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
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] DG # [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]

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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: October 01, 2008

SUBJECT: Level IM2 Inorganic Data Validation for Case [redacted]
SDG: [redacted]
Site: Battlefield Golf Club

FROM: [redacted]
Inorganic Data Reviewer

Through: [redacted]
Senior Data Review Chemist

TO: Colleen Walling
ESAT Region 3 Project Officer

OVERVIEW

Case [redacted], Sample Delivery Group (SDG) [redacted], consisted of twenty (20) aqueous samples analyzed by ICP-AES for aluminum (Al), boron (B), calcium (Ca), iron (Fe), magnesium (Mg), molybdenum (Mo), potassium (K), and sodium (Na). In addition, mercury (Hg) was analyzed in this SDG using a cold vapor technique. The sample set included no filed Quality Control (QC) samples. All samples were submitted to ChemTech Consulting Group (CHEM) for analyses. Samples were analyzed in accordance with Contract Laboratory Program (CLP) Statement of Work (SOW) ILM05.4 (Modified) through the Routine Analytical Services (RAS) program. Modifications included analysis of boron (B) at a Contract Required Quantitation Limit (CRQL) of 50 ug/L and molybdenum at 5.0 ug/L using modification reference number 1629.0

SUMMARY

Data were validated according to the 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 as well as the ICP serial dilution analysis. Details for 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

Preparation (PB) and/or Continuing Calibration (CCBs) Blanks had negative results greater than the absolute values of the MDLs for the analytes listed below. Positive results reported for boron (B) in affected samples which are less than or equal to two times (≤ 2X) the absolute values of the blank concentrations may be biased low. The "L" qualifier for this analyte was superseded by "J" on the DSFs. Quantitation limits for these analytes in affected samples may be biased low and have been qualified "UL" on the DSFs.

Blanks	Affected Analytes
PB	Boron (B), molybdenum (Mo)
CCB	B, mercury (Hg)

Percent Differences (%Ds) for ICP serial dilution analysis were outside control limit (>10%) for B and sodium (Na). Reported positive results for these analytes in affected samples are estimated and have been qualified "J" on the DSFs.

NOTES

Positive results which are less than the Contract Required Quantitation Limits (CRQLs) but greater than MDLs have been qualified "J" on the DSFs.

Data for Case [redacted] SDG [redacted], were reviewed in accordance with Region III Modifications to the National Functional Guidelines for Evaluating Inorganic Analyses, April 1993.

ATTACHMENTS

INFORMATION REGARDING REPORT CONTENT

TABLES 1A	SUMMARY OF QUALIFIERS ON DATA SUMMARY FORMS AFTER DATA VALIDATION
TABLE 1B	CODES USED IN COMMENTS COLUMN OF TABLES 1A
APPENDIX A	GLOSSARY OF DATA QUALIFIER CODES
APPENDIX B	DATA SUMMARY FORM(S)
APPENDIX C	CHAIN OF CUSTODY RECORD(S)
APPENDIX D	LABORATORY CASE NARRATIVE(S)

DCN: [redacted]

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

Case [redacted], SDG [redacted]

ANALYTE	SAMPLES AFFECTED	POSITIVE VALUES	NON-DETECTED VALUES	BIAS	COMMENTS*
B	[redacted]	J			SD (26%) CBN (– 30.455 J ug/L)
	[redacted]		UL	Low	PBN (– 10.725 J ug/L)
	[redacted]	J			SD (26%)
Mo	All Samples		UL	Low	PBN (– 1.470 J ug/L)
Hg	[redacted]		UL	Low	CBN (– 0.134 J ug/L)
Na	All samples Except [redacted]	J			SD (15%)

* See explanation of comments in Table 1B

TABLE 1B
CODES USED IN COMMENTS COLUMN

SD	=	Percent differences (%Ds) for the ICP serial dilution analysis were outside the (10%) control limit. [%Ds are in parenthesis]. Positive results are estimated.
CBN	=	Continuing calibration blanks had reported negative results greater than absolute value of MDLs [results are in parenthesis]. Reported results which are less than or equal to two times (≤2X) the absolute value of the blank and quantitation limits may be biased low.
PBN	=	The preparation blank had reported negative results greater than absolute value of MDLs [results are in parenthesis]. 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 CODE

Q = No analytical result.

Appendix B

Data Summary Forms (DSFs)

DATA SUMMARY FORM: INORGANIC

Case #: [redacted]
SDG : [redacted]
Site : BATTLEFIELD GOLF CLUB
Lab. : CHEM
Total Metals

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

Sample Number :		[redacted]		[redacted]		[redacted]		[redacted]		[redacted]	
Sampling Location :											
Matrix :		Water		Water		Water		Water		Water	
Units :		ug/L		ug/L		ug/L		ug/L		ug/L	
Date Sampled :		8/27/2008		8/27/2008		8/26/2008		8/27/2008		8/27/2008	
Time Sampled :		14:21		14:58		13:20		15:20		16:39	
Dilution Factor :		1.0		1.0		1.0		1.0		1.0	
ANALYTE	CRQL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
[illegible]	[illegible]	[illegible]		[illegible]		[illegible]		[illegible]		[illegible]	
BORON	50	20.1	J	95.4	J	46.8	J	11.7	J	46.5	J
[illegible]	[illegible]	[illegible]		[illegible]		[illegible]		[illegible]		[illegible]	
IRON	100	830		565		350		7640		767	
[illegible]	[illegible]	[illegible]		[illegible]		[illegible]		[illegible]		[illegible]	
MOLYBDENUM	5		UL		UL		UL		UL		UL
[illegible]	[illegible]	[illegible]		[illegible]		[illegible]		[illegible]		[illegible]	
POTASSIUM	5000	636	J	2480	J	2810	J	1490	J	2910	J
[illegible]	[illegible]	[illegible]		[illegible]		[illegible]		[illegible]		[illegible]	

Sample Number :		[redacted]		[redacted]		[redacted]		[redacted]		[redacted]	
Sampling Location :											
Matrix :		Water		Water		Water		Water		Water	
Units :		ug/L		ug/L		ug/L		ug/L		ug/L	
Date Sampled :		8/27/2008		8/27/2008		8/27/2008		8/27/2008		8/27/2008	
Time Sampled :		17:07		17:15		18:18		19:30		19:20	
Dilution Factor :		1.0		1.0		1.0		1.0		1.0	
ANALYTE	CRQL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
[illegible]	[illegible]	[illegible]		[illegible]		[illegible]		[illegible]		[illegible]	
BORON	50		UL	31.5	J	150	J	41.6	J	12.4	J
[illegible]	[illegible]	[illegible]		[illegible]		[illegible]		[illegible]		[illegible]	
IRON	100	5850		550		150		349		305	
[illegible]	[illegible]	[illegible]		[illegible]		[illegible]		[illegible]		[illegible]	
MOLYBDENUM	5		UL		UL		UL		UL		UL
[illegible]	[illegible]	[illegible]		[illegible]		[illegible]		[illegible]		[illegible]	
POTASSIUM	5000	599	J	2310	J	15600		3980	J	3180	J
[illegible]	[illegible]	[illegible]		[illegible]		[illegible]		[illegible]		[illegible]	

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
Total Metals

Sample Number :		[redacted]		[redacted]		[redacted]		[redacted]		[redacted]	
Sampling Location :											
Matrix :		Water		Water		Water		Water		Water	
Units :		ug/L		ug/L		ug/L		ug/L		ug/L	
Date Sampled :		8/27/2008		8/25/2008		8/29/2008		8/28/2008		8/28/2008	
Time Sampled :		19:15		19:15		10:12		17:47		09:17	
Dilution Factor :		1.0		1.0		1.0		1.0		1.0	
ANALYTE	CRQL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
[redacted]											
BORON	50	18.9	J	14.5	J	108	J	145	J		UL
[redacted]											
IRON	100	322		343		157		240		1150	
[redacted]											
MOLYBDENUM	5		UL		UL		UL		UL		UL
[redacted]											
POTASSIUM	5000	3710	J	3140	J	10400		13100		857	J
[redacted]											

Sample Number :		[redacted]		[redacted]		[redacted]		[redacted]		[redacted]	
Sampling Location :											
Matrix :		Water		Water		Water		Water		Water	
Units :		ug/L		ug/L		ug/L		ug/L		ug/L	
Date Sampled :		8/26/2008		8/27/2008		8/27/2008		8/28/2008		8/28/2008	
Time Sampled :		10:13		15:41		16:13		09:45		10:23	
Dilution Factor :		1.0		1.0		1.0		1.0		1.0	
ANALYTE	CRQL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
[redacted]											
BORON	50		UL	32.3	J		UL	321	J	596	J
[redacted]											
IRON	100			4930		40.1	J	950		1140	
[redacted]											
MOLYBDENUM	5		UL		UL		UL		UL		UL
[redacted]											
POTASSIUM	5000			8320		1000	J	3110	J	2540	J
[redacted]											

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

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

Case No: [redacted] R
DAS No:

Region:	3	Date Shipped:	9/2/2008
Project Code:	[redacted]	Carrier Name:	FedEx
Account Code:		Airbill:	961942977974,
CERCLIS ID:	VAN000306614	Shipped to:	ChemTech Consulting Group (CHEMED) 284 Sheffield Street Mountainside NJ 07092 (908) 789-8900
Spill ID:	ALM		
Site Name/State:	Battlefield Golf/VA		
Project Leader:	[redacted]		
Action:	Preliminary Assessment		
Sampling Co:	Tetra Tech EM Inc.		

Chain of Custody Record

Relinquished By	(Date / Time)	Received By	(Date / Time)
1			
2.			
3.			
4.			

Sampler Signature: [redacted]

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/ [redacted]	M/G	TAL TM+B+M (14)	833 (HNO3) (1)	[redacted]	S: 8/27/2008 11:24		--
[redacted]	Potable Well/ [redacted]	M/G	TAL TM+B+M (14)	834 (HNO3) (1)	[redacted]	S: 8/27/2008 11:56		--
[redacted]	Potable Well/ [redacted]	M/G	TAL TM+B+M (14)	835 (HNO3) (1)	[redacted]	S: 8/27/2008 12:24		--
[redacted]	Potable Well/ [redacted]	M/G	TAL TM+B+M (14)	836 (HNO3) (1)	[redacted]	S: 8/27/2008 13:18		--
[redacted]	Potable Well/ [redacted]	M/G	TAL TM+B+M (14)	837 (HNO3) (1)	[redacted]	S: 8/27/2008 13:39		--
[redacted]	Potable Well/ [redacted]	M/G	TAL TM+B+M (14)	838 (HNO3) (1)	[redacted]	S: 8/27/2008 14:21		--
[redacted]	Potable Well/ [redacted]	M/G	TAL TM+B+M (14)	839 (HNO3) (1)	[redacted]	S: 8/27/2008 14:58		--
[redacted]	Potable Well/ [redacted]	M/G	TAL TM+B+M (14)	840 (HNO3) (1)	[redacted]	S: 8/26/2008 13:20		--
[redacted]	Potable Well/ [redacted]	M/G	TAL TM+B+M (14)	841 (HNO3) (1)	[redacted]	S: 8/27/2008 15:20		--
[redacted]	Potable Well/ [redacted]	M/G	TAL TM+B+M (14)	842 (HNO3) (1)	[redacted]	S: 8/27/2008 16:39		--
[redacted]	Potable Well/ [redacted]	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:	Concentration: L = Low, M = Low/Medium, H = High	Type/Designate: Composite = C, Grab = G	Shipment Iced? _____

TAL DM+B+M = TAL Diss Metals+Boron+Moly, TAL Met+B+ = TAL Metals + Boron + Molybdenum, TAL TM+B+M = TAL Total Metals+Boron+Moly

TR Number: [redacted]

PR provides preliminary results. Requests for preliminary results will increase analytical costs.

Send Copy to: Sample Management Office, Attn: [redacted] CSC, 15000 Conference Center Dr., Chantilly, VA 20151-3819; Phone 703/818-4200; Fax 703/818-4602

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

Case No: [redacted] R
DAS No:

Region:	3	Date Shipped:	9/2/2008
Project Code:	[redacted]	Carrier Name:	FedEx
Account Code:		Airbill:	961942977974,
CERCLIS ID:	VAN000306614	Shipped to:	ChemTech Consulting Group (CHEMED) 284 Sheffield Street Mountainside NJ 07092 (908) 789-8900
Spill ID:	ALM		
Site Name/State:	Battlefield Golf/VA		
Project Leader:	[redacted]		
Action:	Preliminary Assessment		
Sampling Co:	Tetra Tech EM Inc.		

Chain of Custody Record

Relinquished By	(Date / Time)	Received By	(Date / Time)
1			
2.			
3.			
4.			

Sampler Signature: [redacted]

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/ [redacted]	M/G	TAL TM+B+M (14)	844 (HNO3) (1)	[redacted]	S: 8/27/2008 17:15		--
[redacted]	Potable Well/ [redacted]	M/G	TAL TM+B+M (14)	845 (HNO3) (1)	[redacted]	S: 8/27/2008 18:18		--
[redacted]	Potable Well/ [redacted]	M/G	TAL TM+B+M (14)	846 (HNO3) (1)	[redacted]	S: 8/27/2008 19:30		--
[redacted]	Potable Well/ [redacted]	M/G	TAL TM+B+M (14)	847 (HNO3) (1)	[redacted]	S: 8/27/2008 19:20		--
[redacted]	Potable Well/ [redacted]	M/G	TAL TM+B+M (14)	848 (HNO3) (1)	[redacted]	S: 8/27/2008 19:15		--
[redacted]	Potable Well/ [redacted]	M/G	TAL TM+B+M (14)	849 (HNO3) (1)	[redacted]	S: 8/25/2008 19:15		--
[redacted]	Potable Well/ [redacted]	M/G	TAL TM+B+M (14)	850 (HNO3) (1)	[redacted]	S: 8/29/2008 10:12		--
[redacted]	Potable Well/ [redacted]	M/G	TAL TM+B+M (14)	851 (HNO3) (1)	[redacted]	S: 8/28/2008 17:47		--
[redacted]	Potable Well/ [redacted]	M/G	TAL TM+B+M (14)	852 (HNO3) (1)	[redacted]	S: 8/28/2008 9:17		
[redacted]	Potable Well/ [redacted]	M/G	TAL TM+B+M (14)	853 (HNO3) (1)	[redacted]	S: 8/26/2008 10:13		--
[redacted]	Potable Well/ [redacted]	M/G	TAL TM+B+M (14)	854 (HNO3) (1)	[redacted]	S: 8/27/2008 15:41		--

Shipment for Case Complete? Y	Sample(s) to be used for laboratory QC:	Additional Sampler Signature(s):	Chain of Custody Seal Number:
Analysis Key:	Concentration: L = Low, M = Low/Medium, H = High	Type/Designate: Composite = C, Grab = G	Shipment Iced? _____

TAL DM+B+M = TAL Diss Metals+Boron+Moly, TAL Met+B+ = TAL Metals + Boron + Molybdenum, TAL TM+B+M = TAL Total Metals+Boron+Moly

TR Number: [redacted]

PR provides preliminary results. Requests for preliminary results will increase analytical costs.

Send Copy to: Sample Management Office, Attn: [redacted] CSC, 15000 Conference Center Dr., Chantilly, VA 20151-3819; Phone 703/818-4200; Fax

10063

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

Case No: [redacted] R
DAS No:

Region:	3	Date Shipped:	9/2/2008
Project Code:	[redacted]	Carrier Name:	FedEx
Account Code:		Airbill:	961942977974.
CERCLIS ID:	VAN000306614	Shipped to:	ChemTech Consulting Group (CHEMED) 284 Sheffield Street Mountainside NJ 07092 (908) 789-8900
Spill ID:	ALM		
Site Name/State:	Battlefield Golf/VA		
Project Leader:	[redacted]		
Action:	Preliminary Assessment		
Sampling Co:	Tetra Tech EM Inc.		

Chain of Custody Record

Relinquished By	(Date / Time)	Received By	(Date / Time)
1			
2.			
3.			
4.			

Sampler Signature: [redacted]

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/ [redacted]	M/G	TAL TM+B+M (14)	855 (HNO3) (1)	[redacted]	S: 8/27/2008 16:13		--
[redacted]	Potable Well/ [redacted]	M/G	TAL TM+B+M (14)	856 (HNO3) (1)	[redacted]	S: 8/28/2008 9:45		--
[redacted]	Potable Well/ [redacted]	M/G	TAL TM+B+M (14)	857 (HNO3) (1)	[redacted]	S: 8/28/2008 10:23		-
[redacted]	Potable Well/ [redacted]	M/G	TAL TM+B+M (14)	858 (HNO3) (1)	[redacted]	S: 8/28/2008 10:29		--
[redacted]	Potable Well/ [redacted]	M/G	TAL TM+B+M (14)	859 (HNO3) (1)	[redacted]	S: 8/29/2008 11:19		
[redacted]	Potable Well/ [redacted]	M/G	TAL TM+B+M (14)	860 (HNO3) (1)	[redacted]	S: 8/29/2008 11:19		--
[redacted]	Potable Well/ [redacted]	M/G	TAL TM+B+M (14)	861 (HNO3) (1)	[redacted]	S: 8/29/2008 11:30		--
[redacted]	Potable Well/ [redacted]	M/G	TAL TM+B+M (14)	862 (HNO3) (1)	[redacted]	S: 8/28/2008 11:13		--
[redacted]	Soil (>12")/ [redacted]	M/G	TAL Met+B+ (14)	863 (Ice Only), 864 (Ice Only) (2)	[redacted]	S: 8/25/2008 10:18		--
[redacted]	Soil (>12")/ [redacted]	M/G	TAL Met+B+ (14)	865 (Ice Only), 866 (Ice Only) (2)	[redacted]	S: 8/25/2008 11:35		--
[redacted]	Soil (>12")/ [redacted]	M/G	TAL Met+B+ (14)	867 (Ice Only), 868 (Ice Only) (2)	[redacted]	S: 8/25/2008 12:15		--

Shipment for Case Complete? Y	Sample(s) to be used for laboratory QC:	Additional Sampler Signature(s):	Chain of Custody Seal Number:
Analysis Key:	Concentration: L = Low, M = Low/Medium, H = High	Type/Designate: Composite = C, Grab = G	Shipment Iced? _____

TAL DM+B+M = TAL Diss Metals+Boron+Moly, TAL Met+B+ = TAL Metals + Boron + Molybdenum, TAL TM+B+M = TAL Total Metals+Boron+Moly

TR Number: [redacted]

PR provides preliminary results. Requests for preliminary results will increase analytical costs.

Send Copy to: Sample Management Office, Attn: [redacted], CSC, 15000 Conference Center Dr., Chantilly, VA 20151-3819; Phone 703/818-4200; Fax 703/818-4602

U.S. EPA Region III Analytical Request Form

[redacted] 8-25-08

ASQAB USE ONLY		
RAS#	[redacted]	Analytical TAT
DAS#		14
NSF#		

10064

[redacted]

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:	
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#: [redacted]	Cell Phone #: [redacted]	E-mail: [redacted]
Site Leader: [redacted]	Phone#: [redacted]	Cell Phone #: [redacted]	E-mail: [redacted]
Contractor: Tetra Tech EM Inc	EPA CO/PO: Lorrie Murray/Karen Wodarczyk		

#Samples [redacted]	Matrix: soil	Parameter: TAL Metals + Boron + Molybdenum + Hg CHEM	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 ICPMS & Hg
#Samples [redacted]	Matrix: potable water	Parameter: Al, Ca, Fe, K, Mg, Na	Method: ILM05.4 ICPAES
#Samples [redacted]	Matrix: groundwater	Parameter: TAL metals Low(w/o Al,Ca,Fe,K,Mg,Na)&B,Mo,Hg	Method: ILM05.4 ICPMS & Hg
#Samples [redacted]	Matrix: groundwater	Parameter: Al, Ca, Fe, K, Mg, Na	Method: ILM05.4 ICPAES
#Samples	Matrix:	Parameter:	Method:
#Samples	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)	YES	
Were ICP-AES and ICP-MS background corrections applied?	(Yes/No)	YES	
If yes, were raw data generated before application of background corrections?	(Yes/No)	NO	

Comments:

THE "E" QUALIFIERS ON FORM I AND VIII FOR BORON AND SODIUM INDICATE CHEMICAL OR PHYSICAL INTERFERENCE EFFECTS, WHICH WERE SUSPECTED DURING THOSE ELEMENTS' 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: [redacted] 9/16/08 Title: EPA PROJECT MANAGER

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

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

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):

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-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. Duplicate sample did meet requirements. Serial Dilution did meet requirements except for Boron and 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 [redacted] Name: [redacted]

Date 9/16/08 Title: Project Manager

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.

Clarifications/Revisions to the RFQ for Modified Analysis:

Laboratory Name:
Laboratory Comments:

Contractor Laboratory Acknowledgment Document

Analysis	Modification Reference Number	Hardcopy Turnaround Requirement	Preliminary Results (Y/N)	PDF Delivery (Y/N)	(A) Estimated No. of Samples by Matrix (including billable QC)	Cost For Modified Analysis	
						(B) New Per Sample Price	(A x B) Total Cost
ICP-AES 5-10 Metals (plus B and Mo)	1629.0	14 days	N	N	149 water	$_____	$_____
ICP-AES 11-22 Metals (plus B and Mo)	1629.0	14 days	N	N	28 water 39 soil	$_____	$_____
ICP-MS 11-16 Metals	N/A	14 days	N	N	149 water	$_____	$_____
Mercury	N/A	14 days	N	N	177 water 39 soil	$_____	$_____
						Total Project Cost	$_____

Project Information
Estimated Shipping Period: 8/29/2008 through 9/3/2008
Additional Information: Please note that the samples will ship under two Cases.

Note: The requirements in the RFQ are as stated, and the Government will reduce the line item price listed on the bid sheet for late deliverables at a rate of 5 percent per calendar day late, up to a maximum of 50 percent. The Government will treat noncompliant data and late data for Preliminary Results in accordance with the terms and conditions of the contract, using the price listed on the bid sheet as the basis for the calculation.

Name of Contractor Laboratory: _____

Contract Number: _____

___ Laboratory AGREES to perform analysis through the modified analysis protocol outlined in Modified Analysis Request.
___ Laboratory DECLINES to perform analysis through the modified analysis protocol outlined in Modified Analysis Request.

Signature of Laboratory Representative: _____ Date: _____

Signature of USEPA Contracting Officer: _____ Date: _____

Lisa
Penix/ESC/R3/USEPA/US
10/03/2008 10:14 AM

To Christine Wagner/R3/USEPA/US@EPA
cc Victor Yastrop/ESC/R3/USEPA/US@EPA,
bcc [redacted]
Subject [redacted] - Validated Electronic Data for Battlefield Golf Club

Christine Wagner
US EPA Region 3
1650 Arch Street
Philadelphia, PA 19103-2029

October 3, 2008

Dear Christine,

Attached to this message you will find electronic files containing the **validation report and validated** inorganic data for the Battlefield Golf Club site, Case # [redacted] SDG [redacted] The validation of this case was completed by the Region III Environmental Services Assistance Team (ESAT).

Please contact ESAT's PO, Colleen Walling by phone at 410-305-2763 or e-mail at Walling.Colleen@epa.gov if additional assistance is needed.

Sincerely,

Lisa D. Penix

TO # [redacted] TDF # [redacted]

[redacted]idated_DGF.xls [redacted]Validated_EDD.xls

****

Lisa D. Penix
ESAT Region 3
Lockheed Martin Enterprise Solutions & Services
EPA Environmental Science Center
701 Mapes Road
Fort Meade, MD 20755
Telephone (410) 305 - 3020
Fax (410) 305 - 3095
email: Penix.Lisa@epamail.epa.gov

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
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]

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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

LOCKHEED MARTIN
We never forget who we're working for

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 selected total metals. 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 and matrix spike analyses. 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 blanks (CCBs) had reported results greater than the Method Detection Limits (MDLs) for antimony (Sb), cadmium (Cd), chromium (Cr), lead (Pb), silver (Ag), thallium (Tl) and vanadium (V). Positive results for these analytes in affected samples which are less than or equal to five times (≤5X) blank concentrations may be biased high and have been qualified "B" on the DSFs.

A CCB had a negative result 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. Low recoveries may be attributed to matrix interferences or analyte lost during the digestion process. The "L" qualifier for positive results for Ag was superseded by "B" on the DSFs. Quantitation limits for this analyte may be biased low and have been qualified "UL" on the DSFs.

NOTES

The post digestion spike analysis reported a recovery of 131% for Ag: however, data are not qualified based on the post-digestion spike recovery.

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

ANALYTE	SAMPLES AFFECTED	POSITIVE VALUES	NON-DETECTED VALUES	BIAS	COMMENTS*
Sb	[redacted]	B		High	CCB (0.310 J ug/L)
Cd	[redacted]	B		High	CCB (0.180 Jug/L)
	[redacted]	B		High	CCB (0.177 J ug/L)
Cr	[redacted]	B		High	CCB (0.107 J ug/L)
	[redacted]	B		High	CCB (0.107 J ug/L)
Pb	[redacted]	B		High	CCB (0.100 J ug/L)
Se	[redacted]		UL	Low	CBN (-0.330 J ug/L)
Ag	[redacted]3	B		High	CCB (0.093 J ug/L) MSL (48%)
	[redacted]	B		High	CCB (0.090 J ug/L) MSL (48%)
	[redacted]	B		High	CCB (0.090 J ug/L) MSL (48%)
	[redacted]		UL	Low	MSL (48%)
Tl	[redacted]	B		High	CCB (0.163 J ug/L)

* See explanation of comments in Table 1B

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

Case [redacted] SDG [redacted]

ANALYTE	SAMPLES AFFECTED	POSITIVE VALUES	NON-DETECTED VALUES	BIAS	COMMENTS*
V	[redacted]	B		High	CCB (0.350 J ug/L)
	[redacted]	B		High	CCB (0.270 J ug/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 ≤5X the blank concentrations may be biased high.
CBN	=	Continuing calibration blank had a negative result with absolute value > MDL [results are in parenthesis]. Quantitation limits may be biased low.
MSL	=	Matrix Spike recovery was low (<75% but >30%) [percent 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]
SDG : [redacted]
Site : BATTLEFIELD GOLF CLUB
Lab. : CHEM

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

Total Metals

Sample Number :		[redacted]		[redacted]		[redacted]		[redacted]		[redacted]	
Sampling Location :											
Matrix :		Water		Water		Water		Water		Water	
Units :		ug/L		ug/L		ug/L		ug/L		ug/L	
Date Sampled :		8/27/2008		8/27/2008		8/26/2008		8/27/2008		8/27/2008	
Time Sampled :		14:21		14:58		13:20		15:20		16:39	
Dilution Factor :		1.0		1.0		1.0		1.0		1.0	
ANALYTE	CRQL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ANTIMONY	2	0.40	B	1.1	B			0.22	B		
*ARSENIC	1	1.7		1.8		1.6		1.7		1.5	
BARIUM	10	36.0		21.1		2.8	J	9.9	J	1.7	J
BERYLLIUM	1							0.10	J		
*CADMIUM	1							0.10	B		
*CHROMIUM	2	1.1	J	1.4	J	0.74	J	0.75	J	0.64	J
COBALT	1							1.1		0.11	J
COPPER	2	5.7		88.9		12.7		17.5		10.3	
*LEAD	1	0.27	B	2.4		2.0		1.3		0.20	J
MANGANESE	1	165		169		11.1		232		6.9	
*NICKEL	1	2.4		2.6		0.80	J	1.7		0.68	J
SELENIUM	5										
SILVER	1	0.037	B	0.083	B		UL	0.097	B	0.043	B
THALLIUM	1			0.12	B						
VANADIUM	5	1.0	B	1.1	B	1.3	B	1.2	B	1.2	B
ZINC	2	61.7		24.6		12.4		13.8		2.6	

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

Total Metals

Sample Number :		[redacted]		[redacted]		[redacted]		[redacted]		[redacted]	
Sampling Location :											
Matrix :		Water		Water		Water		Water		Water	
Units :		ug/L		ug/L		ug/L		ug/L		ug/L	
Date Sampled :		8/27/2008		8/27/2008		8/27/2008		8/27/2008		8/27/2008	
Time Sampled :		17:07		17:15		18:18		19:30		19:20	
Dilution Factor :		1.0		1.0		1.0		1.0		1.0	
ANALYTE	CRQL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ANTIMONY	2										
*ARSENIC	1	1.3		1.3		1.4		1.5		1.4	
BARIUM	10	9.3	J	1.6	J	1.9	J	5.6	J	1.7	J
BERYLLIUM	1										
*CADMIUM	1	0.10	B					0.26	B		
*CHROMIUM	2	0.74	J	0.67	J	0.64	J	0.72	J	1.1	J
COBALT	1	0.33	J							0.12	J
COPPER	2	76.0		10.1		6.4		80.5		2.1	
*LEAD	1	6.0		0.54	J	2.0		6.3		0.22	J
MANGANESE	1	112		5.9		8.4		11.1		10.2	
*NICKEL	1	0.47	J	0.78	J	0.89	J	1.7		0.55	J
SELENIUM	5										
SILVER	1		UL		UL		UL	0.040	B		UL
THALLIUM	1										
VANADIUM	5	1.5	B	1.1	B	0.63	B	1.2	B	1.3	B
ZINC	2	42.3		3.4		7.3		71.5		3.3	

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

Total Metals

Sample Number :		[redacted]		[redacted]		[redacted]		[redacted]		[redacted]	
Sampling Location :											
Matrix :		Water		Water		Water		Water		Water	
Units :		ug/L		ug/L		ug/L		ug/L		ug/L	
Date Sampled :		8/27/2008		8/25/2008		8/29/2008		8/28/2008		8/28/2008	
Time Sampled :		19:15		19:15		10:12		17:47		09:17	
Dilution Factor :		1.0		1.0		1.0		1.0		1.0	
ANALYTE	CRQL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ANTIMONY	2										
*ARSENIC	1	1.4		1.3		1.5		1.6		1.4	
BARIUM	10	1.4	J	1.5	J	1.1	J	1.7	J	15.0	
BERYLLIUM	1										
*CADMIUM	1	0.10	B							0.12	B
*CHROMIUM	2	0.57	J	0.52	B	0.57	J	0.65	J	0.52	B
COBALT	1							0.12	J		
COPPER	2	97.1		9.3		22.5		39.5		87.9	
*LEAD	1	18.9		0.49	J	1.9		2.2		7.2	
MANGANESE	1	9.4		9.4		4.3		4.4		145	
*NICKEL	1	1.1		0.54	J	0.67	J	0.62	J	1.3	
SELENIUM	5								UL		UL
SILVER	1		UL		UL		UL	0.087	B	0.043	B
THALLIUM	1										
VANADIUM	5	1.1	B	0.90	B	0.69	B	1.0	B	1.2	B
ZINC	2	66.5		11.6		28.1		30.2		73.2	

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

Total Metals

Sample Number :	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Sampling Location :					
Matrix :	Water	Water	Water	Water	Water
Units :	ug/L	ug/L	ug/L	ug/L	ug/L
Date Sampled :	8/26/2008	8/27/2008	8/27/2008	8/28/2008	8/28/2008
Time Sampled :	10:13	15:41	16:13	09:45	10:23
Dilution Factor :	1.0	1.0	1.0	1.0	1.0

ANALYTE	CRQL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ANTIMONY	2										
*ARSENIC	1	2.6		1.5		1.5		1.6		1.6	
BARIUM	10	59.0		33.0		0.50	J	47.8		30.9	
BERYLLIUM	1	0.51	J								
*CADMIUM	1	0.16	B								
*CHROMIUM	2	0.99	J	0.69	J	0.75	J	0.63	J	0.71	J
COBALT	1	8.7				0.11	J				
COPPER	2	55.3		15.6		148		16.4		24.3	
*LEAD	1	12.2		0.67	J	11.8		1.0		2.1	
MANGANESE	1	102		178		2.4		238		166	
*NICKEL	1	8.1		0.66	J	0.82	J	2.2		2.8	
SELENIUM	5		UL		UL		UL		UL		UL
SILVER	1		UL		UL		UL		UL		UL
THALLIUM	1										
VANADIUM	5	2.4	J	0.76	B	0.75	B	0.87	B	1.2	B
ZINC	2	40.0		18.4		16.9		8.4		38.7	

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

[redacted] 8-25-08

ASQAB USE ONLY		
RAS#	[redacted]	Analytical TAT
DAS#		14
NSF#		

10088

[redacted]

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:	
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#: [redacted]	Cell Phone #: [redacted]	E-mail: [redacted]
Site Leader: [redacted]	Phone#: [redacted]	Cell Phone #: [redacted]	E-mail: [redacted]
Contractor: Tetra Tech EM Inc	EPA CO/PO: Lorrie Murray/Karen Wodarczyk		
#Samples [redacted]	Matrix: soil	Parameter: TAL Metals + Boron + Molybdenum + Hg CHEM	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 ICPMS & Hg
#Samples [redacted]	Matrix: potable water	Parameter: Al, Ca, Fe, K, Mg, Na	Method: ILM05.4 ICPAES
#Samples [redacted]	Matrix: groundwater	Parameter: TAL metals Low(w/o Al,Ca,Fe,K,Mg,Na)&B,Mo,Hg	Method: ILM05.4 ICPMS & Hg
#Samples [redacted]	Matrix: groundwater	Parameter: Al, Ca, Fe, K, Mg, Na	Method: ILM05.4 ICPAES
#Samples	Matrix:	Parameter:	Method:
#Samples	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.

Anal_req_form

10089

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

Case No: [redacted] R
DAS No:

Region:	3	Date Shipped:	9/2/2008
Project Code:	[redacted]	Carrier Name:	FedEx
Account Code:		Airbill:	961942977974.
CERCLIS ID:	VAN000306614	Shipped to:	ChemTech Consulting Group (CHEMED) 284 Sheffield Street Mountainside NJ 07092 (908) 789-8900
Spill ID:	ALM		
Site Name/State:	Battlefield Golf/VA		
Project Leader:	[redacted]		
Action:	Preliminary Assessment		
Sampling Co:	Tetra Tech EM Inc.		

Chain of Custody Record

Relinquished By	(Date / Time)	Received By	(Date / Time)
1			
2.			
3.			
4.			

Sampler Signature: [redacted]

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/ [redacted]	M/G	TAL TM+B+M (14)	844 (HNO3) (1)	[redacted]	S: 8/27/2008 17:15		--
[redacted]	Potable Well/ [redacted]	M/G	TAL TM+B+M (14)	845 (HNO3) (1)	[redacted]	S: 8/27/2008 18:18		--
[redacted]	Potable Well/ [redacted]	M/G	TAL TM+B+M (14)	846 (HNO3) (1)	[redacted]	S: 8/27/2008 19:30		--
[redacted]	Potable Well/ [redacted]	M/G	TAL TM+B+M (14)	847 (HNO3) (1)	[redacted]	S: 8/27/2008 19:20		--
[redacted]	Potable Well/ [redacted]	M/G	TAL TM+B+M (14)	848 (HNO3) (1)	[redacted]	S: 8/27/2008 19:15		--
[redacted]	Potable Well/ [redacted]	M/G	TAL TM+B+M (14)	849 (HNO3) (1)	[redacted]	S: 8/25/2008 19:15		--
[redacted]	Potable Well/ [redacted]	M/G	TAL TM+B+M (14)	850 (HNO3) (1)	[redacted]	S: 8/29/2008 10:12		--
[redacted]	Potable Well/ [redacted]	M/G	TAL TM+B+M (14)	851 (HNO3) (1)	[redacted]	S: 8/28/2008 17:47		--
[redacted]	Potable Well/ [redacted]	M/G	TAL TM+B+M (14)	852 (HNO3) (1)	[redacted]	S: 8/28/2008 9:17		--
[redacted]	Potable Well/ [redacted]	M/G	TAL TM+B+M (14)	853 (HNO3) (1)	[redacted]	S: 8/26/2008 10:13		--
[redacted]	Potable Well/ [redacted]	M/G	TAL TM+B+M (14)	854 (HNO3) (1)	[redacted]	S: 8/27/2008 15:41		--

Shipment for Case Complete? Y	Sample(s) to be used for laboratory QC:	Additional Sampler Signature(s):	Chain of Custody Seal Number:
Analysis Key:	Concentration: L = Low, M = Low/Medium, H = High	Type/Designate: Composite = C, Grab = G	Shipment Iced? _____

TAL DM+B+M = TAL Diss Metals+Boron+Moly, TAL Met+B+ = TAL Metals + Boron + Molybdenum, TAL TM+B+M = TAL Total Metals+Boron+Moly

TR Number: [redacted]

REGION COPY

PR provides preliminary results. Requests for preliminary results will increase analytical costs.

Send Copy to: Sample Management Office, Attn: [redacted] CSC, 15000 Conference Center Dr., Chantilly, VA 20151-3819; Phone 703/818-4200; Fax 703/818-4602

10090

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

Case No: [redacted] R
DAS No:

Region:	3	Date Shipped:	9/2/2008
Project Code:	[redacted]	Carrier Name:	FedEx
Account Code:		Airbill:	961942977974,
CERCLIS ID:	VAN000306614	Shipped to:	ChemTech Consulting Group (CHEMED) 284 Sheffield Street Mountainside NJ 07092 (908) 789-8900
Spill ID:	ALM		
Site Name/State:	Battlefield Golf/VA		
Project Leader:	[redacted]		
Action:	Preliminary Assessment		
Sampling Co:	Tetra Tech EM Inc.		

Chain of Custody Record

Sampler Signature: [redacted]

Relinquished By (Date / Time)	Received By (Date / Time)
1	
2.	
3.	
4.	

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/ [redacted]	M/G	TAL TM+B+M (14)	833 (HNO3) (1)	[redacted]	S: 8/27/2008 11:24		--
[redacted]	Potable Well/ [redacted]	M/G	TAL TM+B+M (14)	834 (HNO3) (1)	[redacted]	S: 8/27/2008 11:56		--
[redacted]	Potable Well/ [redacted]	M/G	TAL TM+B+M (14)	835 (HNO3) (1)	[redacted]	S: 8/27/2008 12:24		--
[redacted]	Potable Well/ [redacted]	M/G	TAL TM+B+M (14)	836 (HNO3) (1)	[redacted]	S: 8/27/2008 13:18		--
[redacted]	Potable Well/ [redacted]	M/G	TAL TM+B+M (14)	837 (HNO3) (1)	[redacted]	S: 8/27/2008 13:39		--
[redacted]	Potable Well/ [redacted]	M/G	TAL TM+B+M (14)	838 (HNO3) (1)	[redacted]	S: 8/27/2008 14:21		--
[redacted]	Potable Well/ [redacted]	M/G	TAL TM+B+M (14)	839 (HNO3) (1)	[redacted]	S: 8/27/2008 14:58		--
[redacted]	Potable Well/ [redacted]	M/G	TAL TM+B+M (14)	840 (HNO3) (1)	[redacted]	S: 8/26/2008 13:20		--
[redacted]	Potable Well/ [redacted]	M/G	TAL TM+B+M (14)	841 (HNO3) (1)	[redacted]	S: 8/27/2008 15:20		--
[redacted]	Potable Well/ [redacted]	M/G	TAL TM+B+M (14)	842 (HNO3) (1)	[redacted]	S: 8/27/2008 16:39		--
[redacted]	Potable Well/ [redacted]	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:	Concentration: L = Low, M = Low/Medium, H = High	Type/Designate: Composite = C, Grab = G	Shipment Iced?

TAL DM+B+M = TAL Diss Metals+Boron+Moly, TAL Met+B+ = TAL Metals + Boron + Molybdenum, TAL TM+B+M = TAL Total Metals+Boron+Moly

TR Number: [redacted]

REGION COPY

PR provides preliminary results. Requests for preliminary results will increase analytical costs.

Send Copy to: Sample Management Office, Attn: [redacted] CSC, 15000 Conference Center Dr., Chantilly, VA 20151-3819; Phone 703/818-4200; Fax 703/818-4602

10091

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

Case No: [redacted] R
DAS No:

Region:	3	Date Shipped:	9/2/2008
Project Code:	CT4354	Carrier Name:	FedEx
Account Code:		Airbill:	961942977974.
CERCLIS ID:	VAN000306614	Shipped to:	ChemTech Consulting Group (CHEMED) 284 Sheffield Street Mountainside NJ 07092 (908) 789-8900
Spill ID:	ALM		
Site Name/State:	Battlefield Golf/VA		
Project Leader:	[redacted]		
Action:	Preliminary Assessment		
Sampling Co:	Tetra Tech EM Inc.		

Chain of Custody Record

Sampler Signature: [redacted]

Relinquished By (Date / Time)	Received By (Date / Time)
1	
2.	
3.	
4.	

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/ [redacted]	M/G	TAL TM+B+M (14)	855 (HNO3) (1)	[redacted]	S: 8/27/2008 16:13		--
[redacted]	Potable Well/ [redacted]	M/G	TAL TM+B+M (14)	856 (HNO3) (1)	[redacted]	S: 8/28/2008 9:45		--
[redacted]	Potable Well/ [redacted]	M/G	TAL TM+B+M (14)	857 (HNO3) (1)	[redacted]	S: 8/28/2008 10:23		--
[redacted]	Potable Well/ [redacted]	M/G	TAL TM+B+M (14)	858 (HNO3) (1)	[redacted]	S: 8/28/2008 10:29		--
[redacted]	Potable Well/ [redacted]	M/G	TAL TM+B+M (14)	859 (HNO3) (1)	[redacted]	S: 8/29/2008 11:19		--
[redacted]	Potable Well/ [redacted]	M/G	TAL TM+B+M (14)	860 (HNO3) (1)	[redacted]	S: 8/29/2008 11:19		--
[redacted]	Potable Well/ [redacted]	M/G	TAL TM+B+M (14)	861 (HNO3) (1)	[redacted]	S: 8/29/2008 11:30		--
[redacted]	Potable Well/ [redacted]	M/G	TAL TM+B+M (14)	862 (HNO3) (1)	[redacted]	S: 8/28/2008 11:13		--
[redacted]	Soil (>12")/ [redacted]	M/G	TAL Met+B+ (14)	863 (Ice Only), 864 (Ice Only) (2)	[redacted]	S: 8/25/2008 10:18		--
[redacted]	Soil (>12")/ [redacted]	M/G	TAL Met+B+ (14)	865 (Ice Only), 866 (Ice Only) (2)	[redacted]	S: 8/25/2008 11:35		--
[redacted]	Soil (>12")/ [redacted]	M/G	TAL Met+B+ (14)	867 (Ice Only), 868 (Ice Only) (2)	[redacted]	S: 8/25/2008 12:15		--

Shipment for Case Complete? Y	Sample(s) to be used for laboratory QC:	Additional Sampler Signature(s):	Chain of Custody Seal Number:
Analysis Key:	Concentration: L = Low, M = Low/Medium, H = High	Type/Designate: Composite = C, Grab = G	Shipment Iced? _____

TAL DM+B+M = TAL Diss Metals+Boron+Moly, TAL Met+B+ = TAL Metals + Boron + Molybdenum, TAL TM+B+M = TAL Total Metals+Boron+Moly

TR Number: [redacted]

PR provides preliminary results. Requests for preliminary results will increase analytical costs.

Send Copy to: Sample Management Office, Attn: [redacted], CSC, 15000 Conference Center Dr., Chantilly, VA 20151-3819; Phone 703/818-4200; Fax 703/818-4602

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.	Lab Sample ID
[redacted]	[redacted]

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

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] Name [redacted]

Date: [redacted] 9/16/0[redacted] Title: EPA PROJECT MANAGER

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]

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 [redacted] Name: [redacted]

Date [redacted] 9/16/08 Title: Project Manager

DATA SUMMARY FORM: INORGANIC

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

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

Total Metals

Sample Number :		[redacted]		[redacted]		[redacted]		[redacted]		[redacted]	
Sampling Location :											
Matrix :		Water		Water		Water		Water		Water	
Units :		ug/L		ug/L		ug/L		ug/L		ug/L	
Date Sampled :		8/27/2008		8/27/2008		8/26/2008		8/27/2008		8/27/2008	
Time Sampled :		14:21		14:58		13:20		15:20		16:39	
Dilution Factor :		1.0		1.0		1.0		1.0		1.0	
ANALYTE	CRQL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ANTIMONY	2	0.40	B	1.1	B			0.22	B		
*ARSENIC	1	1.7		1.8		1.6		1.7		1.5	
BARIUM	10	36.0		21.1		2.8	J	9.9	J	1.7	J
BERYLLIUM	1							0.10	J		
*CADMIUM	1							0.10	B		
*CHROMIUM	2	1.1	J	1.4	J	0.74	J	0.75	J	0.64	J
COBALT	1							1.1		0.11	J
COPPER	2	5.7		88.9		12.7		17.5		10.3	
*LEAD	1	0.27	B	2.4		2.0		1.3		0.20	J
MANGANESE	1	165		169		11.1		232		6.9	
*NICKEL	1	2.4		2.6		0.80	J	1.7		0.68	J
SELENIUM	5										
SILVER	1	0.037	B	0.083	B		UL	0.097	B	0.043	B
THALLIUM	1			0.12	B						
VANADIUM	5	1.0	B	1.1	B	1.3	B	1.2	B	1.2	B
ZINC	2	61.7		24.6		12.4		13.8		2.6	

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

Total Metals

Sample Number :		[redacted]		[redacted]		[redacted]		[redacted]		[redacted]	
Sampling Location :											
Matrix :		Water		Water		Water		Water		Water	
Units :		ug/L		ug/L		ug/L		ug/L		ug/L	
Date Sampled :		8/27/2008		8/27/2008		8/27/2008		8/27/2008		8/27/2008	
Time Sampled :		17:07		17:15		18:18		19:30		19:20	
Dilution Factor :		1.0		1.0		1.0		1.0		1.0	
ANALYTE	CRQL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ANTIMONY	2										
*ARSENIC	1	1.3		1.3		1.4		1.5		1.4	
BARIUM	10	9.3	J	1.6	J	1.9	J	5.6	J	1.7	J
BERYLLIUM	1										
*CADMIUM	1	0.10	B					0.26	B		
*CHROMIUM	2	0.74	J	0.67	J	0.64	J	0.72	J	1.1	J
COBALT	1	0.33	J							0.12	J
COPPER	2	76.0		10.1		6.4		80.5		2.1	
*LEAD	1	6.0		0.54	J	2.0		6.3		0.22	J
MANGANESE	1	112		5.9		8.4		11.1		10.2	
*NICKEL	1	0.47	J	0.78	J	0.89	J	1.7		0.55	J
SELENIUM	5										
SILVER	1		UL		UL		UL	0.040	B		UL
THALLIUM	1										
VANADIUM	5	1.5	B	1.1	B	0.63	B	1.2	B	1.3	B
ZINC	2	42.3		3.4		7.3		71.5		3.3	

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

Total Metals

Sample Number :		[redacted]		[redacted]		[redacted]		[redacted]		[redacted]	
Sampling Location :											
Matrix :		Water		Water		Water		Water		Water	
Units :		ug/L		ug/L		ug/L		ug/L		ug/L	
Date Sampled :		8/27/2008		8/25/2008		8/29/2008		8/28/2008		8/28/2008	
Time Sampled :		19:15		19:15		10:12		17:47		09:17	
Dilution Factor :		1.0		1.0		1.0		1.0		1.0	
ANALYTE	CRQL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ANTIMONY	2										
*ARSENIC	1	1.4		1.3		1.5		1.6		1.4	
BARIUM	10	1.4	J	1.5	J	1.1	J	1.7	J	15.0	
BERYLLIUM	1										
*CADMIUM	1	0.10	B							0.12	B
*CHROMIUM	2	0.57	J	0.52	B	0.57	J	0.65	J	0.52	B
COBALT	1							0.12	J		
COPPER	2	97.1		9.3		22.5		39.5		87.9	
*LEAD	1	18.9		0.49	J	1.9		2.2		7.2	
MANGANESE	1	9.4		9.4		4.3		4.4		145	
*NICKEL	1	1.1		0.54	J	0.67	J	0.62	J	1.3	
SELENIUM	5								UL		UL
SILVER	1		UL		UL		UL	0.087	B	0.043	B
THALLIUM	1										
VANADIUM	5	1.1	B	0.90	B	0.69	B	1.0	B	1.2	B
ZINC	2	66.5		11.6		28.1		30.2		73.2	

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

Total Metals

Sample Number :		[redacted]		[redacted]		[redacted]		[redacted]		[redacted]	
Sampling Location :											
Matrix :		Water		Water		Water		Water		Water	
Units :		ug/L		ug/L		ug/L		ug/L		ug/L	
Date Sampled :		8/26/2008		8/27/2008		8/27/2008		8/28/2008		8/28/2008	
Time Sampled :		10:13		15:41		16:13		09:45		10:23	
Dilution Factor :		1.0		1.0		1.0		1.0		1.0	
ANALYTE	CRQL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ANTIMONY	2										
*ARSENIC	1	2.6		1.5		1.5		1.6		1.6	
BARIUM	10	59.0		33.0		0.50	J	47.8		30.9	
BERYLLIUM	1	0.51	J								
*CADMIUM	1	0.16	B								
*CHROMIUM	2	0.99	J	0.69	J	0.75	J	0.63	J	0.71	J
COBALT	1	8.7				0.11	J				
COPPER	2	55.3		15.6		148		16.4		24.3	
*LEAD	1	12.2		0.67	J	11.8		1.0		2.1	
MANGANESE	1	102		178		2.4		238		166	
*NICKEL	1	8.1		0.66	J	0.82	J	2.2		2.8	
SELENIUM	5		UL		UL		UL		UL		UL
SILVER	1		UL		UL		UL		UL		UL
THALLIUM	1										
VANADIUM	5	2.4	J	0.76	B	0.75	B	0.87	B	1.2	B
ZINC	2	40.0		18.4		16.9		8.4		38.7	

CRQL = Contract Required Quantitation Limit *Action Level Exists SEE NARRATIVE FOR CODE DEFINITIONS

To calculate sample quantitation limits: (CRQL * Dilution Factor) Revised 09/99