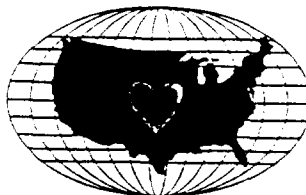


Appendix C

Data Validation Report Summary



HEARTLAND

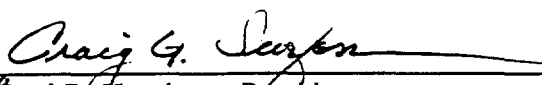
ENVIRONMENTAL SERVICES, INC.

Data Validation Report

SDG#: BV83
Date: October 11, 1999
Client Name: Black & Veatch
Project/Site Name: Lake Charles
Date Sampled: July 13 - 15, 1999
Number of Samples: 15 Aqueous Sample(s) with 2 MS/MSD(s)
Laboratory: Southern Petroleum Laboratories
Validation Guidance: National Functional Guidelines for Organic and Inorganic Data Review, February, 1994
QA/QC Level: Level IV
Method(s) Utilized: SW846 Third Edition
Analytical Fractions: Volatiles and Polynuclear Aromatic Hydrocarbons

Analytical data in this report were screened to determine usability of results and also to determine contractual compliance relative to these requirements and deliverables. This screening assumes analytical results are correct as reported and merely provides an interpretation of the reported quality control results. A minimum of 10% of all laboratory calculations have been verified as part of this validation. All instrument output, i.e. spectra, chromatograms, etc., for each sample have been carefully reviewed. The end-user is urged to review the Specific Findings and associated Data Qualifications presented in this report. Annotated Form 1s or spreadsheets for all samples reviewed are included after the Data Assessment Narratives. Form 1s for MS/MSD samples or spreadsheets are not annotated.

The release of this Data Validation Report is authorized by the following signature:



Paul B. Humburg, President

10-13-99

Date

SDG# BV83

Samples and Fractions Reviewed

Sample Identifications

Analytical Fractions

B&V ID	Matrix	VOA		PAH	
LC-MW11-W01-071399-P	WATER	X	X	X	
LC-MW10-W01-071399-P	WATER	X	X	X	
LC-MW08-W01-071399-P	WATER	X	X	X	
LC-MW07-W01-071399-P	WATER	X	X	X	
LC-MW05-W01-071499-P	WATER	X	X	X	
LC-MW02-W01-071499-P	WATER	X	X	X	
LC-MW04-W01-071499-P	WATER	X	X	X	
LC-MW04-W01-071499-P MS	WATER	X	X	X	
LC-MW04-W01-071499-P MSD	WATER	X	X	X	
LC-Trip 3-S01-071499-P	WATER	X	X	X	
LC-MW01-W01-071499-P	WATER	X	X	X	
LC-MW09-W01-071499-P	WATER	X	X	X	
LC-MW03-W01-071399-P	WATER	X	X	X	
LC-MW03-W01-071399-D	WATER	X	X	X	
LC-Trip 2-W01-071499-D	WATER	X	X	X	
LC-MW06-W01-071599-P	WATER	X	X	X	
LC-MW06-W01-071599-P MS	WATER	X	X	X	
LC-MW06-W01-071599-P MSD	WATER	X	X	X	
TRIP BLANK	WATER	X	X	X	
Total Billable Samples (Water/Soil)		19	0	14	0

VOA= Volatiles

PAH= Polynuclear Aromatic Hydrocarbons

DATA ASSESSMENT NARRATIVE

VOLATILE ORGANICS

General

The organic findings offered in this screening report assumes that all analytical results are correct as reported and is based upon the examination of the reported holding times, blank analysis results, surrogate and matrix spike recoveries, GC/MS performance, tuning results, calibration results and internal standard areas. This report was prepared in compliance relative to the analytical and deliverable requirements specified in the SW846 8260 Method; the National Functional Guidelines for Organic Data Review, and DQO Level IV. All comments made within this report should be considered when examining the analytical results. Please refer the specific findings found in each category to the Summary of Data Qualifications table.

SDG # BV83

A validation was performed on the Volatile Data from SDG BV83. The data was evaluated based on the following parameters.

- * • Data Completeness
- * • Holding Times
- * • GC/MS Tuning
- * • Calibrations
- * • Internal Standard Performance
- Blanks
- * • Surrogate Recoveries
- * • Matrix Spike/Matrix Spike Duplicate
- * • Field Duplicates
- Compound Identification /Quantitation

* - All criteria were met for this parameter

QC Blanks

<u>Associated blank</u>	<u>Compound</u>	<u>Conc.</u>	<u>Action level</u>
LC-Trip3-S01-071499P	acetone	49	490
<u>Samples</u>	<u>Compound</u>	<u>Qualification</u>	
LC-MW05-W01-071499-P	acetone	CRQL (100U)	
LC-MW06-W01-071599-P			

Data Assessment Narrative
Volatiles Page - 2

Compound Identification/Quantitation

Report the diluted results (D-flagged) from the sample below in favor of the results in the original analysis that exceed the linear range of the calibration curve (E-flagged results).

LC-MW06-W01-071599-PDL

GLOSSARY OF DATA QUALIFIERS

QUALIFICATION CODES

U = Not detected

J = Estimated value

UJ = Reported quantitation limit is qualified as estimated

R = Result is rejected and unusable

D = result value is based on dilution analysis

METHOD BLANK QUALIFICATION CODES

B = The sample result for the blank contaminant is less than the sample CRQL and is less than 10X the method blank value. The sample result for the blank contaminant is rejected and the CRQL for that analyte is reported.

B = The sample result for the blank contaminant is greater than the sample CRQL and is less than 10X the method blank value. The sample result for the blank contaminant is qualified as non detected at the analyte value reported.

No Action = The sample result for the blank contaminant is greater than the sample CRQL and is greater than 10X the method blank value. The sample result for the blank contaminant is not qualified with any blank qualifiers.

The specific findings will be noted in numerical form on the Form Is in this data validation report. These specific finding footnotes will reflect the conclusions found in the data validation process that resulted in the qualification of the data.

SUMMARY OF DATA QUALIFICATIONS

<u>SAMPLE ID</u>	<u>ANALYTE ID</u>	<u>DL</u>	<u>QL</u>
LC-MW05-W01-071499-P	acetone	+J	CRQL
LC-MW06-W01-071599-P			
LC-MW06-W01-071599-PDL	all compounds except D-flagged compounds	+/-	DNR

- * DL denotes the Form I qualifier supplied by the laboratory
QL denotes the qualifier used by the data validation firm
+ in the DL column denotes a positive result
- in the DL column denotes a non detect result

DATA ASSESSMENT NARRATIVE

PAHs

General

The organic findings offered in this screening report assumes that all analytical results are correct as reported and is based upon the examination of the reported holding times, blank analysis results, surrogate and matrix spike recoveries, HPLC performance, and calibration results. This report was prepared in compliance relative to the analytical and deliverable requirements specified in the U.S. EPA SW846, Method 8310; the National Functional Guidelines for Organic Data Review, February 1994, and DQO Level IV. All comments made within this report should be considered when examining the analytical results. Please refer the specific findings found in each category to the Summary of Data Qualifications table.

SDG #BV83

A validation was performed on the PAH Data from SDG BV83. The data was evaluated based on the following parameters.

- * • Data Completeness
- * • Holding Times
- * • Calibrations
- Blanks
- Surrogate Recoveries
- * • Matrix Spike/Matrix Spike Duplicate
- Field Duplicates
- Compound Identification /Quantitation

* - All criteria were met for this parameter

Field Duplicates

The field duplicate pair LC-MW03-W01-071399-P/LC-MW03-W01-071399-PD exhibited a non compliant RPD for acenaphthylene (125%). Qualify the positive results as estimated (J).

Data Assessment Narrative
PAH - Page 2

Blanks

The method blank exhibited contamination for three compounds.

Blank ID	Compound	Conc.	Action Limit (10X)
MB389	1-methylnaphthalene	0.02	0.1
	2-methylnaphthalene	0.05	0.25
	naphthalene	0.09	0.45

Sample ID	Compound	Conc.	Qualifier	Assoc. Blank
LC-MW11-W01-071399-P	2-MNPHTH	0.04	CRQL	MB-389
LC-MW10-W01-071399-P	2-MNPHTH	0.04	CRQL	
LC-MW08-W01-071399-P	2-MNPHTH	0.04	CRQL	
LC-MW07-W01-071399-P	1-MNPHTH	0.02	CRQL	
	2-MNPHTH	0.04	CRQL	
	NPHTH	0.04	CRQL	
LC-MW02-W01-071499-P	1-MNPHTH	0.04	CRQL	
	2-MNPHTH	0.05	CRQL	
	NPHTH	0.08	CRQL	
LC-MW01-W01-071499-P	2-MNPHTH	0.04	CRQL	
	NPHTH	0.04	CRQL	
LC-MW03-W01-071399-P	NPHTH	0.7	CRQL	
LC-MW03-W01-071399-D	NPHTH	0.5	CRQL	

Data Assessment Narrative
PAH - Page 3

Surrogates

Six samples exhibited non compliant surrogate recoveries (50%-150%).

Sample ID	1-fluoronaphthalene	phenanthrene-d ₁₀	Qualifier
LC-MW08-W01-071399-P	47 %		J/UJ
LC-MW04-W01-071499-P	415 %		J
LC-MW04-W01-071499-PDL	420 %	194 %	J
LC-MW04-W01-071499-PDL1	1285 %		J
LC-MW09-W01-071499-P	935 %	490 %	J
LC-MW09-W01-071499-PDL	1367 %		J
LC-MW03-W01-071399-P		207 %	J
LC-MW03-W01-071399-D		306 %	J
LC-MW06-MW01-071599-P	5313 %	6926 %	J
LC-MW06-MW01-071599-PDL		19830 %	J

Compound Identification/Quantitation

Report the diluted results (D-flagged) from the sample below in favor of the results in the original analysis that exceed the linear range of the calibration curve (E-flagged results).

LC-MW04-W01-071499-PDL
LC-MW09-W01-071499-PDL
LC-MW03-W01-071399-PDL
LC-MW03-W01-071399-DDL
LC-MW05-W01-071499-PDL
LC-MW06-W01-071599-PDL

GLOSSARY OF DATA QUALIFIERS

QUALIFICATION CODES

U = Not detected

J = Estimated value

UJ = Reported quantitation limit is qualified as estimated

R = Result is rejected and unusable

D = result value is based on dilution analysis

METHOD BLANK QUALIFICATION CODES

CRQL = The sample result for the blank contaminant is less than the sample CRQL and is less than 10X the method blank value. The sample result for the blank contaminant is rejected and the CRQL for that analyte is reported.

U = The sample result for the blank contaminant is greater than the sample CRQL and is less than 10X the method blank value. The sample result for the blank contaminant is qualified as non detected at the analyte value reported.

No Action = The sample result for the blank contaminant is greater than the sample CRQL and is greater than 10X the method blank value. The sample result for the blank contaminant is not qualified with any blank qualifiers.

The specific findings will be noted in numerical form on the Form Is in this data validation report. These specific finding footnotes will reflect the conclusions found in the data validation process that resulted in the qualification of the data.

SUMMARY OF DATA QUALIFICATIONS

<u>SAMPLE ID</u>	<u>COMPOUND ID</u>	<u>DL</u>	<u>QL</u>
LC-MW03-W01-071399-P	acenaphthylene	+	J
LC-MW03-W01-071399-PD			
LC-MW11-W01-071399-P	2-MNPHTH	+BJ	CRQL
LC-MW10-W01-071399-P	2-MNPHTH		CRQL
LC-MW08-W01-071399-P	2-MNPHTH		CRQL
LC-MW07-W01-071399-P	1-MNPHTH		CRQL
	2-MNPHTH		CRQL
	NPHTH		CRQL
LC-MW02-W01-071499-P	1-MNPHTH		CRQL
	2-MNPHTH		CRQL
	NPHTH		CRQL
LC-MW01-W01-071499-P	2-MNPHTH		CRQL
	NPHTH		CRQL
LC-MW03-W01-071399-P	NPHTH		CRQL
LC-MW03-W01-071399-D	NPHTH		CRQL
LC-MW08-W01-071399-P	all compounds	+/-	J/UJ
LC-MW04-W01-071499-P	all compounds	+	J
LC-MW04-W01-071499-PDL			
LC-MW04-W01-071499-PDL1			
LC-MW09-W01-071499-P			
LC-MW09-W01-071499-PDL			
LC-MW03-W01-071399-P			
LC-MW03-W01-071399-D			
LC-MW06-MW01-071599-P			
LC-MW06-MW01-071599-PDL			

- * DL denotes the Form I qualifier supplied by the laboratory
 QL denotes the qualifier used by the data validation firm
 + in the DL column denotes a positive result
 - in the DL column denotes a non detect result

SUMMARY OF DATA QUALIFICATIONS

<u>SAMPLE ID</u>	<u>COMPOUND ID</u>	<u>DL</u>	<u>QL</u>
LC-MW04-W01-071499-PDL	all compounds except	+/-	DNE
LC-MW09-W01-071499-PDL	D-flagged compounds		
LC-MW03-W01-071399-PDL			
LC-MW03-W01-071399-DDL			
LC-MW05-W01-071499-PDL			
LC-MW06-W01-071599-PDL			

- * DL denotes the Form I qualifier supplied by the laboratory
 QL denotes the qualifier used by the data validation firm
 + in the DL column denotes a positive result
 - in the DL column denotes a non detect result