

APPENDIX F
DATA VALIDATION SUMMARY REPORTS

**Data Validation Summary Report
For Data Collected by IT Corporation at
Boiler Plant No. 1, Building 3176, Parcels 26(7) and 89(7)
Fort McClellan, Calhoun County, Alabama**

1.0 Introduction

Level III data validation was performed on 100 percent of the environmental soil and water samples collected at Parcel GSBP-26. The analytical data consisted of two sample delivery groups (SDG), CK826001 and CK826002, which was analyzed by Quanterra Incorporated. In addition, an evaluation of the field split data, which was analyzed by the U.S. Army Corps of Engineers (USACE)-South Atlantic Division (SAD) laboratory is included in this report. The chemical parameters for which the samples were analyzed, are identified below:

Parameter (Method)
Volatiles by SW-846-8260B
Semivolatiles by SW-846-8270C
Metals by SW-846-6010B/7470/7471

2.0 Procedures

The sample data were validated following the logic identified in the *EPA Contract Laboratory Program (CLP) National Functional Guidelines For Inorganic Data Review* (February 1994) and *EPA Contract Laboratory Program National Functional Guidelines For Organic Review* (October 1999) for all areas except blanks. *Region III Laboratory Data Validation Functional Guidelines for Evaluating Inorganic Analyses* (April 1993) and *Region III National Functional Guidelines for Organic Data Review* (June 1992) were applied to the areas associated with blank contamination. Specific quality control (QC) criteria, as identified in the quality assurance plan (QAP), analytical methods, and laboratory Standard Operating Procedures (SOP) were applied to all sample results. As the result of the use of Update III SW-846 test methods for the analytical data and the application of the CLP guidelines during the validation process, there were instances where specific QC requirements for all target compounds were not defined. This primarily occurred in the organic, gas chromatography (GC) and GC/mass spectrometry (MS) calibration areas and is due to the fact that the analytical methods are “performance-based”, and allows the use of average calibration responses, in lieu of, individual responses, which are defined by CLP protocol. In light of applying CLP guidelines to SW-846 methods and evaluating the usability of the data during the validation process, specific QC criteria were determined to address all target compounds and are identified in this report for each parameter, as well as, in the validation checklists, which function as worksheets. All completed validation checklists are on file in the

Knoxville office. For those analytical methods not addressed by the CLP and Region III guidelines, the validation was based on the method requirements (i. e. SW-846, CFR, SOPs) and technical judgement, following the logic of the CLP validation guidelines.

3.0 Summary of Data Validation Findings

The overall quality of the data was determined to be acceptable with minimal qualification. The only rejected data ('R' qualified) was due to "poor performing" volatile compounds (ketones, some halogenated hydrocarbons, e.g.), which exhibited poor calibration responses in the associated calibration data, and samples that were reanalyzed and have more than one result reported. The 'R' qualifier was assigned to the samples with more than one set of results to indicate that a given result should not be used to characterize a particular constituent or an analysis for a given sample.

Individual validation reports have been prepared for each parameter and the overall results of the validation findings are summarized in this report. The validation qualifier data entry verification report (Attachment A) is also provided. This is a complete listing of all of the analytical results and the validation qualifiers assigned for Parcel GSBP-26. It also identifies the "use" column, which indicates which result to use in the event of a reanalysis. A listing of the validation qualifiers and the reason codes, along with their definitions are also found in Attachment A. The following section highlights the key findings of the data validation for each analysis.

4.0 Analysis-Specific Data Validation Summaries

4.1 Volatiles by SW-846-8260B

Overall, the data are of good quality and are usable as reported by the laboratory with the exceptions noted below. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all project samples.

Initial and Continuing Calibration

All initial and continuing calibrations associated with the project samples met QC criteria, with the exception of the following:

- The following demonstrated relative response factors (RRF) below 0.1 in the ICAL and/or CCAL: Nondetect results were rejected (qualified 'R'); positive results were estimated (qualified 'J'); unless 'B' qualified due to blank contamination.

SDG	Sample Number	Compound(s)	Validation Qualifier
CK826001	BQ0001, BQ0002, BQ0003	Bromomethane	R/J
CK826002	BQ3001, BQ3002	Acetone, 2-Butanone Bromochloromethane, Dibromomethane, 1,2-Dibromo-3-chloropropane	R/B

- The following exhibited individual ICAL %RSD>30 and/or CCAL %D>20: Nondetect results were estimated (qualified 'UJ'); unless rejected (qualified 'R') due to ICAL/CCAL minimum RRF criteria not met; positive results were estimated (qualified 'J'); unless 'B' qualified due to blank contamination.

SDG	Sample Number	Compound(s)	Validation Qualifier
CK826001	BQ0001, BQ0002, BQ0003	Chloroethane	UJ
CK826002	BQ3001, BQ3002	Methylene chloride, 1,2,3- Trichloropropane	UJ

Blanks

The 5X/10X rule for contaminants found in the associated equipment rinses, trip, and method blanks was applied to all sample results. All were found to be acceptable with the exception of the following:

SDG	Sample Number	Compound(s)	Blank Contaminant(s)	Validation Qualifier
CK826001	BQ0001, BQ0002, BQ0003	Methylene chloride	Method	B
CK826002	BQ3001, BQ3002	Chloromethane	Trip Blank	B
CK826002	BQ3002	Acetone	Method/TB	B

Surrogate Recoveries

All surrogate recoveries are within acceptable QC ranges for the surrogates applied, with the exception of the following:

SDG	Sample Number	Surrogate(s)	Validation Qualifier
CK826001	BQ0002, BQ0003	Dibromofluoromethane, Toluene-d8	J

Matrix Spike/Matrix Spike Duplicate

Matrix spike/matrix spike duplicate (MS/MSD) analysis was performed for the project samples and all QC criteria were met.

Laboratory Control Sample

Laboratory control sample (LCS) was performed for the project samples and all QC criteria were met.

Internal Standards

The associated target compounds internal standard areas and retention times for all samples were within the control limits, with the exception of the following:

SDG	Sample Number	Internal Standard(s)	Validation Qualifier
CK826001	BQ0002, BQ0003	ALL	J/UJ

Field Duplicates

Original and field duplicate results were evaluated and all QC criteria were met with the exception of the following:

SDG	Sample Number	Compound(s)	Validation Qualifier
CK826001	BQ0002 (original), BQ0003 (FD)	1,3-Dichlorobenzene, 1,2,4-Trimethylbenzene	J

Quantitation

Results quantified between the method detection limit (MDL) and the reporting limit (RL), which the lab qualified as "J", were qualified as estimated 'J' unless blank contamination was present or the results were rejected. Results rejected in favor of a preferred result (e.g., due to dilution or reanalysis) were qualified as rejected 'R'.

4.2 Semivolatile Organic Compounds by SW-846-8270C

Overall, the data are of good quality and are usable as reported by the laboratory with the exceptions noted below. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all project samples.

Initial and Continuing Calibration

All initial and continuing calibrations associated with the project samples met QC criteria, with the exception of the following:

The following exhibited individual ICAL %RSD>30 and/or CCAL %D>20:

SDG	Sample Number	Compound(s)	Validation Qualifier
CK826001	BQ0001, BQ0002, BQ0003	2,4-Dinitrophenol	UJ

Blanks

The 5X/10X rule for contaminants found in the associated equipment rinses and method blanks was applied to all sample results. All were found to be acceptable.

Surrogate Recoveries

All surrogate recoveries are within acceptable QC ranges for the surrogates applied.

Matrix Spike/Matrix Spike Duplicate

MS/MSD analysis was performed for the project samples and all QC criteria were met.

Laboratory Control Sample

LCS was performed for the project samples and all QC criteria were met.

Internal Standards

The associated target compounds internal standard areas and retention times for all samples were within the control limits, with the exception of the following:

SDG	Sample Number	Internal Standard(s)	Validation Qualifier
CK826002	BQ3001, BQ3002	ISs -1,2,3,4,5 (1,4-Dichlorobenzene-d4, Naphthalene-d8, Acenaphthene-d10, Phenanthrene-d10, Chrysene-d12)	UJ

Field Duplicates

Original and field duplicate results were evaluated and all QC criteria were met.

Quantitation

Results quantified between the MDL and the RL, which the lab qualified as “J”, were qualified as estimated ‘J’ unless blank contamination was present or the results were rejected. Results rejected in favor of a preferred result (e.g., due to dilution or reanalysis) were qualified as rejected ‘R’.

4.3 Metals by SW-846-6010B/7471/7470A

Overall, the data are of good quality and are usable as reported by the laboratory with the exceptions noted below. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all samples.

Initial and Continuing Calibrations

All initial and continuing calibrations associated with the project samples met QC criteria.

Blanks

The 5X rule for contaminants found in the associated equipment rinse, calibration, and method blanks was applied to all sample results. All were found to be acceptable, with the exception of the following:

SDG	Sample Number	Metal(s)	Blank Contaminant	Validation Qualifier
CK826001	BQ0002	Mercury	Method	B
CK826002	BQ3001, BQ3002	Aluminum	Method/Calib/ER	B

Matrix Spike/Matrix Spike Duplicate

MS/MSD analysis was performed for the project samples and all QC criteria were met with the following exception:

SDG	Sample Number	Metal(s)	Validation Qualifier
CK826001	BQ0001, BQ0002, BQ0003	Antimony	UJ/J
CK826002	BQ3001, BQ3002	Aluminum	B*

- * 'B' qualifiers assigned to designate blank contamination, which are identification qualifiers, take precedence over estimating qualifiers, assigned due to quantitation.

Laboratory Control Sample

LCS was performed for the project samples and all QC criteria were met.

Interference Check Sample

All interference check sample (IDL) percent recoveries were acceptable and all QC criteria were met.

Inductively-Coupled Plasma Serial Dilutions

All QC criteria were met for the serial dilutions associated with the project samples with the exception of the following:

SDG	Sample Number	Compound	Validation Qualifier
CK826001	BQ0001, BQ0002, BQ0003	Arsenic, Beryllium	J
CK826002	BQ3001, BQ3002	Aluminum, Barium	*B/J

- * 'B' qualifiers assigned to designate blank contamination, which are identification qualifiers, take precedence over estimating qualifiers, assigned due to quantitation.

Field Duplicates

Original and field duplicate results were evaluated and all QC criteria were met with the following exceptions:

SDG	Sample Number	Compound	Validation Qualifier
CK826001	BQ0002 (original), BQ0003 (FD)	Cobalt, Selenium	J

Quantitation

Results quantitated between the instruction detection limit (IDL) and the RL ("B" flagged by the laboratory) were qualified as estimated (J), unless qualified "B", due to blank contamination.

5.0 Quality Assurance Field Split Sample Data Evaluation

Data from the quality assurance split samples supplied to IT Corporation by the USACE were reviewed for comparability to the original and field duplicate results. Relative percent differences were calculated and the results are summarized in this section. It should be noted that the hard-copy results for field split sample BQ3003 were unreadable (light print) and were not evaluated. Results for the soil field split sample are as follows:

SDG CK826001

Original Sample ID BQ0002	Field Dup ID BQ0003	Field Split ID BQ0004	Units	Compounds / Elements	Original / Field Split RPD	% RSD
0.049	0.054	nd	mg/kg	Mercury	NC	NC
15800	16700	14921.3	mg/kg	Aluminum	5.7	5.63
4.9	5	4.27	mg/kg	Arsenic	13.7	8.38
47	38.9	31.69	mg/kg	Barium	38.9	19.54
0.89	0.85	nd	mg/kg	Beryllium	NC	NC
0.12	nd	nd	mg/kg	Cadmium	NC	NC
783	832	806.74	mg/kg	Calcium	-3.0	3.04
21	22.2	18.88	mg/kg	Chromium	10.6	8.12
23.1	11.7	nd	mg/kg	Cobalt	NC	NC
42	52.9	43.82	mg/kg	Copper	-4.2	12.63
32300	34300	29213.5	mg/kg	Iron	10.0	8.02
22.2	20.5	17.08	mg/kg	Lead	26.1	13.09
8210	8840	7820.22	mg/kg	Magnesium	4.9	6.21
208	96.8	97.98	mg/kg	Manganese	71.9	47.57
47.7	46.9	42.7	mg/kg	Nickel	11.1	5.87
873	874	485.39	mg/kg	Potassium	57.1	30.11
0.75	1.4	nd	mg/kg	Selenium	NC	NC
133	81	30.56	mg/kg	Sodium	125.3	62.83
0.51	nd	nd	mg/kg	Thallium	NC	NC
22.4	23.9	19.33	mg/kg	Vanadium	14.7	10.65
119	133	129.66	mg/kg	Zinc	-8.6	5.75
38	38	nd	ug/kg	Acetone	NC	NC
5.2	3.9	nd	ug/kg	Bromobenzene	NC	NC
5.5	nd	nd	ug/kg	Bromomethane	NC	NC
5	4.8	nd	ug/kg	2-Butanone	NC	NC
2.9	nd	nd	ug/kg	2-Chlorotoluene	NC	NC
nd	4.8	nd	ug/kg	4-Chlorotoluene	NC	NC
7.1	2.1	nd	ug/kg	1,3-Dichlorobenzene	NC	NC
6.5	8.9	nd	ug/kg	1,4-Dichlorobenzene	NC	NC
16	18	nd	ug/kg	Methylene chloride	NC	NC
4.7	2.7	nd	ug/kg	1,2,4-Trimethylbenzene	NC	NC
1.1	nd	nd	ug/kg	1,3,5-Trimethylbenzene	NC	NC
1.6	nd	nd	ug/kg	m-xylene & p-xylene	NC	NC
nd	1.1	nd	ug/kg	Styrene	NC	NC

Bold Print = Results detected below the reporting limit.

Metals: Majority of same metals detected in all three samples, however, cadmium, and thallium were only found in the original. Mercury, beryllium, cobalt, and selenium were not found in the field split. Manganese, potassium, and sodium had relative percent difference values above the QC limit for soils. Differences attributed to lack of homogeneity in soil samples. Sodium results are not all bold print due to different RLs.

Volatiles: Acetone, bromobenzene, 2-butanone, 1,3-dichlorobenzene, 1,4-dichlorobenzene, methylene chloride, and 1,2,4-trimethylbenzene were detected in the original and field duplicate. Bromomethane, 2-chlorotoluene, 1,3,5-trimethylbenzene and m & p-xylene were detected only in the original. Styrene and 4-chlorotoluene were detected only in the field duplicate. All were below the quantitation limit with the exception of acetone, 1,4-dichlorobenzene, methylene chloride, and the original result for 1,3-dichlorobenzene. Acetone, methylene chloride, and 2-butanone are all common laboratory contaminants.

Semivolatiles: No semivolatiles were detected.