

SDG	Samples Affected	Analyte/Analytes	Validation Qualifier
PK152301	KCC1001	Hexachlorocyclopentadiene, 4-Nitroaniline, Carbazole, 2,4-Dinitrophenol, 4,6-Dinitro-2-methylphenol, Benzo(b)fluoranthene	UJ
PK152303	KCC0001, KCC0002, KCC0004, KCC0005, KCC0006	Hexachlorocyclopentadiene	UJ
PK152303	KCC0007, KCC0008	3-Nitroaniline, 4-Nitroaniline, 4-Chloroaniline, Carbazole, 3,3-Dichlorobenzidine	UJ
PK152304	KCC2004, KCC2005, KCC2006	Hexachlorocyclopentadiene	UJ

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2 Blanks

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

6

7 Note: 'B' qualifiers were applied to all of the following sample results.

SDG	Samples Affected	Analyte/Analytes	Associated Blank Contamination
PK152301	KCC1001, KCC1003, KCC1004	Bis(2-ethylhexyl)phthalate, Di-n-butyl Phthalate	Method
PK152303	KCC0016	Bis(2-ethylhexyl)phthalate	Method

8

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

11

12 Surrogate Recoveries

13 All surrogate recoveries are within acceptable QC limits, with the following exceptions:

14

SDG	Samples Affected	Analyte/Analytes	Validation Qualifier
PK152305	KCC0014	Benzo(b)fluoranthene, Chrysene, Pyrene, Benzo(a)pyrene, Benzo(ghi)perylene, Fluoranthene, Benzo(a)anthracene	J

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2 Matrix Spike/Matrix Spike Duplicate

3 MS/MSD and LCS were performed for the project samples and all QC criteria were met.

4

5 Field Duplicates

6 Original and FD results were evaluated and no problems were noted.

7

8 Internal Standards

9 All internal standards met criteria with the exception of the following:

10

- 11 • All compounds associated with the internal standards listed in the table below were
12 qualified as indicated.

13

SDG	Samples Affected	Internal Standard Outside QC Limits	Validation Qualifier
PK152306	KCC0018, KCC0020	Perylene-d12	UJ
PK152306	KCC0019	Chrysene-d12	UJ

14

15 Quantitation

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

20

21 **4.3 Metals by SW-846-6010B/7471A/7470A**

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

24

1. Holding Times

2 Technical holding time criteria were met for all samples.

3

4 Initial and Continuing calibrations

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

6

7 Blanks

8 The 5X rule for contaminants found in the associated equipment rinse, calibration, and method
9 blanks was applied to all sample results. All were acceptable with the exceptions noted below:

10

11 Note: 'B' qualifiers were applied to all of the following sample results.

SDG	Samples Affected	Element/Elements	Associated Blank Contamination
PK152301	KCC1001, KCC1003, KCC1004	Sodium	Method
PK152301	KCC1001	Potassium	Calibration
PK152302	KCC2001, KCC2002, KCC2003	Sodium	Method
PK152302	KCC2001	Thallium	Calibration
PK152302	KCC2003	Aluminum	Calibration
PK152303	KCC0001, KCC0002, KCC0004, KCC0005, KCC0006, KCC0007, KCC0008, KCC0015, KCC0016	Sodium	Method/Calibration/ER
PK152304	KCC2004, KCC2005, KCC2006	Sodium	Method
PK152304	KCC2005, KCC2006	Lead	Calibration
PK152305	KCC0009, KCC0011, KCC0012, KCC0013, KCC0014	Sodium	Calibration
PK152305	KCC0011, KCC0012	Thallium	Calibration
PK152306	KCC0017, KCC0018, KCC0019, KCC0020	Sodium	Method/Calibration/ER
PK152307	KCC3004	Sodium	Method/Calibration/ER

SDG	Samples Affected	Element/Elements	Associated Blank Contamination
PK152307	KCC3005	Potassium	Calibration

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

Matrix Spike/Matrix Spike Duplicate

Batch QC was performed for the project samples and all QC criteria were met, with the following exceptions:

SDG	Samples Affected	Element/Elements	Validation Qualifier
PK152303	KCC0001, KCC0002, KCC0004, KCC0005, KCC0006, KCC0007, KCC0008, KCC0015, KCC0016	Sodium, Cadmium, Beryllium, Antimony, Manganese, Chromium, Lead, Selenium, Silver, Thallium, Cobalt, Arsenic, Vanadium, Potassium, Copper, Nickel, Magnesium, Barium, Calcium, Zinc	*B/UJ/J

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

Laboratory Control Sample

All QC criteria were met for the LCS associated with the project sample analyses.

Interference Check Sample

All interference check sample (ICS) percent recoveries, where applicable, were acceptable.

Inductively Coupled Plasma Serial Dilutions

All QC criteria were met with the exception of the following:

SDG	Samples Affected	Analyte/Analytes	Validation Qualifier
PK152303	KCC0001, KCC0002, KCC0004, KCC0005, KCC0006, KCC0007, KCC0008, KCC0015, KCC0016	Lead, Vanadium, Magnesium, Barium, Manganese, Iron, Chromium, Aluminum	J

1

2 Field Duplicates

3 Original and FD results were evaluated and no problems were noted.

4

5 Sample Quantitation

6 Results quantified between the instrument detection limit (IDL) and the RL ('B' flagged by the
7 laboratory) were qualified as estimated ('J').

8

9 **4.4 Chlorinated Pesticides by SW-846-8081A**

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

12

13 Holding Times

14 Technical holding time criteria were met for all samples.

15

16 Initial and Continuing Calibration

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

19

- 20 • The following exhibited individual primary CCAL %D>15 percent and/or confirmation
21 %D>25 percent: nondetect results were estimated (qualified 'UJ'). Positive results were
22 estimated (qualified 'J') unless 'B' qualified due to blank contamination:

23

SDG	Samples Affected	Analyte/Analytes	Validation Qualifier
PK152303	KCC0016	4,4' - DDD	J

24

1 Blanks

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

4
5 Surrogate Recoveries

6 All surrogate recoveries are within acceptable QC limits.

7
8 Matrix Spike/Matrix Spike Duplicate

9 MS/MSD and LCS were performed for the project samples and all QC criteria were met.

10
11 Field Duplicates

12 Original and FD results were evaluated and no problems were noted.

13
14 Quantitation

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

19
20 **4.5 Organophosphorous Pesticides by SW-846-8141A**

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

23
24 Holding Times

25 Technical holding time criteria were met for all project samples.

26
27 Initial and Continuing Calibration

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

- 30
31 • The following exhibited individual ICAL %RSD>20 : nondetect results were estimated
32 (qualified 'UJ'). Positive results were estimated (qualified 'J'); unless 'B' qualified due
33 to blank contamination:
34

SDG	Samples Affected	Analyte/Analytes	Validation Qualifier
PK152306	KCC0017, KCC0018, KCC0019, KCC0020	Merphos, Naled	UJ
PK152307	KCC3004, KCC3005	Demeton (Total), Merphos, Azinphos-Methyl, Fensulfothion	UJ
PK152308	KCC0001R, KCC0002R, KCC0004R, KCC0005R, KCC0006R, KCC0007R, KCC0008R, KCC0015R, KCC0016R	Merphos, Naled	UJ

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- The following exhibited individual primary CCAL %D>15 percent and/or confirmation %D>25 percent: nondetect results were estimated (qualified 'UJ'). Positive results were estimated (qualified 'J') unless 'B' qualified due to blank contamination:

SDG	Samples Affected	Analyte/Analytes	Validation Qualifier
PK152306	KCC0017, KCC0018, KCC0019, KCC0020	Demeton (Total), Mevinphos, Coumaphos, Fensulfothion	UJ
PK152307	KCC3004, KCC3005	Demeton (Total), Merphos, Thionazin, Naled, Dimethoate, Sulfotepp, Famphur, Malathion	UJ
PK152308	KCC0001R, KCC0002R, KCC0004R, KCC0005R, KCC0006R, KCC0007R, KCC0008R, KCC0015R, KCC0016R	Diazinon, Naled, Phorate, Merphos, Bolstar, Coumaphos, Stirophos, Disulfoton, Thionazin, Sulfotepp, Tokuthion	UJ

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Blanks

The 5X 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.

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Matrix Spike/Matrix Spike Duplicate

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

Field Duplicates

Original and FD results were evaluated and no problems were identified.

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'.

4.6 PCBs by SW-846-8082

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 Calibration

All initial and continuing calibrations associated with the project samples met QC criteria with the exception of the following, where the %D for the CCAL exceeded the 15 percent criteria. Nondetect results were estimated (qualified 'UJ'). Positive results were estimated (qualified 'J') unless 'B' qualified due to blank contamination:

SDG	Samples Affected	Analyte/Analytes	Validation Qualifier
PK152303	KCC0001, KCC0002, KCC0004, KCC0005	All reported compounds	UJ

Blanks

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

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Surrogate Recoveries

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

Matrix Spike/Matrix Spike Duplicate

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

Field Duplicates

Original and FD results were evaluated and no problems were identified.

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'.

4.7 Herbicides by SW-846-8151A

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>20 : nondetect results were estimated (qualified 'UJ'). Positive results were estimated (qualified 'J') unless 'B' qualified due to blank contamination:

SDG	Samples Affected	Analyte/Analytes	Validation Qualifier
PK152306	KCC0017, KCC0018, KCC0019, KCC0020	MCPA, MCPP	UJ

1

2 Blanks

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

5

6 Surrogate Recoveries

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

9

SDG	Samples Affected	Analyte/Analytes	Validation Qualifier
PK152301	KCC1003	All reported compounds	UJ

10

11 Matrix Spike/Matrix Spike Duplicate

12 MS/MSD and LCS were performed for the project samples and all QC criteria were met.

13

14 Field Duplicates

15 Original and FD results were evaluated and no problems were identified.

16

17 Quantitation

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

22

23 **4.8 Nitroaromatics and Nitramines by SW-846-8330**

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

26

1 Holding Times

2 Technical holding time criteria were met for all samples.

4 Initial and Continuing Calibration

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

7 Blanks

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

11 Matrix Spike/Matrix Spike Duplicate

12 Batch QC was performed for the project samples and all QC criteria were met with the exception
13 of the following:

SDG	Samples Affected	Analyte/Analytes	Validation Qualifier
PK152302	KCC2001, KCC2002, KCC2003	Nitrobenzene	UJ

16 Laboratory Control Sample (LCS)

17 All QC criteria were met for the LCS associated with the project sample analyses.

19 Field Duplicates

20 Original and FD results were evaluated and no problems were noted.

22 Quantitation

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

28 **5.0 Quality Assurance Field Split Sample Data Evaluation**

29 Data from the quality assurance split samples supplied to IT by the USACE were reviewed for
30 comparability to the original and field duplicate results. Relative percent differences were

1 calculated and the results are summarized in this section.

2

3 Field Split Data for SDG PK152303

4

5 Note: Field Split Laboratory - Specialized Assays, Inc., Nashville, TN

Original Sample ID	Field Duplicate ID	Field Split ID
KCC0001	KCC0002	KCC0003

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7 Comments:

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- 9 • Metals: A majority of the same metals were detected in all three samples. Barium and
10 zinc, two of seven metals with RPDs above the QC limit were the only results above the
11 reporting limit. Differences in analysis attributed to non-homogeneity in soil samples
12 and/or field split lab not reporting results below the RL.
- 13 • Volatiles: Acetone was detected in all three samples. 2-Butanone and methylene
14 chloride were detected in the original and/or FD samples. All are common laboratory
15 contaminants. P-Isopropyltoluene was detected in all three samples. Differences
16 attributed to nonhomogeneity in soil samples and/or field split lab not reporting results
17 below the RL.
- 18 • Organophosphorous Pesticides: The original and FD were canceled due to laboratory
19 problems, but no organophosphorous pesticides were detected in the field split.
- 20 • Semivolatiles, Pesticides, PCBs, Herbicides, Explosives: No compounds were detected in
21 the original sample, FD or field split.
- 22 •
- 23 •
- 24 •
- 25 •

26 Field Split Data for SDG PK152307

27

28 Note: Field Split Laboratory - Specialized Assays, Inc., Nashville, TN

29

Original Sample ID	Field Duplicate ID	Field Split ID
KCC3001	KCC3002	KCC3003

30

1 **Comments:**

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- 3 • The data results for field split sample KCC3003 are not available at this time for
4 evaluation of comparability.

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ATTACHMENT A

Validation Qualifiers

- U Not detected. The compound/analyte was analyzed for, but not detected above the associated reporting limit.
- J The compound/analyte was positively identified; the reported value is the estimated concentration of the constituent detected in the sample analyzed.
- B The concentration reported was detected significantly above the levels reported in the associated equipment rinse samples and/or laboratory method and trip blanks. (5X/10X Rule was applied).
- R The reported sample results are rejected due to the following:
 1. Severe deficiencies in the supporting quality control data.
 2. Anomalies noted in the sampling and/or analysis process which could affect the validity of the reported data.
 3. The presence or absence of the constituent cannot be verified based on the data provided.
 4. To indicate not to use a particular result in the event of a reanalysis.
- UJ The compound/analyte was analyzed for, but not detected above the established reporting limit. However, review and evaluation of supporting QC data and/or sampling and analysis process have indicated that the 'non-detect' maybe inaccurate or imprecise. The non-detect result should be estimated.



Validation Reason Code Definitions

(Page 1 of 2)

Reason Code	Description
01	Sample received outside of 4+/-2 degrees Celsius
01A	Improper sample preservation
02	Holding Time Exceeded
02A	Extraction
02B	Analysis
03	Instrument Performance - Outside Criteria
03A	BFB
03B	DFTPP
03C	DDT and/or Endrin % breakdown exceeds criteria
03D	retention time windows
03E	Resolution
04	Initial calibration results outside specified criteria
04A	Compound mean RRF QC criteria not met
04B	Individual % RSD criteria not met
04C	Correlation coefficient <0.995
05	Continuing calibration results outside specified criteria
05A	Compound mean RRF QC criteria not met
05B	Compound % D QC criteria not met
06	Result qualified as a result of the 5x/10x blank correction
06A	Method or preparation blank
06B	ICB or CCB
06C	ER
06D	TB
06E	FB
07	Surrogate recoveries outside control limits
07A	Sample
07B	Associated method blank or LCS
08	MS/MSD/Duplicate results outside criteria
08A	MS and/or MSD recovery not within control limits (accuracy)
08B	% RPD outside acceptance criteria (precision)
09	Post digestion spike outside criteria (GFAA)
10	Internal standards outside specified control limits

Validation Reason Code Definitions

(Page 2 of 2)

Reason Code	Description
10A	Recovery
10B	Retention Time
11	Laboratory control sample recoveries outside specified control limits
11A	Recovery
11B	% RPD (if run in duplicate)
12	Interference check standard
13	Serial dilution
14	Tentatively identified compounds
15	Quantitation
16	Multiple results available; alternate analysis preferred
17	Field duplicate RPD criteria is exceeded
18	Percent difference between original and second column exceeds QC criteria
19	Professional judgement was used to qualify the data
20	Pesticide clean-up checks
21	Target compound identification
22	Radiological calibration
23	Radiological quantitation
24	Reported result and/or lab qualifier revised to reflect validation findings

**Data Validation Summary Report
For the Site Investigation Performed at the
"Fill Area at Range 30" (Parcel FA-231)
Fort McClellan, Calhoun County, Alabama**

1.0 Introduction

Level III data validation was performed on 100 percent of the environmental samples collected at Parcel FA-231. The analytical data consisted of one sample delivery group (SDG), CK923101, which was analyzed by Quanterra Incorporated. The chemical parameters for which the samples were analyzed are identified below:

Parameter (Method)
Volatile Organic Compounds by SW-846-8260B
Semivolatile Organic Compounds by SW-846-8270C
Target Analyte List Metals by SW-846-6010B/7470A/7471A
Organochlorine Pesticides by SW-846-8081A
Organophosphorus Pesticides by SW-8141A
Polychlorinated Biphenyls by SW-846-8082
Chlorinated Herbicides by SW-846-8151A
Nitroaromatics and Nitramines by SW-846-8330

2.0 Procedure

The sample data were validated following the logic identified in the 1994 U.S. Environmental Protection Agency (EPA) *Contract Laboratory Program National Functional Guidelines For Inorganic Data Review* and the 1999 EPA *Contract Laboratory Program National Functional Guidelines For Organic Review* for all areas except blanks. The 1993 EPA *Region III Laboratory Data Validation Functional Guidelines for Evaluating Inorganic Analyses* and the 1992 *Region III National Functional Guidelines for Organic Data Review* 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 Contract Laboratory Program (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 chromatograph (GC) and GS/mass spectrometry (GC/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

1 light of applying CLP guidelines to SW-846 methods and evaluating the usability of the data
2 during the validation process, specific QC criteria were determined to address all target
3 compounds and are identified in this report for each parameter, as well as, in the validation
4 checklists, which function as worksheets. All completed validation checklists are on file in the
5 Knoxville office. For those analytical methods not addressed by the CLP and Region III
6 guidelines, the validation was based on the method requirements (i. e., SW-846, Code of Federal
7 Regulations, SOPs) and technical judgement, following the logic of the CLP validation
8 guidelines.

10 **3.0 Summary of Data Validation Findings**

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

17
18 This validation report has been prepared for all the samples associated with this investigation,
19 and the overall results of the validation findings are summarized in this report. A listing of the
20 validation qualifiers and the reason codes, along with their definitions is also found in
21 Attachment A. These qualifiers and reason codes were applied to the data and stored in the
22 FTMC database. The following section highlights the key findings of the data validations for
23 each analysis.

25 **4.0 Analysis-Specific Data Validation Summaries**

27 **4.1 Volatile Organic Compounds by SW-846-8260B**

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

31 Holding Times

32 Technical holding time criteria were met for all project samples.

1 Initial and Continuing Calibration

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

4
5 The following demonstrated relative response factors (RRFs) below 0.1 in the ICAL and/or
6 CCAL: nondetect results were rejected (qualified 'R'); positive results were estimated (qualified
7 'J'); unless 'B' qualified due to blank contamination.

8

SDG Number	Sample Number	Compound	Validation Qualifier
CK923101	DD0020, DD0021, DD0022	Bromomethane	R

9
10 * **'R' qualifiers take precedence over estimating qualifiers.**

11
12 The following exhibited individual ICAL %RSD>30 and/or CCAL %D>20: nondetect results
13 were estimated (qualified 'UJ'); unless rejected (qualified 'R') due to ICAL/CCAL minimum
14 RRF criteria not met; positive results were estimated (qualified 'J'); unless 'B' qualified due to
15 blank contamination.

16

SDG Number	Sample Number	Compound	Validation Qualifier
CK923101	DD0020, DD0021, DD0022	Bromomethane, 2-Hexanone, 2-Butanone, Acetone, Methylene Chloride	B/J/UJ/R

17
18 * **'B' qualifiers assigned to designate blank contamination, which are identification**

19 **qualifiers, take precedence over estimating qualifiers assigned due to quantitation.**

20 * **'R' qualifiers take precedence over estimating qualifiers.**

21
22 Blanks

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

26

SDG Number	Sample Number	Compound	Blank Contaminant	Validation Qualifier
CK923101	DD0020, DD0021, DD0022	Methylene chloride	Method/ER	B

1 Surrogate Recoveries

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

3

4 Matrix Spike / Matrix Spike Duplicate

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

7

8 Laboratory Control Sample

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

11

12 Internal Standards

13 All internal standards met QC criteria.

14

15 Field Duplicates

16 Original and field duplicate (FD) results were evaluated and no problems were identified.

17

18 Quantitation

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

23

24 **4.2 Semivolatile Organic Compounds by SW-846-8270C**

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

27

28 Holding Times

29 Technical holding time criteria were met for all project samples.

30

31 Initial and Continuing Calibration

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

34

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

1 were estimated (qualified 'UJ'); unless rejected (qualified 'R') due to ICAL/CCAL minimum
2 RRF criteria not met; positive results were estimated (qualified 'J'); unless 'B' qualified due to
3 blank contamination.

SDG Number	Sample Number	Compound	Validation Qualifier
CK923101	DD0020, DD0021, DD0022	2,4-Dinitrophenol	UJ

6 Blanks

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

SDG Number	Sample Number	Compound	Blank Contaminant	Validation Qualifier
CK923101	DD0020, DD0021, DD0022	bis(2-Ethylhexyl)phthalate	Method	B

11 Surrogate Recoveries

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

15 Matrix Spike/Matrix Spike Duplicate

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

18 Laboratory Control Sample

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

21 Internal Standards

22 All internal standards met QC criteria.

24 Field Duplicates

25 Original and FD results were evaluated and no problems were identified.

1 Quantitation
2 Results quantified between the MDL and the RL, which the lab qualified as 'J,' were qualified as
3 estimated 'J' unless blank contamination was present or the results were rejected. Results
4 rejected in favor of a preferred result (e.g., due to dilution or reanalysis) were qualified as
5 rejected 'R'.
6

7 **4.3 Metals by SW-846-6010B/7471A/7470A**

8 Overall, the data are of good quality and are usable as reported by the laboratory with the
9 exceptions noted below. Data were reviewed for the following:
10

11 Holding Times

12 Technical holding time criteria were met for all samples.
13

14 Initial and Continuing Calibrations

15 All initial and continuing calibrations associated with the project samples met QC criteria.
16

17 Blanks

18 The 5X rule for contaminants found in the associated equipment rinse, calibration, and method
19 blanks was applied to all sample results. All were found to be acceptable.
20

21 Matrix Spike/Matrix Spike Duplicate

22 MS/MSD analysis was performed for the project samples and all QC criteria were met.
23

24 Laboratory Control Sample

25 LCS was performed for the project samples and all QC criteria were met.
26

27 Interference Check Sample

28 All interference check sample (ICS) percent recoveries were acceptable. All QC criteria were
29 met.
30

31 Inductively Coupled Plasma Serial Dilutions

32 All QC criteria were met for the serial dilutions associated with the project samples.
33

1 Field Duplicates

2 Original and FD results were evaluated. All QC criteria were met with the exception of the
3 following (RPD greater than 50 percent):
4

SDG Number	Sample Number	Compound(s)	Validation Qualifier
CK923101	DD0020 (Original); DD0022 (FD)	Magnesium, Calcium	J

5
6 Quantitation

7 Results quantitated between the instrument detection limit (IDL) and the RL ('B' flagged by the
8 laboratory) were qualified as estimated ('J').
9

10 **4.4 Organochlorine Pesticides by SW-846-8081A**

11 Overall, the data are of good quality and are usable as reported by the laboratory. Data were
12 reviewed for the following:
13

14 Holding Times

15 Technical holding time criteria were met for all project samples.
16

17 Initial and Continuing Calibration

18 All initial and continuing calibrations associated with the project samples met QC criteria.
19

20 Blanks

21 The 5X rule for contaminants found in the associated equipment rinse and method blanks was
22 applied to all sample results. All were found to be acceptable.
23

24 Surrogate Recoveries

25 All surrogate recoveries are within acceptable QC ranges for the surrogates applied.
26

27 Matrix Spike/Matrix Spike Duplicate

28 MS/MSD analysis was performed for the project samples and all QC criteria were met.
29

30 Laboratory Control Sample

31 LCS was performed for the project samples and all QC criteria were met.
32

1 Field Duplicates

2 Original and FD results were evaluated and no problems were identified.

3

4 Quantitation

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

9

10 **4.5 Organophosphorus Pesticides by SW-846-8141A**

11 Overall, the data are of good quality and are usable as reported by the laboratory. Data were
12 reviewed for the following:

13

14 Holding Times

15 Technical holding time criteria were met for all project samples.

16

17 Initial and Continuing Calibration

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

19

20 Blanks

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

23

24 Surrogate Recoveries

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

26

27 Matrix Spike/Matrix Spike Duplicate

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

29

30 Laboratory Control Sample

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

32

33 Field Duplicates

34 Original and FD results were evaluated and no problems were identified.

35

1 Quantitation

2 Results quantified between the MDL and the RL, which the lab qualified as 'J,' were qualified as
3 estimated 'J' unless blank contamination was present or the results were rejected. Results
4 rejected in favor of a preferred result (e.g., due to dilution or reanalysis) were qualified as
5 rejected 'R'.
6

7 **4.6 PCBs by SW-846-8082**

8 Overall, the data are of good quality and are usable as reported by the laboratory. Data were
9 reviewed for the following:
10

11 Holding Times

12 Technical holding time criteria were met for all project samples.
13

14 Initial and Continuing Calibration

15 All initial and continuing calibrations associated with the project samples met QC criteria.
16

17 Blanks

18 The 5X rule for contaminants found in the associated equipment rinse and method blanks was
19 applied to all sample results. All were found to be acceptable.
20

21 Surrogate Recoveries

22 All surrogate recoveries are within acceptable QC ranges for the surrogates applied.
23

24 Matrix Spike/Matrix Spike Duplicate

25 MS/MSD analysis was performed for the project samples and all QC criteria were met.
26

27 Laboratory Control Sample

28 LCS was performed for the project samples and all QC criteria were met.
29

30 Field Duplicates

31 Original and FD results were evaluated and no problems were identified.
32

33 Quantitation

34 Results quantified between the MDL and the RL, which the lab qualified as 'J,' were qualified as

1 estimated 'J' unless blank contamination was present or the results were rejected. Results
2 rejected in favor of a preferred result (e.g., due to dilution or reanalysis) were qualified as
3 rejected 'R'.
4

5 **4.7 Herbicides by SW-846-8151**

6 Overall, the data are of good quality and are usable as reported by the laboratory. Data were
7 reviewed for the following:
8

9 Holding Times

10 Technical holding time criteria were met for all project samples.
11

12 Initial and Continuing Calibration

13 All initial and continuing calibrations associated with the project samples met QC criteria.
14

15 Blanks

16 The 5X rule for contaminants found in the associated equipment rinse and method blanks was
17 applied to all sample results. All were found to be acceptable.
18

19 Surrogate Recoveries

20 All surrogate recoveries are within acceptable QC ranges for the surrogates applied.
21

22 Matrix Spike/Matrix Spike Duplicate

23 MS/MSD analysis was performed for the project samples and all QC criteria were met.
24

25 Laboratory Control Sample

26 LCS was performed for the project samples and all QC criteria were met.
27

28 Field Duplicates

29 Original and FD results were evaluated and no problems were identified.
30

31 Quantitation

32 Results quantified between the MDL and the RL, which the lab qualified as 'J,' were qualified as
33 estimated 'J' unless blank contamination was present or the results were rejected. Results

1 rejected in favor of a preferred result (e.g., due to dilution or reanalysis) were qualified as
2 rejected 'R'.
3

4 **4.8 Nitroaromatics and Nitramines by SW-846-8330**

5 Overall, the data are of good quality and are usable as reported by the laboratory. Data were
6 reviewed for the following:
7

8 Holding Times

9 Technical holding time criteria were met for all project samples.
10

11 Initial and Continuing Calibration

12 All initial and continuing calibrations associated with the project samples met QC criteria.
13

14 Blanks

15 The 5X rule for contaminants found in the associated equipment rinse and method blanks was
16 applied to all sample results. All were found to be acceptable.
17

18 Surrogate Recoveries

19 All surrogate recoveries are within acceptable QC ranges for the surrogates applied.
20

21 Matrix Spike/Matrix Spike Duplicate

22 MS/MSD analysis was performed for the project samples and all QC criteria were met.
23

24 Laboratory Control Sample

25 LCS was performed for the project samples and all QC criteria were met.
26

27 Field Duplicates

28 Original and FD results were evaluated and no problems were identified.
29

30 Quantitation

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



ATTACHMENT A

Validation Qualifiers

- U Not detected. The compound/analyte was analyzed for, but not detected above the associated reporting limit.
- J The compound/analyte was positively identified; the reported value is the estimated concentration of the constituent detected in the sample analyzed.
- B The concentration reported was detected significantly above the levels reported in the associated equipment rinse samples and/or laboratory method and trip blanks. (5X/10X Rule was applied).
- R The reported sample results are rejected due to the following:
1. Severe deficiencies in the supporting quality control data.
 2. Anomalies noted in the sampling and/or analysis process which could affect the validity of the reported data.
 3. The presence or absence of the constituent cannot be verified based on the data provided.
 4. To indicate not to use a particular result in the event of a reanalysis.
- UJ The compound/analyte was analyzed for, but not detected above the established reporting limit. However, review and evaluation of supporting QC data and/or sampling and analysis process have indicated that the 'non-detect' maybe inaccurate or imprecise. The non-detect result should be estimated.

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Validation Reason Code Definitions

(Page 1 of 2)

Reason Code	Description
01	Sample received outside of 4+/-2 degrees Celsius
01A	Improper sample preservation
02	Holding Time Exceeded
02A	Extraction
02B	Analysis
03	Instrument Performance - Outside Criteria
03A	BFB
03B	DFTPP
03C	DDT and/or Endrin % breakdown exceeds criteria
03D	retention time windows
03E	Resolution
04	Initial calibration results outside specified criteria
04A	Compound mean RRF QC criteria not met
04B	Individual % RSD criteria not met
04C	Correlation coefficient <0.995
05	Continuing calibration results outside specified criteria
05A	Compound mean RRF QC criteria not met
05B	Compound % D QC criteria not met
06	Result qualified as a result of the 5x/10x blank correction
06A	Method or preparation blank
06B	ICB or CCB
06C	ER
06D	TB
06E	FB
07	Surrogate recoveries outside control limits
07A	Sample
07B	Associated method blank or LCS
08	MS/MSD/Duplicate results outside criteria
08A	MS and/or MSD recovery not within control limits (accuracy)
08B	% RPD outside acceptance criteria (precision)
09	Post digestion spike outside criteria (GFAA)
10	Internal standards outside specified control limits

Validation Reason Code Definitions

(Page 2 of 2)

Reason Code	Description
10A	Recovery
10B	Retention Time
11	Laboratory control sample recoveries outside specified control limits
11A	Recovery
11B	% RPD (if run in duplicate)
12	Interference check standard
13	Serial dilution
14	Tentatively identified compounds
15	Quantitation
16	Multiple results available; alternate analysis preferred
17	Field duplicate RPD criteria is exceeded
18	Percent difference between original and second column exceeds QC criteria
19	Professional judgement was used to qualify the data
20	Pesticide clean-up checks
21	Target compound identification
22	Radiological calibration
23	Radiological quantitation
24	Reported result and/or lab qualifier revised to reflect validation findings

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**Data Validation Summary Report
for the Site Investigation Performed at the
"Probable Fill Area at Range 30" (Parcel PPMP 231)
Fort McClellan, Calhoun County, Alabama**

7 **1.0 Introduction**

8 Level III data validation was performed on 100 percent of the environmental samples collected at
9 Parcel PPMP-231. The analytical data consisted of eleven sample delivery groups (SDG),
10 PK823101, PK823102, PK823103, PK823104, PK823105, PK823106, PK823107, PK823108,
11 PK823109, PK823110, and PK823111 which was analyzed by Quanterra Incorporated. In
12 addition, an evaluation of the field split data, which was analyzed by the USACE-SAD
13 laboratory is included in this report. The chemical parameters for which the samples were
14 analyzed are identified below:
15

Parameter (Method)
Target Compound List Volatile Organics by Gas Chromatography/Mass Spectrometry SW-846-8260B
Target Compound List Semivolatiles by Gas Chromatography SW-846-8270C
Metals by SW-846-6010B and 7471A/7470A
Pesticides by SW-846-8081A
Organophosphorus Pesticides by SW-846-8141A
Herbicides by SW-846-8151A
Polychlorinated Biphenyls by SW-846-8082
Explosives by SW-846-8330

16
17 **2.0 Procedure**

18 The sample data were validated following the logic identified in the 1994 U.S. Environmental
19 Protection Agency (EPA) *Contract Laboratory Program National Functional Guidelines For*
20 *Inorganic Data Review* and the 1999 EPA *Contract Laboratory Program National Functional*
21 *Guidelines For Organic Review* for all areas except blanks. The EPA 1993 *Region III*
22 *Laboratory Data Validation Functional Guidelines for Evaluating Inorganic Analyses* and 1992
23 *Region III National Functional Guidelines for Organic Data Review* were applied to the areas
24 associated with blank contamination. Specific quality control (QC) criteria, as identified in the

1 quality assurance plan (QAP), analytical methods, and laboratory standard operating procedures
2 (SOP) were applied to all sample results. As the result of the use of Update III SW-846 test
3 methods for the analytical data and the application of the Contract Laboratory Program (CLP)
4 guidelines during the validation process, there were instances where specific QC requirements
5 for all target compounds were not defined. This primarily occurred in the organic, gas
6 chromatography (GC) and GC/mass spectrometry calibration areas and is due to the fact that the
7 analytical methods are “performance-based,” and allows the use of average calibration responses
8 in lieu of individual responses, which are defined by CLP protocol. In light of applying CLP
9 guidelines to SW-846 methods and evaluating the usability of the data during the validation
10 process, specific QC criteria were determined to address all target compounds and are identified
11 in this report for each parameter, as well as in the validation checklists, which function as
12 worksheets. All completed validation checklists are on file in the Knoxville office. For those
13 analytical methods not addressed by the CLP and Region III guidelines, the validation was based
14 on the method requirements (i.e., SW846, Code of Federal Regulations, SOP) and technical
15 judgment following the logic of the CLP validation guidelines.

17 **3.0 Summary of Data Validation Findings**

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

24
25 This validation report has been prepared for all the samples associated with this investigation,
26 and the overall results of the validation findings are summarized in this report. A listing of the
27 validation qualifiers and the reason codes, along with their definitions, is also found in
28 Attachment A. These qualifiers and reason codes were applied to the data and stored in the
29 FTMC database. The following section highlights the key findings of the data validation for
30 each analysis.

1 **4.0 Analysis-Specific Data Validation Summaries**

2
3 **4.1 Volatile Organics by GC/Mass Spectrometry SW-846-8260B**

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

6
7 Holding Times

8 Technical holding time criteria were met for all samples.

9
10 Initial and Continuing Calibration

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

- 13
14 • The following demonstrated RRFs below 0.1 in the ICAL and/or CCAL: nondetect
15 results were rejected (qualified 'R'). Positive results were estimated (qualified 'J') unless
16 'B' qualified due to blank contamination.
17

SDG	Samples Affected	Analyte/Analytes	Validation Qualifier
PK823101	KT0001, KT0002, KT0025, KT0026	Acetone, 2-Butanone, Bromochloromethane, 1,2-Dibromo-3- chloropropane	R
PK823102	KT0005, KT0006	Acetone, 2-Butanone, Dibromomethane, Bromochloromethane, 1,2-Dibromo-3- chloropropane	R/J
PK823103	KT0003, KT0004, KT0007, KT0008, KT0013, KT0014, KT0015, KT0016, KT0017, KT0020, KT0021, KT0022, KT0029	Acetone, 2-Butanone	R/B/J
PK823103	KT0007, KT0008, KT0013, KT0014, KT0015, KT0016, KT0017, KT0020, KT0021, KT0022, KT0029	1,2-Dibromo-3-Chloropropane, Dibromomethane, Bromochloromethane	R

SDG	Samples Affected	Analyte/Analytes	Validation Qualifier
PK823103	KT0003, KT0004	Bromomethane	R
PK823104	KT2001	Acetone, 2-Butanone, 1,2-Dibromo-3-chloropropane	R
PK823105	KT0009, KT0010, KT0012, KT0018, KT0019	Bromomethane, 2-Butanone, Acetone	R/B/J
PK823106	KT2004	Acetone, Bromochloromethane, 2-Butanone, 1,2-Dibromo-3-chloropropane, Dibromomethane	J/R
PK823107	KT0024	Acetone, 2-Butanone	J
PK823108	KT1001	Acetone, 2-Butanone	R
PK823109	KT0030, KT0031	Acetone, 2-Butanone, Bromochloromethane	R
PK823110	KT3001, KT3002, KT3003, KT3005, KT3006	Acetone, 2-Butanone, Bromochloromethane, Dibromomethane, 1,2-Dibromo-3-Chloropropane	B/R

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- 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 relative response factor (RRF) criteria not met. Positive results were estimated (qualified 'J'); Unless 'B' qualified due to blank contamination.

SDG	Samples Affected	Analyte/Analytes	Validation Qualifier
PK823101	KT0001, KT0002, KT0025, KT0026	2-Hexanone	UJ
PK823101	KT0001, KT0025, KT0026	Acetone	R

SDG	Samples Affected	Analyte/Analytes	Validation Qualifier
PK823103	KT0003, KT0004, KT0007, KT0008, KT0013, KT0014, KT0015, KT0016, KT0017, KT0020, KT0021, KT0022, KT0029	Bromomethane, Methylene chloride	R/B/UJ
PK823103	KT0007, KT0008, KT0013, KT0014, KT0015, KT0016, KT0017, KT0020, KT0021, KT0022, KT0029	2-Hexanone, Naphthalene	UJ
PK823103	KT0003, KT0004	Chloroethane, Trichlorofluoromethane, Carbon disulfide, 1,2,3-Trichlorobenzene, 1,2,4-Trichlorobenzene	UJ
PK823103	KT0022	1,2-Dibromo-3-chloropropane, 4-Methyl-2-pentanone	R/UJ
PK823104	KT2001	Methylene chloride	UJ
PK823105	KT0009, KT0010, KT0012, KT0018, KT0019	Bromomethane, Chloroethane, Dichlorodifluoromethane, Methylene chloride, 1,2,3-Trichlorobenzene, 1,2,4-Trichlorobenzene	R/B/UJ
PK823106	KT2004	Methylene chloride, 1,2,3-Trichlorobenzene	UJ
PK823107	KT0024	Acetone, Methylene chloride, Dichlorodifluoromethane	B/J/UJ
PK823108	KT1001	Dichlorodifluoromethane, Methylene chloride, Acetone	R/B/UJ
PK823109	KT0030, KT0031	Methylene chloride, Chloroethane, Dichlorodifluoromethane	B/UJ
PK823110	KT3001, KT3003, KT3005	1,2,3-Trichlorobenzene, 1,2,4-Trichlorobenzene, Acetone, 2-Butanone	R/B/UJ
PK823110	KT3003, KT3005	Trans-1,3-Dichloropropene	UJ

SDG	Samples Affected	Analyte/Analytes	Validation Qualifier
PK823110	KT3001	Bromomethane, 2,2-Dichloropropane, 2-Hexanone, N-Butylbenzene, Naphthalene, Hexachlorobutadiene, 1,2,4-Trimethylbenzene	UJ
PK823110	KT3002, KT3006	Carbon disulfide, Trans-1,2-Dichloroethene, Trans-1,3-Dichloropropene, Dichlorodifluoromethane	UJ
PK823110	KT3003, KT3005	Naphthalene, 2-Hexanone, 1,2-Dibromo-3-Chloropropane	R/UJ

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Blanks

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

SDG	Samples Affected	Analyte/Analytes	Associated Blank Contamination
PK823101	KT0001, KT0002, KT0025, KT0026	Methylene chloride	Method
PK823102	KT0005, KT0006	Methylene chloride	Method
PK823103	KT0003, KT0004, KT0008, KT0013, KT0014, KT0015, KT0016, KT0017, KT0021, KT0022, KT0029	Acetone, Methylene chloride	Method / ER
PK823103	KT0007, KT0020	Methylene chloride	Method
PK823105	KT0009, KT0010, KT0012, KT0018, KT0019	Methylene chloride	Method
PK823105	KT0019	Acetone	ER
PK823107	KT0024	Methylene chloride	Method
PK823108	KT1001	Methylene chloride	Method

SDG	Samples Affected	Analyte/Analytes	Associated Blank Contamination
PK823101	KT0001, KT0002, KT0025, KT0026	Methylene chloride	Method
PK823102	KT0005, KT0006	Methylene chloride	Method
PK823103	KT0003, KT0004, KT0008, KT0013, KT0014, KT0015, KT0016, KT0017, KT0021, KT0022, KT0029	Acetone, Methylene chloride	Method / ER
PK823103	KT0007, KT0020	Methylene chloride	Method
PK823109	KT0030, KT0031	Methylene chloride	Method
PK823110	KT3001, KT3002, KT3003, KT3005, KT3006	Acetone	Method/ER

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

Surrogate Recoveries

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

Matrix Spike/Matrix Spike Duplicate

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

Field Duplicates

Original and field duplicate (FD) results were evaluated and all QC criteria were met, with the exceptions of the following: Note: Soil-50% criteria applied. Water-35% criteria applied.

SDG	Samples Affected	Analyte	Validation Qualifier
PK823103	KT0015, KT0017-FD	Acetone	*B
PK823105	KT0009, KT0010-FD	Acetone	J
PK823110	KT3002, KT3003	Acetone	*B

1
2 * 'B' qualifiers assigned to designate blank contamination, which are identification qualifiers, take
3 precedence over estimating qualifiers assigned due to quantitation.
4

5 Internal Standards

6 All internal standards met criteria with the exception of the following:

- 7
8 • All compounds associated with the internal standards listed in the table below were
9 qualified as indicated.
10

SDG	Samples Affected	Internal Standard Outside QC Limits	Validation Qualifier
PK823103	KT0007	1,4-Dichlorobenzene-d4	**R/UJ
PK823105	KT0009, KT0010, KT0012, KT0018, KT0019	1,4-Dichlorobenzene-d4	UJ
PK823107	KT0024	Chlorobenzene-d5, 1,4-Dichlorobenzene-d4	UJ

11
12 ** 'R' qualifiers take precedence over estimating qualifiers.
13

14 Quantitation

15 Results quantitated between the maximum detection limit (MDL) and the reporting limit (RL),
16 which the lab qualified as 'J,' were qualified as estimated 'J' unless blank contamination was
17 present or the results were rejected.
18

19 **4.2 TCL Semivolatiles by GC/MS SW-846-8270C**

20 Overall, the data are of good quality and are usable as reported by the laboratory with the
21 exceptions noted below. Data were reviewed for the following:
22

23 Holding Times

24 Technical holding time criteria were met for all samples.
25

26 Initial and Continuing Calibration

27 All initial and continuing calibrations associated with the project samples met QC criteria with
28 the exceptions of the following:

1
 2 The following exhibited individual ICAL %RSD>30 and/or CCAL %D>20:
 3

SDG	Samples Affected	Analyte/Analytes	Validation Qualifier
PK823101	KT0001	Benzo(ghi)perylene, Carbazole, 4,6-Dinitro-2-methylphenol, 2,4-Dinitrophenol, Hexachlorocyclopentadiene, Indeno(1,2,3-cd)pyrene, 4-Nitrophenol	UJ
PK823103	KT0003, KT0004, KT0007, KT0008, KT0013, KT0014, KT0015, KT0016, KT0017, KT0020, KT0021, KT0022, KT0029	4-Chloroaniline, 2-Nitroaniline, 3-Nitroaniline, 4-Nitrophenol,	UJ
PK823103	KT0013, KT0014, KT0015, KT0016, KT0017, KT0020, KT0029	n-Nitrosodi-n-propylamine, Benzo(k)fluoranthene	UJ
PK823103	KT0007, KT0008, KT0021, KT0022	3,3'-Dichlorobenzidine	UJ
PK823103	KT0003, KT0004	2-Methylphenol, 4-Nitroaniline, Hexachlorocyclopentadiene	UJ
PK823105	KT0010, KT0012, KT0018, KT0019	3-Nitroaniline, 4-Nitroaniline, 2,4-Dinitrophenol, Carbazole, 2,6-Dinitro-2-methylphenol, Benzo(g,h,i)perylene	J/UJ
PK823106	KT2004	Benzo(ghi)perylene, 3,3'-Dichlorobenzidine, Indeno(1,2,3-cd)pyrene	UJ
PK823110	KT3001, KT3002, KT3003, KT3006	Carbazole	UJ
PK823110	KT3001, KT3006	4-Nitroaniline, 3,3' Dichlorobenzidine	UJ

4
 5 Blanks
 6 The 5X/10X rule for contaminants found in the associated equipment rinsates and method blanks
 7 was applied to all sample results. All were found to be acceptable with the exception of the
 8 following: Note: 'B' Qualifiers were applied to all of the following sample results.

1

SDG	Samples Affected	Analyte/Analytes	Associated Blank Contamination
PK823103	KT0013, KT0014, KT0015, KT0016, KT0017, KT0020, KT0029	Bis(2-Ethylhexyl)phthalate, Di-n-butyl phthalate	Method
PK823104	KT2001	Bis(2-Ethylhexyl)phthalate	Method
PK823105	KT0009, KT0010, KT0012, KT0018, KT0019	Bis(2-Ethylhexyl)phthalate	Method
PK823110	KT3001, KT3003, KT3005,	Bis(2-Ethylhexyl)phthalate	Method

2

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

5

6 Surrogate Recoveries

7 All surrogate recoveries met QC criteria.

8

9 Matrix Spike/Matrix Spike Duplicate

10 Batch QC, MS/MSD, and LCS were performed for the project samples and all QC criteria were
11 met, with the exceptions of the following;

12

SDG	Samples Affected	Analyte/Analytes	Associated Blank Contamination
PK823101	KT0001, KT0002, KT0025, KT0026	Pentachlorophenol	UJ
PK823110	KT3001, KT3002, KT3003, KT3005, KT3006	Acenaphthene, 4-Chloro-3-Methylphenol, 2-Chlorophenol, 1,4-Dichlorobenzene, 2,4-Dinitrotoluene, 4-Nitrophenol, n-Nitrosodi-n-propylamine, Pentachlorophenol, Phenol, Pyrene, 1,2,4-Trichlorobenzene	UJ

13

1 Field Duplicates

2 Original and FD results were evaluated and all QC criteria were met.

3

4 Internal Standards

5 All internal standards met criteria with the following exceptions: The compounds (which are
6 associated with the internal standards that experienced low are counts) are identified below:

7

SDG	Samples Affected	Analyte/Analytes	Qualifiers
PK823107	KT0024	Dibenz(a,h)anthracene, Indeno(1,2,3-cd)pyrene, Benzo(ghi)perylene	UJ

8

9 Quantitation

10 Results quantitated between the MDL and the RL, which the lab qualified as 'J,' were qualified as
11 estimated 'J' unless blank contamination was present or the results were rejected.

12

13 **4.3 Metals by SW-846-6010B/7471A/7470A**

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

16

17 Holding Times

18 Technical holding time criteria were met for all samples.

19

20 Initial and Continuing calibrations

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

22

23 Blanks

24 The 5X rule for contaminants found in the associated equipment rinse, calibration, and method
25 blanks was applied to all sample results. All were acceptable with the exceptions noted below:

26 Note: 'B' Qualifiers were applied to all of the following sample results.

27

SDG	Samples Affected	Analyte	Associated Blank Contamination
PK823101	KT0001, KT0002, KT0025, KT0026	Sodium, Thallium	ER
PK823101	KT0002, KT0025, KT0026	Beryllium	CCB
PK823101	KT0025, KT0026	Potassium, Selenium	Method/CCB
PK823101	KT0026	Nickel	Method
PK823102	KT0005, KT0006	Sodium	Method
PK823102	KT0005	Beryllium, Nickel, Potassium	CCB
PK823103	KT0003, KT0004, KT0007, KT0008, KT0013, KT0014, KT0015, KT0016, KT0017, KT0020, KT0021, KT0022, KT0029	Sodium	CCB
PK823103	KT0008, KT0014, KT0020, KT0029	Beryllium	CCB
PK823103	KT0017	Thallium	CCB
PK823104	KT2001	Sodium	CCB
PK823105	KT0009, KT0010, KT0012, KT0018, KT0019	Sodium	Method
PK823105	KT0010, KT0012	Potassium	CCB
PK823105	KT0012, KT0019	Calcium	ER
PK823106	KT2004	Sodium	CCB
PK823107	KT0024	Sodium	Method
PK823108	KT1001	Calcium, Sodium, Mercury	ER
PK823109	KT0030, KT0031	Mercury, Sodium	Method/CCB
PK823110	KT3001, KT3002, KT3003, KT3006	Sodium	CCB/ER
PK823110	KT3002, KT3003, KT3006	Aluminum, Iron	CCB/ER
PK823110	KT3001	Mercury, Thallium	CCB/ER

SDG	Samples Affected	Analyte	Associated Blank Contamination
PK823110	KT3002, KT3003	Cobalt	CCB
PK823110	KT3005, KT3006	Magnesium, Calcium	ER

1
2 Matrix Spike/Matrix Spike Duplicate
3 Batch QC was performed for the project samples and all QC criteria were met with the following
4 exceptions:
5

SDG	Samples Affected	Analyte/Analytes	Validation Qualifier
PK823101	KT0001, KT0002, KT0025, KT0026	Aluminum, Antimony, Chromium, Lead, Zinc	J
PK823103	KT0003, KT0004, KT0007, KT0008, KT0013, KT0014, KT0015, KT0016, KT0017, KT0020, KT0021, KT0022, KT0029	All metals except: Aluminum, Iron, Manganese, Mercury	B/J/UJ

6
7 Laboratory Control Sample
8 All QC criteria were met for the LCS associated with the project sample analyses.
9

10 Interference Check Sample
11 All interference check sample (ICS) % recoveries, where applicable, were acceptable and all QC
12 criteria were met.
13

14 Inductively Coupled Plasma Serial Dilutions
15 All QC criteria were met for the serial dilutions associated with the project sample analyses, with
16 the exceptions of the following:
17

SDG	Samples Affected	Analyte/Analytes	Validation Qualifier
PK823101	KT0001, KT0002, KT0025, KT0026	Chromium, Lead	J
PK823103	KT0003, KT0004, KT0007, KT0008, KT0013, KT0014, KT0015, KT0016, KT0017, KT0020, KT0021, KT0022, KT0029	Aluminum, Barium, Chromium, Iron, Manganese, Lead, Zinc	J
PK823110	KT3001, KT3003	Chromium	J
PK823110	KT3001	Zinc	J

1

2 Field Duplicates

3 Original and FD results were evaluated and all QC criteria (50%) were met, with the exceptions
4 of the following:

5

SDG	Samples Affected	Analyte	Validation Qualifier
PK823103	KT0015, KT0017-FD	Arsenic, Selenium, Iron, Manganese	J

6

7 Sample Quantitation

8 Results quantitated between the instrument detection limit (IDL) and the RL ('B' flagged by the
9 laboratory) were qualified as estimated ('J').

10

11 **4.4 Chlorinated Pesticides by SW-846-8081A**

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

14

15 Holding Times

16 Technical holding time criteria were met for all samples.

17

18 Initial and Continuing Calibration

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

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Blanks

The 5X 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 and LCS was performed for the project samples and all QC criteria were met.

Field Duplicates

Original and FD results were evaluated and no problems were identified.

Confirmation

Results quantified between the primary and secondary columns met all QC criteria with the following exceptions:

SDG	Samples Affected	Analyte	Validation Qualifier
PK823105	KT0018	4,4' DDE	J

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'.

4.5 Organophosphorous Pesticides by SW-846-8141A

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:

1 Holding Times

2 Technical holding time criteria were met for all samples, with the exceptions of samples
3 KT0003, KT0004, KT0014 from SDG PK823103, which were analyzed seven days out of hold
4 time and sample KT2001 from PK823104, which exceeded holding times by two days. All
5 reported results for these samples were estimated (qualified J/UJ), as applicable.

6
7 Initial and Continuing Calibration

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

10

- 11 • The following exhibited individual primary CCAL %D>15 and/or confirmation
12 %D>25% : nondetect results were estimated (qualified 'UJ'). Positive results
13 were estimated (qualified 'J') unless 'B' qualified due to blank contamination.

14

SDG	Samples Affected	Analyte/Analytes	Validation Qualifier
PK823101	KT0002, KT0025, KT0026	Azinphos-methyl, Bolstar, Chlorpyrifos, Coumaphos, Diazinon, Dichlorvos, Disulfoton, Ethoprop, Fensulfotion, Fenthion, Malathion, Merphos, Mevinphos, Naled, Phorate, Ronnel, Stirophos, Tokuthion, Trichloronate, Parathion methyl, Demeton (total)	UJ

15

16 Blanks

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

19

20 Surrogate Recoveries

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

22

23 Matrix Spike/Matrix Spike Duplicate

24 MS/MSD and LCS was performed for the project samples and all QC criteria were met, with the
25 exceptions of the following:

26

SDG	Samples Affected	Analyte	Validation Qualifier
PK823103	KT0014	Disulfoton	UJ

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Field Duplicates

Original and FD results were evaluated and no problems were identified.

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’.

4.6 Herbicides by SW-846-8151A

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.

Blanks

The 5X 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, with the exception of the following:

SDG	Samples Affected	Surrogate	Validation Qualifier
PK823103	KT0021	DCAA	UJ

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Matrix Spike/Matrix Spike Duplicate

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

SDG	Samples Affected	Analyte/Analytes	Validation Qualifier
PK823101	KT0001, KT0002, KT0025, KT0026	2,4-D and 2,4,5-TP	UJ
PK823103	KT0003, KT0004, KT0007, KT0008, KT0013, KT0014, KT0015, KT0016, KT0017, KT0020, KT0021, KT0022, KT0029	2,4,5-T and 2,4,5-TP	UJ

6
7
8
9

Field Duplicates

Original and FD results were evaluated and no problems were identified.

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'.

15

4.7 PCBs by SW-846-8082

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:

19

Holding Times

Technical holding time criteria were met for all project samples.

22

1 Initial and Continuing Calibration

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

3

4 Blanks

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

7

8 Surrogate Recoveries

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

10

11 Matrix Spike/Matrix Spike Duplicate

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

13

14 Field Duplicates

15 Original and FD results were evaluated and no problems were identified.

16

17 Quantitation

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

22

23 **4.8 Explosives by SW-846-8330**

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

26

27 Holding Times

28 Technical holding time criteria were met with the exceptions of the following:

29

30 Initial and Continuing Calibration

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

32

1 Blanks

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

4

5 Surrogate Recoveries

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

7

8 Matrix Spike/Matrix Spike Duplicate

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

10

11 Field Duplicates

12 Original and FD results were evaluated and no problems were identified.,

13

14 Quantitation

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

19

20 **5.0 Quality Assurance Field Split Sample Data Evaluation**

21 Data from the quality assurance split samples supplied to IT by the USACE were reviewed for
22 comparability to the original and field duplicate results. Relative percent differences were
23 calculated and the results are summarized in this section.

24

- 25 • Field split data for PK823105

26

Original Sample ID	Field Dup ID	Field Split ID	Units	Compounds / Elements	Original / Field Split RPD	% RSD
KT0009	KT0010	KT0011				
.039	.032	nd	mg/k	Mercury		
7740	7690	4370	mg/k	Aluminum	55.7%	29.3%
5.7	5.2	2.55	mg/k	Arsenic	76.4%	37.8%
13.3	21.6	10.4	mg/k	Lead	24.5%	38.5%
21.7	23.5	14.9	mg/k	Barium	37.2%	22.6%

Original Sample ID KT0009	Field Dup ID KT0010	Field Split ID KT0011	Units	Compounds / Elements	Original / Field Split RPD	% RSD
.62	.7	nd	mg/k	Selenium		
.25	.25	nd	mg/k	Beryllium		
591	718	522	mg/k	Calcium	12.4%	16.3%
14.9	13.2	10.2	mg/k	Chromium	37.5%	18.6%
1.7	1.7	nd	mg/k	Cobalt		
7.3	8.2	nd	mg/k	Copper		
19100	17300	11400	mg/k	Iron	50.5%	25.3%
659	551	410	mg/k	Magnesium	46.6%	23.1%
169	167	123	mg/k	Manganese	31.5%	17.0%
5	5.1	1.96	mg/k	Nickel	87.4%	44.4%
nd	85.7	60	mg/k	Potassium		
49.2	65.3	202	mg/k	Sodium	-121.7	79.6%
32.1	28.9	19.6	mg/k	Vanadium	48.4%	24.2%
14	14.2	5.49	mg/k	Zinc	87.3%	44.3%
490	190	nd	ug/k	Acetone		
15	13	nd	ug/k	Methylene chloride		
56	75	nd	ug/k	bis (2-Ethylhexyl) phthalate		

1
2 Metal: Majority of the same metals detected in all three samples. All six metals detected in the
3 original and/or FD but not in the FS were below the reporting limit except for selenium.
4 Selenium was detected near the reporting limit. High RPDs for the six metals possibility
5 attributed to lack of homogeneity in soil samples.

6
7 Volatiles: No volatiles detected in the FS. Acetone and Methylene chloride detected in the
8 original and FD are common laboratory contaminants.

9
10 Semivolatiles: No semivolatiles detected in the FS. Bis (2-Ethylhexyl) phthalate a common
11 laboratory contaminant was detected in the original and FD.

12
13 Pesticides, Herbicides, PCBs, Explosives: No compounds detected in any of the three samples.

- 14
15 • Field split data for PK823110

16

Original Sample ID	Field Dup ID	Field Split ID	Units	Compounds / Elements	Original / Field Split RPD	% RSD
KT3002	KT3003	KT3004				
128	169	141	ug/L	Aluminum	-9.7%	14.4%
65	69.1	71	ug/L	Barium	-8.8%	4.5%
1220	1250	160	ug/L	Calcium	153.6	70.8%
nd	4.7	nd	ug/L	Chromium		
5.7	6.7	nd	ug/L	Cobalt		
119	143	137	ug/L	Iron	-14.1%	9.4%
429	457	nd	ug/L	Magnesium		
263	250	247	ug/L	Manganese	6.3%	3.4%
1660	1750	nd	ug/L	Sodium		
2.7	1.4	nd	ug/L	Acetone		
nd	2.4	nd	ug/L	bis (2-Ethylhexyl) phthalate		

- 1
- 2 Metal: Majority of the same metals detected in all three samples. Calcium the only metal with
- 3 its RPD above the QC limit, was detected below the reporting limit for the original and FD.
- 4
- 5 Volatiles: No volatiles detected in the FS and only acetone, a common laboratory contaminant
- 6 was detected in the original and FD below the reporting limit.
- 7
- 8 Semivolatiles: No semivolatiles detected in the original and FS. Only bis (2-Ethylhexyl)
- 9 phthalate a common laboratory contaminant was detected below the reporting limit in the FD.
- 10
- 11 Pesticides, OP Pesticides, Herbicides, PCBs; No compounds detected in any of the three
- 12 samples.

ATTACHMENT A

Validation Qualifiers

- U Not detected. The compound/analyte was analyzed for, but not detected above the associated reporting limit.
- J The compound/analyte was positively identified; the reported value is the estimated concentration of the constituent detected in the sample analyzed.
- B The concentration reported was detected significantly above the levels reported in the associated equipment rinse samples and/or laboratory method and trip blanks. (5X/10X Rule was applied).
- R The reported sample results are rejected due to the following:
1. Severe deficiencies in the supporting quality control data.
 2. Anomalies noted in the sampling and/or analysis process which could affect the validity of the reported data.
 3. The presence or absence of the constituent cannot be verified based on the data provided.
 4. To indicate not to use a particular result in the event of a reanalysis.
- UJ The compound/analyte was analyzed for, but not detected above the established reporting limit. However, review and evaluation of supporting QC data and/or sampling and analysis process have indicated that the 'non-detect' maybe inaccurate or imprecise. The non-detect result should be estimated.

Validation Reason Code Definitions

(Page 1 of 2)

Reason Code	Description
01	Sample received outside of 4+/-2 degrees Celsius
01A	Improper sample preservation
02	Holding Time Exceeded
02A	Extraction
02B	Analysis
03	Instrument Performance - Outside Criteria
03A	BFB
03B	DFTPP
03C	DDT and/or Endrin % breakdown exceeds criteria
03D	retention time windows
03E	Resolution
04	Initial calibration results outside specified criteria
04A	Compound mean RRF QC criteria not met
04B	Individual % RSD criteria not met
04C	Correlation coefficient <0.995
05	Continuing calibration results outside specified criteria
05A	Compound mean RRF QC criteria not met
05B	Compound % D QC criteria not met
06	Result qualified as a result of the 5x/10x blank correction
06A	Method or preparation blank
06B	ICB or CCB
06C	ER
06D	TB
06E	FB
07	Surrogate recoveries outside control limits
07A	Sample
07B	Associated method blank or LCS
08	MS/MSD/Duplicate results outside criteria
08A	MS and/or MSD recovery not within control limits (accuracy)
08B	% RPD outside acceptance criteria (precision)
09	Post digestion spike outside criteria (GFAA)
10	Internal standards outside specified control limits

Validation Reason Code Definitions

(Page 2 of 2)

Reason Code	Description
10A	Recovery
10B	Retention Time
11	Laboratory control sample recoveries outside specified control limits
11A	Recovery
11B	% RPD (if run in duplicate)
12	Interference check standard
13	Serial dilution
14	Tentatively identified compounds
15	Quantitation
16	Multiple results available; alternate analysis preferred
17	Field duplicate RPD criteria is exceeded
18	Percent difference between original and second column exceeds QC criteria
19	Professional judgement was used to qualify the data
20	Pesticide clean-up checks
21	Target compound identification
22	Radiological calibration
23	Radiological quantitation
24	Reported result and/or lab qualifier revised to reflect validation findings



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**Data Validation Summary Report
for the Site Investigation Performed at the
"Fill Area West of Range 19", (Parcel PPMP-233)
Fort McClellan, Calhoun County, Alabama**

7 **1.0 Introduction**

8 Level III data validation was performed on 100 percent of the environmental samples collected at
9 Parcel PPMP-233. The analytical data consisted of five sample delivery groups (SDG),
10 PK723301 through PK723305 (note: PK723303 was not validated since it contained field QC
11 data only, i.e. trip and equipment blanks), which were analyzed by Quanterra Incorporated. In
12 addition, an evaluation of the field split data, which was analyzed by the USACE-SAD
13 laboratory, is included in this report. The chemical parameters for which the samples were
14 analyzed are identified below:
15

Parameter (Method)
Volatile Organic Compounds by SW-846-8260B
Semivolatile Organic Compounds by SW-846-8270C
Target Analyte List Metals by SW-846-6010B/7470
Organochlorine Pesticides by SW-846-8081A
Polychlorinated Biphenyls by SW-846-8082
Chlorinated Herbicides by SW-846-8151
Nitroaromatics and Nitramines by SW-846-8330

16
17 **2.0 Procedure**

18 The sample data were validated following the logic identified in the 1994 U.S. Environmental
19 Protection Agency (EPA) *Contract Laboratory Program National Functional Guidelines For*
20 *Inorganic Data Review* and the 1999 EPA *Contract Laboratory Program National Functional*
21 *Guidelines For Organic Review* for all areas except blanks. The EPA 1993 *Region III*
22 *Laboratory Data Validation Functional Guidelines for Evaluating Inorganic Analyses* and 1992
23 *Region III National Functional Guidelines for Organic Data Review* were applied to the areas
24 associated with blank contamination. Specific quality control (QC) criteria, as identified in the
25 quality assurance plan (QAP), analytical methods, and laboratory standard operating procedures
26 (SOP) were applied to all sample results. As the result of the use of Update III SW-846 test
27 methods for the analytical data and the application of the Contract Laboratory Program (CLP)
28 guidelines during the validation process, there were instances where specific QC requirements
29 for all target compounds were not defined. This primarily occurred in the organic, gas
30 chromatography (GC) and GC/mass spectrometry calibration areas and is due to the fact that the
31 analytical methods are "performance-based," and allows the use of average calibration responses

1 in lieu of individual responses, which are defined by CLP protocol. In light of applying CLP
2 guidelines to SW-846 methods and evaluating the usability of the data during the validation
3 process, specific QC criteria were determined to address all target compounds and are identified
4 in this report for each parameter, as well as in the validation checklists, which function as
5 worksheets. All completed validation checklists are on file in the Knoxville office. For those
6 analytical methods not addressed by the CLP and Region III guidelines, the validation was based
7 on the method requirements (i. e., SW-846, Code of Federal Regulation, SOP) and technical
8 judgment, following the logic of the CLP validation guidelines.

9 **3.0 Summary of Data Validation Findings**

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

17
18 This validation report has been prepared for all the samples associated with this investigation,
19 and the overall results of the validation findings are summarized in this report. A listing of the
20 validation qualifiers and the reason codes, along with their definitions, is also found in
21 Attachment A. These qualifiers and reason codes were applied to the data and stored in the
22 FTMC database. The following section highlights the key findings of the data validation for
23 each analysis.

24 **4.0 Analysis-Specific Data Validation Summaries**

25 **4.1 Volatile Organic Compounds by SW-846-8260B**

26
27
28
29 Overall, the data are of good quality and are usable as reported by the laboratory with the
30 exceptions noted below. Data were reviewed for the following:

31 32 Holding Times

33 Technical holding time criteria were met for all project samples with the exception of the following:
34

SDG Number	Sample Number	Compound	Validation Qualifier
PK72330 1	KZ0001, KZ0002, KZ0011	Acetone	J

- Original results for acetone exceeded the instrument calibration range. Reanalysis was performed outside of hold-times. Original results were rejected in favor of estimated reanalyzed results.

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 (RRFs) 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 Number	Sample Number	Compound	Validation Qualifier
PK72330 1	KZ0001, KZ0002, KZ0004, KZ0011, KZ0012	Bromochloromethane	R
PK72330 1	KZ0004, KZ0012	Acetone	R
PK72330 2	KZ0005, KZ0006, KZ0007, KZ0008, KZ0009, KZ0010, KZ0013, KZ0014	Bromochloromethane	R
PK72330 4	KZ0015	Bromochloromethane	R
PK72330 5	KZ3002, KZ3004	Bromochloromethane, Acetone, 2-Butanone, Dibromomethane, 1,2-Dibromo-3- chloropropane, 1,2,3-Trichloropropane	R

* 'R' qualifiers take precedence over estimating qualifiers.

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.

1

SDG Number	Sample Number	Compound	Validation Qualifier
PK72330 1	KZ0001, KZ0002, KZ0004, KZ0011, KZ0012	2-Butanone	UJ
PK72330 1	KZ0004, KZ0012	Acetone	R
PK72330 2	KZ0005, KZ0006, KZ0007, KZ0008, KZ0009, KZ0010, KZ0013, KZ0014	2-Butanone, 2-Hexanone, Acetone	J/UJ/B
PK72330 2	KZ0013, KZ0014	Sec-Dichloropropane	UJ
PK72330 4	KZ0015	Bromomethane, Chloroethane, 1,1,1,2-Tetrachloroethane, 2-Butanone, 2-Hexanone, Acetone, Carbon tetrachloride, Chloromethane, Naphthalene, Trichlorofluoromethane, Sec-Dichloropropane	R/UJ/J
PK72330 5	KZ3002, KZ3004	Bromomethane, 2-Butanone, Bromobenzene, 2-Hexanone, Acetone, Styrene, Tetrachloroethene, 1,2,3-Trichlorobenzene, 1,2,4-Trichlorobenzene, o-xylene, m&p xylene, Naphthalene	R/UJ

2

3

4

* 'R' qualifiers take precedence over estimating qualifiers.

5 Blanks

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

9

SDG Number	Sample Number	Compound	Blank Contaminant	Validation Qualifier
PK72330	KZ0001, KZ0002, KZ0004, KZ0011,	Methylene	Method	B

SDG Number	Sample Number	Compound	Blank Contaminant	Validation Qualifier
1	KZ0012	Chloride		
PK72330 2	KZ0013, KZ0014	Acetone	Method/ER	
PK72330 2	KZ0005, KZ0006, KZ0007, KZ0008, KZ0009, KZ0010, KZ0013, KZ0014	Methylene Chloride	Method	B
PK72330 4	KZ0015	Methylene Chloride	Method	B

1
2 Surrogate Recoveries

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

4
5 Matrix Spike/Matrix Spike Duplicate

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

8
9 Laboratory Control Sample

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

12
13 Internal Standards

14 All internal standards met QC criteria with the exception of the following:

15

SDG Number	Sample Number	Compound	Validation Qualifier
PK72330 1	KZ0011	All compounds associated with IS3	J/UJ
PK72330 2	KZ0009	All compounds associated with IS3	J/UJ

16
17 Field Duplicates

18 Original and field duplicate (FD) results were evaluated and no problems were identified.

19
20 Quantitation

21 Results quantified between the maximum detection limit (MDL) and the reporting limit (RL),
22 which the lab qualified as 'J,' were qualified as estimated 'J' unless blank contamination was

1 present or the results were rejected. Results rejected in favor of a preferred result (e.g., due to
2 dilution or reanalysis) were qualified as rejected 'R'.

3 4 **4.2 Semivolatile Organic Compounds by SW-846-8270C**

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

7 8 Holding Times

9 Technical holding time criteria were met for all project samples.

10 11 Initial and Continuing Calibration

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

14
15 The following exhibited individual ICAL %RSD>30 and/or CCAL %D>20: nondetect results
16 were estimated (qualified 'UJ') unless rejected (qualified 'R') due to ICAL/CCAL minimum
17 RRF criteria not met. Positive results were estimated (qualified 'J'); Unless 'B' qualified due to
18 blank contamination.

19

SDG Number	Sample Number	Compound	Validation Qualifier
PK72330 2	KZ0005, KZ0006, KZ0007, KZ0008, KZ0009, KZ0010, KZ0013, KZ0014	Benzo(k)fluoranthene	UJ
PK72330 4	KZ0015	Benzo(k)fluoranthene, 2,4- Dinitrophenol, Hexachlorocyclopentadiene	UJ

20 21 Blanks

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

SDG Number	Sample Number	Compound	Blank Contaminant	Validation Qualifier
PK72330 2	KZ0005, KZ0006, KZ0007, KZ0008	Bis(2-Ethylhexyl)phthalate	Method	B

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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

All internal standards met QC criteria.

Field Duplicates

Original and FD results were evaluated and no problems were identified.

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/7471A/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.

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

SDG Number	Sample Number	Compound	Blank Contaminant	Validation Qualifier
PK72330 1	KZ0004, KZ0012	Calcium	ER/Method	B
PK72330 2	KZ0006, KZ0008, KZ0010	Calcium	Method	B
PK72330 2	KZ0006, KZ0010, KZ0014	Thallium	ER/Calibration	B
PK72330 2	KZ0010	Beryllium	Calibration	B
PK72330 4	KZ0015	Thallium	Calibration	B
PK72330 5	KZ3002, KZ3004	Aluminum, Magnesium, Mercury	Method/Calibration	B

6
 7 Matrix Spike/Matrix Spike Duplicate
 8 MS/MSD analysis was performed for the project samples. All QC criteria were met with the
 9 exception of the following:

SDG Number	Sample Number	Compound	Validation Qualifier
PK72330 1	KZ0001, KZ0002, KZ0004, KZ0011, KZ0012	Antimony, Chromium	J/UJ
PK72330 2	KZ0005, KZ0006, KZ0007, KZ0008, KZ0009, KZ0010, KZ0013, KZ0014	Antimony, Arsenic, Barium, Beryllium, Cadmium, Calcium, Cobalt, Lead, Potassium, Selenium, Silver, Sodium, Thallium	B/J/UJ
PK72330 4	KZ0015	Antimony	UJ

11
 12 Laboratory Control Sample
 13 LCS was performed for the project samples and all QC criteria were met.
 14

1 Interference Check Sample

2 All interference check sample (ICS) percent recoveries were acceptable. All QC criteria were
3 met.

4
5 Inductively Coupled Plasma Serial Dilutions

6 All QC criteria were met for the serial dilutions with the exception of the following:
7

SDG Number	Sample Number	Compound	Validation Qualifier
PK72330 1	KZ0001, KZ0002, KZ0004, KZ0011, KZ0012	Calcium, Copper	J/B
PK72330 2	KZ0005, KZ0006, KZ0007, KZ0008, KZ0009, KZ0010, KZ0013, KZ0014	Barium, Calcium, Cobalt, Lead, Aluminum, Chromium, Copper, Iron, Magnesium, Manganese, Nickel, Vanadium, Zinc	J/B

8
9 * 'B' qualifiers assigned to designate blank contamination, which are identification qualifiers, takes
10 precedence over estimating qualifiers, assigned due to quantitation.
11

12 Field Duplicates

13 Original and FD results were evaluated. No problems were identified with the exception of the
14 following, which exceeded the 35 percent RPD QC criteria.
15

SDG Number	Sample Number	Compound	Validation Qualifier
PK72330 5	ZK3002(Original) ZK3004 (FD)	Aluminum, Calcium, Chromium, Iron, Nickel, Zinc	J

16
17 Sample Quantitation

18 Results quantitated between the instrument detection limit (IDL) and the RL ('B' flagged by the
19 laboratory) were qualified as estimated ('J').
20

21 **4.4 Organochlorine Pesticides by SW-846-8081A**

22
23 Overall, the data are of good quality and are usable as reported by the laboratory with the
24 exceptions noted below. Data were reviewed for the following:
25

26 Holding Times

27 Technical holding time criteria were met for all project samples.
28

1 Initial and Continuing Calibration

2 All initial and continuing calibrations associated with the project samples met QC criteria with
3 the exception of the following, which exceeded CCAL 15 percent D criteria:

4

SDG Number	Sample Number	Compound	Validation Qualifier
PK72330 4	KZ0015	All reported compounds	UJ

5
6 Blanks

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

9
10 Surrogate Recoveries

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

12
13 Matrix Spike/Matrix Spike Duplicate

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

15
16 Laboratory Control Sample

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

18
19 Field Duplicates

20 Original and FD results were evaluated. No problems were identified with the exception of the
21 following, which exceeded the 35 percent RPD QC criteria.

22

SDG Number	Sample Number	Compound	Validation Qualifier
PK72330 5	ZK3002(Original) ZK3004 (FD)	4,4'-DDD	J

23
24 Quantitation

25 Results quantified between the MDL and the RL, which the lab qualified as 'J,' were qualified as
26 estimated 'J' unless blank contamination was present or the results were rejected. Results
27 rejected in favor of a preferred result (e.g., due to dilution or reanalysis) were qualified as
28 rejected 'R'. It should be noted that 4,4'-DDD results for sample ZK3004, were estimated due to
29 second column confirmation analysis %D > 25 percent.

1
2 **4.5 PCBs by SW-846-8082**
3

4 Overall, the data are of good quality and are usable as reported by the laboratory with the
5 exceptions noted below. Data were reviewed for the following:
6

7 Holding Times

8 Technical holding time criteria were met for all project samples.
9

10 Initial and Continuing Calibration

11 All initial and continuing calibrations associated with the project samples met QC criteria with
12 the exception of the following:
13

SDG Number	Sample Number	Compound	Validation Qualifier
PK72330 4	KZ0015	Aroclor1016, Aroclor1260	UJ

14
15 Blanks

16 The 5X rule for contaminants found in the associated equipment rinse and method blanks was
17 applied to all sample results. All were found to be acceptable.
18

19 Surrogate Recoveries

20 All surrogate recoveries are within acceptable QC ranges for the surrogates applied.
21

22 Matrix Spike/Matrix Spike Duplicate

23 MS/MSD analysis was performed for the project samples. All QC criteria were met with the
24 exception of the following, which experienced low percent recoveries and/or high RPDs:
25

SDG Number	Sample Number	Compound	Validation Qualifier
PK72330 1	KZ0001, KZ0002, KZ0004, KZ0011, KZ0012	Aroclor 1260	UJ

26
27 Laboratory Control Sample

28 LCS was performed for the project samples and all QC criteria were met.
29

1 Field Duplicates

2 Original and FD results were evaluated and no problems were identified.

3
4 Quantitation

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

9
10 **4.6. Organochlorinated Herbicides by SW-846-8151**

11
12 Overall, the data are of good quality and are usable as reported by the laboratory. Data were
13 reviewed for the following:

14
15 Holding Times

16 Technical holding time criteria were met for all project samples.

17
18 Initial and Continuing Calibration

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

20
21 Blanks

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

24
25 Surrogate Recoveries

26 All surrogate recoveries are within acceptable QC ranges. It should be noted that original
27 analysis of sample KZ0005 (SDG PK723302), experienced high recoveries; however, reanalysis
28 was performed with acceptable results; therefore, no qualification was necessary.

29
30 Matrix Spike/Matrix Spike Duplicate

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

32
33 Laboratory Control Sample

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

1 Field Duplicates

2 Original and FD results were evaluated and no problems were identified.
3

4 Quantitation

5 Results quantified between the MDL and the RL, which the lab qualified as 'J,' were qualified as
6 estimated 'J' unless blank contamination was present or the results were rejected. Results
7 rejected in favor of a preferred result (e.g., due to dilution or reanalysis) were qualified as
8 rejected 'R'.
9

10 **4.7 Nitroaromatics and Nitramines by SW-846-8330**

11 Overall, the data are of good quality and are usable as reported by the laboratory with the
12 exceptions noted below. Data were reviewed for the following:
13

14 Holding Times

15 Technical holding time criteria were met for all project samples.
16

17 Initial and Continuing Calibration

18 All initial and continuing calibrations associated with the project samples met QC criteria.
19

20 Blanks

21 The 5X rule for contaminants found in the associated equipment rinse and method blanks was
22 applied to all sample results. All were found to be acceptable.
23

24 Surrogate Recoveries

25 All surrogate recoveries are within acceptable QC ranges for the surrogates applied.
26

27 Matrix Spike / Matrix Spike Duplicate

28 MS/MSD analysis was performed for the project samples and all QC criteria were met.
29

30 Laboratory Control Sample

31 LCS was performed for the project samples and all QC criteria were met.
32

33 Field Duplicates

34 Original and FD results were evaluated and no problems were identified.
35

1 Quantitation

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

6
 7 **5.0 Quality Assurance Field Split Sample Data Evaluation**

8 Data from the quality assurance split samples supplied to IT by the USACE were reviewed for
 9 comparability to the original and field duplicate results. Relative percent differences were
 10 calculated and the results are summarized in this section.

11

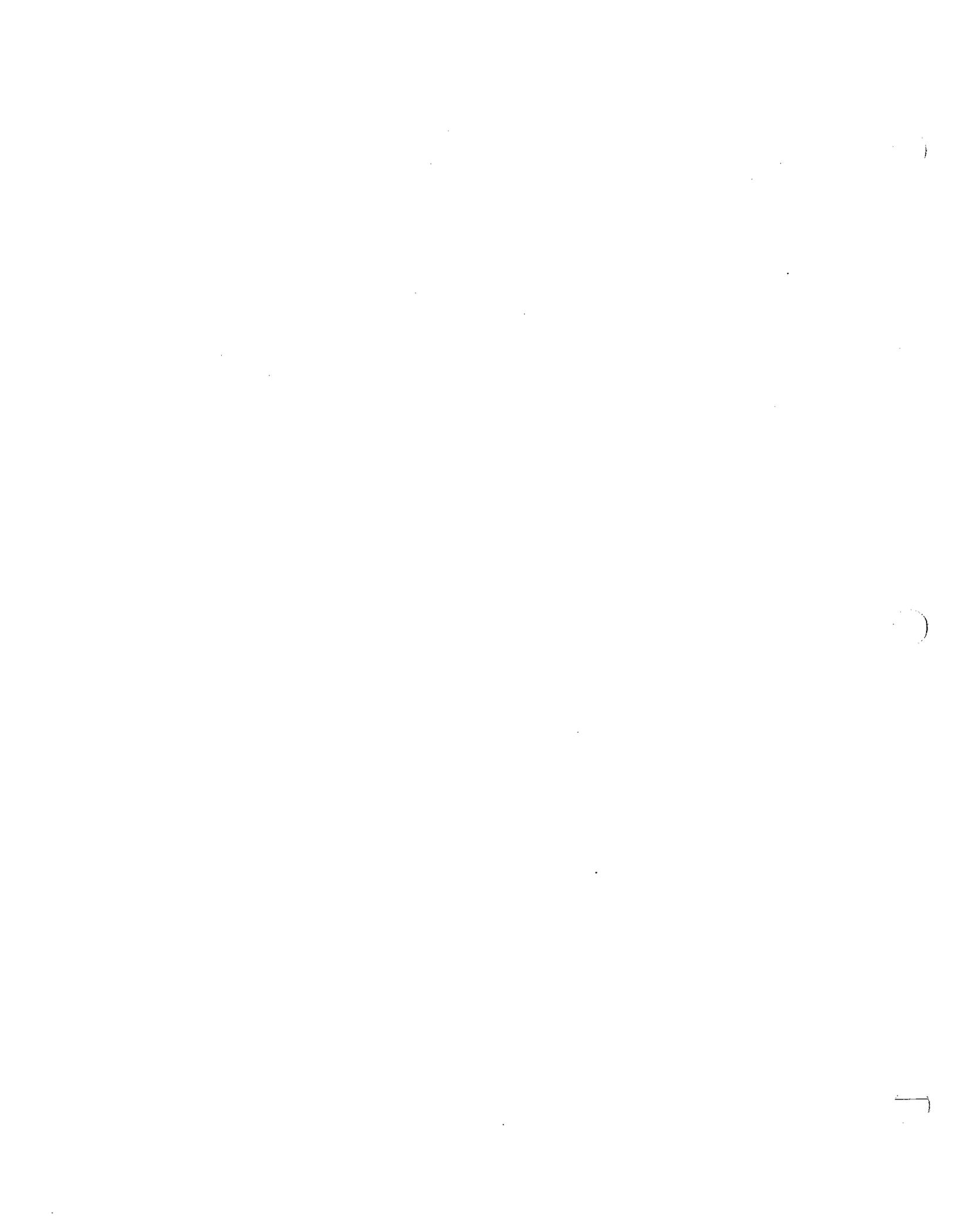
Original Sample ID	Field Dup ID	Field Split ID	Units	Compounds / Elements	Original / Field Split RPD	% RSD
KZ0001	KZ0002	KZ0003				
0.034	0.035	nd	mg/kg	Mercury	N/A	N/A
8350	7860	16671.2	mg/kg	Aluminum	67	45
4.3	4.0	7.483	mg/kg	Arsenic	54	67
11.3	11.5	12.471	mg/kg	Lead	10	5
76.3	75.5	76.870	mg/kg	Barium	0.7	.9
nd	nd	1.814	mg/kg	Selenium	N/A	N/A
0.54	0.47	nd	mg/kg	Beryllium	N/A	N/A
0.68	0.73	nd	mg/kg	Thallium	N/A	N/A
245	225	233.560	mg/kg	Calcium	5	4
11.0	9.0	20.181	mg/kg	Chromium	59	45
7.9	6.6	nd	mg/kg	Cobalt	N/A	N/A
6.8	5.7	14.739	mg/kg	Copper	75	54
13100	11700	23809.5	mg/kg	Iron	58	41
244	257	678.005	mg/kg	Magnesium	94	63
784	713	653.061	mg/kg	Manganese	18	9
6.8	6.2	10.884	mg/kg	Nickel	46	32
251	250	786.846	mg/kg	Potassium	N/A	N/A
17	16.1	33.107	mg/kg	Vanadium	64	43
18.4	15.2	30.386	mg/kg	Zinc	49	38
.0011	.00095	nd	mg/kg	1,1,1-Trichloroethane	N/A	N/A
.0031	.0027	nd	mg/kg	Methylene Chloride	N/A	N/A
1.1	1.2	nd	mg/kg	Acetone	N/A	N/A
.065	nd	nd	mg/kg	Benzo(ghi)perylene	N/A	N/A
.043	nd	nd	mg/kg	Bis(2-Ethylhexyl)phthalate	N/A	N/A

12
 13 **Bold Print** = Results detected below the reporting limit.

- 14
 15 • Metals: Majority of the same metals were detected in all three samples. The RPD’s were
 16 high for some compounds. The differences could be attributed to lack of homogeneity in
 17 soil samples and/or sampling activities.

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- Volatiles: No volatiles detected in the FS. Methylene chloride, a common laboratory contaminant, and 1,1,1-Trichloroethane, were detected below the reporting/quantitation limit in the original and FD. Acetone was also detected in the original and FD and not detected in the FS. It should be noted that acetone results for the original and FD are reported at a dilution since the original analysis exceeded the instrument calibration range.
- Semivolatiles: No semivolatiles detected in the FS. Bis(2-Ethylhexyl)phthalate, a common laboratory contaminant and Benzo(ghi)perylene, were detected below the reporting/quantitation limit in the original and/or FD.
- Pesticides, OP Pesticides, PCB's, Herbicides: No compounds were detected in the original, FD or FS samples.



ATTACHMENT A

Validation Qualifiers

- U Not detected. The compound/analyte was analyzed for, but not detected above the associated reporting limit.
- J The compound/analyte was positively identified; the reported value is the estimated concentration of the constituent detected in the sample analyzed.
- B The concentration reported was detected significantly above the levels reported in the associated equipment rinse samples and/or laboratory method and trip blanks. (5X/10X Rule was applied).
- R The reported sample results are rejected due to the following:
1. Severe deficiencies in the supporting quality control data.
 2. Anomalies noted in the sampling and/or analysis process which could affect the validity of the reported data.
 3. The presence or absence of the constituent cannot be verified based on the data provided.
 4. To indicate not to use a particular result in the event of a reanalysis.
- UJ The compound/analyte was analyzed for, but not detected above the established reporting limit. However, review and evaluation of supporting QC data and/or sampling and analysis process have indicated that the 'non-detect' maybe inaccurate or imprecise. The non-detect result should be estimated.



Validation Reason Code Definitions

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Reason Code	Description
01	Sample received outside of 4+/-2 degrees Celsius
01A	Improper sample preservation
02	Holding Time Exceeded
02A	Extraction
02B	Analysis
03	Instrument Performance - Outside Criteria
03A	BFB
03B	DFTPP
03C	DDT and/or Endrin % breakdown exceeds criteria
03D	retention time windows
03E	Resolution
04	Initial calibration results outside specified criteria
04A	Compound mean RRF QC criteria not met
04B	Individual % RSD criteria not met
04C	Correlation coefficient <0.995
05	Continuing calibration results outside specified criteria
05A	Compound mean RRF QC criteria not met
05B	Compound % D QC criteria not met
06	Result qualified as a result of the 5x/10x blank correction
06A	Method or preparation blank
06B	ICB or CCB
06C	ER
06D	TB
06E	FB
07	Surrogate recoveries outside control limits
07A	Sample
07B	Associated method blank or LCS
08	MS/MSD/Duplicate results outside criteria
08A	MS and/or MSD recovery not within control limits (accuracy)
08B	% RPD outside acceptance criteria (precision)
09	Post digestion spike outside criteria (GFAA)
10	Internal standards outside specified control limits

Validation Reason Code Definitions

(Page 2 of 2)

Reason Code	Description
10A	Recovery
10B	Retention Time
11	Laboratory control sample recoveries outside specified control limits
11A	Recovery
11B	% RPD (if run in duplicate)
12	Interference check standard
13	Serial dilution
14	Tentatively identified compounds
15	Quantitation
16	Multiple results available; alternate analysis preferred
17	Field duplicate RPD criteria is exceeded
18	Percent difference between original and second column exceeds QC criteria
19	Professional judgement was used to qualify the data
20	Pesticide clean-up checks
21	Target compound identification
22	Radiological calibration
23	Radiological quantitation
24	Reported result and/or lab qualifier revised to reflect validation findings

