u>COMMENTS*</u>
Ag	██████████	B		High	CCB (0.093 J $\mu\text{g/L}$ ) MSL (48%)
	██████████		UL	Low	MSL (48%)
V	All Samples Except ██████████	B		High	PB (0.243 J $\mu\text{g/L}$ )

\* See explanation of comments in Table 1B

**TABLE 1B  
CODES USED IN COMMENTS COLUMN**

- CCB = Continuing calibration blanks had results >MDLs [results are in parenthesis]. Positive results which are  $\leq 5X$  the blank concentrations may be biased high.
- PB = Preparation blank had results >MDLs [results are in parenthesis]. Positive results which are  $\leq 5X$  the blank concentrations may be biased high.
- CBN = Continuing calibration blanks had negative results with absolute values >MDLs [results are in parenthesis]. Quantitation limits may be biased low.
- MSL = Matrix spike recovery was low (<75% but >30%) [% recovery is in parenthesis]. Positive results and quantitation limits may be biased low.

## **Appendix A**

### **Glossary of Data Qualifier Codes**

## GLOSSARY OF DATA QUALIFIER CODES (INORGANIC)

### CODES RELATED TO IDENTIFICATION

(confidence concerning presence or absence of analytes):

U = Not detected. The associated number indicates approximate sample concentration necessary to be detected.

(NO CODE) = Confirmed identification.

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.

### CODES RELATED TO QUANTITATION

(can be used for both positive results and sample quantitation limits):

J = Analyte present. Reported value may not be accurate or precise.

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

L = Analyte present. Reported value may be biased low. Actual value is expected to be higher.

UJ = Not detected, quantitation limit may be inaccurate or imprecise.

UL = Not detected, quantitation limit is probably higher.

### OTHER CODES

Q = No analytical result.

## **Appendix B**

### **Data Summary Forms**

DATA SUMMARY FORM: INORGANIC

Case #: [REDACTED]  
 Site: [REDACTED]  
 Lab.: [REDACTED]

SDG: [REDACTED]  
 BATTLEFIELD GOLF CLUB  
 CHEM

Number of Soil Samples: 0  
 Number of Water Samples: 20

Sample Number :		[REDACTED]									
Sampling Location :		[REDACTED]									
Field QC :		[REDACTED]									
Matrix :		Water									
Units :		ug/L									
Date Sampled :		8/26/2008		8/26/2008		8/26/2008		8/26/2008		8/26/2008	
Time Sampled :		10:50		11:33		11:26		11:28		13:16	
Dilution Factor :		1.0		1.0		1.0		1.0		1.0	
ANALYTE	CRQL	Result	Flag								
ANTIMONY	2	0.37	B	0.99	B	0.21	B				
ARSENIC											
BARIUM	10	1.7	B	11.4		1.5	B	1.3	B	10.2	
BERYLLIUM											
*CADMIUM	1										
CHROMIUM											
COBALT	1	0.20	B	0.21	B	0.14	B	0.11	B		
COPPER											
*LEAD	1	0.22	B	6.2		0.77	J	6.1		4.5	
MANGANESE											
*NICKEL	1	0.74	B	1.2		0.63	B	1.2		0.58	B
SELENIUM											
SILVER	1	0.063	B	0.083	B	0.040	B	0.037	B		UL
STRONTIUM											
VANADIUM	5	1.2	B	1.1	B	1.0	B	1.3	J	0.88	B
ZINC											

CRQL = Contract Required Quantitation Limit

\*Action Level Exists

SEE NARRATIVE FOR CODE DEFINITIONS

To calculate sample quantitation limits: (CRQL \* Dilution Factor)

Revised 09/99

DATA SUMMARY FORM: INORGANIC

Case #: [REDACTED] SDG: [REDACTED]  
 Site: BATTLEFIELD GOLF CLUB  
 Lab.: CHEM

ANALYTE	CRQL	Result	Flag								
ANTIMONY	2					0.21	B				
BARIUM	10	1.8	B	1.2	B	1.6	B	1.6	B	1.8	B
*CADMIUM	1					0.11	B	0.15	B	0.11	B
COBALT	1	0.17	B			0.13	B				
*LEAD	1	18.6		1.9		1.4		0.12	B	0.77	J
*NICKEL	1	1.3		0.63	B	0.65	B	0.45	B	0.51	B
SILVER	1		UL		UL	0.10	B	0.037	B	0.040	B
VANADIUM	5	1.5	J	0.69	B	1.2	B	0.71	B	0.78	B

CRQL = Contract Required Quantitation Limit      \*Action Level Exists      SEE NARRATIVE FOR CODE DEFINITIONS  
 To calculate sample quantitation limits: (CRQL \* Dilution Factor)      Revised 09/99

DATA SUMMARY FORM: INORGANIC

Case #:   
 Site:   
 Lab.:

SDG:   
 BATTLEFIELD GOLF CLUB   
 CHEM

Sample Number :		Water									
Sampling Location :		ug/L									
Matrix :		8/26/2008		8/27/2008		8/27/2008		8/27/2008		8/27/2008	
Units :		19:13		09:18		10:40		10:56		10:19	
Date Sampled :		1.0		1.0		1.0		1.0		1.0	
Time Sampled :		1.0		1.0		1.0		1.0		1.0	
Dilution Factor :		1.0		1.0		1.0		1.0		1.0	
ANALYTE	CRQL	Result	Flag								
ANTIMONY	2										
BARIUM	10	4.0	B	29.4		6.7	J	5.6	B	5.4	B
*CADMIUM	1									0.12	B
COBALT	1			0.11	B						
*LEAD	1	0.21	B	0.20	B	7.1		4.6		12.0	
*NICKEL	1	0.47	B	0.55	B	1.5		1.1		0.85	B
SILVER	1		UL								
VANADIUM	5	0.56	B	0.86	B	0.80	B	1.6	J	0.95	B

CRQL = Contract Required Quantitation Limit

\*Action Level Exists

SEE NARRATIVE FOR CODE DEFINITIONS

To calculate sample quantitation limits: (CRQL \* Dilution Factor)

Revised 09/99

DATA SUMMARY FORM: INORGANIC

Case #: [REDACTED] SDG: [REDACTED]  
 Site: BATTLEFIELD GOLF CLUB  
 Lab.: CHEM

Sample Number :		[REDACTED]									
Sampling Location :		[REDACTED]									
Matrix :		Water									
Units :		ug/L									
Date Sampled :		8/27/2008		8/27/2008		8/27/2008		8/27/2008		8/27/2008	
Time Sampled :		11:24		11:56		12:24		13:18		13:39	
Dilution Factor :		1.0		1.0		1.0		1.0		1.0	
ANALYTE	CRQL	Result	Flag								
ANTIMONY	2			0.23	B						
BARIUM	10	44.1		22.2		14.2		3.0	B	1.9	B
*CADMIUM	1	0.13	B	0.16	B	0.10	B				
COBALT	1										
*LEAD	1	7.4		7.7		8.7		17.9		1.7	
*NICKEL	1	5.5		1.8		138		1.0		0.90	B
SILVER	1		UL	0.097	B	0.063	B		UL		UL
VANADIUM	5	1.7	J	1.1	B	1.0	B	1.2	B	1.7	J

CRQL = Contract Required Quantitation Limit

\*Action Level Exists

SEE NARRATIVE FOR CODE DEFINITIONS

To calculate sample quantitation limits: (CRQL \* Dilution Factor)

Revised 09/99

## **Appendix C**

### **Chain-of-Custody Records**

**EPA USEPA Contract Laboratory Program**  
**Inorganic Traffic Report & Chain of Custody Record**

Case No: [REDACTED]  
 DAS No: [REDACTED]

Region: 3	Date Shipped: 9/2/2008	<b>Chain of Custody Record</b> <table border="1"> <tr> <th>Relinquished By</th> <th>(Date / Time)</th> <th>Sampler Signature</th> <th>Received By</th> <th>(Date / Time)</th> </tr> <tr> <td>1</td> <td></td> <td>[REDACTED]</td> <td>[REDACTED]</td> <td></td> </tr> <tr> <td>2</td> <td></td> <td>[REDACTED]</td> <td>[REDACTED]</td> <td></td> </tr> <tr> <td>3</td> <td></td> <td>[REDACTED]</td> <td>[REDACTED]</td> <td></td> </tr> <tr> <td>4</td> <td></td> <td>[REDACTED]</td> <td>[REDACTED]</td> <td></td> </tr> </table>	Relinquished By	(Date / Time)	Sampler Signature	Received By	(Date / Time)	1		[REDACTED]	[REDACTED]		2		[REDACTED]	[REDACTED]		3		[REDACTED]	[REDACTED]		4		[REDACTED]	[REDACTED]	
Relinquished By	(Date / Time)		Sampler Signature	Received By	(Date / Time)																						
1			[REDACTED]	[REDACTED]																							
2			[REDACTED]	[REDACTED]																							
3		[REDACTED]	[REDACTED]																								
4		[REDACTED]	[REDACTED]																								
Project Code: CT4354	Carrier Name: FedEx	Shipped to: ChemTech Consulting Group (CHEMED) 284 Sheffield Street Mountainside NJ 07092 (908) 789-8900																									
Account Code: VAN090306514	Artbill: 961942977974																										
CERCLIS ID: ALM																											
Spill ID: ALM																											
Site Name/State: Battelheld GolfVA																											
Project Leader: [REDACTED]																											
Action: Preliminary Assessment																											
Sampling Co: Tetra Tech EM Inc.																											

INORGANIC SAMPLE NO.	MATRIX/ SAMPLER	CONC/ TYPE	ANALYSIS/ TURNAROUND	TAG No./ PRESERVATIVE/ Bottles	STATION LOCATION	SAMPLE COLLECT DATE/TIME	ORGANIC SAMPLE NO.	QC Type
[REDACTED]	Potable Well/	M/G	TAL TM+B+M (14)	811 (HNO3) (1)	[REDACTED]	S: 8/25/2008 19:19		--
[REDACTED]	Potable Well/	M/G	TAL TM+B+M (14)	812 (HNO3) (1)	[REDACTED]	S: 8/25/2008 20:15		--
[REDACTED]	Potable Well/	M/G	TAL TM+B+M (14)	813 (HNO3) (1)	[REDACTED]	S: 8/26/2008 7:46		--
[REDACTED]	Potable Well/	M/G	TAL TM+B+M (14)	814 (HNO3) (1)	[REDACTED]	S: 8/26/2008 8:19		--
[REDACTED]	Potable Well/	M/G	TAL TM+B+M (14)	815 (HNO3) (1)	[REDACTED]	S: 8/26/2008 9:18		--
[REDACTED]	Potable Well/	M/G	TAL TM+B+M (14)	816 (HNO3) (1)	[REDACTED]	S: 8/26/2008 9:15		--
[REDACTED]	Potable Well/	M/G	TAL TM+B+M (14)	817 (HNO3) (1)	[REDACTED]	S: 8/26/2008 10:26		--
[REDACTED]	Potable Well/	M/G	TAL TM+B+M (14)	818 (HNO3) (1)	[REDACTED]	S: 8/26/2008 10:50		--
[REDACTED]	Potable Well/	M/G	TAL TM+B+M (14)	819 (HNO3) (1)	[REDACTED]	S: 8/26/2008 11:33		--
[REDACTED]	Potable Well/	M/G	TAL TM+B+M (14)	820 (HNO3) (1)	[REDACTED]	S: 8/26/2008 11:26		--
[REDACTED]	Potable Well/	M/G	TAL TM+B+M (14)	821 (HNO3) (1)	[REDACTED]	S: 8/26/2008 11:26		--

Shipment for Case Complete? Y	Sample(s) to be used for laboratory QC:	Additional Sampler Signature(s):	Chain of Custody Seal Number:
Analysis Key: L = Low, M = Low/Medium, H = High	Concentration: L = Low, M = Low/Medium, H = High	Type/Designator: Composite = C, Grab = G	Shipment Lead? _____
TAL DM+B+M = TAL Diss Metals+Boron+Moly, TAL MeI+B+ = TAL Metals + Boron + Molybdenum, TAL TM+B+M = TAL Total Metals+Boron+Moly			

IR Number: 3-375524367-090108-0001  
 EPA provides preliminary results. Request for preliminary results will increase analytical costs.  
 Send Copy to: Sample Management Office, Altin: [REDACTED] CSC, 15000 Conference Center Dr., Chantilly, VA 20151-3819, Phone 703/818-4200, Fax 703/818-4602  
 F215.1.047 Page 4 of 10

**EPA USEPA Contract Laboratory Program  
Inorganic Traffic Report & Chain of Custody Record**

Case No: [REDACTED]  
DAS No: [REDACTED]

Region: 3	Date Shipped: 9/2/2008	Chain of Custody Record Relinquished By: [REDACTED] (Date / Time) Received By: [REDACTED] (Date / Time)
Project Code: CT4354	Carrier Name: FedEx	
Account Code: VANDD0306614	Airbill: 96194297974	
CERCLIS ID: ALM	Shipped to: ChemTech Consulting Group (CHEMED) 294 Sheffield Street Mountainside NJ 07092 (908) 789-8900	
Spill ID: Battlefield Golf/V/A		
Site Name/State: [REDACTED]		
Project Leader: Preliminary Assessment		
Action: Tetra Tech EM Inc.		

INORGANIC SAMPLE No.	MATRIX/ SAMPLER	CONC/ TYPE	ANALYSIS/ TURNAROUND	TAG No./ PRESERVATIVE/ Bottles	STATION LOCATION	SAMPLE COLLECT DATE/TIME	ORGANIC SAMPLE No.	QC Type
[REDACTED]	Potable Well	M/G	TAL TM+B+M (14)	822 (HNO3) (1)	[REDACTED]	S: 8/26/2008 13:18		
[REDACTED]	Potable Well	M/G	TAL TM+B+M (14)	823 (HNO3) (1)	[REDACTED]	S: 8/26/2008 17:18		
[REDACTED]	Potable Well	M/G	TAL TM+B+M (14)	824 (HNO3) (1)	[REDACTED]	S: 8/26/2008 17:50		
[REDACTED]	Potable Well	M/G	TAL TM+B+M (14)	825 (HNO3) (1)	[REDACTED]	S: 8/26/2008 17:50		
[REDACTED]	Potable Well	M/G	TAL TM+B+M (14)	826 (HNO3) (1)	[REDACTED]	S: 8/26/2008 18:51		
[REDACTED]	Potable Well	M/G	TAL TM+B+M (14)	827 (HNO3) (1)	[REDACTED]	S: 8/26/2008 18:59		
[REDACTED]	Potable Well	M/G	TAL TM+B+M (14)	828 (HNO3) (1)	[REDACTED]	S: 8/26/2008 19:13		
[REDACTED]	Potable Well	M/G	TAL TM+B+M (14)	829 (HNO3) (1)	[REDACTED]	S: 8/27/2008 9:18		
[REDACTED]	Potable Well	M/G	TAL TM+B+M (14)	830 (HNO3) (1)	[REDACTED]	S: 8/27/2008 10:40		
[REDACTED]	Potable Well	M/G	TAL TM+B+M (14)	831 (HNO3) (1)	[REDACTED]	S: 8/27/2008 10:56		
[REDACTED]	Potable Well	M/G	TAL TM+B+M (14)	832 (HNO3) (1)	[REDACTED]	S: 8/27/2008 10:19		

Shipment for Case Complete? Y	Sample(s) to be used for laboratory QC:	Additional Sampler Signature(s):	Chain of Custody Seal Number:
Concentration: L = Low, M = Low/Medium, H = High	Typical Designator: Composite = C, Grab = G	Shipment Lead?	
Analysis Key: TAL DM+B+M = TAL Diss Metals+Boron+Mo; TAL Met+B+ = TAL Metals + Boron + Molybdenum; TAL TM+B+M = TAL Total Metals+Boron+Mo;			

TR Number: 3-375524367-090108-0001

**EPA USEPA Contract Laboratory Program**  
**Inorganic Traffic Report & Chain of Custody Record**

Case No: [REDACTED]  
 DAS No: [REDACTED]

Region: 3	Date Shipped: 9/2/2008	<b>Chain of Custody Record</b> Requisitioned By: [REDACTED] (Date / Time) Received By: [REDACTED] (Date / Time)
Project Code: CT4354	Carrier Name: FedEx	
Account Code: VAN000306614	Address: 961942977974	
CERCLUS ID: ALM	Shipped to: ChemTech Consulting Group (CHEMED) 284 Sheffield Street Mountainside NJ 07092 (908) 789-8900	
Spill ID: Ballefield Golf/VA		
Site Name/State: [REDACTED]		
Project Leader: Preliminary Assessment		
Action: Tetra Tech EM Inc.		

INORGANIC SAMPLE NO.	MATRIX/ SAMPLER	CONC/ TYPE	ANALYSIS/ TURBAROUND	TAG No./ PRESERVATIVE/ Boilies	STATION LOCATION	SAMPLE COLLECT DATE/TIME	ORGANIC SAMPLE No.	QC Type
[REDACTED]	Potable Well	M/G	TAL TM+B+M (14)	833 (HNO3) (1)	[REDACTED]	S: 8/27/2008 11:24		
[REDACTED]	Potable Well	M/G	TAL TM+B+M (14)	834 (HNO3) (1)	[REDACTED]	S: 8/27/2008 11:56		
[REDACTED]	Potable Well	M/G	TAL TM+B+M (14)	835 (HNO3) (1)	[REDACTED]	S: 8/27/2008 12:24		
[REDACTED]	Potable Well	M/G	TAL TM+B+M (14)	836 (HNO3) (1)	[REDACTED]	S: 8/27/2008 13:18		
[REDACTED]	Potable Well	M/G	TAL TM+B+M (14)	837 (HNO3) (1)	[REDACTED]	S: 8/27/2008 13:39		
[REDACTED]	Potable Well	M/G	TAL TM+B+M (14)	838 (HNO3) (1)	[REDACTED]	S: 8/27/2008 14:21		
[REDACTED]	Potable Well	M/G	TAL TM+B+M (14)	839 (HNO3) (1)	[REDACTED]	S: 8/27/2008 14:58		
[REDACTED]	Potable Well	M/G	TAL TM+B+M (14)	840 (HNO3) (1)	[REDACTED]	S: 8/26/2008 13:20		
[REDACTED]	Potable Well	M/G	TAL TM+B+M (14)	841 (HNO3) (1)	[REDACTED]	S: 8/27/2008 15:20		
[REDACTED]	Potable Well	M/G	TAL TM+B+M (14)	842 (HNO3) (1)	[REDACTED]	S: 8/27/2008 16:39		
[REDACTED]	Potable Well	M/G	TAL TM+B+M (14)	843 (HNO3) (1)	[REDACTED]	S: 8/27/2008 17:07		

Shipment for Case Complete? Y	Sample(s) to be used for laboratory QC:	Additional Sampler Signature(s):	Chain of Custody Seal Number:
Analysis Key: L = Low, M = Low/Medium, H = High	Concentration: TAL DM+B+M = TAL Diss Metals+Boron+MoV, TAL Met+B+ = TAL Metals + Boron + Molybdenum, TAL TM+B+M = TAL Total Metals+Boron+MoV	Type/Designate: Composite = C, Grab = G	Shipment Lead? _____

TR Number: 3-375524367-090108-0001  
 PR provides preliminary results. Requests for preliminary results will increase analytical costs.  
 EPA 1027 Databa E of 10

# U.S. EPA Region III Analytical Request Form

<b>ASQAB USE ONLY</b>			
RAS#		Analytical TAT	
DAS#		14	
NSF#			

Date: 8/21/2008 Site Activity: Removal Assessment

Site Name: Battlefield Golf Club Street Address: 1001 South Centerville Turnpike

City: Chesapeake State: VA Latitude: 36.68982 Longitude: 76.17790

Program: Superfund Acct. #: 2008T03 N 302DC6C A3LM RS00 CERCLIS #: VAN000306614

Site ID: Spill ID: A3LM Operable Unit: Date Approved: 8/20/2008

Site Specific QA Plan Submitted:  No  Yes Title: Battlefield Golf Club Fly Ash Assessment SAP

EPA Project Leader: CHRIS WAGNER Phone#: [Redacted] Cell Phone #: 804-337-3049 E-mail: Wagner.Christine@epa.gov

Request Preparer: [Redacted] Phone#: [Redacted] Cell Phone #: [Redacted] E-mail: [Redacted]

Site Leader: [Redacted] EPA CO/PO: Lorrie Murray/Karen Wodarczyk

Contractor: Tetra Tech EM Inc Parameter: TAL Metals + Boron + Molybdenum + Hg Method: ILM05.4 ICPAES+Hg

#Samples [Redacted] Matrix: soil Parameter: TAL Metals + Boron + Molybdenum + Hg Method: ILM05.4 ICPAES+Hg

#Samples [Redacted] Matrix: groundwater Parameter: TAL Metals + Boron + Molybdenum + Hg Method: ILM05.4 ICPAES & Hg

#Samples [Redacted] Matrix: potable water Parameter: TAL metals Low(w/o Al,Ca,Fe,K,Mg,Na)&B,Mo,Hg Method: ILM05.4 ICPAES

#Samples [Redacted] Matrix: potable water Parameter: Al, Ca, Fe, K, Mg, Na Method: ILM05.4 ICPMS & Hg

#Samples [Redacted] Matrix: groundwater Parameter: TAL metals Low(w/o Al,Ca,Fe,K,Mg,Na)&B,Mo,Hg Method: ILM05.4 ICPAES

#Samples [Redacted] Matrix: groundwater Parameter: Al, Ca, Fe, K, Mg, Na Method: ILM05.4 ICPAES

#Samples [Redacted] Matrix: [Redacted] Parameter: [Redacted] Method: [Redacted]

Ship Date From: 8/29/2008 Ship Date To: 9/3/2008 Org. Validation Level Inorg. Validation Level IM2

Unvalidated Data Requested:  No  Yes IF Yes, TAT Needed:  24hrs  48hrs  72hrs  Other (Specify) 14 days

Validated Data Package Due:  14 days  21 days  30days  42 days  Other (Specify)

Electronic Data Deliverables Required:  No  Yes (EDDs will be provided in Region 3 EDD Format)

Special Instructions: See attached DLs.

## **Appendix D**

### **Laboratory Case Narrative**

USEPA - CLP

COVER PAGE

Lab Name CHEMTECH CONSULTING GROUP Contract: EPW06047

Lab Code: CHEM Case No.: [REDACTED] NRAS No.: \_\_\_\_\_ SDG No.: [REDACTED]

SOW No.: ILM05.4

EPA Sample No.

[REDACTED]

Lab Sample ID

[REDACTED]

		ICP-AES	ICP-MS
Were ICP-AES and ICP-MS interelement corrections applied?	(Yes/No)	_____	<u>YES</u>
Were ICP-AES and ICP-MS background corrections applied?	(Yes/No)	_____	<u>YES</u>
If yes, were raw data generated before application of background corrections?	(Yes/No)	_____	<u>NO</u>

Comments:

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette (or via an alternate means of electronic transmission, if approved in advance by USEPA) has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: [REDACTED]  
Date: 4/16/08

Name: [REDACTED]  
Title: EPA PROJECT MANAGER

COVER PAGE

ILM05.4

1

**CHEMTECH**  
284 Sheffield Street  
Mountainside, NJ 07092

**SDG NARRATIVE**

USEPA  
SDG # [REDACTED]  
CASE # [REDACTED]  
CONTRACT # EPW06047  
LAB NAME: CHEMTECH CONSULTING GROUP  
LAB CODE: CHEM [REDACTED]  
CHEMTECH PROJECT # [REDACTED]

**A. Number of Samples and Date of Receipt**

20 Water Samples was delivered to the laboratory intact on 09/03/2008.

**B. Parameters**

Test requested for Metals CLP MS.

**C. Cooler Temp**

Indicator Bottle: Presence/Absence  
Cooler: 4°C

**D. Detail Documentation (related to Sample Handling  
Shipping, Analytical Problem, Temp of Cooler etc):**

**E. Corrective Action taken for above:**

**F. Analytical Techniques:**

All analyses were based on CLP Methodology by method ILM05.4

**CHEMTECH**

284 Sheffield Street  
Mountainside, NJ 07092

**G. Calculation:**

*Calculation example for ICP-MS Water Sample:*

Results reported in Ug/L = Results in ppb X Dilution Factor (if any) X Fraction of Sample  
Amount Taken in ICP Water- Prep

Fraction of Sample Amount Taken in ICP-MS Water- Prep = 100/100 or 50/50 =1  
(if 100 ml Initial Volume taken and Final Volume was made to 100 ml or 50 ml Initial Volume  
and Final Volume made to 50 ml in ICP-MS Water Digestion procedure)

**H. QA/QC**

Calibrations met requirements. Interference check met requirements. Blank analyses did not indicate any presence of contamination. Laboratory Control sample was within control limits. Spike sample did meet requirements except for the Silver. Duplicate sample did meet requirements. Serial Dilution did meet requirements.

I certify that the data package is in compliance with the terms and conditions of the contract both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Director or his designee, as verified by the following signature.

Signature \_\_\_\_\_

Name: \_\_\_\_\_

Date 9/16/08

Title: Project Manager

parveen

From: [REDACTED]  
Sent: Thursday, September 04, 2008 11:13 AM  
To: [REDACTED]  
Cc: slizys.dan@epa.gov; Harris Carroll@epamail.epa.gov; thaung khin-cho@epa.gov; kwedar.john@epa.gov  
Subject: Region 03 | Case [REDACTED] Lab CHEM | Issue Multiple | FINAL

Parveen,

\*\*\*Summary Start\*\*\*

-Discrepancies with tags, jars, and/or TR/COC-

Issue 1: The TR/COC lists the analysis TAL TM+B+M for the ground, surface, and potable well water samples; however, the Scheduling Notification Form lists that the analysis is ICP-AES (Al, Ca, Fe, Mg, K, Na)+B+Mo/Hg, ICP-AES TM+B+Mo/Hg, and ICP-MS Metals for water samples. The laboratory is not sure what analyses should be performed on the water samples.

Resolution 1. Per Region 3, the laboratory will perform the following analyses on the water samples. The laboratory will note the issue in the Case/SDG Narrative and proceed with the analysis of the samples.

<u>Matrix</u>	<u>Analysis</u>
Ground Water	ICP-AES TM+B+Mo by MA 1629.0 and Hg
Surface Water	ICP-AES TM+B+Mo by MA 1629.0 and Hg
Potable Well	ICP-AES (Al, Ca, Fe, Mg, K, Na)+B+Mo by MA 1629.0, Hg, and ICP-MS Metals



Issue 2: The laboratory received several water samples that have a container labeled for Dissolved Metals; however, the laboratory is not scheduled to receive any Dissolved Metals samples.

Resolution 2: Per Region 3, the laboratory will perform the following analyses on the Dissolved Metals water samples. The laboratory will note the issue in the Case/SDG Narrative and proceed with the analysis of the samples

<u>Matrix</u>	<u>Analysis (filtered)</u>
Ground Water	ICP-AES (Al, Ca, Fe, Mg, K, Na)+B+Mo by MA 1629.0, Hg, and ICP-MS Metals
Surface Water	ICP-AES TM+B+Mo by MA 1629.0 and Hg

SMO will note that the laboratory accepted the laboratory's bid price of \$ [REDACTED] for ICP-AES 5-10 Metals (plus B and Mo), \$ [REDACTED] for ICP-AES 11-22 Metals (plus B and Mo), \$ [REDACTED] for ICP-MS 11-16 Metals, and \$ [REDACTED] for Mercury for the added Dissolved Metal fraction (bid sheet attached)

-Incorrect/duplicated sample numbers-

Issue 3: The laboratory received water samples that have the same Sample ID for the Total and Dissolved Metals fraction

Resolution 3: In accordance with previous direction from Region 3, the laboratory will note the issue in the Case/SDG Narrative and proceed with the analysis of the samples using the following instructions: The Total Metals sample will keep the CLP sample ID listed on the TR/COC. The SMO coordinator will assign a new CLP sample ID for the Dissolved/Filtered Metals sample, and notify the Region and the laboratory of the new sample ID.

Total Fraction

[REDACTED]

Dissolved Fraction

[REDACTED]

9/4/2008

708

[REDACTED]

[REDACTED]

-Laboratory problems-

Issue 4: The laboratory received 2 containers for most of the soil samples received for the Case. The laboratory would like to perform the requested analyses from the 1<sup>st</sup> container and use the 2<sup>nd</sup> container as extra volume if needed. Are the laboratory's proposed actions acceptable to the Region?

Resolution 4: Per Region 3, the laboratory's proposed actions are acceptable. The laboratory will note the issue in the Case/SDG Narrative and proceed with the analysis of the samples.

\*\*\*Summary End\*\*\*

Please let me know if you have any further questions or problems

Thanks,

[REDACTED]  
[REDACTED]  
[REDACTED] Environmental Sciences Corporation (CSC)  
[REDACTED]  
[REDACTED]

9/4/08, 11:45 AM, Phone conversation between Dan Slizys (Region 3) and [REDACTED] (SMO). Dan indicated that the laboratory's proposed actions are acceptable for issue 4.

---

**From:** [REDACTED]  
**Sent:** Thursday, September 04, 2008 11:12 AM  
**To:** 'slizys.dan@epa.gov'; Harris.Carroll@epamail.epa.gov  
**Cc:** thaung.khin-cho@epa.gov; kwedar.john@epa.gov  
**Subject:** NEW ISSUE | Case [REDACTED] | Lab CHEM | Issue Multiple |

Dan/Carroll,

CHEM is reporting the following issues for Case [REDACTED] (TR/COCs attached). Issues 1, 2, and 3 have been resolved. Please advise on issue 4.

-Discrepancies with tags, jars, and/or TR/COC-

Issue 1: The TR/COC lists the analysis TAL TM+B+M for the ground, surface, and potable well water samples; however, the Scheduling Notification Form lists that the analysis is ICP-AES (Al, Ca, Fe, Mg, K, Na)+B+Mo/Hg, ICP-AES TM+B+Mo/Hg, and ICP-MS Metals for water samples. The laboratory is not sure what analyses should be performed on the water samples.

9/4/2008

709



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION III  
ENVIRONMENTAL SCIENCE CENTER  
701 MAPES ROAD  
FORT MEADE, MARYLAND 20755-5350

DATE : September 30, 2008

SUBJECT: Region III Data QA Review

FROM : Colleen Walling *Colleen K. Walling*  
Region III ESAT RPO (3EA20)

TO : Christine Wagner  
Regional Project Manager (3HS32)

Attached is the inorganic data validation report for the Battlefield Gulf Club site (Case # [REDACTED] SDG # [REDACTED] completed by the Region III Environmental Services Assistance Team (ESAT) contractor under the direction of Region III EAID.

If you have any questions regarding this review, please call me at (410) 305-2763.

Attachment

cc: [REDACTED] (TETRA TECH EMI)

TO File #: [REDACTED]

TDF#: [REDACTED]

OFFICE OF ANALYTICAL SERVICES AND QUALITY ASSURANCE

Lockheed Martin Enterprise Solutions & Services  
ESAT Region 3  
US EPA Environmental Science Center  
701 Mapes Road Ft. Meade, MD 20755-5350  
Telephone 410-305-3037 Facsimile 410-305-3597



**Date:** September 30, 2008

**Subject:** Inorganic Data Validation (IM2 Level)  
Case: [REDACTED]  
SDG : [REDACTED]  
Site : Battlefield Golf Club

**From:** [REDACTED]  
Inorganic Data Reviewer  
[REDACTED]  
Senior Oversight Chemist

**To:** Colleen Walling  
ESAT Region 3 Project Officer

### OVERVIEW

Case [REDACTED] Sample Delivery Group (SDG) [REDACTED] consisted of seventeen (17) aqueous samples analyzed for aluminum (Al), calcium (Ca), iron (Fe), magnesium (Mg), potassium (K), sodium (Na) and mercury (Hg). In addition, boron (B) and molybdenum (Mo) were analyzed per modification reference number 1629.0. The sample set included one (1) field duplicate pair. Samples were analyzed by ChemTech Consulting Group (CHEM) according to the Contract Laboratory Program (CLP) Statement of Work (SOW) ILM05.4 through the Routine Analytical Services (RAS) program.

### SUMMARY

Data were validated according to Region III Modifications to the National Functional Guidelines for Inorganic Data Review, Level IM2. Areas of concern with respect to data usability are listed below.

Data in this case have been impacted by outliers present in the laboratory blanks, matrix spike and ICP serial dilution analyses. Details of these outliers are discussed under "Major and Minor Problems," specific samples affected are outlined in "Table 1A" and qualified analytical results for all samples are summarized on the Data Summary Forms (DSFs).

### MAJOR PROBLEM

Matrix spike recoveries were extremely low (<30%) for B and Mo. Low recoveries may be attributed to matrix interferences or analyte lost during the digestion process. The "L" qualifier for positive results for these analytes in affected samples has been superseded by "J" on the DSFs. Quantitation limits for Mo in affected samples may be biased low and has been rejected and qualified "R" on the DSFs.

**MINOR PROBLEMS**

The Preparation (PB) blank had a reported result greater than the Method Detection Limit (MDL) for Hg. A positive result for this analyte in sample [REDACTED] which is less than or equal to five times ( $\leq 5X$ ) the blank concentration may be biased high and has been qualified "B" on the DSFs.

A CCB had a negative result greater than the absolute value of the MDL for Hg. The quantitation limits for this analyte in affected samples may be biased low and have been qualified "UL" on the DSFs.

The percent difference (%D) in the ICP serial dilution analysis was outside the control limit ( $>10\%$ ) for Na. Positive results for this analyte in all samples are estimated due to possible matrix interferences and has been qualified "J" on the DSFs.

**NOTES**

Results for field duplicate pair [REDACTED] were comparable.

The post digestion spike analysis reported recoveries of 44% and 93% for B and Mo, respectively; however, data are not qualified based on the post-digestion spike recovery.

The laboratory received samples labeled for dissolved metals without being scheduled for this analysis. Furthermore, the laboratory received samples that have the same sample IDs for the total and dissolved metals fractions. Per Region III, samples listed as groundwater on the COC are to be filtered and analyzed for dissolved metals. The Sample Management Office (SMO) has assigned new sample IDs for the dissolved fraction.

Reported results between MDLs and Contract Required Quantitation Limits (CRQLs) were qualified "J" on the DSFs.

Data for Case [REDACTED] SDG [REDACTED] were reviewed in accordance with the National Functional Guidelines for Evaluating Inorganic Analyses with Modifications for use within Region III.

**ATTACHMENTS****INFORMATION REGARDING REPORT CONTENT**

Table 1A is a summary of qualifiers applied to the laboratory-generated results during data validation.

Table 1A	Summary of qualifiers on data summary forms after data validation
Table 1B	Codes used in comments column of Table 1A
Appendix A	Glossary of Data Qualifier Codes
Appendix B	Data Summary Form(s)
Appendix C	Chain of Custody Records
Appendix D	Laboratory Case Narrative

DCN: [REDACTED]

**TABLE 1A  
SUMMARY OF QUALIFIERS ON DATA SUMMARY  
FORM AFTER DATA VALIDATION**

Case [REDACTED], SDG [REDACTED]

<u>ANALYTE</u>	<u>SAMPLES AFFECTED</u>	<u>POSITIVE VALUES</u>	<u>NON- DETECTED VALUES</u>	<u>BIAS</u>	<u>COMMENTS*</u>
Hg	[REDACTED]	B		High	PB (0.159 J ug/L)
	[REDACTED], [REDACTED]		UL	Low	CBN (-0.110 J ug/L)
Na	All samples	J			ISD (17%)
Mo	[REDACTED]	J			>MDL<CRQL MSE (0%)
	All samples except [REDACTED]		R	Extremely low	MSE (0%)
B	All samples	J			>MDL<CRQL MSE (1%)

\* See explanation of comments in Table 1B

**TABLE 1B**  
**CODES USED IN COMMENTS COLUMN**

PB	=	Preparation blank had result > MDL [result is in parenthesis]. Positive results which are $\leq 5X$ the blank concentration may be biased high.
CBN	=	Continuing calibration blanks had negative results with absolute values > MDL [results are in parenthesis]. The quantitation limit may be biased low.
ISD	=	Percent difference (%D) in the ICP serial dilution analysis was outside the control limit (>10%) [%D is in parenthesis]. Positive results are estimated.
>MDL<CRQL	=	Reported results are greater than MDLs but less than CRQLs and are considered estimated.
MSE	=	Matrix Spike recoveries were extremely low (<30%) [percent recoveries are in parenthesis]. Positive results may be biased low. Quantitation limits are rejected.

## Appendix A

### Glossary of Data Qualifier Codes

## GLOSSARY OF DATA QUALIFIER CODES (INORGANIC)

### CODES RELATED TO IDENTIFICATION

(confidence concerning presence or absence of analytes):

U = Not detected. The associated number indicates approximate sample concentration necessary to be detected.

(NO-CODE) = Confirmed identification.

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.

### CODES RELATED TO QUANTITATION

(can be used for both positive results and sample quantitation limits):

J = Analyte Present. Reported value may not be accurate or precise.

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

L = Analyte present. Reported value may be biased low. Actual value is expected to be higher.

UJ = Not detected, quantitation limit may be inaccurate or imprecise.

UL = Not detected, quantitation limit is probably higher.

### OTHER CODES

Q = No analytical result.

## Appendix B

### Data Summary Forms

DATA SUMMARY FORM: INORGANIC

Case #: [REDACTED] SDG: [REDACTED]  
 Site: BATTLEFIELD GOLF CLUB  
 Lab.: CHEM

Number of Soil Samples : 0  
 Number of Water Samples : 17

Dissolved Metals

Sample Number :		[REDACTED]									
Sampling Location :		[REDACTED]									
Matrix :		Water									
Units :		ug/L									
Date Sampled :		8/28/2008		8/29/2008		8/29/2008		8/28/2008		8/28/2008	
Time Sampled :		12:40		11:15		10:00		14:06		15:50	
Dilution Factor :		1.0		1.0		1.0		1.0		1.0	
ANALYTE	CRQL	Result	Flag								
ALUMINUM	200							23.6	J		
BORON	50	27.0	J	17.9	J	20.8	J	19.8	J	26.1	J
CALCIUM	5000	27800		30400		64000		20700		42600	
IRON	100	7430		7460		7440		9790		11700	
MAGNESIUM	5000	5880		11500		34700		3860	J	9630	
MOLYBDENUM	5	1.8	J		R		R		R		R
MERCURY	0.2					0.099	B				
POTASSIUM	5000	5780		1750	J	4270	J	4420	J	6400	
SODIUM	5000	19500	J	12100	J	21900	J	9660	J	13400	J

Sample Number :		[REDACTED]									
Sampling Location :		[REDACTED]									
Matrix :		Water									
Units :		ug/L									
Date Sampled :		8/28/2008		8/28/2008		8/29/2008		8/29/2008		8/29/2008	
Time Sampled :		17:47		18:10		09:10		10:50		11:50	
Dilution Factor :		1.0		1.0		1.0		1.0		1.0	
ANALYTE	CRQL	Result	Flag								
ALUMINUM	200			48.3	J	73.5	J	95.3	J		
BORON	50	16.0	J	38.7	J	48.8	J	20.3	J	6.8	J
CALCIUM	5000	61200		66700		49200		22000		39100	
IRON	100	15700		39300		12700		8500		6190	
MAGNESIUM	5000	38000		18200		13800		18500		11900	
MOLYBDENUM	5		R		R		R		R		R
MERCURY	0.2										
POTASSIUM	5000	2940	J	1570	J	2540	J	1430	J	1030	J
SODIUM	5000	28200	J	8730	J	12200	J	19200	J	10700	J

CRQL = Contract Required Quantitation Limit      \*Action Level Exists  
 To calculate sample quantitation limits: (CRQL \* Dilution Factor)

SEE NARRATIVE FOR CODE DEFINITIONS  
 Revised 09/99

Case #: [REDACTED] SDG: [REDACTED]  
 Site: BATTLEFIELD GOLF CLUB  
 Lab.: CHEM

Dissolved Metals

Sample Number :		[REDACTED]		[REDACTED]		[REDACTED]		[REDACTED]		Dup. of MC1GG6	
Sampling Location :		[REDACTED]		[REDACTED]		[REDACTED]		[REDACTED]		Water	
Field QC :		Water									
Matrix :		ug/L									
Units :		8/28/2008		8/28/2008		8/28/2008		8/28/2008		8/29/2008	
Date Sampled :		13:48		13:05		13:25		15:55		13:50	
Time Sampled :		1.0		1.0		1.0		1.0		1.0	
Dilution Factor :											
ANALYTE	CRQL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ALUMINUM	200	84.1	J					28.6	J		
BORON	50	35.1	J	64.0		43.1	J	10.3	J	28.6	J
CALCIUM	5000	19900		36200		32800		22600		65600	
IRON	100	13100		5490		12700		4360		4660	
MAGNESIUM	5000	4130	J	5700		4570	J	14600		19300	
MOLYBDENUM	5		R	1.4	J		R		R		R
MERCURY	0.2										UL
POTASSIUM	5000	4490	J	8180		5990		997	J	1460	J
SODIUM	5000	12000	J	35600	J	20900	J	12800	J	30200	J

Sample Number :		[REDACTED]		[REDACTED]							
Sampling Location :		[REDACTED]		[REDACTED]							
Field QC :		Dup. of MC1GG5									
Matrix :		Water		Water							
Units :		ug/L		ug/L							
Date Sampled :		8/29/2008		8/29/2008							
Time Sampled :		13:50		14:50							
Dilution Factor :		1.0		1.0							
ANALYTE	CRQL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ALUMINUM	200										
BORON	50	29.0	J	22.4	J						
CALCIUM	5000	69600		56000							
IRON	100	4820		6970							
MAGNESIUM	5000	20500		18100							
MOLYBDENUM	5		R		R						
MERCURY	0.2		UL		UL						
POTASSIUM	5000	1460	J	2120	J						
SODIUM	5000	31800	J	23600	J						

CRQL = Contract Required Quantitation Limit      \*Action Level Exists      SEE NARRATIVE FOR CODE DEFINITIONS  
 To calculate sample quantitation limits: (CRQL \* Dilution Factor)      Revised 09/99

Appendix C  
Chain of Custody Records

# U.S. EPA Region III Analytical Request Form

<b>ASQAB USE ONLY</b>		
RASH#	[REDACTED]	Analytical TAT
DASH#	[REDACTED]	14
NSF#		

Date: 8/21/2008 Site Activity: Removal Assessment

Site Name: Battlefield Golf Club Street Address: 1001 South Centerville Turnpike

City: Chesapeake State: VA Latitude: 36.68982 Longitude: 76.17790

Program: Superfund Acct #: 2008T03 N 302DCC6C A3LM RS00 CERCLIS #: VAN000306614

Site ID: Spill ID: A3LM Operable Unit:

Site Specific QA Plan Submitted:  No  Yes Title: Battlefield Golf Club Fly Ash Assessment SAP Date Approved: 8/20/2008

EPA Project Leader: CHRIS WAGNER Phone#: Cell Phone #: 804-337-3049 E-mail: Wagner.Christine@epa.gov

Request Preparer: [REDACTED] Phone#: Cell Phone #: E-mail:

Site Leader: [REDACTED] Phone#: Cell Phone #: E-mail:

Contractor: Tetra Tech EM Inc EPA CO/PO: Lorie Murray/Karen Wodarczyk

#Samples	Matrix:	Parameter:	Method:
[REDACTED]	soil	TAL Metals + Boron + Molybdenum + Hg	ILM05.4 ICPAES-Hg
[REDACTED]	groundwater	TAL Metals + Boron + Molybdenum + Hg	ILM05.4 ICPAES-Hg
[REDACTED]	potable water	TAL metals Low(w/o Al,Ca,Fe,K,Mg,Na)&B,Mo,Hg	ILM05.4 ICPMS & Hg
[REDACTED]	potable water	Al, Ca, Fe, K, Mg, Na	ILM05.4 ICPAES
[REDACTED]	groundwater	TAL metals Low(w/o Al,Ca,Fe,K,Mg,Na)&B,Mo,Hg	ILM05.4 ICPMS & Hg
[REDACTED]	groundwater	Al, Ca, Fe, K, Mg, Na	ILM05.4 ICPAES
[REDACTED]	Matrix:	Parameter:	Method:
[REDACTED]	Matrix:	Parameter:	Method:

Ship Date From: 8/29/2008 Ship Date To: 9/3/2008 Org. Validation Level Inorg. Validation Level IM2

Unvalidated Data Requested:  No  Yes If Yes, TAT Needed:  24hrs  48hrs  72hrs  7days  Other (Specify) 14 days

Validated Data Package Due:  14 days  21 days  30days  42 days  Other (Specify)

Electronic Data Deliverables Required:  No  Yes (EDDs will be provided in Region 3 EDD Format)

Special Instructions: See attached DLs.





## Appendix D

### Laboratory Case Narrative

USEPA - CLP

COVER PAGE

Lab Name CHEMTECH CONSULTING GROUP Contract: EPW06047

Lab Code: CHEM Case No.: [REDACTED] NRAS No.: 1629.0 SDG No.: [REDACTED]

SOW No.: ILM05.4

EPA Sample No.

Lab Sample ID

[REDACTED]

[REDACTED]

		ICP-AES	ICP-MS
Were ICP-AES and ICP-MS interelement corrections applied?	(Yes/No)	<u>YES</u>	_____
Were ICP-AES and ICP-MS background corrections applied?	(Yes/No)	<u>YES</u>	_____
If yes, were raw data generated before application of background corrections?	(Yes/No)	<u>NO</u>	_____

Comments:

THE "E" QUALIFIERS ON FORM I AND VIII FOR SODIUM INDICATE CHEMICAL OR PHYSICAL INTERFERENCE EFFECTS, WHICH WERE SUSPECTED DURING THAT ELEMENT'S ANALYSES ONLY.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette (or via an alternate means of electronic transmission, if approved in advance by USEPA) has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature:

Signature: [REDACTED]

Name: [REDACTED]

Date: 1/16/08

Title: EPA PROJECT MANAGER

COVER PAGE

ILM05.4

**CHEMTECH**  
284 Sheffield Street  
Mountainside, NJ 07092

## SDG NARRATIVE

USEPA  
SDG # [REDACTED]  
CASE # [REDACTED]  
CONTRACT # EPW06047  
LAB NAME: CHEMTECH CONSULTING GROUP  
LAB CODE: CHEM  
CHEMTECH PROJECT [REDACTED]  
MODIFIED ANALYSIS: 1629.0

### A. Number of Samples and Date of Receipt

17 Water Samples were delivered to the laboratory intact on 09/08/2008.

### B. Parameters

Test requested for ICP- AES Metals CLP12= (Al, Ca, Fe, Mg, K, Na)+B+MO & HG.

### C. Cooler Temp

Indicator Bottle: Presence/Absence  
Cooler: 4°C

### D. Detail Documentation (related to Sample Handling Shipping, Analytical Problem, Temp of Cooler etc):

Issue 1: The TR/COC lists the analysis TAL TM+B+M for the ground, surface, and potable well water samples; however, the Scheduling Notification Form lists that the analysis is ICP-AES (Al, Ca, Fe, Mg, K, Na)+B+Mo/Hg, ICP-AES TM+B+Mo/Hg, and ICP-MS Metals for water samples. The laboratory is not sure what analyses should be performed on the water samples.

Issue 2: The laboratory received several water samples that have a container labeled for Dissolved Metals; however, the laboratory is not scheduled to receive any Dissolved Metals samples.

Issue 3: The laboratory received water samples that have the same Sample ID for the Total and Dissolved Metals fraction.

Issue 4: The laboratory received 2 containers for most of the soil samples received for the Case. The laboratory would like to perform the requested analyses from the 1<sup>st</sup> container and use the 2<sup>nd</sup> container as extra volume if needed. Are the laboratory's proposed actions acceptable to the Region?

**CHEMTECH**

284 Sheffield Street

Mountainside, NJ 07092

**E. Corrective Action taken for above:**

Resolution 1: Per Region 3, the laboratory will perform the following analyses on the water samples. The laboratory will note the issue in the Case/SDG Narrative and proceed with the analysis of the samples.

<u>Matrix</u>	<u>Analysis</u>
Ground Water	ICP-AES TM+B+Mo by MA 1629.0 and Hg
Surface Water	ICP-AES TM+B+Mo by MA 1629.0 and Hg
Potable Well	ICP-AES (Al, Ca, Fe, Mg, K, Na)+B+Mo by MA 1629.0, Hg, and ICP-MS Metals

Resolution 2: Per Region 3, the laboratory will perform the following analyses on the Dissolved Metals water samples. The laboratory will note the issue in the Case/SDG Narrative and proceed with the analysis of the samples.

<u>Matrix</u>	<u>Analysis (filtered)</u>
Ground Water	ICP-AES (Al, Ca, Fe, Mg, K, Na)+B+Mo by MA 1629.0, Hg, and ICP-MS Metals
Surface Water	ICP-AES TM+B+Mo by MA 1629.0 and Hg

SMO will note that the laboratory accepted the laboratory's bid price of \$ [REDACTED] for ICP-AES 5-10 Metals (plus B and Mo), \$ [REDACTED] for ICP-AES 11-22 Metals (plus B and Mo), \$ [REDACTED] for ICP-MS 11-16 Metals, and \$ [REDACTED] for Mercury for the added Dissolved Metal fraction (bid sheet attached).

Resolution 3: In accordance with previous direction from Region 3, the laboratory will note the issue in the Case/SDG Narrative and proceed with the analysis of the samples using the following instructions: The Total Metals sample will keep the CLP sample ID listed on the TR/COC. The SMO coordinator will assign a new CLP sample ID for the Dissolved/Filtered Metals sample, and notify the Region and the laboratory of the new sample ID.

Total Fraction

[REDACTED]

Dissolved Fraction

[REDACTED]

Resolution 4: Per Region 3, the laboratory's proposed actions are acceptable. The laboratory will note the issue in the Case/SDG Narrative and proceed with the analysis of the samples.

**CHEMTECH**

284 Sheffield Street  
Mountainside, NJ 07092

**F. Analytical Techniques:**

All analyses were based on CLP Methodology by method ILM05.4

**G. Calculation:**

*Calculation example for ICP-AES Water Sample:*

Results reported in Ug/L = Results in ppm X 1000 X Dilution Factor (if any) X Fraction of Sample Amount Taken in ICP Water- Prep

Fraction of Sample Amount Taken in ICP Water- Prep = 100/100 or 50/50 =1  
(if 100 ml Initial Volume taken and Final Volume was made to 100 ml or 50 ml Initial Volume and Final Volume made to 50 ml in ICP-AES Water Digestion procedure)

*Calculation example for Hg Water Sample:*

Results reported in Ug/L = Results in ppb X Dilution Factor (if any) X Fraction of Sample Amount Taken in Water Hg-Prep.

Fraction of Sample Amount Taken in Water Hg-Prep = 100/100 =1  
(if 100 ml Initial Volume taken and made it to Final Volume as 100 ml)

**H. QA/ QC**

Calibrations met requirements. Interference check met requirements. Blank analyses did not indicate any presence of contamination. Laboratory Control sample was within control limits. Spike sample did meet requirements for Boron and Molybdenum. Duplicate sample did meet requirements. Serial Dilution did meet requirements except for Sodium.

I certify that the data package is in compliance with the terms and conditions of the contract both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Director or his designee, as verified by the following signature.

Signature \_\_\_\_\_

Name: \_\_\_\_\_

Date \_\_\_\_\_

Title: Project Manager

parveen

From: [REDACTED]  
Sent: Thursday, September 04, 2008 11:13 AM  
To: [REDACTED]  
Cc: slizys.dan@epa.gov; Harris.Carroll@epamail.epa.gov; thaung.khin-cho@epa.gov; kwedar.john@epa.gov  
Subject: Region 03 | Case [REDACTED] Lab CHEM | Issue Multiple | FINAL

[REDACTED]

\*\*\*Summary Start\*\*\*

-Discrepancies with tags, jars, and/or TR/COC-

Issue 1: The TR/COC lists the analysis TAL TM+B+M for the ground, surface, and potable well water samples; however, the Scheduling Notification Form lists that the analysis is ICP-AES (Al, Ca, Fe, Mg, K, Na)+B+Mo/Hg, ICP-AES TM+B+Mo/Hg, and ICP-MS Metals for water samples. The laboratory is not sure what analyses should be performed on the water samples.

Resolution 1: Per Region 3, the laboratory will perform the following analyses on the water samples. The laboratory will note the issue in the Case/SDG Narrative and proceed with the analysis of the samples.

Matrix

Analysis

Ground Water	ICP-AES TM+B+Mo by MA 1629.0 and Hg
Surface Water	ICP-AES TM+B+Mo by MA 1629.0 and Hg
Potable Well	ICP-AES (Al, Ca, Fe, Mg, K, Na)+B+Mo by MA 1629.0, Hg, and ICP-MS Metals



Issue 2: The laboratory received several water samples that have a container labeled for Dissolved Metals however, the laboratory is not scheduled to receive any Dissolved Metals samples.

Resolution 2: Per Region 3, the laboratory will perform the following analyses on the Dissolved Metals water samples. The laboratory will note the issue in the Case/SDG Narrative and proceed with the analysis of the samples.

Matrix

Analysis (filtered)

Ground Water	ICP-AES (Al, Ca, Fe, Mg, K, Na)+B+Mo by MA 1629.0, Hg, and ICP-MS Metals
Surface Water	ICP-AES TM+B+Mo by MA 1629.0 and Hg

SMO will note that the laboratory accepted the laboratory's bid price of \$ [REDACTED] for ICP-AES 5-10 Metals (plus B and Mo), \$ [REDACTED] for ICP-AES 11-22 Metals (plus B and Mo), \$ [REDACTED] for ICP-MS 11-16 Metals, and \$ [REDACTED] for Mercury for the added Dissolved Metal fraction (bid sheet attached).

-Incorrect/duplicated sample numbers-

Issue 3: The laboratory received water samples that have the same Sample ID for the Total and Dissolved Metals fraction.

Resolution 3: In accordance with previous direction from Region 3, the laboratory will note the issue in the Case/SDG Narrative and proceed with the analysis of the samples using the following instructions: The Total Metals sample will keep the CLP sample ID listed on the TR/COC. The SMO coordinator will assign a new CLP sample ID for the Dissolved/Filtered Metals sample, and notify the Region and the laboratory of the new sample ID.

Total Fraction

Dissolved Fraction

[REDACTED]

[REDACTED]

9/4/2008

[REDACTED]

[REDACTED]

-Laboratory problems-

Issue 4: The laboratory received 2 containers for most of the soil samples received for the Case. The laboratory would like to perform the requested analyses from the 1<sup>st</sup> container and use the 2<sup>nd</sup> container as extra volume if needed. Are the laboratory's proposed actions acceptable to the Region?

Resolution 4: Per Region 3, the laboratory's proposed actions are acceptable. The laboratory will note the issue in the Case/SDG Narrative and proceed with the analysis of the samples.

\*\*\*Summary End\*\*\*

Please let me know if you have any further questions or problems.

Thanks,

[REDACTED]

[REDACTED]

Computer Sciences Corporation (CSC)

[REDACTED]

9/4/08, 11:45 AM, Phone conversation between Dan Slizys (Region 3) and [REDACTED] (SMO). Dan indicated that the laboratory's proposed actions are acceptable for issue 4.

---

**From:** [REDACTED]  
**Sent:** Thursday, September 04, 2008 11:12 AM  
**To:** 'slizys.dan@epa.gov'; Harris.Carroll@epamail.epa.gov  
**Cc:** thaung.khin-cho@epa.gov; kwedar.john@epa.gov  
**Subject:** NEW ISSUE | Case [REDACTED] | Lab CHEM | Issue Multiple |

Dan/Carroll,

CHEM is reporting the following issues for Case [REDACTED] (TR/COCs attached). Issues 1, 2, and 3 have been resolved. Please advise on issue 4.

-Discrepancies with tags, jars, and/or TR/COC-

Issue 1: The TR/COC lists the analysis TAL TM+B+M for the ground, surface, and potable well water samples; however, the Scheduling Notification Form lists that the analysis is ICP-AES (Al, Ca, Fe, Mg, K, Na)+B+Mo/Hg, ICP-AES TM+B+Mo/Hg, and ICP-MS Metals for water samples. The laboratory is not sure what analyses should be performed on the water samples.

9/4/2008

223

10046

## Request for Quote (RFQ) for Modified Analysis

Date: August 27, 2008

**Subject:** Modification Reference Number: 1629.0  
Title: ICP-AES Metals with Boron and Molybdenum  
Sample Matrix: Water and Soil  
Fraction Affected: Metals  
Statement of Work: ILM05.4

### **Purpose:**

The Contractor Laboratory is requested to perform the following modified analyses under the Inorganic Statement of Work (SOW) ILM05.4, based on the additional specifications listed below. Unless specifically modified by this modification, all analyses, Quality Control (QC), and reporting requirements specified in SOW ILM05.4 remain unchanged and in full force and effect. The number of samples requested in this modification is not guaranteed.

*Please note that accepting a modified analysis request is voluntary, and that the Laboratory is not required to accept the modified analysis. There will be no adverse effect to the Laboratory for not accepting the modified analysis request. However, once the Laboratory accepts the request for modified analysis, it shall perform the analysis in accordance with this modification and as specified in SOW ILM05.4.*

The Laboratory is requested to review the modification described herein, determine whether or not it shall accept the requested modified analyses, and complete the attached response form. The Laboratory shall provide comments in response to the required changes in the designated area, in order to ensure that the modified analysis can be completed in accordance with the specifications described herein.

**Notice to Contractors:** Acceptance of Modified Analysis samples will not count against the monthly capacity.

**Modification to the SOW Specifications:**

The contract Laboratory shall analyze aqueous/water and soil/sediment samples for target analytes and the additional analytes Boron (B, CASRN 7440-42-8) and Molybdenum (Mo, CASRN 7439-98-7) by ICP-AES as indicated on the Traffic Report/Chain of Custody Record.

Analyte	Water CRQL (ug/L)	Soil CRQL (mg/kg)	Water Spike level (ug/L)	Soil Spike level (mg/kg)
B	50	5.0	250	25
Mo	5	0.5	25	2.5

The Laboratory must submit method Detection Limits (MDL) for Boron and Molybdenum that are less than one-half the CRQLs.

The Laboratory shall not use borosilicate glassware to digest the samples for metals analysis or prepare any sample dilutions to avoid contaminating samples with Boron. Polymer digestion vessels shall be used instead.

Post-digestion Spike requirements are per the SOW.

The Laboratory shall add Boron and Molybdenum to the ICV/CCV solutions at appropriate concentrations.

The Laboratory shall add Boron and Molybdenum to the CRI solution at the requested aqueous CRQLs.

The Laboratory shall add Boron and Molybdenum to the LCSW at the levels requested for Matrix Spike if they are not already present in the solution. The Laboratory is not required to add Boron and Molybdenum to the LCSS if they are not already present.

The Laboratory is not required to add Boron and Molybdenum to the ICSA/ICSAB solutions. The Laboratory shall use a true value of zero (0) and acceptance windows of +/- 2 times the CRQL, unless a non-zero value for these analytes has been determined for the solution(s).

The Laboratory shall add Boron and Molybdenum to Forms 1, 2A, 2B, 3, 4A, 5A, (5B), 6, 8, 9, 10A, 11, and 13

**Reporting Requirements:**

Hardcopy and electronic data reporting are required as specified per SOW ILM05.4. All hardcopy and electronic data shall be adjusted to incorporate modified specifications. This includes attaching a copy of the requirements for modified analysis to the SDG Narrative. If specific problems occur with incorporation of the modified analysis into the hardcopy and/or electronic deliverable, the Laboratory shall contact the DASS Manager within the Sample

Management Office (SMO) at (703) 818-4233 or via email at CCSSUPPORT@fedcsc.com for resolution.

All samples and/or fractions assigned to an SDG shall be analyzed under the same Modified Analysis requirements as established in this memorandum. The Laboratory shall not include data from multiple Modified Analyses in one SDG.

**The Laboratory shall include the Modification Reference Number 1629.0 on each hardcopy data form under the "NRAS No:" header appearing on each form as well as the "NRAS No." field on the Record type 21 of the electronic deliverable (if diskette deliverable is required). The Laboratory shall also document the Modification Reference Number and Solicitation Number on the SDG Coversheet.**

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**Clarifications/Revisions to the RFQ for Modified Analysis:**

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**Laboratory Name:**

**Laboratory Comments:**