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LDC #13204/13234/13298/13315/14000
September 9, 2005

Windward Environmental, LLC
200 West Mercer Street, Suite 401
Seattle, WA 98119
ATTN: Ms. Marina Mitchell

SUBJECT: Lower Duwamish Waterway Group Sediment Sample Data Validation

Dear Ms. Mitchell,

Enclosed is our revised EPA Level II and Level IV data validation of analytical chemistry results generated in support of the Lower Duwamish Waterway Group project. The primary analyses were performed by Analytical Resources, Inc. Samples were analyzed for GC/MS Semivolatiles by EPA SW 846 Methods 8270C and 8270C-SIM, GC Butyltins by the Krone Method and EPA SW 846 Method 8270C-SIM, GC Chlorinated Pesticides by EPA SW 846 Method 8081A, GC Polychlorinated Biphenyls by EPA SW 846 Method 8082, Metals by EPA SW 846 Methods 6010B/200.8/7471, Total Solids by EPA Method 160.3, Ammonia as Nitrogen by modified EPA Method 350.1, Sulfide by EPA Method 376.2, Grain Size by PSEP Method, and Total Organic Carbon by Plumb Method. Samples are referenced under the following Sample Delivery Groups: HP67, HP70, HP90, HQ69, HQ17, HQ04, HQ48, HQ27, HQ28, HR48, HQ56, HQ57, HQ93, HT37, HU13, HV08, HT56 and IL52. See the Sample Analysis Table (Attachment 1) for the number of samples reviewed.

Please feel free to contact us if you have any questions.

Sincerely,

Stella Cuenco

Stella S. Cuenco
Project Manager/Senior Chemist

Attachment 1

LDC #13204 (Windward Environmental, LLC - Seattle WA / Lower Duwamish Waterway Group)

LDC	SDG#	DATE REC'D	DATE DUE	SVOA (8270C)		SVOA (8270C -SIM)		Pest. (8081A)		PCBs (8082)		Metals & Hg (SW846)		Butyltin (Krone/ 8270C-SIM)		NH3 (350.1)		S= (376.2)		Total Solids (160.3)		TOC (Plumb)		Grain Size										
Matrix: Tissue/Sediment				W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	HP67	02/25/04	03/18/05	0	11	0	4	0	1	0	9	0	9	0	3	0	9	0	9	0	9	0	9	0	9								
B	HP70	02/25/04	03/18/05	0	17	0	7	0	3	0	10	0	10	0	5	0	10	0	10	0	10	0	10	0	10								
C	HP90 & HQ69	02/25/04	03/18/05	0	8	0	6	0	1	0	8	0	8	-	-	0	8	0	8	0	8	0	8	0	8								
D	HQ17 & HQ04	02/25/04	03/18/05	0	12	0	6	0	8	0	13	0	12	-	-	0	12	0	12	0	12	0	12	0	12								
Total	B			0	48	0	23	0	13	0	40	0	39	0	8	0	39	0	39	0	39	0	39	0	39	0	0	0	0	0	0	0	0	366

Shaded cells indicate Level IV validation (all other cells are Level II validation). These sample counts do not include Rinsate Blanks,MS/MSD, and DUPs

Attachment 1

Level II

LDC #13234 (Windward Environmental, LLC - Seattle WA / Lower Duwamish Waterway Group)

LDC	SDG#	DATE REC'D	DATE DUE	SVOA (8270C)		SVOA (8270C -SIM)		Pest. (8081A)		PCBs (8082)		Metals & Hg (SW846)		Butyltin (Krone/ 8270C-SIM)		NH3 (350.1)		S= (376.2)		Total Solids (160.3)		TOC (Plumb)		Grain Size									
Matrix: Tissue/Sediment				T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S			T	S	T	S	T	S	T	S
A	HQ48	03/08/05	03/29/05	0	21	0	12	0	13	0	22	0	21	0	5	0	21	0	21	0	21	0	21	0	21										
B	HQ27 & HQ28	03/08/05	03/29/05	0	12	0	3	0	4	0	12	0	11	0	3	0	12	0	12	0	12	0	12	0	12										
C	HR48	03/08/05	03/29/05	-	-	0	1	-	-	-	-	-	-	0	1	-	-	-	-	-	-	-	-	-	-										
E	HQ56 & HQ57	03/08/05	03/29/05	0	12	0	5	0	3	0	17	0	11	0	2	0	11	0	11	0	11	0	11	0	11										
Total	B			0	45	0	21	0	20	0	51	0	43	0	11	0	44	0	44	0	44	0	44	0	44	0	0	0	0	0	0	0	0	0	411

Shaded cells indicate Level IV validation (all other cells are Level II validation). These sample counts do not include Rinsate Blanks,MS/MSD, and DUPs

Attachment 1

Level II

LDC #13298 (Windward Environmental, LLC - Seattle WA / Lower Duwamish Waterway Group)

LDC	SDG#	DATE REC'D	DATE DUE	SVOA (8270C -SIM)		SVOA (8270C -SIM)		Pest. (8081A)		PCBs (8082)		Metals & Hg (SW846)		NH3 (350.1)		S= (376.2)		Total Solids (160.3)		TOC (Plumb)		Grain Size											
Matrix: Tissue/Sediment				T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	W	S	W	S	W	S	W	S	W	S	W	S
A	HQ93	03/22/05	04/12/05	0	3	-	-	-	-	0	3	0	3	0	3	0	3	0	3	0	3	0	3												
B	HT37	03/22/05	04/12/05	-	-	0	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-												
C	HU13	03/22/05	04/12/05	-	-	0	17	0	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-												
D	HV08	03/22/05	04/12/05	-	-	-	-	0	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-												
Total	B			0	3	0	21	0	3	0	3	0	3	0	3	0	3	0	3	0	3	0	3	0	0	0	0	0	0	0	0	0	0	0	48

Shaded cells indicate Level IV validation (all other cells are Level II validation). These sample counts do not include MS/MSD, and DUPs

Level II

LDC #13315 (Windward Environmental, LLC - Seattle WA / Lower Duwamish Waterway Group)

LDC	SDG#	DATE REC'D	DATE DUE	PCBs (8082)		As (200.8)		Total Solids (160.3)		TOC (Plumb)		Grain Size																									
Matrix:	Tissue/Sediment			T	S	T	S	T	S	T	S	T	S			T	S	T	S	T	S	T	S	W	S	W	S	W	S	W	S	W	S	W	S
B	HT56	03/28/05	04/18/05	-	-	0	9	0	9	-	-	0	9																							
Total	B			0	0	0	9	0	9	0	0	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	27

Shaded cells indicate Level IV validation (all other cells are Level II validation). These sample counts do not include MS/MSD, and DUPs

RUSH (2 DAY TAT)

Attachment 1

PDF

LDC #14000 (Windward Environmental, LLC - Seattle WA / Lower Duwamish Waterway Group)

LDC	SDG#	DATE REC'D	(3) DATE DUE	SVOA (8270C)		SVOA (8270C -SIM)																													
Matrix:	Water/Sediment			W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	IL52	09/08/05	09/12/05	0	1	0	1																												
Total	B/SC			0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2

Shaded cells indicate Level IV validation (all other cells are Level II validation). These sample counts do not include MS/MSD, and DUPs

CHEMICAL DATA QUALITY REVIEW FOR PHASE 1 SURFACE SEDIMENT SAMPLES

Lower Duwamish Waterway Group
*LDC# 13204, 13234, 13298, 13315 and 14000

*This report details the findings of an EPA Level II and Level IV data validation of analytical chemistry results generated in support of the Lower Duwamish Waterway Group project. The primary analyses were performed by Analytical Resources, Inc. Samples were analyzed for GC/MS Semivolatiles by EPA SW 846 Methods 8270C and 8270C-SIM, GC Butyltins by the Krone Method and EPA SW 846 Method 8270C-SIM, GC Chlorinated Pesticides by EPA SW 846 Method 8081A, GC Polychlorinated Biphenyls by EPA SW 846 Method 8082, Metals by EPA SW 846 Methods 6010B/200.8/7471, Total Solids by EPA Method 160.3, Ammonia as Nitrogen by modified EPA Method 350.1, Sulfide by EPA Method 376.2, Grain Size by PSEP Method, and Total Organic Carbon by Plumb Method. Samples are referenced under the following Sample Delivery Groups: HP67, HP70, HP90, HQ69, HQ17, HQ04, HQ48, HQ27, HQ28, HR48, HQ56, HQ57, HQ93, HT37, HU13, HV08, HT56 and IL52. See the Sample Analysis Table (Attachment 1) for the number of samples reviewed and the Sample Validation Table (Attachment 2) for the sample identifications and analyses.

*Added LDC 14000 and SDG IL52 in the report.

The QC guidelines used for data qualification are those specified in the National Functional Guidelines for Organic Data Review (October 1999) and the National Functional Guidelines for Inorganic Data Review (July 2002). Specific QC criteria used follows the Surface Sediment Sampling for Chemical Analyses and Toxicity Testing of the Lower Duwamish Waterway Quality Assurance Project Plan (January 14, 2005). Where specific guidance is not available, the data has been evaluated in a conservative manner using professional experience.

The following items were evaluated during the review:

- Holding Times
- Sample Preservation
- Cooler Temperatures
- Instrument Calibration
- Blanks
- Surrogates
- Matrix Spike/Matrix Spike Duplicates
- Internal Standards
- Laboratory Control Samples
- Target Compound Identifications*
- Compound Quantitation and CRQLs*
- System Performance
- Field Duplicates

*Data were not reviewed for Level II.

Only issues which require comment or action are discussed in this report. Data deficiencies are arranged by method. Potential effects of data anomalies have been described where possible.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

J+ The result is an estimated quantity, but the result may be biased high.

J- The result is an estimated quantity, but the result may be biased low.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

Overall Data Assessment

I. Method Compliance

Antimony, arsenic and thallium were analyzed using EPA Method 200.8 instead of EPA SW 846 Method 6020 as required by the QAPP.

***II. Usability**

Technical holding time exceedances, QC exceedances, compound quantitation, instrument calibration and method blank contamination problems have warranted the qualification of a portion of the data set.

Low LCS recoveries have warranted the qualification of detected results as estimated (J) and non-detected results as unusable (R) for butyltin trichloride in the butyltin analyses in SDGs HP67, HP70, HQ27, HQ48, HQ57 and HR48.

Technical holding time problems have warranted the qualification of detected results as estimated (J-) for one sample in the sulfide analyses in SDG HP90 and for several samples in the total solids analyses in SDG HT56.

Compound quantitation problems have warranted the qualification of detected results as estimated (J) for one sample in the semivolatile analyses for SDG HP70 and several samples in the PCB analyses for SDGs HQ17, HQ48, HQ56, HQ57, HQ67, HP70 and HP90.

Instrument calibration problems have warranted the qualification of detected results as estimated (J) and non-detected results as estimated (UJ) for several compounds in the semivolatile analyses for SDGs HP67 and HP70.

*Method blank contamination have warranted the qualification of bis(2-ethylhexyl)phthalate and di-n-butylphthalate as non-detected (U) for several samples in the semivolatile analyses for SDGs HP67, HP70 and IL52. Diethylphthalate was qualified as non-detected (U) for several samples in the semivolatile-SIM analyses for SDGs HU13 and IL52.

*Other QC accuracy and precision exceedances have warranted the qualification of detected results as estimated (J) and non-detected results as estimated (UJ) in the semivolatile, semivolatile-SIM, pesticide, PCB, sulfide, metals and butyltin analyses for SDGs HP67, HP70, HP90, HQ69, HQ17, HQ27, HQ28, HQ48, HQ56, HQ57, HU13, HV08 and IL52.

The required frequency of method blank and LCS were not met for the ammonia as nitrogen analyses.

The required frequency of SRM was not met for the sulfide analyses.

No action was taken when the SRM results were outside the limit of Mean ± Standard Deviation for the organic analyses since the SRM standards were outdated and there were no certified QC limits established.

III. Additional Review

The calibration and internal standard summary forms and the ICP interference check sample analysis data that were associated to all the Level II samples were evaluated per client request. Instrument calibration and internal standard recovery problems did not warrant the qualification of the associated data as unusable (R).

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Sample results that were found to be unusable (R) for all purposes. Based upon the data validation all other results are considered valid and usable for all purposes.

GC/MS Semivolatiles by EPA SW 846 Method 8270C

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals. All ion abundance requirements were met.

Instrument performance check data were not reviewed for Level II.

III. Initial Calibration

Percent relative standard deviations (%RSD) were less than or equal to 15.0% for each individual compound and less than or equal to 30.0% for calibration check compounds (CCCs).

In the case where %RSD was greater than 15.0%, the laboratory used a calibration curve to evaluate the compound. All coefficients of determination (r^2) were greater than or equal to 0.990 .

For the purposes of technical evaluation, all compounds were evaluated against the 30.0% (%RSD) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

Percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were within the method criteria of less than or equal to 20.0% for calibration check compounds (CCCs).

For the purposes of technical evaluation, all compounds were evaluated against the 25.0% (%D) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria with the following exceptions:

Associated SDG	Date	Compound	%D	Associated Samples	Flag	A or P
HP67 HP70	2/1/05	Hexachlorocyclopentadiene	28.53297	LDW-SS1-010** LDW-SS4-010** LDW-SS5-010** LDW-SS10-010** LDW-SS12-010** LDW-SS14-010** LDW-SS15-010** LDW-SS22-010** LDW-SS13-010** LDW-SS23-010** LDW-SS26-010** LDW-SS27-010** LDW-SS200-010** LDW-SS32-010** LDW-SS37-010**	J (all detects) UJ (all non-detects)	A
HP70	2/2/05	Benzyl alcohol 2,4-Dinitrophenol 4,6-Dinitro-2-methylphenol	57.44199 38.07925 41.76197	LDW-SS38-010** LDW-SS40-010** LDW-SS48-010** LDW-SS51-010**	J (all detects) UJ (all non-detects)	A
HP70	2/3/05	Benzyl alcohol 2,4-Dinitrophenol 4,6-Dinitro-2-methylphenol Dibenz(a,h)anthracene Benzo(g,h,i)perylene	46.26238 34.77659 37.90387 38.57960 40.04920	LDW-SS48-010DL**	J (all detects) UJ (all non-detects)	A

The percent difference (%D) of the second source calibration standard were less than or equal to 25.0% for all compounds.

All of the continuing calibration RRF values were within validation criteria.

*V. Blanks

Method blanks were reviewed for each matrix as applicable. No semivolatile contaminants were found in the method blanks with the following exceptions:

Associated SDG	Method Blank ID	Extraction Date	Compound TIC (RT in minutes)	Concentration	Associated Samples
HP67 HP70	MB012405	1/24/05	Bis(2-ethylhexyl)phthalate	15 ug/Kg	All samples in SDGs HP67 and HP70
*IL52	MB082605	8/26/05	Di-n-butylphthalate Bis(2-ethylhexyl)phthalate	72 ug/Kg 11 ug/Kg	All samples in SDG IL52

Sample concentrations were compared to concentrations detected in the method blanks. The sample concentrations were either not detected or were significantly greater (>10X for common contaminants, >5X for other contaminants) than the concentrations found in the associated method blanks with the following exceptions:

Associated SDG	Sample	Compound TIC (RT in minutes)	Reported Concentration	Modified Final Concentration
HP67	LDW-SS1-010**	Bis(2-ethylhexyl)phthalate	07 ug/Kg	07U ug/Kg
HP67	LDW-SS4-010**	Bis(2-ethylhexyl)phthalate	83 ug/Kg	83U ug/Kg
HP67	LDW-SS10-010**	Bis(2-ethylhexyl)phthalate	82 ug/Kg	82U ug/Kg
HP67	LDW-SS15-010**	Bis(2-ethylhexyl)phthalate	64 ug/Kg	64U ug/Kg
HP67	LDW-SS13-010DL** (5x)	Bis(2-ethylhexyl)phthalate	180 ug/Kg	180U ug/Kg
HP70	LDW-SS26-010DL** (5x)	Bis(2-ethylhexyl)phthalate	190 ug/Kg	190U ug/Kg
HP70	LDW-SS27-010**	Bis(2-ethylhexyl)phthalate	30 ug/Kg	30U ug/Kg
HP70	LDW-SS200-010**	Bis(2-ethylhexyl)phthalate	88 ug/Kg	88U ug/Kg
HP70	LDW-SS32-010**	Bis(2-ethylhexyl)phthalate	93 ug/Kg	93U ug/Kg
HP70	LDW-SS37-010DL** (5x)	Bis(2-ethylhexyl)phthalate	650 ug/Kg	650U ug/Kg
HP70	LDW-SS38-010**	Bis(2-ethylhexyl)phthalate	100 ug/Kg	100U ug/Kg
HP70	LDW-SS48-010DL** (5x)	Bis(2-ethylhexyl)phthalate	660 ug/Kg	660U ug/Kg
HP70	LDW-SS51-010**	Bis(2-ethylhexyl)phthalate	120 ug/Kg	120U ug/Kg
*IL52	LDW-SS117-010	Di-n-butylphthalate	26 ug/Kg	26U ug/Kg

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits with the following exceptions:

Associated SDG	Sample	Surrogate	%R (Limits)	Compound	Flag	A or P
HQ17	LDW-SS-118-010	1,2-Dichlorobenzene-d4	31.6 (40-130)	N-Nitrosodimethylamine	J (all detects) UJ (all non-detects)	A

*VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

Associated SDG	Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
HQ17	LDW-SS116-010MS/MSD (LDW-SS116-010)	Pyrene	-	-	78.0 (≤50)	J (all detects) UJ (all non-detects)	A
HQ56	LDW-SS92-010MS/MSD (LDW-SS92-010)	Pyrene	-	-	94.6 (≤50)	J (all detects) UJ (all non-detects)	A

Although the MSD analysis was not performed in SDG HP90, the laboratory performed sample LDW-SS-201-010 in duplicate to assess precision. Relative percent differences (RPD) were within QC limits.

*Duplicate (DUP) sample analyses were performed in SDG IL52. Relative percent differences (RPD) were within QC limits with the following exceptions:

Associated SDG	DUP ID (Associated Samples)	Compound	RPD (Limits)	Flag	A or P
*IL52	LDW-SS-117-010DUP (LDW-SS-117-010)	Di-n-butylphthalate	166 (≤50)	J (all detects)	A

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

Standard reference material was performed at the required frequencies.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

All internal standard areas and retention times were within QC limits with the following exceptions:

Associated SDG	Sample	Internal Standards	Area (Limits)	Compound	Flag	A or P
HP67	LDW-SS22-010**	Perylene-d12	73931 (116217-464868)	Benzo(b)fluoranthene Benzo(k)fluoranthene Benzo(a)pyrene Indeno(1,2,3-cd)pyrene Dibenz(a,h)anthracene Benzo(g,h,i)perylene	J (all detects) UJ (all non-detects)	A

Associated SDG	Sample	Internal Standards	Area (Limits)	Compound	Flag	A or P
HP67	LDW-SS13-010**	Perylene-d12	102609 (110217-464868)	Benzo(b)fluoranthene Benzo(k)fluoranthene Benzo(a)pyrene Indeno(1,2,3-cd)pyrene Dibenz(a,h)anthracene Benzo(g,h,i)perylene	J (all detects) UJ (all non-detects)	A
HP70	LDW-SS26-010**	Perylene-d12	91698 (116217-464868)	Benzo(b)fluoranthene Benzo(k)fluoranthene Benzo(a)pyrene Indeno(1,2,3-cd)pyrene Dibenz(a,h)anthracene Benzo(g,h,i)perylene	J (all detects) UJ (all non-detects)	A
HP70	LDW-SS27-010**	Perylene-d12	110608 (116217-464868)	Benzo(b)fluoranthene Benzo(k)fluoranthene Benzo(a)pyrene Indeno(1,2,3-cd)pyrene Dibenz(a,h)anthracene Benzo(g,h,i)perylene	J (all detects) UJ (all non-detects)	A
HP70	LDW-SS200-010**	Perylene-d12	94243 (116217-464868)	Benzo(b)fluoranthene Benzo(k)fluoranthene Benzo(a)pyrene Indeno(1,2,3-cd)pyrene Dibenz(a,h)anthracene Benzo(g,h,i)perylene	J (all detects) UJ (all non-detects)	A
HP70	LDW-SS32-010**	Perylene-d12	93070 (116217-464868)	Benzo(b)fluoranthene Benzo(k)fluoranthene Benzo(a)pyrene Indeno(1,2,3-cd)pyrene Dibenz(a,h)anthracene Benzo(g,h,i)perylene	J (all detects) UJ (all non-detects)	A
HP70	LDW-SS37-010**	Perylene-d12	59280 (116217-464868)	Benzo(b)fluoranthene Benzo(k)fluoranthene Benzo(a)pyrene Indeno(1,2,3-cd)pyrene Dibenz(a,h)anthracene Benzo(g,h,i)perylene	J (all detects) UJ (all non-detects)	A

XI. Target Compound Identifications

All target compound identifications were within validation criteria.

Target compound identifications data were not reviewed for Level II.

XII. Compound Quantitation and CRQLs

All compound quantitation and CRQLs were within validation criteria with the following exceptions:

Associated SDG	Sample	Compound	Finding	Criteria	Flag	A or P
HP70	LDW-SS48-010**	Phenanthrene Fluoranthene Pyrene Chrysene Benzo(b)fluoranthene	Sample result exceeded calibration range.	Reported result should be within calibration range.	J (all detects) J (all detects) J (all detects) J (all detects) J (all detects)	A

Compound quantitation and CRQLs data were not reviewed for Level II.

XIII. Tentatively Identified Compounds (TICs)

Tentatively identified compounds were not reported by the laboratory for Level IV.

Tentatively identified compounds data were not reviewed for Level II.

XIV. System Performance

The system performance was acceptable.

System performance data were not reviewed for Level II.

*XV. Overall Assessment

The overall assessment of data was acceptable. In the case where more than one result was reported for an individual sample, the least technically acceptable results were rejected as follows:

Associated SDG	Sample	Compound	Flag	A or P
HP67 HP70 HQ56	LDW-SS22-010** LDW-SS13-010** LDW-SS26-010** LDW-SS27-010** LDW-SS200-010** LDW-SS32-010** LDW-SS37-010** LDW-SS88-010	Benzo(b)fluoranthene Benzo(k)fluoranthene Benzo(a)pyrene Indeno(1,2,3-cd)pyrene Dibenz(a,h)anthracene Benzo(g,h,i)perylene	R R R R R R	A
HP67 HP70 HQ56	LDW-SS22-010DL** LDW-SS13-010DL** LDW-SS26-010DL** LDW-SS27-010DL** LDW-SS200-010DL** LDW-SS32-010DL** LDW-SS37-010DL** LDW-SS88-010DL	All TCL compounds except Benzo(b)fluoranthene Benzo(k)fluoranthene Benzo(a)pyrene Indeno(1,2,3-cd)pyrene Dibenz(a,h)anthracene Benzo(g,h,i)perylene	R	A
HP70	LDW-SS48-010**	Phenanthrene Fluoranthene Pyrene Chrysene Benzo(b)fluoranthene	R R R R R	A

Associated SDG	Sample	Compound	Flag	A or P
HP70	LDW-SS48-010DL**	All TCL compounds except Phenanthrene Fluoranthene Pyrene Chrysene Benzo(b)fluoranthene	R	A
*HQ17	LDW-SS117-010	All TCL compounds except Aniline	R	A

For sample LDW-SS-88-010DL, several compounds were considered most usable. The area count of the associated internal standard was outside the QC limits in sample LDW-SS-88-010.

XVI. Field Duplicates

Samples LDW-SS27-010** and LDW-SS200-010**, samples LDW-SS27-010DL** and LDW-SS200-010DL** (SDG HP70), samples LDW-SS-89-010 and LDW-SS-201-010 (SDG HP90), samples LDW-SS50-010 and LDW-SS202-010, and samples LDW-SS123-010 and LDW-SS203-010 (SDG HQ48) were identified as field duplicates. No semivolatiles were detected in any of the samples with the following exceptions:

Associated SDG	Compound	Concentration (ug/Kg)		RPD (Limits)
		LDW-SS27-010**	LDW-SS200-010**	
HP70	Phenanthrene	120	130	8 (≤50)
HP70	Anthracene	28	57	68 (≤50)
HP70	Fluoranthene	390	390	0 (≤50)
HP70	Pyrene	270	300	11 (≤50)
HP70	Benzo(a)anthracene	120	160	29 (≤50)
HP70	Bis(2-ethylhexyl)phthalate	30	88	98 (≤50)
HP70	Chrysene	240	370	43 (≤50)
HP70	Benzo(b)fluoranthene	230	180	24 (≤50)
HP70	Benzo(k)fluoranthene	140	170	19 (≤50)
HP70	Benzo(a)pyrene	140	140	0 (≤50)
HP70	Indeno(1,2,3-cd)pyrene	41	46	11 (≤50)

Associated SDG	Compound	Concentration (ug/Kg)		RPD (Limits)
		LDW-SS27-010**	LDW-SS200-010**	
HP70	Benzo(g,h,i)perylene	36	43	18 (≤50)
HP70	Carbazole	20U	21	Not calculable
HP70	Dibenz(a,h)anthracene	20U	22	Not calculable

Associated SDG	Compound	Concentration (ug/Kg)		RPD (Limits)
		LDW-SS27-010DL**	LDW-SS200-010DL**	
HP70	Phenanthrene	110	120	9 (≤50)
HP70	Fluoranthene	330	360	9 (≤50)
HP70	Pyrene	220	230	4 (≤50)
HP70	Benzo(a)anthracene	120	160	29 (≤50)
HP70	Chrysene	240	390	48 (≤50)
HP70	Benzo(b)fluoranthene	170	140	19 (≤50)
HP70	Benzo(k)fluoranthene	100	120	18 (≤50)
HP70	Benzo(a)pyrene	140	140	0 (≤50)

Associated SDG	Compound	Concentration (ug/Kg)		RPD (Limits)
		LDW-SS-89-010	LDW-SS-201-010	
HP90	Phenanthrene	32	42	27 (≤50)
HP90	Fluoranthene	90	170	62 (≤50)
HP90	Pyrene	100	160	46 (≤50)
HP90	Benzo(a)anthracene	42	59	34 (≤50)
HP90	Bis(2-ethylhexyl)phthalate	25	36	36 (≤50)
HP90	Chrysene	78	120	42 (≤50)
HP90	Benzo(b)fluoranthene	62	72	15 (≤50)

*Indicates change as the result of report review.

Associated SDG	Compound	Concentration (ug/Kg)		RPD (Limits)
		LDW-SS-89-010	LDW-SS-201-010	
HP90	Benzo(k)fluoranthene	38	49	25 (≤50)
HP90	Benzo(a)pyrene	47	54	14 (≤50)
HP90	Indeno(1,2,3-cd)pyrene	20	22	10 (≤50)

Associated SDG	Compound	Concentration (ug/Kg)		RPD (Limits)
		LDW-SS50-010	LDW-SS202-010	
HQ48	Phenanthrene	160	430	92 (≤50)
HQ48	Anthracene	110	150	31 (≤50)
HQ48	Fluoranthene	270	470	54 (≤50)
HQ48	Pyrene	670	890	28 (≤50)
HQ48	Benzo(a)anthracene	170	240	34 (≤50)
HQ48	Bis(2-ethylhexyl)phthalate	560	560	0 (≤50)
HQ48	Chrysene	300	460	42 (≤50)
HQ48	Benzo(b)fluoranthene	400	370	8 (≤50)
HQ48	Benzo(k)fluoranthene	350	410	16 (≤50)
HQ48	Benzo(a)pyrene	260	300	14 (≤50)
HQ48	Indeno(1,2,3-cd)pyrene	73	80	9 (≤50)
HQ48	Benzo(g,h,i)perylene	61	87	35 (≤50)

Associated SDG	Compound	Concentration (ug/Kg)		RPD (Limits)
		LDW-SS123-010	LDW-SS203-010	
HQ48	4-Methylphenol	15	30	67 (≤50)
HQ48	Phenanthrene	21	39	60 (≤50)
HQ48	Fluoranthene	48	78	48 (≤50)

*Indicates change as the result of report review.

Associated SDG	Compound	Concentration (ug/Kg)		RPD (Limits)
		LDW-SS123-010	LDW-SS203-010	
HQ48	Pyrene	57	89	44 (≤50)
HQ48	Benzo(a)anthracene	14	58U	Not calculable
HQ48	Bis(2-ethylhexyl)phthalate	31	36	15 (≤50)
HQ48	Chrysene	22	36	48 (≤50)
HQ48	Benzo(b)fluoranthene	24	32	29 (≤50)
HQ48	Benzo(k)fluoranthene	27	31	14 (≤50)
HQ48	Benzo(a)pyrene	15	58U	Not calculable

XVII. Field Blanks

Samples LDW-SS38-RB (SDG HP70), LDW-SS64-RB (SDG HQ48), LDW-SS43-RB (SDG HQ27), and LDW-SS110-RB (SDG HQ56), were identified as rinsate blanks. No semivolatile contaminants were found in these blanks.

GC/MS Semivolatiles by EPA SW 846 Method 8270C using Selected Ion Monitoring (SIM).

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals. All ion abundance requirements were met.

Instrument performance check data were not reviewed for Level II.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 30.0% for all compounds with the following exceptions:

Associated SDG	Date	Compound	%RSD	Associated Samples	Flag	A or P
HP67 HP70	1/29/05	Benzoic acid	39.2	LDW-SS4-010** LDW-SS10-010** LDW-SS14-010** LDW-SS22-010** LDW-SS23-010** LDW-SS26-010** LDW-SS27-010** LDW-SS200-010** LDW-SS37-010** LDW-SS37-010DL** LDW-SS38-010**	J (all detects) UJ (all non-detects)	A

Average relative response factors (RRF) for all target compounds and system monitoring compounds were within validation criteria.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

All of the continuing calibration percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were less than or equal to 25.0% with the following exceptions:

Associated SDG	Date	Compound	%D	Associated Samples	Flag	A or P
HP67 HP70	1/31/05	Benzoic acid	39.3	LDW-SS10-010** LDW-SS14-010** LDW-SS22-010** LDW-SS23-010** LDW-SS26-010** LDW-SS27-010** LDW-SS200-010** LDW-SS37-010** LDW-SS38-010**	J (all detects) UJ (all non-detects)	A
HP67	2/1/05	Benzoic acid	37.2	LDW-SS4-010**	J (all detects) UJ (all non-detects)	A
HP70	2/3/05	Benzoic acid	79.3	LDW-SS37-010DL**	J (all detects) UJ (all non-detects)	A

The percent difference (%D) of the second source calibration standard were less than or equal to 25.0% for all compounds.

All of the continuing calibration RRF values were within validation criteria.

***V. Blanks**

Method blanks were reviewed for each matrix as applicable. No polynuclear aromatic hydrocarbon contaminants were found in the method blanks with the following exceptions:

Associated SDG	Method Blank ID	Extraction Date	Compound TIC (RT in minutes)	Concentration	Associated Samples
HR48	MB-020905	2/9/05	Diethylphthalate	13 ug/Kg	LDW-SS18-010
HU13	MB-030305	3/3/05	Diethylphthalate	16 ug/Kg	LDW-SS1-010 LDW-SS5-010 LDW-SS12-010 LDW-SS13-010 LDW-SS51-010 LDW-SS116-010 LDW-SS76-010 LDW-SS44-010 LDW-SS87-010 LDW-SS94-010 LDW-SS96-010 LDW-SS67-010 LDW-SS54-010 LDW-SS42-010 LDW-SS128-010 LDW-SS52-010 LDW-SS33-010
*IL52	MB082605	8/26/05	Diethylphthalate	9.3 ug/Kg	LDW-SS117-010

Sample concentrations were compared to concentrations detected in the method blanks. The sample concentrations were either not detected or were significantly greater (>10X for common contaminants, >5X for other contaminants) than the concentrations found in

the associated method blanks with the following exceptions:

Associated SDG	Sample	Compound TIC (RT in minutes)	Reported Concentration	Modified Final Concentration
HU13	LDW-SS1-010	Diethylphthalate	17 ug/Kg	17U ug/Kg
HU13	LDW-SS5-010	Diethylphthalate	14 ug/Kg	14U ug/Kg
HU13	LDW-SS12-010	Diethylphthalate	14 ug/Kg	14U ug/Kg
HU13	LDW-SS13-010	Diethylphthalate	13 ug/Kg	13U ug/Kg
HU13	LDW-SS51-010	Diethylphthalate	6.6 ug/Kg	6.6U ug/Kg
HU13	LDW-SS116-010	Diethylphthalate	7.3 ug/Kg	7.3U ug/Kg
HU13	LDW-SS76-010	Diethylphthalate	14 ug/Kg	14U ug/Kg
HU13	LDW-SS44-010	Diethylphthalate	11 ug/Kg	11U ug/Kg
HU13	LDW-SS87-010	Diethylphthalate	9.2 ug/Kg	9.2U ug/Kg
HU13	LDW-SS94-010	Diethylphthalate	14 ug/Kg	14U ug/Kg
HU13	LDW-SS96-010	Diethylphthalate	12 ug/Kg	12U ug/Kg
HU13	LDW-SS67-010	Diethylphthalate	12 ug/Kg	12U ug/Kg
HU13	LDW-SS54-010	Diethylphthalate	15 ug/Kg	15U ug/Kg
HU13	LDW-SS42-010	Diethylphthalate	14 ug/Kg	14U ug/Kg
HU13	LDW-SS128-010	Diethylphthalate	14 ug/Kg	14U ug/Kg
HU13	LDW-SS52-010	Diethylphthalate	7.8 ug/Kg	7.8U ug/Kg
HU13	LDW-SS33-010	Diethylphthalate	36 ug/Kg	36U ug/Kg
*IL52	LDW-SS117-010	Diethylphthalate	11 ug/Kg	11U ug/Kg

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits with the following exceptions:

Associated SDG	Sample	Surrogate	%R (Limits)	Compound	Flag	A or P
HP90	LDW-SS-99-010	2-Fluorophenol Phenol-d5 2-Chlorophenol-d4 1,2-Dichlorobenzene-d4 Nitrobenzene-d5	35.7 (40-130) 39.5 (40-130) 39.2 (40-130) 32.4 (40-130) 36.8 (40-130)	All TCL compounds	J (all detects) UJ (all non-detects)	P

*VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

MS/MSD analyses were not performed for SDG HQ56 and HQ57.

*Duplicate (DUP) sample analyses were performed in SDG IL52. Relative percent differences (RPD) were within QC limits.

*VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

Associated SDG	LCS ID (Associated Samples)	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Flag	A or P
HU13	LCS-030305 (LDW-SS1-010 LDW-SS5-010 LDW-SS12-010 LDW-SS13-010 LDW-SS51-010 LDW-SS116-010 LDW-SS76-010 LDW-SS44-010 LDW-SS87-010 LDW-SS94-010 LDW-SS96-010 LDW-SS67-010 LDW-SS54-010 LDW-SS42-010 LDW-SS128-010 LDW-SS52-010 LDW-SS33-010)	Pentachlorophenol	28.8 (40-130)	-	-	J (all detects) UJ (all non-detects)	P
*IL52	LCS082605 (LDW-SS117-010)	Pentachlorophenol N-Nitroso-di-n-propylamine	28.0 (40-130) 18.0 (40-130)	- -	- -	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	P

Standard reference material was performed at the required frequencies.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

All internal standard areas and retention times were within QC limits.

XI. Target Compound Identifications

All target compound identifications were within validation criteria.

Target compound identifications data were not reviewed for Level II.

XII. Compound Quantitation and CRQLs

All compound quantitation and CRQLs were within validation criteria.

Compound quantitation and CRQLs data were not reviewed for Level II.

XIII. Tentatively Identified Compounds (TICs)

Tentatively identified compounds were not reported by the laboratory for Level IV.

Tentatively identified compounds data were not reviewed for Level II.

XIV. System Performance

The system performance was acceptable.

System performance data were not reviewed for Level II.

*XV. Overall Assessment

The overall assessment of data was acceptable. In the case where more than one result was reported for an individual sample, the least technically acceptable results were rejected as follows:

Associated SDG	Sample	Compound	Flag	A or P
HP70	LDW-SS37-010**	Indeno(1,2,3-cd)pyrene	R	A
HP70	LDW-SS37-010DL**	All TCL compounds except Indeno(1,2,3-cd)pyrene	R	A
*HQ17	LDW-SS117-010	All TCL compounds	R	A

XVI. Field Duplicates

Samples LDW-SS27-010** and LDW-SS200-010** (SDG HP70), samples LDW-SS-89-010 and LDW-SS-201-010 (SDG HP90), samples LDW-SS50-010 and LDW-SS202-010, and samples LDW-SS123-010 and LDW-SS203-010 (SDG HQ48) were identified as field duplicates. No polynuclear aromatic hydrocarbons were detected in any of the samples with the following exceptions:

Associated SDG	Compound	Concentration (ug/Kg)		RPD (Limits)
		LDW-SS27-010**	LDW-SS200-010**	
HP70	Benzo(a)anthracene	310	150	70 (≤50)
HP70	Benzo(b)fluoranthene	400	270	39 ≤50
HP70	Benzo(a)pyrene	290	220	27 (≤50)
HP70	Indeno(1,2,3-cd)pyrene	150	180	18 (≤50)
HP70	Butylbenzylphthalate	42	17	85 (≤50)

Associated SDG	Compound	Concentration (ug/Kg)		RPD (Limits)
		LDW-SS-89-010	LDW-SS-201-010	
HP90	Benzo(a)anthracene	48	20	82 (≤50)
HP90	Benzo(b)fluoranthene	38	24	45 (≤50)
HP90	Benzo(a)pyrene	31	20	43 (≤50)
HP90	Indeno(1,2,3-cd)pyrene	11	11	0 (≤50)

Associated SDG	Compound	Concentration (ug/Kg)		RPD (Limits)
		LDW-SS50-010	LDW-SS202-010	
HQ48	Benzo(a)anthracene	23	280	170 (≤50)
HQ48	Benzo(b)fluoranthene	25	420	178 (≤50)
HQ48	Benzo(a)pyrene	21	300	174 (≤50)
HQ48	Indeno(1,2,3-cd)pyrene	10	140	173 (≤50)

*Indicates change as the result of report review.

Associated SDG	Compound	Concentration (ug/Kg)		RPD (Limits)
		LDW-SS123-010	LDW-SS203-010	
HQ48	Benzo(a)anthracene	15	9.6	44 (≤50)
HQ48	Benzo(b)fluoranthene	16	12	29 (≤50)
HQ48	Benzo(a)pyrene	11	9.6	14 (≤50)
HQ48	Indeno(1,2,3-cd)pyrene	11	6.4U	Not calculable
HQ48	Dimethylphthalate	18	6.4U	Not calculable
HQ48	Butylbenzylphthalate	7.6	6.4U	Not calculable

XVII. Field Blanks

No field blanks were identified in this SDG.

GC Chlorinated Pesticides by EPA SW 846 Method 8081A

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. GC/ECD Instrument Performance Check

Instrument performance was acceptable unless noted otherwise under initial calibration and continuing calibration sections.

Instrument performance check data were not reviewed for Level II.

III. Initial Calibration

Initial calibration of multicomponent compounds was performed for the primary (quantitation) column as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for all compounds.

Retention time windows were evaluated and considered technically acceptable.

IV. Continuing Calibration

Continuing calibration was performed at required frequencies.

The percent differences (%D) of calibration factors in continuing standard mixtures were within the 15.0% QC limits.

The percent difference (%D) of the second source calibration standard were less than or equal to 15.0% for all compounds.

Retention times (RT) of all compounds in the calibration standards were within QC limits.

Continuing calibration data were not reviewed for Level II.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No chlorinated pesticide contaminants were found in the method blanks.

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

MS/MSD analyses were not performed for SDG HV08.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

Associated SDG	LCS ID (Associated Samples)	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Flag	A or P
HP67 HP70	LCS-012405 (LDW-SS13-010** LDW-SS27-010** LDW-SS200-010** LDW-SS32-010**)	gamma-BHC Endrin aldehyde Hexachlorobutadiene	46 (50-150) 19.4 (50-150) 48.4 (50-150)	- - -	- - -	J (all detects) UJ (all non-detects)	P
HP90 HQ17 HQ27	LCS012805 (LDW-SS-99-010 LDW-SS113B-010 LDW-SS125-010 LDW-SS126-010 LDW-SS116-010 LDW-SS127-010 LDW-SS129-010 LDW-SS84-010 LDW-SS87-010 LDW-SS96-010 LDW-SS63-010 LDW-SS70-010)	Endrin aldehyde	31.0 (50-150)	-	-	J (all detects) UJ (all non-detects)	P
HQ17 HQ48 HQ56	LCS-020105 (LDW-SS76-010 LDW-SS50-010 LDW-SS55-010 LDW-SS72-010 LDW-SS79-010 LDW-SS54-010 LDW-SS202-010 LDW-SS128-010 LDW-SS64-010 LDW-SS36-010 LDW-SS58-010 LDW-SS28-010 LDW-SS134-010 LDW-SS92-010 LDW-SS104-010 LDW-SS115-010)	Endrin aldehyde	36.8 (50-150)	-	-	J (all detects) UJ (all non-detects)	P

*Indicates change as the result of report review.

Associated SDG	LCS ID (Associated Samples)	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Flag	A or P
HQ48	LCS-020405 (LDW-SS42-010)	Endrin aldehyde	43.5 (50-150)	-	-	J (all detects) UJ (all non-detects)	P
HV08	LCS-031105 (LDW-SS5-010 LDW-SS67-010)	Endrin aldehyde	36.5 (50-150)	-	-	J (all detects) UJ (all non-detects)	P

Standard reference material was performed at the required frequencies.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Pesticide Cleanup Checks

a. Florisil Cartridge Check

Although florisil cleanup was not required by the method, it was performed by the laboratory for EPA Level IV.

Florisil cartridge check data were not reviewed for Level II.

b. GPC Calibration

Although GPC cleanup was not required by the method, GPC cleanup was performed by the laboratory for EPA Level IV.

GPC cleanup data were not reviewed for Level II.

XI. Target Compound Identification

All target compound identifications were within validation criteria for samples on which EPA Level IV review was performed.

Target compound identification data were not reviewed for Level II.

XII. Compound Quantitation and Reported CRQLs

All compound quantitation and CRQLs were within validation criteria for samples on which EPA Level IV review was performed.

Compound quantitation and CRQLs data were not reviewed for Level II.

XIII. Overall Assessment of Data

The overall assessment of data was acceptable.

XIV. Field Duplicates

Samples LDW-SS27-010** and LDW-SS200-010** (SDG HP70) and samples LDW-SS50-010 and LDW-SS202-010 (SDG HQ48) were identified as field duplicates. No chlorinated pesticides were detected in any of the samples.

XV. Field Blanks

No field blanks were identified in this SDG.

Polychlorinated Biphenyls by EPA SW 846 Method 8082

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. GC/ECD Instrument Performance Check

Instrument performance was acceptable unless noted otherwise under initial calibration and continuing calibration sections.

Instrument performance check data were not reviewed for Level II.

III. Initial Calibration

Initial calibration of multicomponent compounds was performed for the primary (quantitation) column as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for all compounds.

Retention time windows were evaluated and considered technically acceptable.

IV. Continuing Calibration

Continuing calibration was performed at required frequencies.

The percent differences (%D) of calibration factors in continuing standard mixtures were within the 15.0% QC limits.

The percent difference (%D) of the second source calibration standard were less than or equal to 15.0% for all compounds.

Retention times (RT) of all compounds in the calibration standards were within QC limits.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No polychlorinated biphenyl contaminants were found in the method blanks.

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits with the following exceptions:

Associated SDG	Sample	Column	Surrogate	%R (Limits)	Compound	Flag	A or P
HP67	LDW-SS4-010**	ZB5	Decachlorobiphenyl	234 (50-150)	All TCL compounds	J (all detects)	P
HQ48	LDW-SS56-010	Not specified	Decachlorobiphenyl	151 (50-150)	All TCL compounds	J (all detects)	P

Surrogate recoveries (%R) were not within QC limits for samples LDW-SS-89-010 in SDG HP90 and LDW-SS143-010DL in SDG HQ57. Since these samples were diluted out, no data were qualified.

All internal standard areas and retention times were within QC limits with the following exceptions:

Associated SDG	Sample	Internal Standard	Area (Limits)	Compound	Flag	A or P
HP67	LDW SS1 010**	Heptachlorobiphenyl	65555358 (66506087-266024348)	Aroclor-1016 Aroclor-1221 Aroclor-1232 Aroclor-1242 Aroclor-1248	J (all detects) UJ (all non-detects)	P
HP67	LDW-SS4-010**	Heptachlorobiphenyl	55076972 (66506087-266024348)	Aroclor-1016 Aroclor-1221 Aroclor-1232 Aroclor-1242 Aroclor-1248	J (all detects) UJ (all non-detects)	P
HP67	LDW-SS5-010**	Heptachlorobiphenyl	66177898 (66506087-266024348)	Aroclor-1016 Aroclor-1221 Aroclor-1232 Aroclor-1242 Aroclor-1248	J (all detects) UJ (all non-detects)	A
HP67	LDW-SS12-010**	Heptachlorobiphenyl	54440457 (66506087-266024348)	Aroclor-1016 Aroclor-1221 Aroclor-1232 Aroclor-1242 Aroclor-1248	J (all detects) UJ (all non-detects)	P
HP67	LDW-SS14-010**	Heptachlorobiphenyl	59559589 (66506087-266024348)	Aroclor-1016 Aroclor-1221 Aroclor-1232 Aroclor-1242 Aroclor-1248	J (all detects) UJ (all non-detects)	P
HP67	LDW-SS15-010**	Heptachlorobiphenyl	57122450 (66506087-266024348)	Aroclor-1016 Aroclor-1221 Aroclor-1232 Aroclor-1242 Aroclor-1248	J (all detects) UJ (all non-detects)	P
HP67	LDW-SS22-010**	Heptachlorobiphenyl	53377065 (66506087-266024348)	Aroclor-1016 Aroclor-1221 Aroclor-1232 Aroclor-1242 Aroclor-1248	J (all detects) UJ (all non-detects)	P

Associated SDG	Sample	Internal Standard	Area (Limits)	Compound	Flag	A or P
HP67	LDW-SS13-010**	Heptachlorobiphenyl	54405003 (66500087-200024340)	Aroclor-1016 Aroclor-1221 Aroclor-1232 Aroclor-1242 Aroclor-1248	J (all detects) UJ (all non-detects)	P
HP70	LDW-SS200-010**	Heptachlorobiphenyl	52977551 (55673917-212695668)	Aroclor-1016 Aroclor-1221 Aroclor-1232 Aroclor-1242 Aroclor-1248	J (all detects) UJ (all non-detects)	P
HP70	LDW-SS32-010**	Heptachlorobiphenyl	52779345 (55673917-212695668)	Aroclor-1016 Aroclor-1221 Aroclor-1232 Aroclor-1242 Aroclor-1248	J (all detects) UJ (all non-detects)	P
HP70	LDW-SS40-010**	Heptachlorobiphenyl	54738954 (55673917-212695668)	Aroclor-1016 Aroclor-1221 Aroclor-1232 Aroclor-1242 Aroclor-1248	J (all detects) UJ (all non-detects)	P
HP70	LDW-SS48-010**	Heptachlorobiphenyl	47839147 (55673917-212695668)	Aroclor-1016 Aroclor-1221 Aroclor-1232 Aroclor-1242 Aroclor-1248	J (all detects) UJ (all non-detects)	P
HP70	LDW-SS51-010**	Heptachlorobiphenyl	50253001 (55673917-212695668)	Aroclor-1016 Aroclor-1221 Aroclor-1232 Aroclor-1242 Aroclor-1248	J (all detects) UJ (all non-detects)	P

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

Associated SDG	Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Associated Compound	Flag	A or P
HP90	LDW-SS-60-010MS/MSD (LDW-SS-60-010)	Aroclor-1260	35.2 (50-150)	31.0 (50-150)	-	Aroclor-1254 Aroclor-1260 Aroclor-1248	J (all detects) UJ (all non-detects)	A
HQ17	LDW-SS116-010MS/MSD (LDW-SS116-010)	Aroclor-1260	49.8 (50-150)	-	-	Aroclor-1254 Aroclor-1260 Aroclor-1248	J (all detects) UJ (all non-detects)	A

Percent recoveries (%R) and relative percent differences (RPD) were not within QC limits in SDG HQ56. Since the sample concentration was greater than the spiked

concentration, no data were qualified.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

Standard reference material was performed at the required frequencies.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Pesticide Cleanup Checks

a. Florisil Cartridge Check

Although florisil cleanup was not required by the method, it was performed by the laboratory for EPA Level IV.

Florisil cartridge check data were not reviewed for Level II.

b. GPC Calibration

Although GPC cleanup was not required by the method, GPC cleanup was performed by the laboratory for EPA Level IV.

Although sulfuric acid cleanup was not required by the method, sulfuric acid cleanup was performed by the laboratory for EPA Level IV.

GPC cleanup data were not reviewed for Level II.

XI. Target Compound Identification

All target compound identifications were within validation criteria.

Target compound identifications data were not reviewed for Level II.

XII. Compound Quantitation and Reported CRQLs

All compound quantitation and CRQLs were within validation criteria with the following exceptions:

Associated SDG	Sample	Compound	Finding	Criteria	Flag	A or P
HQ17	LDW-SS84-010	Aroclor-1248	Sample result exceeded calibration range.	Reported result should be within calibration range.	J (all detects)	A
HQ48	LDW-SS50-010	Aroclor-1248 Aroclor-1254	Sample result exceeded calibration range.	Reported result should be within calibration range.	J (all detects) J (all detects)	A
HQ56	LDW-SS92-010 LDW-SS121-010 LDW-SS88-010	Aroclor-1254 Aroclor-1260	Sample result exceeded calibration range.	Reported result should be within calibration range.	J (all detects) J (all detects)	A
HQ56	LDW-SS110-010 LDW-SS109-010	Aroclor-1254	Sample result exceeded calibration range.	Reported result should be within calibration range.	J (all detects) J (all detects)	A
HQ57	LDW-SS143-010	Aroclor-1242	Sample result exceeded calibration range.	Reported result should be within calibration range.	J (all detects)	A

The sample results for detected compounds from the two columns were within 40.0% relative percent differences (RPD) with the following exceptions:

Associated SDG	Sample	Compound	RPD	Flag	A or P
HP67 HQ17	LDW-SS15-010** LDW-SS116-010	Aroclor-1260	41	J (all detects)	A
HP67	LDW-SS22-010**	Aroclor-1242	46	J (all detects)	A
HP70	LDW-SS40-010**	Aroclor-1242	44	J (all detects)	A
HP90	LDW-SS-111-010	Aroclor-1260	80	J (all detects)	A
HP90 HQ48 HQ56	LDW-SS-119-010 LDW-SS56-010 LDW-SS121-010DL	Aroclor-1260	44	J (all detects)	A
HP90	LDW-SS-120-010	Aroclor-1260	63	J (all detects)	A
HQ17	LDW-SS117-010	Aroclor-1260	50	J (all detects)	A
HQ48	LDW-SS142-010	Aroclor-1260	42	J (all detects)	A

Compound quantitation and CRQLs data were not reviewed for Level II.

XIII. Overall Assessment of Data

The overall assessment of data was acceptable. In the case where more than one result was reported for an individual sample, the least technically acceptable results were

rejected as follows:

Associated SDG	Sample	Compound	Flag	A or P
HQ17 HQ48	LDW-SS84-010 LDW-SS50-010	Aroclor-1248 Aroclor-1254 Aroclor-1260	R R R	A
HQ17 HQ48	LDW-SS84-010DL LDW-SS50-010DL	All TCL compounds except Aroclor-1248 Aroclor-1254 Aroclor-1260	R	A
HQ56	LDW-SS92-010 LDW-SS121-010 LDW-SS88-010	Aroclor-1254 Aroclor-1260	R R	A
HQ56	LDW-SS92-010DL LDW-SS121-010DL LDW-SS88-010DL	All TCL compounds except Aroclor-1254 Aroclor-1260	R	A
HQ56	LDW-SS110-010 LDW-SS109-010	Aroclor-1254	R	A
HQ56	LDW-SS110-010DL LDW-SS109-010DL	All TCL compounds except Aroclor-1254	R	A
HQ57	LDW-SS143-010	Aroclor-1242	R	A
HQ57	LDW-SS143-010DL	All TCL compounds except Aroclor-1242	R	A

XIV. Field Duplicates

Samples LDW-SS27-010** and LDW-SS200-010** (SDG HP70), samples LDW-SS-89-010 and LDW-SS-201-010 (SDG HP90), samples LDW-SS50-010 and LDW-SS202-010 and samples LDW-SS50-010DL and LDW-SS202-010 (SDG HQ48) were identified as field duplicates. No polychlorinated biphenyls were detected in any of the samples with the following exceptions:

Compound	Concentration (ug/Kg)		RPD (Limits)
	LDW-SS27-010**	LDW-SS200-010**	
Aroclor-1242	21	23	9 (≤50)
Aroclor-1254	32	37	14 (≤50)
Aroclor-1260	20U	40	Not calculable

Compound	Concentration (ug/Kg)		RPD (Limits)
	LDW-SS-89-010	LDW-SS-201-010	
Aroclor-1254	2300	46	192 (≤50)
Aroclor-1260	1200	39	187 (≤50)

Compound	Concentration (ug/Kg)		RPD (Limits)
	LDW-SS50-010	LDW-SS202-010	
Aroclor-1248	300	160	61 (≤50)
Aroclor-1254	280	150	60 (≤50)
Aroclor-1260	110	59	60 (≤50)

Compound	Concentration (ug/Kg)		RPD (Limits)
	LDW-SS50-010DL	LDW-SS202-010	
Aroclor-1248	330	160	69 (≤50)
Aroclor-1254	320	150	72 (≤50)
Aroclor-1260	140	59	81 (≤50)

XV. Field Blanks

Samples LDW-SS38-RB (SDG HP70), LDW-SS64-RB (SDG HQ48), LDW-SS43-RB (SDG HQ27), and LDW-SS110-RB (SDG HQ56), were identified as rinsate blanks. No polychlorinated biphenyl contaminants were found in these blanks.

Metals by EPA SW 846 Methods 6010B/200.8/7000

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

Calibration verification frequency and analysis criteria were met for each method when applicable.

III. Blanks

Method blanks were reviewed for each matrix as applicable.

Data qualification by the initial, continuing and preparation blanks (ICB/CCB/PBs) was based on the maximum contaminant concentration in the ICB/CCB/PBs in the analysis of each analyte. No contaminant concentrations were found in the initial, continuing and preparation blanks with the following exceptions:

Associated SDG	Method Blank ID	Analyte	Maximum Concentration	Associated Samples
HQ69 HP90 HQ17	PB (prep blank)	Copper	0.2 mg/Kg	LDW-SS-111-010 LDW-SS-112-010 LDW-SS-119-010 LDW-SS-120-010 LDW-SS-60-010 LDW-SS-99-010 LDW-SS-89-010 LDW-SS-201-010 LDW-SS114-010 LDW-SS117-010 LDW-SS13B-010 LDW-SS125-010 LDW-SS126-010 LDW-SS116-010 LDW-SS127-010 LDW-SS130-010 LDW-SS129-010 LDW-SS118-010 LDW-SS76-010 LDW-SS84-010

Associated SDG	Method Blank ID	Analyte	Maximum Concentration	Associated Samples
HQ48	PB (prep blank)	Zinc	0.6 mg/Kg	LDW-SS17-010 LDW-SS50-010 LDW-SS55-010 LDW-SS72-010 LDW-SS79-010 LDW-SS54-010 LDW-SS202-010 LDW-SS42-010 LDW-SS102-010 LDW-SS128-010 LDW-SS142-010 LDW-SS123-010 LDW-SS203-010 LDW-SS64-010 LDW-SS83-010 LDW-SS36-010 LDW-SS58-010 LDW-SS57-010 LDW-SS56-010 LDW-SS28-010

Sample concentrations were compared to the maximum contaminant concentrations detected in the ICB/CCB/PBs. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated method blanks.

IV. ICP Interference Check Sample (ICS) Analysis

The frequency of analysis was met.

The criteria for analysis were met with the following exceptions:

Associated SDG	ICS ID	Analyte	%R (Limits)	Associated Samples	Flag	A or P
HP67 HP70	ICSA	Selenium	-67.2	LDW-SS4-010** LDW-SS14-010** LDW-SS22-010** LDW-SS32-010** LDW-SS37-010** LDW-SS40-010** LDW-SS51-010**	UJ (all non-detects)	P

Samples were qualified as estimated (J) if the interferent concentrations in the samples were greater than ninety percent of the spiked interferent concentrations in the ICSAB.

V. Matrix Spike Analysis

Matrix spike (MS) analyses were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits with the following exceptions:

Associated SDG	Spike ID (Associated Samples)	Analyte	%R (Limits)	Flag	A or P
HP67 HP70	LDW-SS-23-01MS (LDW-SS1-010** LDW-SS4-010** LDW-SS5-010** LDW-SS10-010** LDW-SS12-010** LDW-SS14-010** LDW-SS15-010** LDW-SS22-010** LDW-SS13-010** LDW-SS23-010** LDW-SS26-010** LDW-SS27-010** LDW-SS200-010** LDW-SS32-010** LDW-SS37-010** LDW-SS38-010** LDW-SS40-010** LDW-SS48-010** LDW-SS51-010**)	Antimony	3.7 (70-130)	J (all detects) UJ (all non-detects)	A
HQ69 HP90	LDW-SS-119-010MS (LDW-SS-111-010 LDW-SS-112-010 LDW-SS-119-010 LDW-SS-120-010 LDW-SS-60-010 LDW-SS-99-010 LDW-SS-89-010 LDW-SS-201-010)	Antimony	3.3 (70-130)	J (all detects) UJ (all non-detects)	A
HQ17	LDW-SS114-010MS (LDW-SS114-010 LDW-SS117-010 LDW-SS113B-010 LDW-SS125-010 LDW-SS126-010 LDW-SS116-010 LDW-SS127-010 LDW-SS130-010 LDW-SS129-010 LDW-SS118-010 LDW-SS76-010 LDW-SS84-010)	Antimony	4.3 (70-130)	J (all detects) UJ (all non-detects)	A
HQ48	LDW-SS17-010MS (LDW-SS17-010 LDW-SS50-010 LDW-SS55-010 LDW-SS72-010 LDW-SS79-010 LDW-SS54-010 LDW-SS202-010 LDW-SS42-010 LDW-SS102-010 LDW-SS128-010 LDW-SS142-010 LDW-SS123-010 LDW-SS203-010 LDW-SS64-010 LDW-SS83-010 LDW-SS36-010 LDW-SS58-010 LDW-SS57-010 LDW-SS56-010 LDW-SS28-010)	Antimony	2.0 (70-130)	J (all detects) UJ (all non-detects)	A

Associated SDG	Spike ID (Associated Samples)	Analyte	%R (Limits)	Flag	A or P
HQ48	LDW-SS134-010MS (LDW-SS134-010)	Antimony	3.1 (70-130)	J (all detects) UJ (all non-detects)	A
HQ27 HQ28	LDW-SS43-010MS (LDW-SS43-010 LDW-SS44-010 LDW-SS87-010 LDW-SS94-010 LDW-SS96-010 LDW-SS97-010 LDW-SS31-010 LDW-SS67-010 LDW-SS63-010 LDW-SS70-010 LDW-SS75-010 LDW-SS101-010)	Antimony	2.4 (70-130)	J (all detects) UJ (all non-detects)	A
HQ56 HQ57	LDW-SS52-010MS (LDW-SS52-010 LDW-SS92-010 LDW-SS104-010 LDW-SS110-010 LDW-SS109-010 LDW-SS115-010 LDW-SS121-010 LDW-SS88-010 LDW-SS33-010 LDW-SS49-010 LDW-SS143-010)	Antimony	2.2 (70-130)	J (all detects) UJ (all non-detects)	A
HQ93	LDW-SSCR20-010MS (LDW-SSCR20-010 LDW-SSCR23-010 LDW-MSMP43-010)	Antimony	1.6 (70-130)	J (all detects) UJ (all non-detects)	A

Although antimony percent recoveries were severely low (<30%), all the results in the associated samples were qualified as estimated (j/UJ) since the post spike recoveries for antimony were grater the 75%.

VI. Duplicate Sample Analysis

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Results were within QC limits with the following exceptions:

Associated SDG	DUP ID (Associated Samples)	Analyte	RPD (Limits)	Difference (Limits)	Flag	A or P
HQ17	LDW-SS114-010DUP (LDW-SS114-010 LDW-SS117-010 LDW-SS113B-010 LDW-SS125-010 LDW-SS126-010 LDW-SS116-010 LDW-SS127-010 LDW-SS130-010 LDW-SS129-010 LDW-SS118-010 LDW-SS76-010 LDW-SS84-010)	Cadmium Chromium	- 65.9 (≤30)	0.9 mg/Kg (≤0.6 mg/Kg) -	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A

VII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

Standard reference material was performed at the required frequencies.

VIII. Internal Standards (ICP-MS)

All internal standard areas and retention times were within QC limits.

IX. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized.

X. ICP Serial Dilution

ICP serial dilution was not performed by the laboratory.

XI. Sample Result Verification

All sample result verifications met validation criteria.

Sample result verification data were not reviewed for Level II.

XII. Overall Assessment of Data

The overall assessment of data was acceptable.

XIII. Field Duplicates

Samples LDW-SS89-010 and LDW-SS201-010 (SDG HP90), samples LDW-SS27-010** and LDW-SS200-010** (SDG HP70), samples LDW-SS50-010 and LDW-SS202-010, and samples LDW-SS123-010 and LDW-SS203-010 (SDG HQ48) were identified as field duplicates. No metals were detected in any of the samples with the following exceptions:

Associated SDG	Analyte	Concentration (mg/Kg)		RPD (Limits)
		LDW-SS89-010	LDW-SS201-010	
HP90	Arsenic	4.2	4.2	0 (≤50)
HP90	Chromium	14.8	14.0	6 (≤50)
HP90	Cobalt	4.9	4.8	2 (≤50)
HP90	Copper	18.6	18.5	1 (≤50)
HP90	Lead	10	9	11 (≤50)
HP90	Nickel	10	9	11 (≤50)
HP90	Vanadium	43.9	43.3	1 (≤50)
HP90	Zinc	38.4	39.7	3 (≤50)
HP90	Molybdenum	0.7	0.7	0 (≤50)

Associated SDG	Analyte	Concentration (mg/Kg)		RPD (Limits)
		LDW-SS27-010**	LDW-SS200-010	
HP70	Arsenic	13.7	10.6	26 (≤50)
HP70	Chromium	24	22.9	5 (≤50)
HP70	Cobalt	6.4	6.3	2 (≤50)
HP70	Copper	52.5	52.3	0 (≤50)
HP70	Lead	28	30	7 (≤50)
HP70	Mercury	0.11	0.12	9 (≤50)
HP70	Nickel	14	14	0 (≤50)
HP70	Vanadium	49.8	49.7	0 (≤50)
HP70	Zinc	87	88	1 (≤50)
HP70	Molybdenum	3	2.7	11 (≤50)

Associated SDG	Analyte	Concentration (mg/Kg)		RPD (Limits)
		LDW-SS50-010	LDW-SS202-010	
HQ48	Arsenic	16.8	15.8	6 (≤50)
HQ48	Cadmium	1.2	1.3	8 (≤50)

*Indicates change as the result of report review.

Associated SDG	Analyte	Concentration (mg/Kg)		RPD (Limits)
		LDW-SS50-010	LDW-SS202-010	
HQ48	Chromium	44	45.5	3 (≤50)
HQ48	Cobalt	8.7	9.2	6 (≤50)
HQ48	Copper	89.4	88.6	1 (≤50)
HQ48	Lead	87	92	6 (≤50)
HQ48	Mercury	0.41	0.40	2 (≤50)
HQ48	Nickel	26	26	0 (≤50)
HQ48	Silver	1.2	1.4	15 (≤50)
HQ48	Vanadium	68.3	69.6	2 (≤50)
HQ48	Zinc	181	179	1 (≤50)
HQ48	Molybdenum	3	3.3	10 (≤50)

Associated SDG	Analyte	Concentration (mg/Kg)		RPD (Limits)
		LDW-SS123-010	LDW-SS203-010	
HQ48	Arsenic	7.2	7.5	4 (≤50)
HQ48	Cadmium	0.3	0.3	0 (≤50)
HQ48	Chromium	20.9	18.8	11 (≤50)
HQ48	Cobalt	7.0	6.6	6 (≤50)
HQ48	Copper	28.0	27.6	1 (≤50)
HQ48	Lead	18	17	6 (≤50)
HQ48	Mercury	0.08	0.08	0 (≤50)
HQ48	Nickel	14	13	7 (≤50)
HQ48	Vanadium	55.6	54.5	2 (<50)
HQ48	Zinc	60.9	58.7	4 (≤50)
HQ48	Molybdenum	1.4	1.3	7 (≤50)

XIV. Field Blanks

Samples LDW-SS38-RB (SDG HP70), LDW-SS64-RB (SDG HQ48), LDW-SS43-RB (SDG HQ27), and LDW-SS110-RB (SDG HQ56) were identified as rinsate blanks. No metal contaminants were found in these blanks with the following exceptions:

Associated SDG	Rinsate Blank ID	Analyte	Concentration (mg/L)	Associated Samples
HQ48	LDW-SS64-RB	Zinc	0.006	All samples in SDG HQ48

Total Solids by EPA Method 160.3, Ammonia as Nitrogen by modified EPA Method 350.1, Sulfide by EPA Method 376.2, Grain Size by PSEP Method, & Total Organic Carbon by Plumb Method

I. Technical Holding Times

All technical holding time requirements were met with the following exceptions:

Associated SDG	Sample	Analyte	Total Days From Sample Collection Until Analysis	Required Holding Time (in Days) From Sample Collection Until Analysis	Flag	A or P
HP90	LDW-SS-111-010	Sulfide	9	7	J- (all detects) R (all non-detects)	P
HT50	DR-SS5-010 DR-SS6-010 DR-SS7-010 DR-SS9-010	Total solids	27	7	J- (all detects) R (all non-detects)	P
HT56	DR-SS10-010 DR-SS11-010 DR-SS13-010 DR-SS14-010 DR-SS15-010	Total solids	19	7	J- (all detects) R (all non-detects)	P

Since the results above were detected in the affected samples, these findings did not warrant rejection (R) of the data.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

All criteria for the initial calibration of each method were met.

b. Calibration Verification

Calibration verification frequency and analysis criteria were met for each method when applicable.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the method blanks.

Twenty-one samples were associated to the method blank for ammonia as nitrogen in SDG HQ48. No more that twenty samples should be associated to a method blank.

Method blanks were not required for particle size.

IV. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

Associated SDG	Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
HP70	LDW-SS48-010MS (LDW-SS23-010** LDW-SS26-010** LDW-SS27-010** LDW-SS200-010** LDW-SS32-010** LDW-SS37-010** LDW-SS38-010** LDW-SS40-010** LDW-SS48-010** LDW-SS51-010**)	Sulfide	71.1 (75-125)	-	-	J- (all detects) UJ (all non-detects)	A
HP90	LDW-SS-101-010MS/MSD (LDW-SS-111-010 LDW-SS-112-010 LDW-SS-119-010 LDW-SS-120-010 LDW-SS-60-010 LDW-SS-99-010 LDW-SS-89-010 LDW-SS-201-010)	Sulfide	60.2 (75-125)	54.8 (75-125)	-	J- (all detects) UJ (all non-detects)	A
HQ17	LDW-SS76-010MS/MSD (LDW-SS114-010 LDW-SS117-010 LDW-SS113B-010 LDW-SS125-010 LDW-SS126-010 LDW-SS116-010 LDW-SS127-010 LDW-SS130-010 LDW-SS129-010 LDW-SS118-010 LDW-SS76-010 LDW-SS84-010)	Sulfide	65.7 (75-125)	60.7 (75-125)	-	J- (all detects) UJ (all non-detects)	A
HQ27	LDW-SS75-010MS (LDW-SS43-010 LDW-SS44-010 LDW-SS87-010 LDW-SS94-010 LDW-SS96-010 LDW-SS97-010 LDW-SS31-010 LDW-SS67-010 LDW-SS63-010 LDW-SS70-010 LDW-SS75-010)	Sulfide	65.7 (75-125)	-	-	J- (all detects) UJ (all non-detects)	A
HQ27	LDW-SS101-010MS/MSD (LDW-SS101-010)	Sulfide	60.2 (75-125)	54.8 (75-125)	-	J- (all detects) UJ (all non-detects)	A

Matrix spike (MS) analyses were not required for particle size.

V. Duplicates/Triplicates

Duplicate (DUP) and triplicate (TRP) sample analyses were reviewed for each matrix as applicable. Relative percent differences (RPD) and relative standard deviation (RSD) were within QC limits.

Relative standard deviation (RSD) were within QC limits with the following exceptions:

Associated SDG	TRP/DUP ID (Associated Samples)	Analyte	RPD (Limits)	Flag	A or P
HQ27	LDW-SS75-010DUP/TRP (LDW-SS43-010 LDW-SS44-010 LDW-SS87-010 LDW-SS94-010 LDW-SS96-010 LDW-SS97-010 LDW-SS31-010 LDW-SS67-010 LDW-SS63-010 LDW-SS70-010 LDW-SS75-010)	Sulfide	40.2 (≤20)	J (all detects) UJ (all non-detects)	A

VI. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

Twenty-one samples were associated to the standard reference material (SRM) for ammonia as nitrogen in SDG HQ48. No more than twenty samples should be associated to a laboratory control sample.

Standard reference material was performed for all analyses except sulfide.

VII. Sample Result Verification

All sample result verifications met validation criteria.

Sample result verification data were not reviewed for Level II.

VIII. Overall Assessment of Data

The overall assessment of data was acceptable.

IX. Field Duplicates

Samples LDW-SS27-010** and LDW-SS200-010** (SDG HP70), samples LDW-SS89-010 and LDW-SS201-010 (SDG HP90), samples LDW-SS50-010 and LDW-SS202-010, and samples LDW-SS123-010 and LDW-SS203-010 (SDG HQ48) were identified as field duplicates. No contaminant concentrations were detected in any of the samples with the

following exceptions:

Associated SDG	Analyte	Concentration		RPD (Limits)
		LDW-SS850-010	LDW-SS202-010	
HP70	Total solids	47.30 %	48.50 %	3 (≤50)
HP70	Ammonia as N	5.59 mg/Kg	5.25 mg/Kg	6 (≤50)
HP70	Sulfide	310 mg/Kg	220 mg/Kg	34 (≤50)
HP70	Total organic carbon	1.60%	1.68%	5 (≤50)

Associated SDG	Analyte	Concentration		RPD (Limits)
		LDW-SS-89-010	LDW-SS-201-010	
HP90	Total Solids	71.70%	69.30%	3 (≤50)
HP90	Ammonia as N	1.30 mg/Kg	1.4 mg/Kg	7 (≤50)
HP90	Total organic carbon	1.01%	1.02%	1 (≤50)
HP90	Phi size -2	99.9 % Finer	100 % Finer	0 (≤50)
HP90	Phi size -1	99.5 % Finer	99.9 % Finer	0 (≤50)
HP90	Phi size 0	97.8 % Finer	97.7 % Finer	0 (≤50)
HP90	Phi size 1	76.6 % Finer	76.5 % Finer	0 (≤50)
HP90	Phi size 2	42.9 % Finer	43.4 % Finer	1 (≤50)
HP90	Phi size 3	31.0 % Finer	31.1 % Finer	0 (≤50)
HP90	Phi size 4	16.3 % Finer	16.4 % Finer	1 (≤50)
HP90	Phi size 5	10.9 % Finer	10.8 % Finer	1 (≤50)
HP90	Phi size 6	7.7 % Finer	7.7 % Finer	0 (≤50)
HP90	Phi size 7	5.2 % Finer	5.1 % Finer	2 (≤50)
HP90	Phi size 8	3.4 % Finer	3.5 % Finer	3 (≤50)
HP90	Phi size 9	2.4 % Finer	2.4 % Finer	0 (≤50)

Associated SDG	Analyte	Concentration		RPD (Limits)
		LDW-SS-89-010	LDW-SS-201-010	
HP90	Phi size 10	1.6 % Finer	1.7 % Finer	6 (≤50)

Associated SDG	Analyte	Concentration		RPD (Limits)
		LDW-SS50-010	LDW-SS202-010	
HQ48	Total solids	50.90%	51.50%	1 (≤50)
HQ48	Ammonia as N	6.22 mg/Kg	8.03 mg/Kg	2 (≤50)
HQ48	Sulfide	110 mg/Kg	770 mg/Kg	150 (≤50)
HQ48	Total organic carbon	1.94%	1.90%	2 (≤50)
HQ48	Phi size -2	100 % Finer	99.8 % Finer	0 (≤50)
HQ48	Phi size -1	99.8 % Finer	99.3 % Finer	1 (≤50)
HQ48	Phi size 0	99.0 % Finer	98.7 % Finer	0 (≤50)
HQ48	Phi size 1	92.4 % Finer	95.0 % Finer	3 (≤50)
HQ48	Phi size 2	78.7 % Finer	84.1 % Finer	7 (≤50)
HQ48	Phi size 3	73.6 % Finer	76.1 % Finer	3 (≤50)
HQ48	Phi size 4	62.9 % Finer	67.8 % Finer	7 (≤50)
HQ48	Phi size 5	49.5 % Finer	52.7 % Finer	6 (≤50)
HQ48	Phi size 6	35.5 % Finer	38.2 % Finer	7 (≤50)
HQ48	Phi size 7	23.7 % Finer	19.8 % Finer	18 (≤50)
HQ48	Phi size 8	15.6 % Finer	13.6 % Finer	14 (≤50)
HQ48	Phi size 9	11.2 % Finer	10.0 % Finer	11 (≤50)
HQ48	Phi size 10	7.6 % Finer	6.8 % Finer	11 (≤50)

Associated SDG	Analyte	Concentration		RPD (Limits)
		LDW-SS123-010	LDW-SS203-010	
HQ48	Total solids	69.00 %	68.90 %	0 (≤50)
HQ48	Ammonia as N	3.49 mg/Kg	5.05 mg/Kg	37 (≤50)
HQ48	Total organic carbon	1.77%	1.81%	2 (≤50)
HQ48	Phi size -2	100.0 % Finer	97.1 % Finer	3 (≤50)
HQ48	Phi size -1	99.5 % Finer	96.0 % Finer	4 (≤50)
HQ48	Phi size 0	95.2 % Finer	92.0 % Finer	3 (≤50)
HQ48	Phi size 1	69.2 % Finer	66.5 % Finer	4 (≤50)
HQ48	Phi size 2	37.2 % Finer	34.6 % Finer	7 (≤50)
HQ48	Phi size 3	31.5 % Finer	29.4 % Finer	7 (≤50)
HQ48	Phi size 4	27.0 % Finer	25.0 % Finer	8 (≤50)
HQ48	Phi size 5	22.9 % Finer	21.3 % Finer	7 (≤50)
HQ48	Phi size 6	16.1 % Finer	15.7 % Finer	3 (≤50)
HQ48	Phi size 7	10.9 % Finer	10.7 % Finer	2 (≤50)
HQ48	Phi size 8	7.5 % Finer	7.2 % Finer	4 (≤50)
HQ48	Phi size 9	5.5 % Finer	5.2 % Finer	6 (≤50)
HQ48	Phi size 10	3.8 % Finer	3.7 % Finer	3 (≤50)

X. Field Blanks

No field blanks were identified in this SDG.

GC/MS Butyltins By Krone Method & EPA SW 846 Method 8270C using Selected Ion Monitoring (SIM).

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals. All ion abundance requirements were met.

Instrument performance check data were not reviewed for Level II.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 30.0% for butyltins.

Average relative response factors (RRF) for butyltins were within validation criteria.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

The continuing calibration percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were less than or equal to 25.0%.

The percent differences (%D) of the second source calibration standard were less than or equal to 25.0% for butyltins.

All of the continuing calibration RRF values were within validation criteria.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No butyltin contaminants were found in the method blanks.

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

Associated SDG	Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
HQ27	LDW-SS67-010MS/MSD (LDW-SS67-010)	Butyltin trichloride	-	-	82.2 (≤50)	J (all detects) UJ (all non-detects)	A

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

Associated SDG	LCS ID	Compound	%R (Limits)	Associated Samples	Flag	A or P
HP67 HP70	LCS-012205	Butyltin trichloride	3.4 (20-130)	LDW-SS4-010** LDW-SS14-010** LDW-SS15-010** LDW-SS27-010** LDW-SS200-010** LDW-SS32-010** LDW-SS38-010** LDW-SS51-010**	J (all detects) R (all non-detects)	P
HQ27 HQ48 HQ57	LCS-012905	Butyltin trichloride	2.0 (20-130)	LDW-SS43-010 LDW-SS31-010 LDW-SS67-010 LDW-SS55-010 LDW-SS79-010 LDW-SS58-010 LDW-SS56-010 LDW-SS28-010 LDW-SS33-010 LDW-SS49-010	J (all detects) R (all non-detects)	P
HR48	LCS-020805	Butyltin trichloride	2.0 (20-130)	LDW-SS20-010	J (all detects) R (all non-detects)	P

Standard reference material was performed at the required frequencies.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

All internal standard areas and retention times were within QC limits.

XI. Target Compound Identifications

All target compound identifications were within validation criteria.

Target compound identifications data were not reviewed for Level II.

XII. Compound Quantitation and CRQLs

All compound quantitation and CRQLs were within validation criteria

Compound quantitation and CRQLs data were not reviewed for Level II.

XIII. Tentatively Identified Compounds (TICs)

Tentatively identified compounds were not reported by the laboratory for Level IV.

Tentatively identified compounds data were not reviewed for Level II.

XIV. System Performance

The system performance was acceptable.

System performance data were not reviewed for Level II.

XV. Overall Assessment of Data

The overall assessment of data was acceptable.

XVI. Field Duplicates

Samples LDW-SS27-010** and LDW-SS200-010** (SDG HP70) were identified as field duplicates. No butyltins were detected in any of the samples with the following exceptions:

Associated SDG	Compound	Concentration (ug/Kg)		RPD (Limits)
		LDW-SS27-010**	LDW-SS200-010**	
HP70	Tributyltin chloride	38	24	45 (≤50)
HP70	Dibutyltin dichloride	12	5.8U	Not calculable

XVII. Field Blanks

No field blanks were identified in this SDG.

Attachment 1

Attachment 1

LDC #13204 (Windward Environmental, LLC - Seattle WA / Lower Duwamish Waterway Group)

LDC	SDG#	DATE REC'D	DATE DUE	SVOA (8270C)		SVOA (8270C -SIM)		Pest. (8081A)		PCBs (8082)		Metals & Hg (SW846)		Butyltin (Krone/ 8270C-SIM)		NH3 (350.1)		S= (376.2)		Total Solids (160.3)		TOC (Plumb)		Grain Size											
Matrix: Tissue/Sediment				W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	HP67	02/25/04	03/18/05	0	11	0	4	0	1	0	9	0	9	0	3	0	9	0	9	0	9	0	9	0	9										
B	HP70	02/25/04	03/18/05	0	17	0	7	0	3	0	10	0	10	0	5	0	10	0	10	0	10	0	10	0	10										
C	HP90 & HQ69	02/25/04	03/18/05	0	8	0	6	0	1	0	8	0	8	-	-	0	8	0	8	0	8	0	8	0	8										
D	HQ17 & HQ04	02/25/04	03/18/05	0	12	0	6	0	8	0	13	0	12	-	-	0	12	0	12	0	12	0	12	0	12										
Total	B			0	48	0	23	0	13	0	40	0	39	0	8	0	39	0	39	0	39	0	39	0	39	0	0	0	0	0	0	0	0	0	366

Shaded cells indcate Level IV validation (all other cells are Level II validation). These sample counts do not include Rinsate Blanks,MS/MSD. and DUPs

Attachment 1

Level II

LDC #13234 (Windward Environmental, LLC - Seattle WA / Lower Duwamish Waterway Group)

LDC	SDG#	DATE REC'D	DATE DUE	SVOA (8270C)		SVOA (8270C -SIM)		Pest. (8081A)		PCBs (8082)		Metals & Hg (SW846)		Butyltin (Krone/ 8270C-SIM)		NH3 (350.1)		S= (376.2)		Total Solids (160.3)		TOC (Plumb)		Grain Size									
Matrix:	Tissue/Sediment			T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S			T	S	T	S	T	S	T	S
A	HQ48	03/08/05	03/29/05	0	21	0	12	0	13	0	22	0	21	0	5	0	21	0	21	0	21	0	21	0	21										
B	HQ27 & HQ28	03/08/05	03/29/05	0	12	0	3	0	4	0	12	0	11	0	3	0	12	0	12	0	12	0	12	0	12										
C	HR48	03/08/05	03/29/05	-	-	0	1	-	-	-	-	-	-	0	1	-	-	-	-	-	-	-	-	-	-										
E	HQ56 & HQ57	03/08/05	03/29/05	0	12	0	5	0	3	0	17	0	11	0	2	0	11	0	11	0	11	0	11	0	11										
Total	B			0	45	0	21	0	20	0	51	0	43	0	11	0	44	0	44	0	44	0	44	0	44	0	0	0	0	0	0	0	0	0	411

Shaded cells indicate Level IV validation (all other cells are Level II validation). These sample counts do not include Rinsate Blanks,MS/MSD, and DUPs

Attachment 1

Level II **LDC #13298 (Windward Environmental, LLC - Seattle WA / Lower Duwamish Waterway Group)**

LDC	SDG#	DATE REC'D	DATE DUE	SVOA (8270C -SIM)		SVOA (8270C -SIM)		Pest. (8081A)		PCBs (8082)		Metals & Hg (SW846)		NH3 (350.1)		S= (376.2)		Total Solids (160.3)		TOC (Plumb)		Grain Size													
Matrix:	Tissue/Sediment			T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	W	S	W	S	W	S	W	S	W	S	W	S
A	HQ93	03/22/05	04/12/05	0	3	-	-	-	-	0	3	0	3	0	3	0	3	0	3	0	3	0	3												
B	HT37	03/22/05	04/12/05	-	-	0	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-												
C	HU13	03/22/05	04/12/05	-	-	0	17	0	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-												
D	HV08	03/22/05	04/12/05	-	-	-	-	0	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-												
Total	B			0	3	0	21	0	3	0	3	0	3	0	3	0	3	0	3	0	3	0	3	0	0	0	0	0	0	0	0	0	0	0	48

Shaded cells indicate Level IV validation (all other cells are Level II validation). These sample counts do not include MS/MSD, and DUPs

Job #04-08-06-24

Attachment 1

Level II

LDC #13315 (Windward Environmental, LLC - Seattle WA / Lower Duwamish Waterway Group)

LDC	SDG#	DATE REC'D	DATE DUE	PCBs (8082)		As (200.8)		Total Solids (160.3)		TOC (Plumb)		Grain Size																							
Matrix:	Tissue/Sediment			T	S	T	S	T	S	T	S	T	S			T	S	T	S	T	S	T	S	W	S	W	S	W	S	W	S	W	S
B	HT56	03/28/05	04/18/05	-	-	0	9	0	9	-	-	0	9																					
Total	B			0	0	0	9	0	9	0	0	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	27

Shaded cells indicate Leve IV validation (all other cells are Level II validation). These sample counts do not include MS/MSD, and DUPs

RUSH (2 DAY TAT)

Attachment 1

PDF

LDC #14000 (Windward Environmental, LLC - Seattle WA / Lower Duwamish Waterway Group)

LDC	SDG#	DATE REC'D	(3) DATE DUE	SVOA (8270C)		SVOA (8270C -SIM)																													
Matrix:	Water/Sediment			W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	IL52	09/08/05	09/12/05	0	1	0	1																												
Total	B/SC			0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2

Shaded cells indicate Level IV validation (all other cells are Level II validation). These sample counts do not include MS/MSD, and DUPs

Attachment 2

Attachment 2

SDG#: HP67 VALIDATION SAMPLE TABLE **LDC#:** 13204A

Project Name: Lower Duwamish Waterway Group Parameters/Analytical Method Project #04-08-06-21

Client ID #	Lab ID #	Matrix	Date Collected	SVOA (8270C)	PAHs (8270C -SIM)	Pest. (8081A)	PCBs (8082)	Metals (SW846	Butyl-tin (Krone)	NH_3 (350.1)	S= (376.2)	Total Solids (160.3)	TOC (Plumb)	Grain Size	
LDW-SS1-010	HP67A	sediment	01/17/05	X			X	X		X	X	X	X	X	
LDW-SS4-010	HP67B	sediment	01/17/05	X	X		X	X	X	X	X	X	X	X	
LDW-SS5-010	HP67C	sediment	01/17/05	X			X	X		X	X	X	X	X	
LDW-SS10-010	HP67D	sediment	01/17/05	X	X		X	X		X	X	X	X	X	
LDW-SS12-010	HP67E	sediment	01/17/05	X			X	X		X	X	X	X	X	
LDW-SS14-010	HP67F	sediment	01/17/05	X	X		X	X	X	X	X	X	X	X	
LDW-SS15-010	HP67G	sediment	01/17/05	X			X	X	X	X	X	X	X	X	
LDW-SS22-010	HP67I	sediment	01/17/05	X	X		X	X		X	X	X	X	X	
LDW-SS22-010DL	HP67IDL	sediment	01/17/05	X											
LDW-SS13-010	HP67J	sediment	01/17/05	X		X	X	X		X	X	X	X	X	
LDW-SS13-010DL	HP67JDL	sediment	01/17/05	X											
LDW-SS1-010MS	HP67AMS	sediment	01/17/05							X					
LDW-SS1-010DUP	HP67ADUP	sediment	01/17/05							X		X			
LDW-SS1-010TRP	HP67ATRP	sediment	01/17/05									X			
LDW-SS4-010MS	HP67BMS	sediment	01/17/05										X	X	
LDW-SS4-010DUP	HP67BDUP	sediment	01/17/05											X	
LDW-SS4-010TRP	HP67BTRP	sediment	01/17/05											X	
LDW-SS5-010MS	HP67CMS	sediment	01/17/05				X								
LDW-SS5-010MSD	HP67CMSD	sediment	01/17/05				X								
LDW-SS10-10MS	HP67DMS	sediment	01/17/05		X										
LDW-SS10-10MSD	HP67DMSD	sediment	01/17/05		X										
LDW-SS14-010MS	HP67FMS	sediment	01/17/05	X					X						
LDW-SS14-010MSD	HP67FMSD	sediment	01/17/05	X					X						
LDW-SS13-010MS	HP67JMS	sediment	01/17/05			X					X				
LDW-SS13-010MSD	HP67JMSD	sediment	01/17/05			X									

Note: X = Valication was performed.

SDG#: HP67 VALIDATION SAMPLE TABLE **LDC#:** 13204A

Project Name: Lower Duwamish Waterway Group Parameters/Analytical Method Project #04-08-06-21

Client ID #	Lab ID #	Matrix	Date Collected	SVOA (8270C)	PAHs (8270C -SIM)	Pest. (8081A)	PCBs (8082)	Metals (SW846	Butyl- tin (Krone)	NH_3 (350.1)	S= (376.2)	Total Solids (160.3)	TOC (Plumb)	Grain Size	
LDW-SS13-010DUP	HP67JDUP	sediment	01/17/05								X				

Note: X = Valication was performed.

Attachmer

SDG#: HP70 VALIDATION SAMPLE TABLE **LDC#:** 13204B

Project Name: Lower Duwamish Waterway Group Parameters/Analytical Method Project #04-08-06-21

Client ID #	Lab ID #	Matrix	Date Collected	SVOA (8270C)	PAHs (8270C -SIM)	Pest. (8081A)	PCBs (8082)	Metals (SW846)	Butyl-tin (Krone)	NH_3 (350.1)	S= (376.2)	Total Solids (160.3)	TOC (Plumb)	Grain Size	
LDW-SS38-RB	HP70A	sediment	01/18/05	X			X	X							
LDW-SS23-010	HP70B	sediment	01/18/05	X	X		X	X		X	X	X	X	X	
LDW-SS26-010	HP70C	sediment	01/18/05	X	X		X	X		X	X	X	X	X	
LDW-SS26-010DL	HP70CDL	sediment	01/18/05	X											
LDW-SS27-010	HP70D	sediment	01/18/05	X	X	X	X	X	X	X	X	X	X	X	
LDW-SS27-010DL	HP70DDL	sediment	01/18/05	X											
LDW-SS200-010	HP70E	sediment	01/18/05	X	X	X	X	X	X	X	X	X	X	X	
LDW-SS200-010DL	HP70EDL	sediment	01/18/05	X											
LDW-SS32-010	HP70F	sediment	01/18/05	X		X	X	X	X	X	X	X	X	X	
LDW-SS32-010DL	HP70FDL	sediment	01/18/05	X											
LDW-SS37-010	HP70G	sediment	01/18/05	X	X		X	X		X	X	X	X	X	
LDW-SS37-010DL	HP70GDL	sediment	01/18/05	X	X										
LDW-SS38-010	HP70H	sediment	01/18/05	X	X		X	X	X	X	X	X	X	X	
LDW-SS40-010	HP70I	sediment	01/18/05	X			X	X		X	X	X	X	X	
LDW-SS48-010	HP70J	sediment	01/18/05	X			X	X		X	X	X	X	X	
LDW-SS48-010DL	HP70JDL	sediment	01/18/05	X											
LDW-SS51-010	HP70K	sediment	01/18/05	X			X	X	X	X	X	X	X	X	
LDW-SS23-010MS	HP70BMS	sediment	01/18/05					X							
LDW-SS23-010DUP	HP70BDUP	sediment	01/18/05					X							
LDW-SS48-010MS	HP70JMS	sediment	01/18/05								X				
LDW-SS48-010DUP	HP70JDUP	sediment	01/18/05								X				
LDW-SS51-010MS	HP70KMS	sediment	01/18/05							X					
LDW-SS51-010DUP	HP70KDUP	sediment	01/18/05							X					

Note: X = Validation was performed.

Attachment 2

SDG#: HP90 & HQ69 VALIDATION SAMPLE TABLE **LDC#:** 13204C

Project Name: Lower Duwamish Waterway Group Parameters/Analytical Method Project #04-08-06-21

Client ID #	Lab ID #	Matrix	Date Collected	SVOA (8270C)	PAHs (8270C -SIM)	Pest. (8081A)	PCBs (8082)	Metals (SW846)	Butyl-tin (Krone)	NH_3 (350.1)	S= (376.2)	Total Solids (160.3)	TOC (Plumb)	Grain Size	
LDW-SS-111-010	HP90A	sediment	01/19/05	X			X	X		X	X	X	X		
LDW-SS-112-010	HP90B	sediment	01/19/05	X			X	X		X	X	X	X	X	
LDW-SS-119-010	HP90C	sediment	01/19/05	X	X		X	X		X	X	X	X	X	
LDW-SS-120-010	HP90D	sediment	01/19/05	X	X		X	X		X	X	X	X	X	
LDW-SS-60-010	HP90E	sediment	01/19/05	X	X		X	X		X	X	X	X	X	
LDW-SS-99-010	HP90F	sediment	01/19/05	X	X	X	X	X		X	X	X	X	X	
LDW-SS-89-010	HP90H	sediment	01/19/05	X	X		X	X		X	X	X	X	X	
LDW-SS-201-010	HP90I	sediment	01/19/05	X	X		X	X		X	X	X	X	X	
LDW-SS-111-010	HQ69A	sediment	01/19/05					X							
LDW-SS-111-010MS	HP90AMS	sediment	01/19/05							X			X		
LDW-SS-111-010DUP	HP90ADUP	sediment	01/19/05							X			X		
LDW-SS-111-010TRP	HP90ATRP	sediment	01/19/05										X		
LDW-SS-112-010MS	HP90BMS	sediment	01/19/05							X					
LDW-SS-112-010DUP	HP90BDUP	sediment	01/19/05							X					
LDW-SS-119-010MS	HP90CMS	sediment	01/19/05					X							
LDW-SS-119-010DUP	HP90CDUP	sediment	01/19/05					X						X	
LDW-SS-119-010TRP	HP90CTRP	sediment	01/19/05											X	
LDW-SS-60-010MS	HP90EMS	sediment	01/19/05				X								
LDW-SS-60-010MSD	HP90EMSD	sediment	01/19/05				X								
LDW-SS-99-010MS	HP90FMS	sediment	01/19/05			X									
LDW-SS-99-010MSD	HP90FMSD	sediment	01/19/05			X									
LDW-SS-201-010MS	HP90IMS	sediment	01/19/05	X	X										
LDW-SS-201-01MSD	HP90IMSD	sediment	01/19/05		X										
LDW-SS-201-01DUP	HP90IDUP	sediment	01/19/05	X											

Note: X = Validation was performed.

Attachment 2

SDG#: HQ17 & HQ04 — VALIDATION SAMPLE TABLE — **LDC#:** 13204D

Project Name: Lower Duwamish Waterway Group — Parameters/Analytical Method — Project #04-08-06-21

Client ID #	Lab ID #	Matrix	Date Collected	SVOA (8270C)	PAHs (8270C -SIM)	Pest. (8081A)	PCBs (8082)	Metals (SW846)	Butyl-tin (Krone)	NH_3 (350.1)	S= (376.2)	Total Solids (160.3)	TOC (Plumb)	Grain Size	
LDW-SS114-010	HQ17A	sediment	01/20/05	X			X	X		X	X	X	X	X	
LDW-SS117-010	HQ17B	sediment	01/20/05	X	X		X	X		X	X	X	X	X	
LDW-SS113B-010	HQ17C	sediment	01/20/05	X	X	X	X	X		X	X	X	X	X	
LDW-SS125-010	HQ17D	sediment	01/20/05	X	X	X	X	X		X	X	X	X	X	
LDW-SS126-010	HQ17E	sediment	01/20/05	X	X	X	X	X		X	X	X	X	X	
LDW-SS116-010	HQ17F	sediment	01/20/05	X		X	X	X		X	X	X	X	X	
LDW-SS127-010	HQ17G	sediment	01/20/05	X		X	X	X		X	X	X	X	X	
LDW-SS130-010	HQ17H	sediment	01/20/05	X			X	X		X	X	X	X	X	
LDW-SS129-010	HQ17I	sediment	01/20/05	X	X	X	X	X		X	X	X	X	X	
LDW-SS118-010	HQ17J	sediment	01/20/05	X			X	X		X	X	X	X	X	
LDW-SS76-010	HQ17K	sediment	01/20/05	X		X	X	X		X	X	X	X	X	
LDW-SS84-010	HQ17L	sediment	01/19/05	X		X	X	X		X	X	X	X	X	
LDW-SS84-010DL	HQ17LDL	sediment	01/19/05				X								
LDW-B9a-S	HQ04A	sediment	08/27/04		X										
LDW-SS114-010MS	HQ17AMS	sediment	01/20/05					X		X			X		
LDW-SS114-010DUP	HQ17ADUP	sediment	01/20/05					X		X		X	X	X	
LDW-SS114-010TRP	HQ17ATRP	sediment	01/20/05											X	
LDW-SS116-010MS	HQ17FMS	sediment	01/20/05	X			X								
LDW-SS116-010MSD	HQ17FMSD	sediment	01/20/05	X			X								
LDW-SS76-010MS	HQ17KMS	sediment	01/20/05								X				
LDW-SS76-010MSD	HQ17KMSD	sediment	01/20/05								X				
LDW-SS76-010DUP	HQ17KDUP	sediment	01/20/05								X				
LDW-SS76-010TRP	HQ17KTRP	sediment	01/20/05								X				

Note: X = Validation was performed.

Attachment 2

SDG#: HQ48 VALIDATION SAMPLE TABLE **LDC#:** 13234A

Project Name: Lower Duwamish Waterway Group Parameters/Analytical Method Project #04-08-06-21

Client ID #	Lab ID #	Matrix	Date Collected	SVOA (8270C)	SVOA (8270C -SIM)	Pest. (8081A)	PCBs (8082)	Metals (SW846)	Butyltin (Krone/ 8270C-SIM)	NH_3 (350.1)	S= (376.2)	Total Solids (160.3)	TOC (Plumb)	Grain Size	
LDW-SS17-010	HQ48A	sediment	01/24/05	X			X	X		X	X	X	X	X	
LDW-SS50-010	HQ48B	sediment	01/24/05	X	X	X	X	X		X	X	X	X	X	
LDW-SS50-010DL	HQ48BDL	sediment	01/24/05				X								
LDW-SS55-010	HQ48C	sediment	01/24/05	X		X	X	X	X	X	X	X	X	X	
LDW-SS72-010	HQ48D	sediment	01/24/05	X	X	X	X	X		X	X	X	X	X	
LDW-SS79-010	HQ48E	sediment	01/24/05	X	X	X	X	X	X	X	X	X	X	X	
LDW-SS54-010	HQ48F	sediment	01/24/05	X		X	X	X		X	X	X	X	X	
LDW-SS202-010	HQ48G	sediment	01/24/05	X	X	X	X	X		X	X	X	X	X	
LDW-SS42-010	HQ48H	sediment	01/24/05	X		X	X	X		X	X	X	X	X	
LDW-SS102-010	HQ48I	sediment	01/24/05	X	X		X	X		X	X	X	X	X	
LDW-SS128-010	HQ48J	sediment	01/24/05	X		X	X	X		X	X	X	X	X	
LDW-SS142-010	HQ48K	sediment	01/24/05	X	X		X	X		X	X	X	X	X	
LDW-SS123-010	HQ48L	sediment	01/24/05	X	X		X	X		X	X	X	X	X	
LDW-SS203-010	HQ48M	sediment	01/24/05	X	X		X	X		X	X	X	X	X	
LDW-SS64-RB	HQ48N	water	01/24/05	X			X	X							
LDW-SS64-010	HQ48O	sediment	01/24/05	X	X	X	X	X		X	X	X	X	X	
LDW-SS83-010	HQ48P	sediment	01/24/05	X	X		X	X		X	X	X	X	X	
LDW-SS36-010	HQ48Q	sediment	01/24/05	X		X	X	X		X	X	X	X	X	
LDW-SS58-010	HQ48R	sediment	01/24/05	X		X	X	X	X	X	X	X	X	X	
LDW-SS57-010	HQ48S	sediment	01/24/05	X			X	X		X	X	X	X	X	
LDW-SS56-010	HQ48T	sediment	01/24/05	X	X		X	X	X	X	X	X	X	X	
LDW-SS28-010	HQ48U	sediment	01/24/05	X	X	X	X	X	X	X	X	X	X	X	
LDW-SS134-010	HQ48V	sediment	01/24/05	X		X	X	X		X	X	X	X	X	
LDW-SS17-010MS	HQ48AMS	sediment	01/24/05					X		X			X		
LDW-SS17-010DUP	HQ48ADUP	sediment	01/24/05					X		X		X	X	X	

Note: X = Validation was performed.

SDG#: HQ48 VALIDATION SAMPLE TABLE **LDC#:** 13234A

Project Name: Lower Duwamish Waterway Group Parameters/Analytical Method Project #04-08-06-21

Client ID #	Lab ID #	Matrix	Date Collected	SVOA (8270C)	SVOA (8270C -SIM)	Pest. (8081A)	PCBs (8082)	Metals (SW846)	Butyltin (Krone/ 8270C-SIM)	NH_3 (350.1)	S= (376.2)	Total Solids (160.3)	TOC (Plumb)	Grain Size	
LDW-SS17-010TRP	HQ48ATRP	sediment	01/24/05											X	
LDW-SS79-010MS	HQ48EMS	sediment	01/24/05								X				
LDW-SS79-010MSD	HQ48EMSD	sediment	01/24/05								X				
LDW-SS79-010DUP	HQ48EDUP	sediment	01/24/05								X				
LDW-SS102-010MS	HQ48IMS	sediment	01/24/05		X										
LDW-SS102-010MSD	HQ48IMSD	sediment	01/24/05		X										
LDW-SS123-010MS	HQ48LMS	sediment	01/24/05	X											
LDW-SS123-010MSD	HQ48LMSD	sediment	01/24/05	X											
LDW-SS203-010MS	HQ48MMS	sediment	01/24/05				X								
LDW-SS203-010MSD	HQ48MMSD	sediment	01/24/05				X								
LDW-SS57-010DUP	HQ48SDUP	sediment	01/24/05								X				
LDW-SS28-010MS	HQ48UMS	sediment	01/24/05							X			X		
LDW-SS28-010DUP	HQ48UDUP	sediment	01/24/05									X	X		
LDW-SS28-010TRP	HQ48UTRP	sediment	01/24/05									X			
LDW-SS134-010MS	HQ48VMS	sediment	01/24/05			X		X							
LDW-SS134-010MSD	HQ48VMSD	sediment	01/24/05			X									
LDW-SS134-010DUP	HQ48VDUP	sediment	01/24/05					X		X					
LDW-SS134-010TRP	HQ48VTRP	sediment	01/24/05											X	

Note: X = Validation was performed.

Attachment 2

SDG#: HQ27 & HQ28 VALIDATION SAMPLE TABLE **LDC#:** 13234B

Project Name: Lower Duwamish Waterway Group Parameters/Analytical Method Project #04-08-06-21

Client ID #	Lab ID #	Matrix	Date Collected	SVOA (8270C)	SVOA (8270C -SIM)	Pest. (8081A)	PCBs (8082)	Metals (SW846)	Butyl-tin (Krone/ 8270C-SIM)	NH_3 (350.1)	S= (376.2)	Total Solids (160.3)	TOC (Plumb)	Grain Size	
LDW-SS43-010	HQ27A	sediment	01/21/05	X	X		X	X	X	X	X	X	X	X	
LDW-SS44-010	HQ27B	sediment	01/21/05	X			X	X		X	X	X	X	X	
LDW-SS87-010	HQ27C	sediment	01/21/05	X		X	X	X		X	X	X	X	X	
LDW-SS94-010	HQ27D	sediment	01/21/05	X			X	X		X	X	X	X	X	
LDW-SS96-010	HQ27E	sediment	01/21/05	X		X	X	X		X	X	X	X	X	
LDW-SS97-010	HQ27F	sediment	01/21/05	X	X		X	X		X	X	X	X	X	
LDW-SS31-010	HQ27G	sediment	01/21/05	X			X	X	X	X	X	X	X	X	
LDW-SS67-010	HQ27H	sediment	01/21/05	X			X	X	X	X	X	X	X	X	
LDW-SS63-010	HQ27I	sediment	01/21/05	X	X	X	X	X		X	X	X	X	X	
LDW-SS70-010	HQ27J	sediment	01/21/05	X		X	X	X		X	X	X	X	X	
LDW-SS75-010	HQ27K	sediment	01/21/05	X			X	X		X	X	X	X	X	
LDW-SS43-RB	HQ27L	water	01/21/05	X			X	X							
LDW-SS101-010	HQ28A	sediment	01/20/05	X			X	X		X	X	X	X	X	
LDW-SS43-010MS	HQ27AMS	sediment	01/21/05					X		X			X		
LDW-SS43-010DUP	HQ27ADUP	sediment	01/21/05					X		X		X	X		
LDW-SS43-010TRP	HQ27ATRP	sediment	01/21/05									X	X		
LDW-SS87-010DUP	HQ27CDUP	sediment	01/21/05											X	
LDW-SS87-010TRP	HQ27CTRP	sediment	01/21/05											X	
LDW-SS97-010MS	HQ27FMS	sediment	01/21/05				X								
LDW-SS97-010MSD	HQ27FMSD	sediment	01/21/05				X								
LDW-SS67-010MS	HQ27HMS	sediment	01/21/05	X					X						
LDW-SS67-010MSD	HQ27HMSD	sediment	01/21/05	X					X						
LDW-SS75-010MS	HQ27KMS	sediment	01/21/05								X				
LDW-SS75-010DUP	HQ27KDUP	sediment	01/21/05								X				

Note: X = Validation was performed.

SDG#: HQ27 & HQ28 VALIDATION SAMPLE TABLE **LDC#:** 13234B

Project Name: Lower Duwamish Waterway Group Parameters/Analytical Method Project #04-08-06-21

Client ID #	Lab ID #	Matrix	Date Collected	SVOA (8270C)	SVOA (8270C -SIM)	Pest. (8081A)	PCBs (8082)	Metals (SW846)	Butyl-tin (Krone/ 8270C-SIM)	NH_3 (350.1)	S= (376.2)	Total Solids (160.3)	TOC (Plumb)	Grain Size	
LDW-SS75-010TRP	HQ27KTRP	sediment	01/21/05								X				
LDW-SS101-010MS	HQ28AMS	sediment	01/20/05								X				
LDW-SS101-010MSD	HQ28AMSD	sediment	01/20/05								X				
LDW-SS101-010DUP	HQ28ADUP	sediment	01/20/05								X	X			
LDW-SS101-010TRP	HQ28ATRP	sediment	01/20/05								X	X			

Note: X = Validation was performed.

Attachment 2

SDG#: HR48 VALIDATION SAMPLE TABLE **LDC#:** 13234C

Project Name: Lower Duwamish Waterway Group Parameters/Analytical Method Project #04-08-06-21

Client ID #	Lab ID #	Matrix	Date Collected	SVOA (8270C)	SVOA (8270C -SIM)	Pest. (8081A)	PCBs (8082)	Metals (SW846)	Butyl-tin (Krone)	NH_3 (350.1)	S= (376.2)	Total Solids (160.3)	TOC (Plumb)	Grain Size	
LDW-SS18-010	HR48A	sediment	02/01/05		X										
LDW-SS20-010	HR48B	sediment	02/02/05						X						
LDW-SS18-010MS	HR48AMS	sediment	02/01/05		X										
LDW-SS18-010MSD	HR48AMSD	sediment	02/01/05		X										
LDW-SS20-010MS	HR48BMS	sediment	02/02/05						X						
LDW-SS20-010MSD	HR48BMSD	sediment	02/02/05						X						

Note: X = Validation was performed.

Attachment 2

SDG#: HQ56 & HQ57 VALIDATION SAMPLE TABLE **LDC#:** 13234E

Project Name: Lower Duwamish Waterway Group Parameters/Analytical Method Project #04-08-06-21

Client ID #	Lab ID #	Matrix	Date Collected	SVOA (8270C)	SVOA (8270C -SIM)	Pest. (8081A)	PCBs (8082)	Metals (SW846)	PCP (8041)	Butyl-tin (Krone)	NH_3 (350.1)	S= (376.2)	Total Solids (160.3)	TOC (Plumb)	Grain Size
LDW-SS110-RB	HQ56A	water	01/25/05	X			X	X							
LDW-SS52-010	HQ56B	sediment	01/25/05	X			X	X			X	X	X	X	X
LDW-SS92-010	HQ56C	sediment	01/25/05	X	X	X	X	X			X	X	X	X	X
LDW-SS92-010DL	HQ56CDL	sediment	01/25/05				X								
LDW-SS104-010	HQ56D	sediment	01/25/05	X	X	X	X	X			X	X	X	X	X
LDW-SS110-010	HQ56E	sediment	01/25/05	X	X		X	X			X	X	X	X	X
LDW-SS110-010DL	HQ56EDL	sediment	01/25/05				X								
LDW-SS109-010	HQ56F	sediment	01/25/05	X			X	X			X	X	X	X	X
LDW-SS109-010DL	HQ56FDL	sediment	01/25/05				X								
LDW-SS115-010	HQ56G	sediment	01/25/05	X		X	X	X			X	X	X	X	X
LDW-SS121-010	HQ56H	sediment	01/25/05	X			X	X			X	X	X	X	X
LDW-SS121-010DL	HQ56HDL	sediment	01/25/05				X								
LDW-SS88-010	HQ56I	sediment	01/25/05	X	X		X	X			X	X	X	X	X
LDW-SS88-010DL	HQ56IDL	sediment	01/25/05	X			X								
LDW-SS33-010	HQ57A	sediment	01/26/05	X			X	X		X	X	X	X	X	X
LDW-SS49-010	HQ57B	sediment	01/26/05	X			X	X		X	X	X	X	X	X
LDW-SS143-010	HQ57C	sediment	01/26/05	X	X		X	X			X	X	X	X	X
LDW-SS143-010DL	HQ57CDL	sediment	01/26/05				X								
LDW-SS52-010MS	HQ56BMS	sediment	01/25/05					X			X				
LDW-SS52-010DUP	HQ56BDUP	sediment	01/25/05					X			X		X		
LDW-SS52-010TRP	HQ56BTRP	sediment	01/25/05										X		
LDW-SS92-010MS	HQ56CMS	sediment	01/25/05	X			X								
LDW-SS92-010MSD	HQ56CMSD	sediment	01/25/05	X			X								
LDW-SS109-010MS	HQ56FMS	sediment	01/25/05									X			
LDW-SS109-010DUP	HQ56FDUP	sediment	01/25/05									X			

Note: X = Validation was performed.

SDG#: HQ56 & HQ57 | VALIDATION SAMPLE TABLE | **LDC#:** 13234E

Project Name: Lower Duwamish Waterway Group | Parameters/Analytical Method | Project #04-08-06-21

Client ID #	Lab ID #	Matrix	Date Collected	SVOA (8270C)	SVOA (8270C -SIM)	Pest. (8081A)	PCBs (8082)	Metals (SW846)	PCP (8041)	Butyl-tin (Krone)	NH_3 (350.1)	S= (376.2)	Total Solids (160.3)	TOC (Plumb)	Grain Size
LDW-SS109-010TRP	HQ56FTRP	sediment	01/25/05									X			
LDW-SS49-010MS	HQ57BMS	sediment	01/26/05											X	
LDW-SS49-010DUP	HQ57BDUP	sediment	01/26/05											X	
LDW-SS49-010TRP	HQ57BTRP	sediment	01/26/05											X	

Note: X = Validation was performed.

Attachment 2

SDG#: HQ93 VALIDATION SAMPLE TABLE **LDC#:** 13298A

Project Name: Lower Duwamish Waterway Group Parameters/Analytical Method Project #04-08-06-21

Client ID #	Lab ID #	Matrix	Date Collected	SVOA (8270C)	SVOA (8270C -SIM)	Pest. (8081A)	PCBs (8082)	Metals (SW846)	TBT (Krone)	NH_3 (350.1)	S= (376.2)	Total Solids (160.3)	TOC (Plumb)	Grain Size	
LDW-SSCR20-010	HQ93A	sediment	01/28/05	X			X	X		X	X	X	X	X	
LDW-SSCR23-010	HQ93B	sediment	01/28/05	X			X	X		X	X	X	X	X	
LDW-MSMP43-010	HQ93C	sediment	01/28/05	X			X	X		X	X	X	X	X	
LDW-SSCR20-010MS	HQ93AMS	sediment	01/28/05					X		X			X		
LDW-SSCR20-010DUP	HQ93ADUP	sediment	01/28/05					X		X		X	X		
LDW-SSCR20-010TRP	HQ93ATRP	sediment	01/28/05									X			
LDW-MSMP43-010MS	HQ93CMS	sediment	01/28/05				X				X				
LDW-MSMP43-010MSD	HQ93CMSD	sediment	01/28/05				X								
LDW-MSMP43-010DUP	HQ93CDUP	sediment	01/28/05								X				
LDW-MSMP43-010TRP	HQ93CTRP	sediment	01/28/05								X				

Note: X = Validation was performed.

Attachment 2

SDG#: HT37 VALIDATION SAMPLE TABLE **LDC#:** 13298B

Project Name: Lower Duwamish Waterway Group Parameters/Analytical Method Project #04-08-06-21

Client ID #	Lab ID #	Matrix	Date Collected	SVOA (8270C)	SVOA (8270C -SIM)	Pest. (8081A)	PCBs (8082)	Metals (SW846)	TBT (Krone)	NH_3 (350.1)	S= (376.2)	Total Solids (160.3)	TOC (Plumb)	Grain Size	
LDW-SS118-010	HT37A	sediment	01/20/05		X										
LDW-SS101-010	HT37B	sediment	01/20/05		X										
LDW-SS55-010	HT37C	sediment	01/24/05		X										
LDW-SS36-010	HT37D	sediment	01/24/05		X										
LDW-SS55-010MS	HT37CMS	sediment	01/24/05		X										
LDW-SS55-010MSD	HT37CMSD	sediment	01/24/05		X										

Note: X = Validation was performed.

Attachment 2

SDG#: HU13 VALIDATION SAMPLE TABLE **LDC#:** 13298C

Project Name: Lower Duwamish Waterway Group Parameters/Analytical Method Project #04-08-06-21

Client ID #	Lab ID #	Matrix	Date Collected	SVOA (8270C)	SVOA (8270C -SIM)	Pest. (8081A)	PCBs (8082)	Metals (SW846)	TBT (Krone)	NH_3 (350.1)	S= (376.2)	Total Solids (160.3)	TOC (Plumb)	Grain Size	
LDW-SS1-010	HU13A	sediment	01/17/05		X										
LDW-SS5-010	HU13B	sediment	01/17/05		X										
LDW-SS12-010	HU13C	sediment	01/17/05		X										
LDW-SS13-010	HU13D	sediment	01/17/05		X										
LDW-SS51-010	HU13E	sediment	01/18/05		X										
LDW-SS116-010	HU13F	sediment	01/20/05		X										
LDW-SS130-010	HU13G	sediment	01/20/05			X									
LDW-SS76-010	HU13H	sediment	01/20/05		X										
LDW-SS44-010	HU13I	sediment	01/21/05		X										
LDW-SS87-010	HU13J	sediment	01/21/05		X										
LDW-SS94-010	HU13K	sediment	01/21/05		X										
LDW-SS96-010	HU13L	sediment	01/21/05		X										
LDW-SS67-010	HU13M	sediment	01/21/05		X										
LDW-SS54-010	HU13N	sediment	01/24/05		X										
LDW-SS42-010	HU13O	sediment	01/24/05		X										
LDW-SS128-010	HU13P	sediment	01/24/05		X										
LDW-SS52-010	HU13Q	sediment	01/25/05		X										
LDW-SS33-010	HU13R	sediment	01/26/05		X										
LDW-SS1-010MS	HU13AMS	sediment	01/17/05		X										
LDW-SS1-010MSD	HU13AMSD	sediment	01/17/05		X										
LDW-SS130-010MS	HU13GMS	sediment	01/20/05			X									
LDW-SS130-010MSD	HU13GMSD	sediment	01/20/05			X									

Note: X = Validation was performed.

Attachment 2

SDG#: HV08 VALIDATION SAMPLE TABLE **LDC#:** 13298D

Project Name: Lower Duwamish Waterway Group Parameters/Analytical Method Project #04-08-06-21

Client ID #	Lab ID #	Matrix	Date Collectec	SVOA (8270C)	SVOA (8270C -SIM)	Pest. (8081A)	PCBs (8082)	Metals (SW846)	TBT (Krone)	NH_3 (350.1)	S= (376.2)	Total Solids (160.3)	TOC (Plumb)	Grain Size	
LDW-SS5-010	HV08A	sediment	01/17/05			X									
LDW-SS67-010	HV08B	sediment	01/21/05			X									
LDW-SS5-010DUP	HV08ADUP	sediment	01/17/05			X									

Note: X = Valication was performed.

13298VALD.wpd

Attachment 2

SDG#: HT56 VALIDATION SAMPLE TABLE **LDC#:** 13315B

Project Name: Lower Duwamish Working Group Parameters/Analytical Method Project #04-08-06-24

Client ID #	Lab ID #	Matrix	Date Collected	SVOA (8270C)	PAHs (8270C -SIM)	Pest. (8081A)	PCBs (8082)	As (200.8)	PCP (8041)	TBT (Krone)	NH_3 (350.1)	S= (376.2)	Total Solids (160.3)	TOC (Plumb)	Grain Size
DR-SS5-010	HT56A	sediment	02/01/05					X					X		X
DR-SS6-010	HT56B	sediment	02/01/05					X					X		X
DR-SS7-010	HT56C	sediment	02/01/05					X					X		X
DR-SS9-010	HT56D	sediment	02/01/05					X					X		X
DR-SS10-010	HT56E	sediment	02/09/05					X					X		X
DR-SS11-010	HT56F	sediment	02/09/05					X					X		X
DR-SS13-010	HT56G	sediment	02/09/05					X					X		X
DR-SS14-010	HT56H	sediment	02/09/05					X					X		X
DR-SS15-010	HT56I	sediment	02/09/05					X					X		X
DR-SS5-010MS	HT56AMS	sediment	02/01/05					X							
DR-SS5-010DUP	HT56ADUP	sediment	02/01/05					X					X		X
DR-SS5-010TRP	HT56ATRP	sediment	02/01/05										X		X

Note: X = Validation was performed.

Attachment 2

SDG#: IL52 VALIDATION SAMPLE TABLE **LDC#:** 14000A

Project Name: Lower Duwamish Waterway Group Parameters/Analytical Method Project #04-08-06-24

Client ID #	Lab ID #	Matrix	Date Collected	SVOA (8270C)	SVOA (8270C -SIM)										
LDW-SS117-010	IL52A	sediment	01/20/05	X	X										
LDW-SS117-010DUP	IL52ADUP	sediment	01/20/05	X	X										

Note: X = Validation was performed.

LDC #: 13204A2a **VALIDATION COMPLETENESS WORKSHEET** Date: 3/10/05

SDG #: HP67 Level ~~III~~ IV Page: 1 of 1

Laboratory: Analytical Resources, Inc. Reviewer: 9

2nd Reviewer: ~~A~~

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	~~A~~	Sampling dates: 1/17/05
II.	GC/MS Instrument performance check	~~A~~	
III.	Initial calibration	~~A~~	%RSD, r^2
IV.	Continuing calibration	~~SW~~ N	
V.	Blanks	SW	
VI.	Surrogate spikes	~~A~~	
VII.	Matrix spike/Matrix spike duplicates	~~A~~	
VIII.	Laboratory control samples	~~A~~	LCS, SRM
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	~~SW~~ N	
XI.	Target compound identification	~~A~~	
XII.	Compound quantitation/CRQLs	~~A~~	
XIII.	Tentitatively identified compounds (TICs)	N	
XIV.	System performance	~~A~~	
XV.	Overall assessment of data	SW	
XVI.	Field duplicates	N	
XVII.	Field blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples

MI sed

1 2	LDW-SS1-010	11 1	LDW-SS13-010DL	21 2	MB-012405	31	
2 2	LDW-SS4-010	12 2	LDW-SS14-010MS	22		32	
3 2	LDW-SS5-010	13 2	LDW-SS14-010MSD	23		33	
4 2	LDW-SS10-010	14		24		34	
5 2	LDW-SS12-010	15		25		35	
6 2	LDW-SS14-010	16		26		36	
7 2	LDW-SS15-010	17		27		37	
8 2	LDW-SS22-010	18		28		38	
9 1	LDW-SS22-010DL	19		29		39	
10 2	LDW-SS13-010	20		30		40	

LDC #: 13204A2a
SDG #: HP67

VALIDATION FINDINGS CHECKLIST

Page: 1 of 3
Reviewer: Q
2nd Reviewer: R

Method: Semivolatiles (EPA SW 846 Method 8270C)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. GC/MS instrument performance check				
Were the DFTPP performance results reviewed and found to be within the specified criteria?	✓			
Were all samples analyzed within the 12 hour clock criteria?	✓			
III. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	✓			
Was a curve fit used for evaluation? If Yes, what was the acceptance criteria used?	✓			
Did the initial calibration meet the curve fit acceptance criteria?	✓			
Were all percent relative standard deviations (%RSD) $\leq$ 30% and relative response factors (RRF) $\geq$ 0.05?	✓			
IV. Continuing calibration				
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?	✓			
Were all percent differences (%D) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	✓			
Were all percent differences (%D) $\leq$ 25% and relative response factors (RRF) $\geq$ 0.05?		✓		
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.	✓			
VI. Surrogate spikes				
Were all surrogate %R within QC limits?	✓			
If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?			✓	
If any %R was less than 10 percent, was a reanalysis performed to confirm %R?			✓	
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.	✓			
Was a MS/MSD analyzed every 20 samples of each matrix?	✓			

LDC #: 13204A29
SDG #: HP67

VALIDATION FINDINGS CHECKLIST

Reviewer: 9
2nd Reviewer:

Validation Area	Yes	No	NA	Findings/Comments
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	✓			
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
X. Internal standards				
Were internal standard area counts within -50% or +100% of the associated calibration standard?		✓		
Were retention times within ± 30 seconds from the associated calibration standard?	✓			
XI. Target compound identification				
Were relative retention times (RRT's) within ± 0.06 RRT units of the standard?	✓			
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	✓			
Were chromatogram peaks verified and accounted for?	✓			
XII. Compound quantitation/CRQLs				
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	✓			
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XIII. Tentatively identified compounds (TICs)				
Were the major ions (> 10 percent relative intensity) in the reference spectrum evaluated in sample spectrum?			✓	
Were relative intensities of the major ions within ± 20% between the sample and the reference spectra?			✓	
Did the raw data indicate that the laboratory performed a library search for all required peaks in the chromatograms (samples and blanks)?		✓		
XIV. System performance				
System performance was found to be acceptable.	✓			
XV. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			

LDC #: 13204A29
SDG #: HP67

VALIDATION FINDINGS CHECKLIST

Reviewer: 9
2nd Reviewer: X

Validation Area	Yes	No	NA	Findings/Comments
XVI. Field duplicates				
Field duplicate pairs were identified in this SDG.		✓		
Target compounds were detected in the field duplicates.			✓	
XVII. Field blanks				
Field blanks were identified in this SDG.		✓		
Target compounds were detected in the field blanks.			✓	

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

A. Phenol**	P. Bis(2-chloroethoxy)methane	EE. 2,6-Dinitrotoluene	TT. Pentachlorophenol**	III. Benzo(a)pyrene**
B. Bis (2-chloroethyl) ether	Q. 2,4-Dichlorophenol**	FF. 3-Nitroaniline	UU. Phenanthrene	JJJ. Indeno(1,2,3-cd)pyrene
C. 2-Chlorophenol	R. 1,2,4-Trichlorobenzene	GG. Acenaphthene**	VV. Anthracene	KKK. Dibenz(a,h)anthracene
D. 1,3-Dichlorobenzene	S. Naphthalene	HH. 2,4-Dinitrophenol*	WW. Carbazole	LLL. Benzo(g,h,i)perylene
E. 1,4-Dichlorobenzene**	T. 4-Chloroaniline	II. 4-Nitrophenol*	XX. Di-n-butylphthalate	MMM. Bis(2-Chloroisopropyl)ether
F. 1,2-Dichlorobenzene	U. Hexachlorobutadiene**	JJ. Dibenzofuran	YY. Fluoranthene**	NNN. Aniline
G. 2-Methylphenol	V. 4-Chloro-3-methylphenol**	KK. 2,4-Dinitrotoluene	ZZ. Pyrene	OOO. N-Nitrosodimethylamine
H. 2,2'-Oxybis(1-chloropropane)	W. 2-Methylnaphthalene	LL. Diethylphthalate	AAA. Butylbenzylphthalate	PPP. Benzoic Acid
I. 4-Methylphenol	X. Hexachlorocyclopentadiene*	MM. 4-Chlorophenyl-phenyl ether	BBB. 3,3'-Dichlorobenzidine	QQQ. Benzyl alcohol
J. N-Nitroso-di-n-propylamine*	Y. 2,4,6-Trichlorophenol**	NN. Fluorene	CCC. Benzo(a)anthracene	RRR. Pyridine
K. Hexachloroethane	Z. 2,4,5-Trichlorophenol	OO. 4-Nitroaniline	DDD. Chrysene	SSS. Benzidine
L. Nitrobenzene	AA. 2-Chloronaphthalene	PP. 4,6-Dinitro-2-methylphenol	EEE. Bis(2-ethylhexyl)phthalate	TTT.
M. Isophorone	BB. 2-Nitroaniline	QQ. N-Nitrosodiphenylamine (1)**	FFF. Di-n-octylphthalate**	UUU.
N. 2-Nitrophenol**	CC. Dimethylphthalate	RR. 4-Bromophenyl-phenylether	GGG. Benzo(b)fluoranthene	VVV.
O. 2,4-Dimethylphenol	DD. Acenaphthylene	SS. Hexachlorobenzene	HHH. Benzo(k)fluoranthene	WWW.

LDC #: 13204B2a

SDG #: HPGT

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

VALIDATION FINDINGS WORKSHEET

Continuing Calibration

Reviewer: [signature]

2nd Reviewer: [signature]

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Was a continuing calibration standard analyzed at least once every 12 hours of sample analysis for each instrument?

(Y) N N/A Were percent differences (%D) and relative response factors (RRF) within method criteria for all CCC's and SPCC's ?

Y (N) N/A Were all %D and RRFs within the validation criteria of ≤25 %D and ≥0.05 RRF ?

#	Date	Standard ID	Compound	Finding %D (Limit: ≤25.0%)	Finding RRF (Limit: ≥0.05)	Associated Samples	Qualifications
	2/1/05	CC0201	X	28.53297		1-8, 10, 12-13 Blk	J/UJ/A

LDC #: 13204A2a
SDG #: HP87

VALIDATION FINDINGS WORKSHEET
Blanks

Page: 1 of 1
Reviewer: 9
2nd Reviewer: K

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a method blank analyzed for each matrix?
Y N N/A Was a method blank analyzed for each concentration preparation level?
Y N N/A Was a method blank associated with every sample?
Y N N/A Was the blank contaminated? If yes, please see qualification below.

Blank extraction date: 1/24/05 **Blank analysis date:** 2/1/05
Conc. units: ug/kg Associated Samples: all

Compound	Blank ID	Sample Identification								
	MB-012405	1	2	3	5	6	7	8	9 (5X)	10
zzz	15	67/U	83/U	82/U	(180)	(160)	64/U	(1100)	(900)	(180)

+ug

Blank extraction date: same **Blank analysis date:** _____
Conc. units: _____ Associated Samples: all

Compound	Blank ID	Sample Identification								
	MB-012405	11 (5X)								
zzz	15	180/U								

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Common contaminants such as the phthalates and TICs noted above that were detected in samples within ten times the associated method blank concentration were qualified as not detected, "U". Other contaminants within five times the method blank concentration were also qualified as not detected, "U".

LDC #: 13204A29
SDG #: HP87

VALIDATION FINDINGS WORKSHEET
Internal Standards

Reviewer: 9
2nd Reviewer: K

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y (N) N/A Were all interral standard area counts within -50 to +100 of the associated calibration standard?

Y N N/A Were the retention times of the internal standards within +/- 30 seconds of the retention times of the associated calibration stancard?

#	Date	Sample ID	Internal Standard	Area (Limits)	RT (Limits)	Qualifications
		13 (MSD)	PRY	115555 (116217-464868)		No qual.
		8	PRY	73931 (	)	J/UJ/A
		10	PRY	102609 (	)	(GGG → LLL)

* QC limits are advisory

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10
IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

LDC #: 13204A29
SDG #: HP67

VALIDATION FINDINGS WORKSHEET
Overall Assessment of Data

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

All available information pertaining to the data were reviewed using professional judgement to compliment the determination of the overall quality of the data.

Y N N/A Was the overall quality and usability of the data acceptable?

#	Date	Sample ID	Finding	Associated Samples	Qualifications
		8, 10	~~FFF~~ → LLL	8, 10	R/A
					↓
		9, 11	All except ~~FFF~~ → LLL	9, 11	

Comments: _____

OVR.2S

LDC #: 13204A29
SDG #: HP67

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Reviewer: 9
2nd Reviewer: K

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

The Relative Response Factor (RRF), average RRF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

RRF = $(A_x)(C_{is})/(A_{is})(C_x)$
average RRF = sum of the RRFs/number of standards
%RSD = 100 * (S/X)

A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard
S = Standard deviation of the RRFs, X = Mean of the RRFs

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Reported RRF (25 std)	Recalculated RRF (25 std)	Reported Average RRF (initial)	Recalculated Average RRF (initial)	Reported %RSD	Recalculated %RSD
1	ICAL	1/29/15	Phenol (1st internal standard)	2.15562	2.15562	2.1869	2.1869	10.64	10.64
			Naphthalene (2nd internal standard)	curve fit					
			Fluorene (3rd internal standard)						
			~~Pentachlorophenol (4th~~ internal standard)						
			~~Bis(2-ethylhexyl)phthalate~~ (5th internal standard)	1.39735	1.39735	1.47223	1.47223	11.459	11.459
			Benzo(a)pyrene (6th internal standard)	1.14851	1.14851	1.17510	1.17510	9.8411	9.8412
2			~~Phenol~~ (1st internal standard)	0.58814	0.58814	0.59056	0.59056	5.0147	5.0146
			Naphthalene (2nd internal standard)						
			Fluorene (3rd internal standard)						
			Pentachlorophenol (4th internal standard)						
			Bis(2-ethylhexyl)phthalate (5th internal standard)						
			Benzo(a)pyrene (6th internal standard)						
3			Phenol (1st internal standard)						
			Naphthalene (2nd internal standard)						
			Fluorene (3rd internal standard)						
			Pentachlorophenol (4th internal standard)						
			Bis(2-ethylhexyl)phthalate (5th internal standard)						
			Benzo(a)pyrene (6th internal standard)						

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204A2a
SDG#: HP67

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer:
2nd Reviewer:

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270)

Parameter: Naphthalene

Order of regression: Quad

DATE	GCMS ID	COLUMN	(Y) CONC RATIO	(X) AREA RATIO	(X^2) AREA RATIO
01/29/2005	NT6	CAP	0.05	0.07050	0.00497
			0.25	0.33156	0.10993
			0.50	0.62253	0.38754
			1.25	1.37134	1.88057
			2.00	2.13061	4.53952
			3.00	2.89979	8.40879
			4.00	3.65117	13.33104

Regression Output:

Constant		0.0000
Std Err of Y Est		0.0257
R Squared		0.9997540
No. of Observations		7
Degrees of Freedom		5
X Coefficient (s)	0.7597	0.0923
Std Err of Coef.	0.0191	0.0062
Correlation Coefficient (r) =		0.9998770
Coefficient of Determination (r^2) =		0.9997540

LDC #: 13204A2a
SDG#: HD67

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer:
2nd Reviewer: AC

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270)

Parameter: Fluorene

Order of regression: Quac

DATE	GCMS ID	COLUMN	(Y) CONC RATIO	(X) AREA RATIO	(X^2) AREA RATIO
01/29/2005	NT6	CAP	0.05	0.08005	0.00641
			0.25	0.37229	0.13860
			0.50	0.70479	0.49673
			1.25	1.51081	2.28254
			2.00	2.35067	5.52564
			3.00	3.12574	9.77028
			4.00	3.97161	15.77370

Regression Output:

Constant		0.0000
Std Err of Y Est		0.0425
R Squared		0.9993286
No. of Observations		7
Degrees of Freedom		5
X Coefficient (s)	0.6770	0.0844
Std Err of Coef.	0.0289	0.0086
Correlation Coefficient (r) =		0.9996643
Coefficient of Determination (r^2) =		0.9993286

LDC #: 13204A2a
SDG#: HP67

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Reviewer: 1
2nd Reviewer: AC

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270)

Parameter: Phenanthrene

Order of regression: Quad

DATE	GCMS ID	COLUMN	(Y) CONC RATIO	(X) AREA RATIO	(X^2) AREA RATIO
01/29/2005	NT6	CAP	0.05	0.08072	0.00652
			0.25	0.35484	0.12591
			0.50	0.65729	0.43202
			1.25	1.44590	2.09064
			2.00	2.23477	4.99422
			3.00	3.01402	9.08432
			4.00	3.85558	14.86552

Regression Output:

Constan:		0.0000
Std Err of Y Est		0.0372
R Squared		0.9994857
No. of Observations		7
Degrees of Freedom		5
X Coefficient (s)	0.7347	0.0801
Std Err of Coef.	0.0260	0.0080
Correlation Coefficient (r) =		0.9997428
Coefficient of Determination (r^2) =		0.9994857

LDC #: 13204A20
SDG #: HP67

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Reviewer: 9
2nd Reviewer: DR

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
$RRF = (A_x)(C_{is})/(A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
A_x = Area of compound, A_{is} = Area of associated nternal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Average RRF (Initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported %D	Recalculated %D
1	CC0B1	1/31/05	Phenol (1st internal standard)	2.18692	2.10036	2.10036	3.958	3.958
			Naphthalene (2nd internal standard)	25.00	24.06	24.06	3.85	3.85
			Fluorene (3rd internal standard)	↓	24.72	24.72	1.12	1.12
			~~Pentachlorophenol~~ (4th internal standard) DDD		24.06	24.06	3.8	3.76
			~~Bis(2-ethylhexyl)phthal~~ate (5th internal standard)	1.47223	1.38989	1.38989	5.59	5.59
			Benzo(a)pyrene (6th internal standard)	1.17510	1.14073	1.14073	2.925	2.925
2			~~Phenol~~ (1st internal standard)	0.59056	0.58563	0.58563	0.834	0.835
			Naphthalene (2nd internal standard)					
			Fluorene (3rd nternal standard)					
			Pentachlorophenol (4th internal standard)					
			Bis(2-ethylhexyl)phthalate (5th internal standard)					
	CC0201	2/1/05	~~Benzo(a)pyrene~~ (6th internal standard)	0.59056	0.58979	0.58979	0.12989	0.131
3			Phenol (1st internal standard)	2.18692	2.09375	2.09375	4.26044	4.26023
			Naphthalene (2nd internal standard)	25.00	24.14209	24.14	3.432	3.44
			Fluorene (3rd internal standard)	↓	24.89932	24.83	0.683	0.68
			~~Pentachlorophenol~~ (4th internal standard) DDD		24.10492	24.10	3.580	3.60
			~~Bis(2-ethylhexyl)phthalate~~ (5th internal standard)	1.47223	1.40347	1.40347	4.67053	4.6706
			Benzo(a)pyrene (6th internal standard)	1.17510	1.12883	1.12883	3.93808	3.938

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204A29
SDG #: HP6T

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Page: 1 of 1
Reviewer: 9
2nd reviewer: K

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270)

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: 1

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5	25	18.3417	73.2	73.4	0.2
2-Fluorobiphenyl	↓	20.7956	83.2	83.2	0
Terphenyl-d14	↓	19.8475	79.2	79.4	0.2
Phenol-d5	37.5	28.9920	77.3	77.3	0
2-Fluorophenol	↓	18.2782	48.8	48.7	0.1
2,4,6-Tribromophenol	↓	38.6869	103	103	0
2-Chlorophenol-d4	↓	30.8607	82.4	82.3	0.1
1,2-Dichlorobenzene-d4	25	18.9443	75.6	75.8	0.2

Sample ID: _____

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

Sample ID: _____

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

LDC #: 13204A29
SDG #: HP6T

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Reviewer: 9
2nd Reviewer: DC

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SSC - SC)/SA Where: SSC = Spiked sample concentration; SA = Spike added; SC = Sample concentation

RPD = | MS - MSD | * 2/(MS + MSD) MS = Matrix spike percent recovery MSD = Matrix spike duplicate percent recovery

MS/MSD samples: 12/13

Compound	Spike Added (ug/kg)		Sample Concentration (ug/kg)	Spiked Sample Concentration (ug/kg)		Matrix Spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	------	MS	MSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
Phenol	729	731	ND	587	571	80.5	80.5	78.1	78.1	2.8	2.8
2-Chlorophenol	↓	↓		594	585	81.5	81.5	80.0	80.0	1.5	1.5
1,4-Dichlorobenzene	486	487		356	359	73.3	73.3	73.7	73.7	0.8	0.8
N-Nitroso-di-n-propylamine	↓	↓		337	334	69.3	69.3	68.6	68.6	0.9	0.9
1,2,4-Trichlorobenzene	↓	↓		413	406	85.0	85.0	83.4	83.4	1.7	1.7
4-Chloro-3-methylphenol	729	731		705	686	96.7	96.7	93.8	93.8	2.7	2.7
Acenaphthene	486	487		483	451	99.4	99.4	92.6	92.6	6.9	6.9
4-Nitrophenol	729	731		814	813	112	112	111	111	0.1	0.1
2,4-Dinitrotoluene	486	487		442	426	90.9	90.9	87.5	87.5	3.7	3.7
Pentachlorophenol	729	731	↓	762	786	105	105	108	108	3.1	3.1
Pyrene	486	487	106	678	586	118	118	98.6	98.6	14.6	14.6

Comments: Refer to Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204B29
SDG #: HP67

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: [illegible]

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SC/SA Where: SSC = Spike concentration; SA = Spike added

RPD = | LCS - LCSD | * 2/(LCS + LCSD) LCS = Laboratory control sample percent recovery LCSD = Laboratory control sample duplicate percent recovery

LCS/LCSD samples: LCS-012405

Compound	Spike Added (ug/kg)		Spike Concentration (ug/kg)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
Phenol	T50	NA	496	NA	66.1	66.1				
2-Chlorophenol	↓		518		69.1	69.1				
1,4-Dichlorobenzene	500		349		69.8	69.8				
N-Nitroso-di-n-propylamine			323		64.6	64.6				
1,2,4-Trichlorobenzene	↓		389		TT.8	TT.8				
4-Chloro-3-methylphenol	T50		585		T8.0	T8.0				
Acenaphthene	500		384		T6.8	T6.8				
4-Nitrophenol	T50		6T01		89.5	89.5				
2,4-Dinitrotoluene	500		383		T6.6	T6.6				
Pentachlorophenol	T50		T33		9T.T	9T.T				
Pyrene	500	↓	482	↓	96.4	96.4				

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204A2a
SDG #: HD6T

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: 9
2nd reviewer: DC

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

Concentration = $\frac{(A_x)(I_s)(V_t)(DF)(2.0)}{(A_{is})(RRF)(V_o)(V_i)(\%S)}$

A_x	=	Area of the characteristic ion (EICP) for the compound to be measured
A_{is}	=	Area of the characteristic ion (EICP) for the specific internal standard
I_s	=	Amount of internal standard added in nanograms (ng)
V_o	=	Volume or weight of sample extract in milliliters (ml) or grams (g).
V_i	=	Volume of extract injected in microliters (ul)
V_t	=	Volume of the concentrated extract in microliters (ul)
Df	=	Dilution Factor.
%S	=	Percent solids, applicable to soil and solid matrices only.
2.0	=	Factor of 2 to account for GPC cleanup

Example:

Sample I.D. 2 , 11 :

Conc. = $\frac{(44495)(20)(500)(1)(\quad)}{(226068)(1.1T510)(25.6)(1)(\quad)}$

= 65.4 Mg/g

#	Sample ID	Compound	Reported Concentration ( )	Calculated Concentration ( )	Qualification

LDC #: 13204B2a **VALIDATION COMPLETENESS WORKSHEET** Date: 3/10/05
SDG #: HP70 Level N IV Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: 9
2nd Reviewer: 9

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/18/05
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	%RSD. r²
IV.	Continuing calibration	SW	
V.	Blanks	SW	
VI.	Surrogate spikes	SW	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples	A	LCS, SRM
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	SW	
XI.	Target compound identification	A	
XII.	Compound quantitation/CRQLs	SW	
XIII.	Tentitatively identified compounds (TICs)	N	
XIV.	System performance	A	
XV.	Overall assessment of data	SW	
XVI.	Field duplicates	SW	D = 5+7, 6+8.
XVII	Field blanks	ND	RB = LDW-SS38-RB

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples
All soils

1	~~LDW-SS38-RB~~	11	LDW-SS37-010	21	MB-012405	31	
2	LDW-SS23-010	12	LDW-SS37-010DL	22		32	
3	LDW-SS20-010	13	LDW-SS38-010	23		33	
4	LDW-SS26-010DL	14	LDW-SS40-010	24		34	
5	LDW-SS27-010	15	LDW-SS48-010	25		35	
6	LDW-SS27-010DL	16	LDW-SS48-010DL	26		36	
7	LDW-SS200-010	17	LDW-SS51-010	27		37	
8	LDW-SS200-010DL	18		28		38	
9	LDW-SS32-010	19		29		39	
10	LDW-SS32-010DL	20		30		40	

LDC #: 13204B29
SDG #: HP70

VALIDATION FINDINGS CHECKLIST

Page: 1 of 3
Reviewer: Q
2nd Reviewer: DC

Method: Semivolatiles (EPA SW 846 Method 8270C)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. GC/MS Instrument performance check				
Were the DFTPP performance results reviewed and found to be within the specified criteria?	✓			
Were all samples analyzed within the 12 hour clock criteria?	✓			
III. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	✓			
Was a curve fit used for evaluation? If Yes, what was the acceptance criteria used?	✓			
Did the initial calibration meet the curve fit acceptance criteria?	✓			
Were all percent relative standard deviations (%RSD) $\leq$ 30% and relative response factors (RRF) $\geq$ 0.05?	✓			
IV. Continuing calibration				
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?	✓			
Were all percent differences (%D) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	✓			
Were all percent differences (%D) $\leq$ 25% and relative response factors (RRF) $\geq$ 0.05?		✓		
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.	✓			
VI. Surrogate spikes				
Were all surrogate %R within QC limits?		✓		
If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?			✓	
If any %R was less than 10 percent, was a reanalysis performed to confirm %R?			✓	
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.	✓			
Was a MS/MSD analyzed every 20 samples of each matrix?	✓			

Validation Area	Yes	No	NA	Findings/Comments
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	✓			
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
X. Internal standards				
Were internal standard area counts within -50% or +100% of the associated calibration standard?		✓		
Were retention times within ± 30 seconds from the associated calibration standard?	✓			
XI. Target compound identification				
Were relative retention times (RRT's) within ± 0.06 RRT units of the standard?	✓			
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	✓			
Were chromatogram peaks verified and accounted for?	✓			
XII. Compound quantitation/CRQLs				
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	✓			
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XIII. Tentatively identified compounds (TICs)				
Were the major ions (> 10 percent relative intensity) in the reference spectrum evaluated in sample spectrum?			✓	
Were relative intensities of the major ions within ± 20% between the sample and the reference spectra?			✓	
Did the raw data indicate that the laboratory performed a library search for all required peaks in the chromatograms (samples and blanks)?		✓		
XIV. System performance				
System performance was found to be acceptable.	✓			
XV. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			

Validation Area	Yes	No	NA	Findings/Comments
XVI. Field duplicates				
Field duplicate pairs were identified in this SDG.	✓			
Target compounds were detected in the field duplicates.	✓			
XVII. Field blanks				
Field blanks were identified in this SDG.	✓			
Target compounds were detected in the field blanks.		✓		

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

A. Phenol**	P. Bis(2-chloroethoxy)methane	EE. 2,6-Dinitrotoluene	TT. Pentachlorophenol**	III. Benzo(a)pyrene**
B. Bis (2-chloroethyl) ether	Q. 2,4-Dichlorophenol**	FF. 3-Nitroaniline	UU. Phenanthrene	JJJ. Indeno(1,2,3-cd)pyrene
C. 2-Chlorophenol	R. 1,2,4-Trichlorobenzene	GG. Acenaphthene**	VV. Anthracene	KKK. Dibenz(a,h)anthracene
D. 1,3-Dichlorobenzene	S. Naphthalene	HH. 2,4-Dinitrophenol*	WW. Carbazole	LLL. Benzo(g,h,i)perylene
E. 1,4-Dichlorobenzene**	T. 4-Chloroaniline	II. 4-Nitrophenol*	XX. Di-n-butylphthalate	MMM. Bis(2-Chloroisopropyl)ether
F. 1,2-Dichlorobenzene	U. Hexachlorobutadiene**	JJ. Dibenzofuran	YY. Fluoranthene**	NNN. Aniline
G. 2-Methylphenol	V. 4-Chloro-3-methylphenol**	KK. 2,4-Dinitrotoluene	ZZ. Pyrene	OOO. N-Nitrosodimethylamine
H. 2,2'-Oxybis(1-chloropropane)	W. 2-Methylnaphthalene	LL. Diethylphthalate	AAA. Butylbenzylphthalate	PPP. Benzoic Acid
I. 4-Methylphenol	X. Hexachlorocyclopentadiene*	MM. 4-Chlorophenyl-phenyl ether	BBB. 3,3'-Dichlorobenzidine	QQQ. Benzyl alcohol
J. N-Nitroso-di-n-propylamine*	Y. 2,4,6-Trichlorophenol**	NN. Fluorene	CCC. Benzo(a)anthracene	RRR. Pyridine
K. Hexachloroethane	Z. 2,4,5-Trichlorophenol	OO. 4-Nitroaniline	DDD. Chrysene	SSS. Benzidine
L. Nitrobenzene	AA. 2-Chloronaphthalene	PP. 4,6-Dinitro-2-methylphenol	EEE. Bis(2-ethylhexyl)phthalate	TTT.
M. Isophorone	BB. 2-Nitroaniline	QQ. N-Nitrosodiphenylamine (1)**	FFF. Di-n-octylphthalate**	UUU.
N. 2-Nitrophenol**	CC. Dimethylphthalate	RR. 4-Bromophenyl-phenylether	GGG. Benzo(b)fluoranthene	VVV.
O. 2,4-Dimethylphenol	DD. Acenaphthylene	SS. Hexachlorobenzene	HHH. Benzo(k)fluoranthene	WWW.

LDC #: 13204B29
SDG #: HP70

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

Page: 1 of 1
Reviewer: 9
2nd Reviewer: [illegible]

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a continuing calibration standard analyzed at least once every 12 hours of sample analysis for each instrument?
Y N N/A Were percent differences (%D) and relative response factors (RRF) within method criteria for all CCC's and SPCC's ?
Y N N/A Were all %D and RRFs within the validation criteria of ≤25 %D and ≥0.05 RRF ?

#	Date	Standard ID	Compound	Finding %D (Limit: ≤25.0%)	Finding RRF (Limit: ≥0.05)	Associated Samples	Qualifications
	2/1/05	cc0201	X	28.53297		2-3.5.7.9.11	J/UJ/A
						Blk	
	2/3/05	cc0202	QQQ	57.44199		13-15.17	J/UJ/A
			HH	38.07925			
			PP	41.76197			
	2/3/05	cc0203	QQQ	46.26238		16	J/UJ/A
			HH	34.77659			
			PP	37.90387			
			KKK	38.57960			
			LLL	40.04920			

LDC #: 13202 B29
SDG #: HPTO

VALIDATION FINDINGS WORKSHEET
Blanks

Page: 1 of 1
Reviewer: a
2nd Reviewer: M

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a method blank analyzed for each matrix?
Y N N/A Was a method blank analyzed for each concentration preparation level?
Y N N/A Was a method blank associated with every sample?
Y N N/A Was the blank contaminated? If yes, please see qualification below.

Blank extraction date: 1/24/05 **Blank analysis date:** 2/1/05
Conc. units: ug/kg Associated Samples: M

Compound	Blank ID	Sample Identification								
	MB-012405	3	4(5x)	5	7	9	11	12(5)	13	14
EEE	15	(200)	190/U	30/U	88/U	93/U	(760)	650/U	100/U	(270)

Blank extraction date: _____ **Blank analysis date:** _____
Conc. units: Sand Associated Samples: M

Compound	Blank ID	Sample Identification								
	MB-012405	15	16(5x)	17						
EEE	15	(770)	660/U	120/U						

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Common contaminants such as the phthalates and TICs noted above that were detected in samples within ten times the associated method blank concentration were qualified as not detected, "U". Other contamirants within five times the method blank concentration were also qualified as not detected, "U".

LDC #: 12404D2

SDG #: HD70

VALIDATION FINDINGS WORKSHEET
Surrogate Recovery

Page: 1 of 1
Reviewer: Q
2nd Reviewer: K

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Please see qualification below for all questions answered "N". Not applicable questions are identified as "N/A".

Y (N) N/A Were percent recoveries (%R) for surrogates within QC limits?
Y N N/A If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?
Y N N/A If any %R was less than 10 percent, was a reanalysis performed to confirm %R?

#	Date	Sample ID	Surrogate	%R (Limits)	Qualifications
		4	TBP	31.9 (40-130)	No qual
				( )	
		8	TBP	32.1 ( )	
				( )	
		10	TBP	36.4 ( )	
				( )	
		12	TBP	31.5 ( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	

* QC limits are advisory	QC Limits (Soil)	QC Limits (Water)
S1 (NBZ) = Nitrobenzene-d5	23-120	35-114
S2 (FBP) = 2-Fluorobiphenyl	30-115	43-116
S3 (TPH) = Terphenyl-d14	18-137	33-141
S4 (PHL) = Phenol-d5	24-113	10-94
S5 (2FP)= 2-Fluorophenol	25-121	21-100
S6 (TBP) = 2,4,6-Tribromophenol	19-122	10-123
S7 (2CP) = 2-Chlorophenol-d4	20-130*	33-110*
S8 (DCB) = 1,2-Dichlorobenzene-d4	20-130*	16-110*

LDC #: 13204B29
SDG #: HPT0

VALIDATION FINDINGS WORKSHEET
Internal Standards

Page: 1 of 1
Reviewer: 9
2nd Reviewer: K

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y (N) N/A Were all internal standard area counts within -50 to +100 of the associated calibration standard?

(Y) N N/A Were the retention times of the nternal standards within +/- 30 seconds of the retention times of the associated calibration standard?

#	Date	Sample ID	Internal Standard	Area (Limits)	RT (Limits)	Qualifications
		3	PRY	91698 (116217-464868)		J/UJ/A
		5	PRY	110608 ( )		
		7	PRY	94243 ( )		
		~~8~~	*			
		9	PRY	93876 ( )		
		11	PRY	59280 ( )		
						(FFF → UUU)

* QC limits are advisory

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10
IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

LDC #: 15204B2A
SDG #: HP70

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported CRQLs

Page: 1 of 1
Reviewer: 9
2nd Reviewer: SR

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?

Y N N/A Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?

#	Date	Sample ID	Finding	Associated Samples	Qualifications
		15	uu. YY. ZZ. DDD. ~~EEE~~	15	~~dets~~ / A
			>calib range		

Comments: See sample calculation verification worksheet for recalculations

LDC #: 13204B29
SDG #: HP70

VALIDATION FINDINGS WORKSHEET
Overall Assessment of Data

Page: 1 of 1
Reviewer: Q
2nd Reviewer: SC

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

All available information pertaining to the data were reviewed using professional judgement to compliment the determination of the overall quality of the data.

(Y) N N/A Was the overall quality and usability of the data acceptable?

#	Date	Sample ID	Finding	Associated Samples	Qualifications
		15	UU, YY. 22. DDD. ~~GGG~~	15	R/A
		16	All except above	16	↓
		3,5,7,9,11	~~GGG~~ → LL	3.5.7.9.11	R/A
			(IS out)		
		4.6.8.10.12	All except ~~GGG~~ → LL	4.6.8.10.12	R/A

Comments: _____

OVR.2S

DC#:13204A2a (B)
SDG#:HP70

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: a
2nd Reviewer: C

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Y N NA Were field duplicate pairs identified in this SDG?
Y N NA Were target analytes detected in the field duplicate pairs?

Compound	Concentration (ug/Kg) 5	7	RPD ≤50	
UU	120	130	8	
VV	28	57	68	
YY	390	390	0	
ZZ	270	300	11	
CCC	120	160	29	
EEE	30	88	98	
DDD	240	370	43	
GGG	230	180	24	
HHH	140	170	19	
III	140	140	0	
JJJ	41	46	11	
LLL	36	43	18	
WW	20U	21	~~200~~ NC	
KKK	20U	22	~~200~~ NC	

Compound	Concentration (ug/Kg) ~~56~~	8	RPD	
UU	110	120	9	
YY	330	360	9	
ZZ	220	230	4	
CCC	120	160	29	
DDD	240	390	48	
GGG	170	140	19	
HHH	100	120	18	
III	140	140	0	

LDC #: 13204B2A
SDG #: #P70

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: R

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

The Relative Response Factor (RRF), average RRF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

RRF = $(A_x)(C_{is})/(A_{is})(C_x)$
average RRF = sum of the RRFs/number of standards
%RSD = 100 * (S/X)

A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard
S = Standard deviation of the RRFs, X = Mean of the RRFs

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Reported RRF (25 std)	Recalculated RRF (25 std)	Reported Average RRF (initial)	Recalculated Average RRF (initial)	Reported %RSD	Recalculated %RSD
1	ICAL	1/29/05	Phenol (1st internal standard)	2.15562	2.15562	2.1869	2.1869	10.6455	10.6455
			Naphthalene (2nd internal standard)						
			Fluorene (3rd internal standard)	curve fit					
			~~Pentachlorophenol~~ (4th internal standard)						
			~~Bis(2-ethylhexyl)phthalate~~ (5th internal standard)	1.39735	1.39735	1.47223	1.47223	11.459	11.459
			Benzo(a)pyrene (6th internal standard)	1.14851	1.14851	1.17510	1.17510	9.84111	9.84112
2			~~Phenol~~ (1st internal standard)	0.58814	0.58814	0.59056	0.59056	5.0147	5.01456
			Naphthalene (2nd internal standard)						
			Fluorene (3rd internal standard)						
			Pentachlorophenol (4th internal standard)						
			Bis(2-ethylhexyl)phthalate (5th internal standard)						
			Benzo(a)pyrene (6th internal standard)						
3			Phenol (1st internal standard)						
			Naphthalene (2nd internal standard)						
			Fluorene (3rd internal standard)						
			Pentachlorophenol (4th internal standard)						
			Bis(2-ethylhexyl)phthalate (5th internal standard)						
			Benzo(a)pyrene (6th internal standard)						

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204B29
SDG#: HP70

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Reviewer: a
2nd Reviewer: a

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270)

Parameter: Phenanthrene

Order of regression: Quad

DATE	GCMS ID	COLUMN	(Y) CONC RATIO	(X) AREA RATIO	(X^2) AREA RATIO
01/29/2005	NT6	CAP	0.05	0.08072	0.00652
			0.25	0.35484	0.12591
			0.50	0.65729	0.43202
			1.25	1.44590	2.09064
			2.00	2.23477	4.99422
			3.00	3.01402	9.08432
			4.00	3.85558	14.86552

Regression Output:

Constant		0.0000
Std Err of Y Est		0.0372
R Squared		0.9994857
No. of Observations		7
Degrees of Freedom		5
X Coefficient (s)	0.7347	0.0801
Std Err of Coef.	0.0260	0.0080
Correlation Coefficient (r) =		0.9997428
Coefficient of Determination (r^2) =		0.9994857

LDC #: 13204B29
SDG#: HP70

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: [illegible]

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270)

Parameter: Naphthalene

Order of regression: Quad

DATE	GCMS ID	COLUMN	(Y) CONC RATIO	(X) AREA RATIO	(X^2) AREA RATIO
01/29/2005	NT6	CAP	0.05	0.07050	0.00497
			0.25	0.33156	0.10993
			0.50	0.62253	0.38754
			1.25	1.37134	1.88057
			2.00	2.13061	4.53952
			3.00	2.89979	8.40879
			4.00	3.65117	13.33104

Regression Output:

Constant		0.0000
Std Err of Y Est		0.0257
R Squared		0.9997540
No. of Observations		7
Degrees of Freedom		5
X Coefficient (s)	0.7597	0.0923
Std Err of Coef.	0.0191	0.0062
Correlation Coefficient (r) =		0.9998770
Coefficient of Determination (r^2) =		0.9997540

LDC #: 13204B2a
SDG#: HP70

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Reviewer: a
2nd Reviewer: a

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270)

Parameter: Fluorene

Order of regression: Quad

DATE	GCMS ID	COLUMN	(Y) CONC RATIO	(X) AREA RATIO	(X^2) AREA RATIO
01/29/2005	NT6	CAP	0.05	0.08005	0.00641
			0.25	0.37229	0.13860
			0.50	0.70479	0.49673
			1.25	1.51081	2.28254
			2.00	2.35067	5.52564
			3.00	3.12574	9.77028
			4.00	3.97161	15.77370

Regression Output:

Constant		0.0000
Std Err of Y Est		0.0425
R Squared		0.9993286
No. of Observations		7
Degrees of Freedom		5
X Coefficient (s)	0.6770	0.0844
Std Err of Coef.	0.0289	0.0086
Correlation Coefficient (r) =		0.9996643
Coefficient of Determination (r^2) =		0.9993286

LDC #: 13204B29
SDG #: HD70

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: K

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
$RRF = (A_x)(C_{is})/(A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Average RRF (Initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported %D	Recalculated %D
1	CC031	1/31/05	Phenol (1st internal standard)	2.18692	2.10036	2.10036	3.958	3.958
			Naphthalene (2nd internal standard)	25.00	24.06	24.06	3.85	3.85
			Fluorene (3rd internal standard)	↓	24.72	24.72	1.12	1.12
			~~Pentachlorophenol~~ (4th internal standard)		24.06	24.06	3.8	3.76
			~~Bis(2-ethylhexyl)phthalate~~ (5th internal standard)	1.47223	1.38989	1.38989	5.59	5.59
			Benzo(a)pyrene (6th internal standard)	1.17510	1.14073	1.14073	2.925	2.925
2			~~Phenol~~ (1st internal standard)	0.59056	0.58563	0.58563	0.834	0.835
			Naphthalene (2nd internal standard)					
			Fluorene (3rd internal standard)					
			Pentachlorophenol (4th internal standard)					
			Bis(2-ethylhexyl)phthalate (5th internal standard)					
	CC0201	2/1/05	~~Benzo(a)pyrene~~ (6th internal standard)	0.59056	0.58979	0.58979	0.12989	0.131
3			Phenol (1st internal standard)	2.18692	2.09375	2.09375	4.26044	4.26023
			Naphthalene (2nd internal standard)	25.00	24.14209	24.14	3.432	3.44
			Fluorene (3rd internal standard)	↓	24.8932	24.83	0.683	0.68
			~~Pentachlorophenol~~ (4th internal standard)		24.10492	24.10	3.580	3.60
			~~Bis(2-ethylhexyl)phthalate~~ (5th internal standard)	1.47223	1.40347	1.40347	4.67053	4.6706
			Benzo(a)pyrene (6th internal standard)	1.17510	1.12883	1.12883	3.93808	3.938

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204B20
SDG #: HP7U

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Reviewer: 9
2nd Reviewer: a

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
$RRF = (A_x)(C_{is})/(A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Average RRF (Initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported %D	Recalculated %D
1	CC0203	2/3/05	Phenol (1st internal standard)	2.18692	1.91205	1.91205	12.5692	12.569
			Naphthalene (2nd internal standard)	25	24.261	24.26	2.95549	2.961
			Fluorene (3rd internal standard)	↓	24.67368	24.67	1.30529	1.32
			~~Pentachlorophenol~~ (4th internal standard)		24.03533	24.04	3.85866	3.858
			~~Bis(2-ethylhexyl)phthalate~~ (5th internal standard)	1.47223	1.40362	1.40362	4.66007	4.660
			Benzo(a)pyrene (6th internal standard)	1.17510	1.11272	1.11272	5.30845	5.308
2			~~Phenol~~ (1st internal standard)	0.59056	0.57522	0.57522	2.59731	2.598
			Naphthalene (2nd internal standard)					
			Fluorene (3rd internal standard)					
			Pentachlorophenol (4th internal standard)					
			Bis(2-ethylhexyl)phthalate (5th internal standard)					
	CC0207	2/3/05	~~Benzo(a)pyrene~~ (6th internal standard)	0.59056	0.58255	0.58255	1.35484	1.356
3			Phenol (1st internal standard)	2.18692	1.94681	1.94681	10.9943	10.979
			Naphthalene (2nd internal standard)	25	24.17483	24.17	3.30067	3.32
			Fluorene (3rd internal standard)	↓	24.9548	24.95	0.18079	0.183
			~~Pentachlorophenol~~ (4th internal standard)		24.06056	24.06	3.75778	3.76
			~~Bis(2-ethylhexyl)phthalate~~ (5th internal standard)	1.47223	1.40565	1.40565	4.52219	4.522
			Benzo(a)pyrene (6th internal standard)	~~0.59056~~ 1.17510	1.11340	1.11340	5.25057	5.250

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13201B2a
SDG #: HPTO

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Page: 1 of 1
Reviewer: 9
2nd reviewer: R

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270)

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: 2

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5	25	12.5=T9	50.0	50.1	0.1
2-Fluorobiphenyl	↓	13.8296	55.2	55.4	0.2
Terphenyl-d14	↓	13.T256	54.8	54.9	0.1
Phenol-d5	37.5	15.9087	42.4	42.4	0
2-Fluorophenol	↓	17.3542	46.4	46.3	0.1
2,4,6-Tribromophenol	26.9605	~~18.1923~~	72.0	T2.0	0
2-Chlorophenol-d4	↓	20.6899	55.2	55.2	0
1,2-Dichlorobenzene-d4	25	12.1922	48.8	48.8	0

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

LDC #: 13204B29
SDG #: HP70

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: 1

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SC/SA Where: SSC = Spike concentration
SA = Spike added

RPD = | LCS - LCSD | * 2/(LCS + LCSD) LCS = Laboratory control sample percent recovery LCSD = Laboratory control sample duplicate percent recovery

LCS/LCSD samples: LCS-012405

Compound	Spike Added (ug/kg)		Spike Concentration (ug/kg)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
Phenol	750	NA	496	NA	66.1	66.1				
2-Chlorophenol	↓		518		69.1	69.1				
1,4-Dichlorobenzene	500		349		69.8	69.8				
N-Nitroso-di-n-propylamine	↓		323		64.6	64.6				
1,2,4-Trichlorobenzene	↓		389		77.8	77.8				
4-Chloro-3-methylphenol	750		585		78.0	78.0				
Acenaphthene	500		384		76.8	76.8				
4-Nitrophenol	750		671		89.5	89.5				
2,4-Dinitrotoluene	500		383		76.6	76.6				
Pentachlorophenol	750		733		97.7	97.7				
Pyrene	500	↓	482	↓	96.4	96.4				

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204B29
SDG #: HPT0

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: 9
2nd reviewer: DK

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

$$\text{Concentration} = \frac{(A_x)(I_s)(V_t)(DF)(2.0)}{(A_{is})(RRF)(V_o)(V_i)(\%S)}$$

A_x = Area of the characteristic ion (EICP) for the compound to be measured

A_{is} = Area of the characteristic ion (EICP) for the specific internal standard

I_s = Amount of internal standard added in nanograms (ng)

V_o = Volume or weight of sample extract in milliliters (ml) or grams (g).

V_i = Volume of extract injected in microliters (ul)

V_t = Volume of the concentrated extract in microliters (ul)

Df = Dilution Factor.

%S = Percent solids, applicable to soil and solid matrices only.

2.0 = Factor of 2 to account for GPC cleanup

Example:

Sample I.D. 3 , EEC :

Conc. = $\frac{(122088)(20)(500)(1)(\quad)}{(395977)(0.59056)(48.7)(1)(0.53)}$

= 201.9 ug/kg

#	Sample ID	Compound	Reported Concentration ( )	Calculated Concentration ( )	Qualification

LDC #: 13204C2a **VALIDATION COMPLETENESS WORKSHEET** Date: 3/7/05

SDG #: HP90 ~~& HQ69~~ Level II Page: 1 of 1

Laboratory: Analytical Resources, Inc. Reviewer: 9

2nd Reviewer: R

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/19/05
II.	GC/MS Instrument performance check	N	
III.	Initial calibration	N	
IV.	Continuing calibration	N	
V.	Blanks	A	
VI.	Surrogate spikes	SW	
VII.	Matrix spike/Matrix spike duplicates/DUP	A/A	~~LDW-SS6T-010~~ MS only @
VIII.	Laboratory control samples	A	LCS. SRM
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	N	
XI.	Target compound identification	N	
XII.	Compound quantitation/CRQLs	N	
XIII.	Tentitatively identified compounds (TICs)	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	
XVI.	Field duplicates	SW	D=6+7 .
XVII.	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples
All soils

1	LDW-SS-112-010	11	MB-012705	21		31	
2	LDW-SS-119-010	12	LDW-SS-111-010	22		32	
3	LDW-SS-120-010	13	MB-013105	23		33	
4	LDW-SS-60-010	14		24		34	
5	LDW-SS-99-010	15		25		35	
6	LDW-SS-89-010	16		26		36	
7	LDW-SS-201-010	17		27		37	
8	~~LDW-SS-201-010MS~~ LDW-SS-201-010MS	18		28		38	
9	LDW-SS-201-01~~MSD~~DUP	19		29		39	
10		20		30		40	

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

A. Phenol**	P. Bis(2-chloroethoxy)methane	EE. 2,6-Dinitrotoluene	TT. Pentachlorophenol**	III. Benzo(a)pyrene**
B. Bis (2-chloroethyl) ether	Q. 2,4-Dichlorophenol**	FF. 3-Nitroaniline	UU. Phenanthrene	JJJ. Indeno(1,2,3-cd)pyrene
C. 2-Chlorophenol	R. 1,2,4-Trichlorobenzene	GG. Acenaphthene**	VV. Anthracene	KKK. Dibenz(a,h)anthracene
D. 1,3-Dichlorobenzene	S. Naphthalene	HH. 2,4-Dinitrophenol*	WW. Carbazole	LLL. Benzo(g,h,i)perylene
E. 1,4-Dichlorobenzene**	T. 4-Chloroaniline	II. 4-Nitrophenol*	XX. Di-n-butylphthalate	MMM. Bis(2-Chloroisopropyl)ether
F. 1,2-Dichlorobenzene	U. Hexachlorobutadiene**	JJ. Dibenzofuran	YY. Fluoranthene**	NNN. Aniline
G. 2-Methylphenol	V. 4-Chloro-3-methylphenol**	KK. 2,4-Dinitrotoluene	ZZ. Pyrene	OOO. N-Nitrosodimethylamine
H. 2,2'-Oxybis(1-chloropropane)	W. 2-Methylnaphthalene	LL. Diethylphthalate	AAA. Butylbenzylphthalate	PPP. Benzoic Acid
I. 4-Methylphenol	X. Hexachlorocyclopentadiene*	MM. 4-Chlorophenyl-phenyl ether	BBB. 3,3'-Dichlorobenzidine	QQQ. Benzyl alcohol
J. N-Nitroso-di-n-propylamine*	Y. 2,4,6-Trichlorophenol**	NN. Fluorene	CCC. Benzo(a)anthracene	RRR. Pyridine
K. Hexachloroethane	Z. 2,4,5-Trichlorophenol	OO. 4-Nitroaniline	DDD. Chrysene	SSS. Benzidine
L. Nitrobenzene	AA. 2-Chloronaphthalene	PP. 4,6-Dinitro-2-methylphenol	EEE. Bis(2-ethylhexyl)phthalate	TTT.
M. Isophorone	BB. 2-Nitroaniline	QQ. N-Nitrosodiphenylamine (1)**	FFF. Di-n-octylphthalate**	UUU.
N. 2-Nitrophenol**	CC. Dimethylphthalate	RR. 4-Bromophenyl-phenylether	GGG. Benzo(b)fluoranthene	VVV.
O. 2,4-Dimethylphenol	DD. Acenaphthylene	SS. Hexachlorobenzene	HHH. Benzo(k)fluoranthene	WWW.

LDC #: [illegible]
SDG #: HP908 & HR89

VALIDATION FINDINGS WORKSHEET
Surrogate Recovery

Page: 1 of 1
Reviewer: 9
2nd Reviewer: R

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Please see qualification below for all questions answered "N". Not applicable questions are identified as "N/A".

Y (N) N/A Were percent recoveries (%R) for surrogates within QC limits?
Y N N/A If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?
Y N N/A If any %R was less than 10 percent, was a reanalysis performed to confirm %R?

#	Date	Sample ID	Surrogate	%R (Limits)	Qualifications
		1	TBP	39.7 (40-130)	No qual.
				( )	↓
		2	TBP	37.5 ( )	↓
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	

* QC limits are advisory	QC Limits (Soil)	QC Limits (Water)
S1 (NBZ) = Nitrobenzene-d5	23-120	35-114
S2 (FBP) = 2-Fluorobiphenyl	30-115	43-116
S3 (TPH) = Terphenyl-d14	18-137	33-141
S4 (PHL) = Phenol-d5	24-113	10-94

	QC Limits (Soil)	QC Limits (Water)
S5 (2FP)= 2-Fluorophenol	25-121	21-100
S6 (TBP) = 2,4,6-Tribromophenol	19-122	10-123
S7 (2CP) = 2-Chlorophenol-d4	20-130*	33-110*
S8 (DCB) = 1,2-Dichlorobenzene-d4	20-130*	16-110*

DC#:13204C2a
SDG#: HP90&~~HQ69~~

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer:
2nd Reviewer:

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Y N NA Were field duplicate pairs identified in this SDG?
Y N NA Were target analytes detected in the field duplicate pairs?

Compound	Concentration (ug/Kg)		RPD (≤ 50)	
	6	7		
UU	32	42	27	
YY	90	170	62	
ZZ	100	160	46	
CCC	42	59	34	
EEE	25	36	36	
DDD	78	120	42	
GGG	62	72	15	
HHH	38	49	25	
III	47	54	14	
JJJ	20	22	10	

LDC #: 13204D2a **VALIDATION COMPLETENESS WORKSHEET** Date: 2/7/05
SDG #: HQ17 & ~~HQ04~~ Level II Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: Q
2nd Reviewer: W

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/19-20/05
II.	GC/MS Instrument performance check	N	
III.	Initial calibration	N	
IV.	Continuing calibration	N	
V.	Blanks	A	
VI.	Surrogate spikes	SW	
VII.	Matrix spike/Matrix spike duplicates	SW	
VIII.	Laboratory control samples	A	LCS/D SRM
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	N	
XI.	Target compound identification	N	
XII.	Compound quantitation/CRQLs	N	
XIII.	Tentitatively identified compounds (TICs)	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A SW	
XVI.	Field duplicates	N	
XVII.	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples
All soils

1	LDW-SS114-010 -	11	LDW-SS76-010	21	MB-012805	31	
2	LDW-SS117-010	12	LDW-SS84-010	22		32	
3	LDW-SS113B-010	13	LDW-SS116-010MS	23		33	
4	LDW-SS125-010	14	LDW-SS116-010MSD	24		34	
5	LDW-SS126-010	15		25		35	
6	LDW-SS116-010	16		26		36	
7	LDW-SS127-010	17		27		37	
8	LDW-SS130-010	18		28		38	
9	LDW-SS129-010	19		29		39	
10	LDW-SS118-010	20		30		40	

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

A. Phenol**	P. Bis(2-chloroethoxy)methane	EE. 2,6-Dinitrotoluene	TT. Pentachlorophenol**	III. Benzo(a)pyrene**
B. Bis (2-chloroethyl) ether	Q. 2,4-Dichlorophenol**	FF. 3-Nitroaniline	UU. Phenanthrene	JJJ. Indeno(1,2,3-cd)pyrene
C. 2-Chlorophenol	R. 1,2,4-Trichlorobenzene	GG. Acenaphthene**	VV. Anthracene	KKK. Dibenz(a,h)anthracene
D. 1,3-Dichlorobenzene	S. Naphthalene	HH. 2,4-Dinitrophenol*	WW. Carbazole	LLL. Benzo(g,h,i)perylene
E. 1,4-Dichlorobenzene**	T. 4-Chloroaniline	II. 4-Nitrophenol*	XX. Di-n-butylphthalate	MMM. Bis(2-Chloroisopropyl)ether
F. 1,2-Dichlorobenzene	U. Hexachlorobutadiene**	JJ. Dibenzofuran	YY. Fluoranthene**	NNN. Aniline
G. 2-Methylphenol	V. 4-Chloro-3-methylphenol**	KK. 2,4-Dinitrotoluene	ZZ. Pyrene	OOO. N-Nitrosodimethylamine
H. 2,2'-Oxybis(1-chloropropane)	W. 2-Methylnaphthalene	LL. Diethylphthalate	AAA. Butylbenzylphthalate	PPP. Benzoic Acid
I. 4-Methylphenol	X. Hexachlorocyclopentadiene*	MM. 4-Chlorophenyl-phenyl ether	BBB. 3,3'-Dichlorobenzidine	QQQ. Benzyl alcohol
J. N-Nitroso-di-n-propylamine*	Y. 2,4,6-Trichlorophenol**	NN. Fluorene	CCC. Benzo(a)anthracene	RRR. Pyridine
K. Hexachloroethane	Z. 2,4,5-Trichlorophenol	OO. 4-Nitroaniline	DDD. Chrysene	SSS. Benzidine
L. Nitrobenzene	AA. 2-Chloronaphthalene	PP. 4,6-Dinitro-2-methylphenol	EEE. Bis(2-ethylhexyl)phthalate	TTT.
M. Isophorone	BB. 2-Nitroaniline	QQ. N-Nitrosodiphenylamine (1)**	FFF. Di-n-octylphthalate**	UUU.
N. 2-Nitrophenol**	CC. Dimethylphthalate	RR. 4-Bromophenyl-phenylether	GGG. Benzo(b)fluoranthene	VVV.
O. 2,4-Dimethylphenol	DD. Acenaphthylene	SS. Hexachlorobenzene	HHH. Benzo(k)fluoranthene	WWW.

LDC #: [illegible]
SDG #: HRIT.

VALIDATION FINDINGS WORKSHEET
Surrogate Recovery

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Please see qualification below for all questions answered "N". Not applicable questions are identified as "N/A".

Y (N) N/A Were percent recoveries (%R) for surrogates within QC limits?
Y N (N/A) If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?
Y N (N/A) If any %R was less than 10 percent, was a reanalysis performed to confirm %R?

#	Date	Sample ID	Surrogate	%R (Limits)	Qualifications
		2	TBP	145 (40-130)	No qual.
				( )	
		10	DCB	31.6 (↓)	J/UJ/A (NDMA only)
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	

* QC limits are advisory	QC Limits (Soil)	QC Limits (Water)
S1 (NBZ) = Nitrobenzene-d5	23-120	35-114
S2 (FBP) = 2-Fluorobiphenyl	30-115	43-116
S3 (TPH) = Terphenyl-d14	18-137	33-141
S4 (PHL) = Phenol-d5	24-113	10-94
S5 (2FP)= 2-Fluorophenol	25-121	21-100
S6 (TBP) = 2,4,6-Tribromophenol	19-122	10-123
S7 (2CP) = 2-Chlorophenol-d4	20-130*	33-110*
S8 (DCB) = 1,2-Dichlorobenzene-d4	20-130*	16-110*

LDC #: 13204029
SDG #: HRCT

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Page: 1 of 1
Reviewer: a
2nd Reviewer: [illegible]

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A'.

Y N N/A Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Scil / Water.

Y N N/A Was a MS/MSD analyzed every 20 samples of each matrix?

Y N N/A Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		13/14	ZZ	35T (40-130)	( )	78.0 (≤ 57)	6	Y/M/A*
				( )	( )	( )		* No Final for ZR (5X)
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

	Compound	QC Limits (Soil)	RPD (Soil)	QC Limits (Water)	RPD (Water)		Compound	QC Limits (Soil)	RPD (Soil)	QC Limits (Water)	RPD (Water)
A.	Phenol	26-90%	≤ 35%	12-110%	≤ 42%	GG.	Acenaphthene	31-137%	≤ 19%	46-118%	≤ 31%
C.	2-Chlorophenol	25-102%	≤ 50%	27-123%	≤ 40%	II.	4-Nitrophenol	11-114%	≤ 50%	10-80%	≤ 50%
E.	1,4-Dichlorobenzene	28-104%	≤ 27%	36-97%	≤ 28%	KK.	2,4-Dinitrotoluene	28-89%	≤ 47%	24-96%	≤ 38%
J.	N-Nitroso-di-n-propylamine	41-126%	≤ 38%	41-116%	≤ 38%	TT.	Pentachlorophenol	17-109%	≤ 47%	9-103%	≤ 50%
R.	1,2,4-Trichlorobenzene	38-107%	≤ 23%	39-98%	≤ 28%	ZZ.	Pyrene	35-142%	≤ 36%	26-127%	≤ 31%
V.	4-Chloro-3-methylphenol	26-103%	≤ 33%	23-97%	≤ 42%						

LDC #: 13204D29
SDG #: H017

VALIDATION FINDINGS WORKSHEET
Overall Assessment of Data

Reviewer: A
2nd Reviewer: _____

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

All available information pertaining to the data were reviewed using professional judgement to compliment the determination of the overall quality of the data.

(Y) N N/A Was the overall quality and usability of the data acceptable?

#	Date	Sample ID	Finding	Associated Samples	Qualifications
		2	All qcls		R/A
			except Aniline		

Comments: _____

LDC #: 13234A2a **VALIDATION COMPLETENESS WORKSHEET** Date: 3/9/05

SDG #: HQ48 Level II Page: 1 of 1

Laboratory: Analytical Resources, Inc. Reviewer: 9

2nd Reviewer: K

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/24/05
II.	GC/MS Instrument performance check	N	
III.	Initial calibration	N	
IV.	Continuing calibration	N	
V.	Blanks	A	
VI.	Surrogate spikes	SW	
VII.	Matrix spike/Matrix spike duplicates	A	LDW-SS6T-010 (HQ27)
VIII.	Laboratory control samples	~~A~~	LCS, SRM
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	N	
XI.	Target compound identification	N	
XII.	Compound quantitation/CRQLs	N	
XIII.	Tentitatively identified compounds (TICs)	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	
XVI.	Field duplicates	SW	5=2+7. 12+13
XVII.	Field blanks	ND	~~FB-14~~ LDW-SS64-EB

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples

1	LDW-SS17-010	11	LDW-SS142-010	21	LDW-SS28-010	31	MB-020105
2	LDW-SS50-010	12	LDW-SS123-010	22	LDW-SS134-010	32	MB-013105
3	LDW-SS55-010	13	LDW-SS203-010	23	LDW-SS123-010MS	33	~~MB-012905~~
4	LDW-SS72-010	14	~~LDW-SS64-RB~~	24	LDW-SS123-010MSD	34	
5	LDW-SS79-010	15	LDW-SS64-010	25		35	
6	LDW-SS54-010	16	LDW-SS83-010	26		36	
7	LDW-SS202-010	17	LDW-SS36-010	27		37	
8	LDW-SS42-010	18	LDW-SS58-010	28		38	
9	LDW-SS102-010	19	LDW-SS57-010	29		39	
10	LDW-SS128-010	20	LDW-SS56-010	30		40	

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

A. Phenol**	P. Bis(2-chloroethoxy)methane	EE. 2,6-Dinitrotoluene	TT. Pentachlorophenol**	III. Benzo(a)pyrene**
B. Bis (2-chloroethyl) ether	Q. 2,4-Dichlorophenol**	FF. 3-Nitroaniline	UU. Phenanthrene	JJJ. Indeno(1,2,3-cd)pyrene
C. 2-Chlorophenol	R. 1,2,4-Trichlorcbenzene	GG. Acenaphthene**	VV. Anthracene	KKK. Dibenz(a,h)anthracene
D. 1,3-Dichlorobenzene	S. Naphthalene	HH. 2,4-Dinitrophenol*	WW. Carbazole	LLL. Benzo(g,h,i)perylene
E. 1,4-Dichlorobenzene**	T. 4-Chloroaniline	II. 4-Nitrophenol*	XX. Di-n-butylphthalate	MMM. Bis(2-Chloroisopropyl)ether
F. 1,2-Dichlorobenzene	U. Hexachlorobutadiene**	JJ. Dibenzofuran	YY. Fluoranthene**	NNN. Aniline
G. 2-Methylphenol	V. 4-Chloro-3-methylphenol**	KK. 2,4-Dinitrotoluene	ZZ. Pyrene	OOO. N-Nitrosodimethylamine
H. 2,2'-Oxybis(1-chloropropane)	W. 2-Methylnaphthalene	LL. Diethylphthalate	AAA. Butylbenzylphthalate	PPP. Benzoic Acid
I. 4-Methylphenol	X. Hexachlorocyclopentadiene*	MM. 4-Chlorophenyl-phenyl ether	BBB. 3,3'-Dichlorobenzidine	QQQ. Benzyl alcohol
J. N-Nitroso-di-n-propylamine*	Y. 2,4,6-Trichlorophenol**	NN. Fluorene	CCC. Benzo(a)anthracene	RRR. Pyridine
K. Hexachloroethane	Z. 2,4,5-Trichlorophenol	OO. 4-Nitroaniline	DDD. Chrysene	SSS. Benzidine
L. Nitrobenzene	AA. 2-Chloronaphthalene	PP. 4,6-Dinitro-2-methylphenol	EEE. Bis(2-ethylhexyl)phthalate	TTT.
M. Isophorone	BB. 2-Nitroaniline	QQ. N-Nitrosodiphenylamine (1)**	FFF. Di-n-octylphthalate**	UUU.
N. 2-Nitrophenol**	CC. Dimethylphthalate	RR. 4-Bromophenyl-phenylether	GGG. Benzo(b)fluoranthene	VVV.
O. 2,4-Dimethylphenol	DD. Acenaphthylene	SS. Hexachlorobenzene	HHH. Benzo(k)fluoranthene	WWW.

LDC #: [illegible]
SDG #: H848

VALIDATION FINDINGS WORKSHEET
Surrogate Recovery

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Please see qualification below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were percent recoveries (%R) for surrogates within QC limits?
Y N N/A If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?
Y N N/A If any %R was less than 10 percent, was a reanalysis performed to confirm %R?

#	Date	Sample ID	Surrogate	%R (Limits)	Qualifications
		2	DCB	38.8 (16-130)	No qual.
				( )	↓
		12	DCB	39.9 ( )	↓
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	

* QC limits are advisory	QC Limits (Soil)	QC Limits (Water)
S1 (NBZ) = Nitrobenzene-d5	23-120	35-114
S2 (FBP) = 2-Fluorobiphenyl	30-115	43-116
S3 (TPH) = Terphenyl-d14	18-137	33-141
S4 (PHL) = Phenol-d5	24-113	10-94

	QC Limits (Soil)	QC Limits (Water)
S5 (2FP) = 2-Fluorophenol	25-121	21-100
S6 (TBP) = 2,4,6-Tribromophenol	19-122	10-123
S7 (2CP) = 2-Chlorophenol-d4	20-130*	33-110*
S8 (DCB) = 1,2-Dichlorobenzene-d4	20-130*	16-110*

DC#:13234A2a
SDG#: HQ48

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Y N NA Were field duplicate pairs identified in this SDG?
Y N NA Were target analytes detected in the field duplicate pairs?

Compound	Concentration (ug/Kg)		RPD	
	2	7		
UU	160	430	92	
VV	110	150	31	
YY	270	470	54	
ZZ	670	890	28	
CCC	170	240	34	
EEE	560	560	0	
DDD	300	460	42	
GGG	400	370	8	
HHH	350	410	16	
III	260	300	14	
JJJ	73	80	9	
LLL	61	87	35	

Compound	Concentration (ug/Kg)		RPD	
	12	13		
I	15	30	67	
UU	21	39	60	
YY	48	78	48	
ZZ	57	89	44	
CCC	14	58U	~~200~~ NC	
EEE	31	36	15	
DDD	22	36	48	
GGG	24	32	29	
HHH	27	31	14	
III	15	58U	~~200~~ NC	

LDC #: 13234B2a **VALIDATION COMPLETENESS WORKSHEET** Date: 3/9/05
SDG #: HQ27 & HQ28 Level II Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer:
2nd Reviewer:

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/20/05 - 1/21/05
II.	GC/MS Instrument performance check	N	
III.	Initial calibration	N	
IV.	Continuing calibration	N	
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples	A	LCS/D, SRM
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	N	
XI.	Target compound identification	N	
XII.	Compound quantitation/CRQLs	N	
XIII.	Tentitatively identified compounds (TICs)	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	
XVI.	Field duplicates	N	
XVII.	Field blanks	ND	~~RB=12~~ RB=LDW-SS43-RB

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples

1	LDW-SS43-010	11	LDW-SS75-010	21	~~MB01=805~~	31	
2	LDW-SS44-010	~~12~~	~~LDW-SS43-RB~~	22	MB-013105	32	
3	LDW-SS87-010	13	LDW-SS101-010	23	MB-012805	33	
4	LDW-SS94-010	14	LDW-SS67-010MS	24		34	
5	LDW-SS96-010	15	LDW-SS67-010MSD	25		35	
6	LDW-SS97-010	16		26		36	
7	LDW-SS31-010	17		27		37	
8	LDW-SS67-010	18		28		38	
9	LDW-SS63-010	19		29		39	
10	LDW-SS70-010	20		30		40	

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

A. Phenol**	P. Bis(2-chloroethoxy)methane	EE. 2,6-Dinitrotoluene	TT. Pentachlorophenol**	III. Benzo(a)pyrene**
B. Bis (2-chloroethyl) ether	Q. 2,4-Dichlorophenol**	FF. 3-Nitroaniline	UU. Phenanthrene	JJJ. Indeno(1,2,3-cd)pyrene
C. 2-Chlorophenol	R. 1,2,4-Trichlorobenzene	GG. Acenaphthene**	VV. Anthracene	KKK. Dibenz(a,h)anthracene
D. 1,3-Dichlorobenzene	S. Naphthalene	HH. 2,4-Dinitrophenol*	WW. Carbazole	LLL. Benzo(g,h,i)perylene
E. 1,4-Dichlorobenzene**	T. 4-Chloroaniline	II. 4-Nitrophenol*	XX. Di-n-butylphthalate	MMM. Bis(2-Chloroisopropyl)ether
F. 1,2-Dichlorobenzene	U. Hexachlorobutadiene**	JJ. Dibenzofuran	YY. Fluoranthene**	NNN. Aniline
G. 2-Methylphenol	V. 4-Chloro-3-methylphenol**	KK. 2,4-Dinitrotoluene	ZZ. Pyrene	OOO. N-Nitrosodimethylamine
H. 2,2'-Oxybis(1-chloropropane)	W. 2-Methylnaphthalene	LL. Diethylphthalate	AAA. Butylbenzylphthalate	PPP. Benzoic Acid
I. 4-Methylphenol	X. Hexachlorocyclopentadiene*	MM. 4-Chlorophenyl-phenyl ether	BBB. 3,3'-Dichlorobenzidine	QQQ. Benzyl alcohol
J. N-Nitroso-di-n-propylamine*	Y. 2,4,6-Trichlorophenol**	NN. Fluorene	CCC. Benzo(a)anthracene	RRR. Pyridine
K. Hexachloroethane	Z. 2,4,5-Trichlorophenol	OO. 4-Nitroaniline	DDD. Chrysene	SSS. Benzidine
L. Nitrobenzene	AA. 2-Chloronaphthalene	PP. 4,6-Dinitro-2-methylphenol	EEE. Bis(2-ethylhexyl)phthalate	TTT.
M. Isophorone	BB. 2-Nitroaniline	QQ. N-Nitrosodiphenylamine (1)**	FFF. Di-n-octylphthalate**	UUU.
N. 2-Nitrophenol**	CC. Dimethylphthalate	RR. 4-Bromophenyl-phenylether	GGG. Benzo(b)fluoranthene	VVV.
O. 2,4-Dimethylphenol	DD. Acenaphthylene	SS. Hexachlorobenzene	HHH. Benzo(k)fluoranthene	WWW.

LDC #: 13234B4

SDG #: H02T&H028

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

VALIDATION FINDINGS WORKSHEET

Surrogate Recovery

Page: 1 of 1

Reviewer: 9

2nd Reviewer: X

Please see qualification below for all questions answered "N". Not applicable questions are identified as "N/A".

Y [✓ N] N/A Were percent recoveries (%R) for surrogates within QC limits?

Y N [✓ N/A] If 2 or more base neutra or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?

Y N [✓ N/A] If any %R was less than 10 percent, was a reanalysis performed to confirm %R?

#	Date	Sample ID	Surrogate	%R (Limits)	Qualifications
		10	PHL	33.2 (40-130)	No Qual
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	

* QC limits are advisory	QC Limits (Soil)	QC Limits (Water)		QC Limits (Soil)	QC Limits (Water)
S1 (NBZ) = Nitrobenzene-d5	23-120	35-114	S5 (2FP) = 2-Fluorophenol	25-121	21-100
S2 (FBP) = 2-Fluorobiphenyl	30-115	43-116	S6 (TBP) = 2,4,6-Tribromophenol	19-122	10-123
S3 (TPH) = Terphenyl-d14	18-137	33-141	S7 (2CP) = 2-Chlorophenol-d4	20-130*	33-110*
S4 (PHL) = Phenol-d5	24-113	10-94	S8 (DCB) = 1,2-Dichlorobenzene-d4	20-130*	16-110*

LDC #: 13234B29
SDG #: HQ27 & HQ28

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Page: 1 of 1
Reviewer: 9
2nd Reviewer: K

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A'.

(Y) N N/A Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Scil / Water.

(Y) N N/A Was a MS/MSD analyzed every 20 samples of each matrix?

Y (N) N/A Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		LDW-SS116-010	22	35 (40-130)	( )	78.0 (≤ 50)	None	No Qual
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

	Compound	QC Limits (Soil)	RPD (Soil)	QC Limits (Water)	RPD (Water)		Compound	QC Limits (Soil)	RPD (Soil)	QC Limits (Water)	RPD (Water)
A.	Phenol	26-90%	≤ 35%	12-110%	≤ 42%	GG.	Acenaphthene	31-137%	≤ 19%	46-118%	≤ 31%
C.	2-Chlorophenol	25-102%	≤ 50%	27-123%	≤ 40%	II.	4-Nitrophenol	11-114%	≤ 50%	10-80%	≤ 50%
E.	1,4-Dichlorobenzene	28-104%	≤ 27%	36-97%	≤ 28%	KK.	2,4-Dinitrotoluene	28-89%	≤ 47%	24-96%	≤ 38%
J.	N-Nitroso-di-n-propylamine	41-126%	≤ 38%	41-116%	≤ 38%	TT.	Pentachlorophenol	17-109%	≤ 47%	9-103%	≤ 50%
R.	1,2,4-Trichlorobenzene	38-107%	≤ 23%	39-98%	≤ 28%	ZZ.	Pyrene	35-142%	≤ 36%	26-127%	≤ 31%
V.	4-Chloro-3-methylphenol	26-103%	≤ 33%	23-97%	≤ 42%						

LDC #: 13234E2a **VALIDATION COMPLETENESS WORKSHEET** Date: 3/9/05

SDG #: HQ56 & HQ57 Level II Page: 1 of 1

Laboratory: Analytical Resources, Inc. Reviewer: 9

2nd Reviewer: M

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/25 - 26/05
II.	GC/MS Instrument performance check	N	
III.	Initial calibration	N	
IV.	Continuing calibration	N	
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	SW	
VIII.	Laboratory control samples	~~SW~~ A	LCS. SRM
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	N	
XI.	Target compound identification	N	
XII.	Compound quantitation/CRQLs	N	
XIII.	Tentitatively identified compounds (TICs)	N	
XIV.	System performance	N	
XV.	Overall assessment of data	SW	
XVI.	Field duplicates	N	
XVII.	Field blanks	ND	~~FB~~ LDW-SS110-RB

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples

1	~~LDW-SS110-RB~~ W	11	LDW-SS33-010 Sed	21	MB-020405 S	31	
2	LDW-SS52-010 Sed	12	LDW-SS49-010	22	~~MB-012905~~ W	32	
3	LDW-SS92-010	13	LDW-SS143-010	23		33	
4	LDW-SS104-010	14	LDW-SS92-010MS	24		34	
5	LDW-SS110-010	15	LDW-SS92-010MSD	25		35	
6	LDW-SS109-010	16		26		36	
7	LDW-SS115-010	17		27		37	
8	LDW-SS121-010	18		28		38	
9	LDW-SS88-010	19		29		39	
10	LDW-SS88-010DL	20		30		40	

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

A. Phenol**	P. Bis(2-chloroethoxy)methane	EE. 2,6-Dinitrotoluene	TT. Pentachlorophenol**	III. Benzo(a)pyrene**
B. Bis (2-chloroethyl) ether	Q. 2,4-Dichlorophenol**	FF. 3-Nitroaniline	UU. Phenanthrene	JJJ. Indeno(1,2,3-cd)pyrene
C. 2-Chlorophenol	R. 1,2,4-Trichlorobenzene	GG. Acenaphthene**	VV. Anthracene	KKK. Dibenz(a,h)anthracene
D. 1,3-Dichlorobenzene	S. Naphthalene	HH. 2,4-Dinitrophenol*	WW. Carbazole	LLL. Benzo(g,h,i)perylene
E. 1,4-Dichlorobenzene**	T. 4-Chloroaniline	II. 4-Nitrophenol*	XX. Di-n-butylphthalate	MMM. Bis(2-Chloroisopropyl)ether
F. 1,2-Dichlorobenzene	U. Hexachlorobutadiene**	JJ. Dibenzofuran	YY. Fluoranthene**	NNN. Aniline
G. 2-Methylphenol	V. 4-Chloro-3-methylphenol**	KK. 2,4-Dinitrotoluene	ZZ. Pyrene	OOO. N-Nitrosodimethylamine
H. 2,2'-Oxybis(1-chloropropane)	W. 2-Methylnaphthalene	LL. Diethylphthalate	AAA. Butylbenzylphthalate	PPP. Benzoic Acid
I. 4-Methylphenol	X. Hexachlorocyclopentadiene*	MM. 4-Chlorophenyl-phenyl ether	BBB. 3,3'-Dichlorobenzidine	QQQ. Benzyl alcohol
J. N-Nitroso-di-n-propylamine*	Y. 2,4,6-Trichlorophenol**	NN. Fluorene	CCC. Benzo(a)anthracene	RRR. Pyridine
K. Hexachloroethane	Z. 2,4,5-Trichlorophenol	OO. 4-Nitroaniline	DDD. Chrysene	SSS. Benzidine
L. Nitrobenzene	AA. 2-Chloronaphthalene	PP. 4,6-Dinitro-2-methylphenol	EEE. Bis(2-ethylhexyl)phthalate	TTT.
M. Isophorone	BB. 2-Nitroaniline	QQ. N-Nitrosodiphenylamine (1)**	FFF. Di-n-octylphthalate**	UUU.
N. 2-Nitrophenol**	CC. Dimethylphthalate	RR. 4-Bromophenyl-phenylether	GGG. Benzo(b)fluoranthene	VVV.
O. 2,4-Dimethylphenol	DD. Acenaphthylene	SS. Hexachlorobenzene	HHH. Benzo(k)fluoranthene	WWW.

LDC #: 13234229
SDG #: HQ56 & HQ5T

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Page: 1 of 1
Reviewer: Q
2nd Reviewer: R

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.

(Y) N N/A Was a MS/MSD analyzed every 20 samples of each matrix?

Y (N) N/A Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		14/15 (3X)	22	T90 (40-130)	199 (40-130)	94.6 (≤50)	3	J/UJ/A*
				( )	( )	( )		
				( )	( )	( )		*only RPD
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

	Compound	QC Limits (Soil)	RPD (Soil)	QC Limits (Water)	RPD (Water)		Compound	QC Limits (Soil)	RPD (Soil)	QC Limits (Water)	RPD (Water)
A.	Phenol	26-90%	≤ 35%	12-110%	≤ 42%	GG.	Acenaphthene	31-137%	≤ 19%	46-118%	≤ 31%
C.	2-Chlorophenol	25-102%	≤ 50%	27-123%	≤ 40%	II.	4-Nitrophenol	11-114%	≤ 50%	10-80%	≤ 50%
E.	1,4-Dichlorobenzene	28-104%	≤ 27%	36-97%	≤ 28%	KK.	2,4-Diritrotoluene	28-89%	≤ 47%	24-96%	≤ 38%
J.	N-Nitroso-di-n-propylamine	41-126%	≤ 38%	41-116%	≤ 38%	TT.	Pentachlorophenol	17-109%	≤ 47%	9-103%	≤ 50%
R.	1,2,4-Trichlorobenzene	38-107%	≤ 23%	39-98%	≤ 28%	ZZ.	Pyrene	35-142%	≤ 36%	26-127%	≤ 31%
V.	4-Chloro-3-methylphenol	26-103%	≤ 33%	23-97%	≤ 42%						

LDC #: 13234229
SDG #: #8568 HRST

VALIDATION FINDINGS WORKSHEET
Overall Assessment of Data

Page: 1 of 1
Reviewer: R
2nd Reviewer: R

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

All available information pertaining to the data were reviewed using professional judgement to compliment the determination of the overall quality of the data.

Y N N/A Was the overall quality and usability of the data acceptable?

#	Date	Sample ID	Finding	Associated Samples	Qualifications
		9	~~All except A, GG, NN~~ WW, VV		
		9	~~All except GGG~~ → LLL (IS out)	9	R/A
		10	All except ~~GGG~~ → LLL (high RLs)	10	✓

Comments: _____

OVR.2S

LDC #: 13298A2a **VALIDATION COMPLETENESS WORKSHEET** Date: 3/24/05

SDG #: HQ93 Level II Page: 1 of 1

Laboratory: Analytical Resources, Inc. Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/28/05
II.	GC/MS Instrument performance check	N	
III.	Initial calibration	N	
IV.	Continuing calibration	N	
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	SW	LDW-SS92-010 (HQ56C)
VIII.	Laboratory control samples	A	LCS
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	N	
XI.	Target compound identification	N	
XII.	Compound quantitation/CRQLs	N	
XIII.	Tentitatively identified compounds (TICs)	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	
XVI.	Field duplicates	N	
XVII.	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples

1	LDW-SSCR20-010 Sed	11		21		31	
2	LDW-SSCR23-010	12		22		32	
3	LDW-MSMP43-010	13		23		33	
4	MB-020405	14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

A. Phenol**	P. Bis(2-chloroethoxy)methane	EE. 2,6-Dinitrotoluene	TT. Pentachlorophenol**	III. Benzo(a)pyrene**
B. Bis (2-chloroethyl) ether	Q. 2,4-Dichlorophenol**	FF. 3-Nitroaniline	UU. Phenanthrene	JJJ. Indeno(1,2,3-cd)pyrene
C. 2-Chlorophenol	R. 1,2,4-Trichlorobenzene	GG. Acenaphthene**	VV. Anthracene	KKK. Dibenz(a,h)anthracene
D. 1,3-Dichlorobenzene	S. Naphthalene	HH. 2,4-Dinitrophenol*	WW. Carbazole	LLL. Benzo(g,h,i)perylene
E. 1,4-Dichlorobenzene**	T. 4-Chloroaniline	II. 4-Nitrophenol*	XX. Di-n-butylphthalate	MMM. Bis(2-Chloroisopropyl)ether
F. 1,2-Dichlorobenzene	U. Hexachlorobutadiene**	JJ. Dibenzofuran	YY. Fluoranthene**	NNN. Aniline
G. 2-Methylphenol	V. 4-Chloro-3-methylphenol**	KK. 2,4-Dinitrotoluene	ZZ. Pyrene	OOO. N-Nitrosodimethylamine
H. 2,2'-Oxybis(1-chloropropane)	W. 2-Methylnaphthalene	LL. Diethylphthalate	AAA. Butylbenzylphthalate	PPP. Benzoic Acid
I. 4-Methylphenol	X. Hexachlorocyclopentadiene*	MM. 4-Chlorophenyl-phenyl ether	BBB. 3,3'-Dichlorobenzidine	QQQ. Benzyl alcohol
J. N-Nitroso-di-n-propylamine*	Y. 2,4,6-Trichlorophenol**	NN. Fluorene	CCC. Benzo(a)anthracene	RRR. Pyridine
K. Hexachloroethane	Z. 2,4,5-Trichlorophenol	OO. 4-Nitroaniline	DDD. Chrysene	SSS. Benzidine
L. Nitrobenzene	AA. 2-Chloronaphthalene	PP. 4,6-Dinitro-2-methylphenol	EEE. Bis(2-ethylhexyl)phthalate	TTT.
M. Isophorone	BB. 2-Nitroaniline	QQ. N-Nitrosodiphenylamine (1)**	FFF. Di-n-octylphthalate**	UUU.
N. 2-Nitrophenol**	CC. Dimethylphthalate	RR. 4-Bromophenyl-phenylether	GGG. Benzo(b)fluoranthene	VVV.
O. 2,4-Dimethylphenol	DD. Acenaphthylene	SS. Hexachlorobenzene	HHH. Benzo(k)fluoranthene	WWW.

LDC #: 13298A29
SDG #: H893

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Page: 1 of 1
Reviewer: 9
2nd Reviewer: DC

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.

(Y) N N/A Was a MS/MSD analyzed every 20 samples of each matrix?

Y (N) N/A Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		LDW-3592-010	22	790 (40-130)	199 (40-130)	946 (≤ 50)	None	No Qual
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

	Compound	QC Limits (Soil)	RPD (Soil)	QC Limits (Water)	RPD (Water)		Compound	QC Limits (Soil)	RPD (Soil)	QC Limits (Water)	RPD (Water)
A.	Phenol	26-90%	≤ 35%	12-110%	≤ 42%	GG.	Acenaphthene	31-137%	≤ 19%	46-113%	≤ 31%
C.	2-Chlorophenol	25-102%	≤ 50%	27-123%	≤ 40%	II.	4-Nitrophenol	11-114%	≤ 50%	10-80%	≤ 50%
E.	1,4-Dichlorobenzene	28-104%	≤ 27%	35-97%	≤ 28%	KK.	2,4-Diritrotoluene	28-89%	≤ 47%	24-96%	≤ 38%
J.	N-Nitroso-di-n-propylamine	41-126%	≤ 38%	41-116%	≤ 38%	TT.	Pentachlorophenol	17-109%	≤ 47%	9-103%	≤ 50%
R.	1,2,4-Trichlorobenzene	38-107%	≤ 23%	39-98%	≤ 28%	ZZ.	Pyrene	35-142%	≤ 36%	26-127%	≤ 31%
V.	4-Chloro-3-methylphenol	26-103%	≤ 33%	23-97%	≤ 42%						

LDC #: 13204A2b **VALIDATION COMPLETENESS WORKSHEET** Date: 3/10/05

SDG #: HP67 Level ~~II~~ IV Page: 1 of 1

Laboratory: Analytical Resources, Inc. Reviewer: 2

2nd Reviewer: M

METHOD: GC/MS ~~Polynuclear Aromatic Hydrocarbons~~ SVOA (EPA SW 846 Method 8270C) ~~SIM~~

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/17/05
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	~~A~~ N	
IV.	Continuing calibration	~~A~~ N	
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples	A	LCS. SRM
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	A	
XI.	Target compound identification	A	
XII.	Compound quantitation/CRQLs	A	
XIII.	Tentitatively identified compounds (TICs)	N	
XIV.	System performance	A	
XV.	Overall assessment of data	A	
XVI.	Field duplicates	N	
XVII.	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples

1	LDW-SS4-010 sed	11	MB-012605	21		31	
2	LDW-SS10-010	12		22		32	
3	LDW-SS14-010	13		23		33	
4	LDW-SS22-010	14		24		34	
5	LDW-SS10-010MS	15		25		35	
6	LDW-SS10-010MSD	16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

LDC #: 13204A-b
SDG #: HP67

VALIDATION FINDINGS CHECKLIST

Reviewer: 9
2nd Reviewer: K

Method: Semivolatiles (EPA SW 846 Method 8270C)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. GC/MS Instrument performance check				
Were the DFTPP performance results reviewed and found to be within the specified criteria?	✓			
Were all samples analyzed within the 12 hour clock criteria?	✓			
III. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	✓			
Was a curve fit used for evaluation? If Yes, what was the acceptance criteria used?		✓		
Did the initial calibration meet the curve fit acceptance criteria?			✓	
Were all percent relative standard deviations (%RSD) $\leq$ 30% and relative response factors (RRF) $\geq$ 0.05?		✓		
IV. Continuing calibration				
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?	✓			
Were all percent differences (%D) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	✓			
Were all percent differences (%D) $\leq$ 25% and relative response factors (RRF) $\geq$ 0.05?		✓		
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Surrogate spikes				
Were all surrogate %R within QC limits?	✓			
If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?			✓	
If any %R was less than 10 percent, was a reanalysis performed to confirm %R?			✓	
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.	✓			
Was a MS/MSD analyzed every 20 samples of each matrix?	✓			

LDC #: 13204A2b
SDG #: HP67

VALIDATION FINDINGS CHECKLIST

Reviewer: 9
2nd Reviewer: K

Validation Area	Yes	No	NA	Findings/Comments
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	✓			
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
X. Internal standards				
Were internal standard area counts within -50% or +100% of the associated calibration standard?	✓			
Were retention times within ± 30 seconds from the associated calibration standard?	✓			
XI. Target compound identification				
Were relative retention times (RRT's) within ± 0.06 RRT units of the standard?	✓			
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	✓			
Were chromatogram peaks verified and accounted for?	✓			
XII. Compound quantitation/CRQLs				
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	✓			
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XIII. Tentatively identified compounds (TICs)				
Were the major ions (> 10 percent relative intensity) in the reference spectrum evaluated in sample spectrum?			✓	
Were relative intensities of the major ions within ± 20% between the sample and the reference spectra?			✓	
Did the raw data indicate that the laboratory performed a library search for all required peaks in the chromatograms (samples and blanks)?		✓		
XIV. System performance				
System performance was found to be acceptable.	✓			
XV. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			

Validation Area	Yes	No	NA	Findings/Comments
XVI. Field duplicates				
Field duplicate pairs were identified in this SDG.		✓		
Target compounds were detected in the field duplicates.			✓	
XVII. Field blanks				
Field blanks were identified in this SDG.		✓		
Target compounds were detected in the field blanks.			✓	

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

A. Phenol**	P. Bis(2-chloroethoxy)methane	EE. 2,6-Dinitrotoluene	TT. Pentachlorophenol**	III. Benzo(a)pyrene**
B. Bis (2-chloroethyl) ether	Q. 2,4-Dichlorophenol**	FF. 3-Nitroaniline	UU. Phenanthrene	JJJ. Indeno(1,2,3-cd)pyrene
C. 2-Chlorophenol	R. 1,2,4-Trichlorobenzene	GG. Acenaphthene**	VV. Anthracene	KKK. Dibenz(a,h)anthracene
D. 1,3-Dichlorobenzene	S. Naphthalene	HH. 2,4-Dinitrophenol*	WW. Carbazole	LLL. Benzo(g,h,i)perylene
E. 1,4-Dichlorobenzene**	T. 4-Chloroaniline	II. 4-Nitrophenol*	XX. Di-n-butylphthalate	MMM. Bis(2-Chloroisopropyl)ether
F. 1,2-Dichlorobenzene	U. Hexachlorobutadiene**	JJ. Dibenzofuran	YY. Fluoranthene**	NNN. Aniline
G. 2-Methylphenol	V. 4-Chloro-3-methylphenol**	KK. 2,4-Dinitrotoluene	ZZ. Pyrene	OOO. N-Nitrosodimethylamine
H. 2,2'-Oxybis(1-chloropropane)	W. 2-Methylnaphthalene	LL. Diethylphthalate	AAA. Butylbenzylphthalate	PPP. Benzoic Acid
I. 4-Methylphenol	X. Hexachlorocyclopentadiene*	MM. 4-Chlorophenyl-phenyl ether	BBB. 3,3'-Dichlorobenzidine	QQQ. Benzyl alcohol
J. N-Nitroso-di-n-propylamine*	Y. 2,4,6-Trichlorophenol**	NN. Fluorene	CCC. Benzo(a)anthracene	RRR. Pyridine
K. Hexachloroethane	Z. 2,4,5-Trichlorophenol	OO. 4-Nitroaniline	DDD. Chrysene	SSS. Benzidine
L. Nitrobenzene	AA. 2-Chloronaphthalene	PP. 4,6-Dinitro-2-methylphenol	EEE. Bis(2-ethylhexyl)phthalate	TTT.
M. Isophorone	BB. 2-Nitroaniline	QQ. N-Nitrosodiphenylamine (1)**	FFF. Di-n-octylphthalate**	UUU.
N. 2-Nitrophenol**	CC. Dimethylphthalate	RR. 4-Bromophenyl-phenylether	GGG. Benzo(b)fluoranthene	VVV.
O. 2,4-Dimethylphenol	DD. Acenaphthylene	SS. Hexachlorobenzene	HHH. Benzo(k)fluoranthene	WWW.

LDC #: 13204A2b
SDG #: HP6T
METHOD: GC/MS BNA (EPA SW 846 Method 8270)

VALIDATION FINDINGS WORKSHEET
Initial Calibration

Reviewer: 9
2nd Reviewer: R

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A — Did the laboratory conduct an acceptable 5 point calibration prior to sample analysis?
(Y) N N/A — Were percent relative standard deviations (%RSD) and relative response factors (RRF) within method criteria for all CCC's and SPCC's?
Y (N) N/A — Was a curve fit used for evaluation? If yes, what was the acceptance criteria used for evaluation? ________
Y N (N/A) — Did the initial calibration meet the acceptance criteria?
Y (N) N/A — Were all %RSDs and RRFs within the validation criteria of ≤30 %RSD and ≥0.05 RRF ?

#	Date	Standard ID	Compound	Finding %RSD (Limit: ≤30.0%)	Finding RRF (Limit: ≥0.05)	Associated Samples	Qualifications
	1/29/05	ICAL	PPP	39.2		All + Blk	J / UJ / A

LDC #: 13204B2b
SDG #: HP6T
METHOD: GC/MS BNA (EPA SW 846 Method 8270)

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

Page: 1 of 1
Reviewer: 9
2nd Reviewer: AC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y (N) N/A Was a continuing calibration standard analyzed at least once every 12 hours of sample analysis for each instrument?
Y (N) N/A Were percent differences (%D) and relative response factors (RRF) within method criteria for all CCC's and SPCC's ?
Y (N) N/A Were all %D and RRFs within the validation criteria of ≤25 %D and ≥0.05 RRF ?

#	Date	Standard ID	Compound	Finding %D (Limit: ≤25.0%)	Finding RRF (Limit: ≥0.05)	Associated Samples	Qualifications
	1/31/05	CC0131	PPP	39.3		~~All~~ NB, 2-6	J/UJ/A
	2/1/05	CC0201	PPP	37.2		1	J/UJ/A

CONCAL.2S

LDC #: 13204A2v
SDG #: H76T

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: 0K

METHOD: GC/MS BNA (EPA SW 846 Method 3270)

The Relative Response Factor (RRF), average RRF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

RRF = $(A_x)(C_{is})/(A_{is})(C_x)$
average RRF = sum of the RRFs/number of standards
%RSD = 100 * (S/X)

A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard
S = Standard deviation of the RRFs, X = Mean of the RRFs

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Reported RRF (2.5 std)	Recalculated RRF (2.5 std)	Reported Average RRF (Initial)	Recalculated Average RRF (Initial)	Reported %RSD	Recalculated %RSD
1	ICAL	1/29/05	~~Phenol~~ (1st internal standard) E	1.429	1.429	1.397	1.397	2.5	2.5
			~~Naphthalene~~ (2nd internal standard) K	0.302	0.302	0.303	0.303	2.0	2.0
			~~Fluorene~~ (3rd internal standard) LL	1.114	1.114	1.162	1.162	5.9	5.9
			Pentachlorophenol (4th internal standard)	0.142	0.142	0.129	0.129	18.5	18.5
			~~Bis(2-ethylhexyl)phthalate~~ (5th internal standard) CC C	1.241	1.241	1.225	1.225	2.0	2.0
			Benzo(a)pyrene (6th internal standard)	1.058	1.058	1.061	1.061	3.7	3.7
2			Phenol (1st internal standard)						
			Naphthalene (2nd internal standard)						
			Fluorene (3rd internal standard)						
			Pentachlorophenol (4th internal standard)						
			Bis(2-ethylhexyl)phthalate (5th internal standard)						
			Benzo(a)pyrene (6th internal standard)						
3			Phenol (1st internal standard)						
			Naphthalene (2nd internal standard)						
			Fluorene (3rd internal standard)						
			Pentachlorophenol (4th internal standard)						
			Bis(2-ethylhexyl)phthalate (5th internal standard)						
			Benzo(a)pyrene (6th internal standard)						

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: B20483b
SDG #: HP67

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Reviewer: 9
2nd Reviewer: ac

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
RRF = $(A_x)(C_{is})/(A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Average RRF (Initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported %D	Recalculated %D
1	CC129A	1/29/05	Phenol (1st internal standard)					
			Naphthalene (2nd internal standard)					
			Fluorene (3rd internal standard)	see 1c				
			Pentachlorophenol (4th internal standard)					
			Bis(2-ethylhexyl)phthalate (5th internal standard)					
			Benzo(a)pyrene (6th internal standard)					
2	CC131	1/31/05	~~Phenol~~ (1st internal standard) E	1.397	1.379	1.379	1.3	1.3
			~~Naphthalene~~ (2nd internal standard) R	0.303	0.300	0.300	1.0	1.0
			~~Fluorene~~ (3rd internal standard) LL	1.162	1.128	1.128	2.9	2.9
			Pentachlorophenol (4th internal standard)	0.129	0.134	0.134	3.9	3.5
			Bis(2-ethylhexy)phthalate (5th internal standard) CC	1.225	1.226	1.226	0.1	0.1
			Benzo(a)pyrene (6th internal standard)	1.061	1.056	1.056	0.5	0.5
3	CC0201	2/1/05	~~Phenol~~ (1st internal standard) E	1.397	1.380	1.380	1.2	1.2
			~~Naphthalene~~ (2nd internal standard) R	0.303	0.305	0.305	0.7	0.7
			~~Fluorene~~ (3rd internal standard) LL	1.162	1.108	1.108	4.6	4.6
			Pentachlorophenol (4th internal standard)	0.129	0.139	0.139	7.8	7.7
			~~Bis(2-ethylhexyl)phthalate~~ (5th internal standard) CC	1.225	1.272	1.272	3.8	3.8
			Benzo(a)pyrene (6th internal standard)	1.061	1.058	1.058	0.3	0.3

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204B2b
SDG #: HPGT

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Page: 1 of 1
Reviewer: 9
2nd reviewer: SK

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270)

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: 1

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5	2.5	1.14473	45.6	45.8	0.2
2-Fluorobiphenyl	↓	1.26450	50.4	50.6	0.2
Terphenyl-d14	↓	1.53774	61.6	61.5	0.1
Phenol-d5	3.75	1.91626	51.2	51.1	0.1
2-Fluorophenol	↓	1.78516	47.7	47.6	0.1
2,4,6-Tribromophenol	↓	2.43437	64.8	64.9	0.1
2-Chlorophenol-d4	↓	1.81981	48.5	48.5	0
1,2-Dichlorobenzene-d4	2.5	1.08092	43.2	43.2	0

Sample ID: _____

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

Sample ID: _____

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

LDC #: 13204A7b
SDG #: HP67

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Page: 6 of 7
Reviewer: 9
2nd Reviewer: R

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SSC - SC)/SA Where: SSC = Spiked sample concentration; SA = Spike added; SC = Sample concentation

RPD = | MS - MSD | * 2/(MS + MSD) MS = Matrix spike percent recovery; MSD = Matrix spike duplicate percent recovery

MS/MSD samples: 5/6

Compound	Spike Added (MS)		Sample Concentration (MS)	Spiked Sample Concentration (MS)		Matrix Spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	------	MS	MSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
Phenol											
2-Chlorophenol											
1,4-Dichlorobenzene	340	341	ND	200	210	58.8	58.8	61.6	61.6	4.9	4.9
N-Nitroso-di-n-propylamine	340	341	↓	211	210	62.1	62.1	~~34~~ 61.6	61.6	0.5	0.5
1,2,4-Trichlorobenzene	340	341	↓	231	225	67.9	67.9	66.0	66.0	2.6	2.6
4-Chloro-3-methylphenol											
Acenaphthene											
4-Nitrophenol											
2,4-Dinitrotoluene											
Pentachlorophenol	510	511	ND	508	~~454~~	99.6	99.6	88.8	88.8	11.2	11.2
Pyrene											

Comments: Refer to Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204A2b
SDG #: HP67

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

Reviewer: 9
2nd Reviewer: [illegible]

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SC/SA Where: SSC = Spike concertration; SA = Spike added

RPD = I LCS - LCSD I * 2/(LCS + LCSD) LCS = Laboratory ccntrol sample percent recovery LCSD = Laboratory control sample duplicate percent recovery

LCS/LCSD samples: LCS-012605

Compound	Spike Added (ug/L)		Spike Concentration (ug/L)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
Phenol										
2-Chlorophenol										
1,4-Dichlorobenzene	167	NA	107	NA	64.1	64.1				
N-Nitroso-di-n-propylamine	↓	↓	111	↓	66.5	66.5				
1,2,4-Trichlorobenzene	↓	↓	111	↓	66.5	66.5				
4-Chloro-3-methylphenol										
Acenaphthene										
4-Nitrophenol										
2,4-Dinitrotoluene										
Pentachlorophenol	250	NA	161	NA	64.4	64.4				
Pyrene										

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204A2b
SDG #: HP6T

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: 9
2nd reviewer: DV

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

(Y) N N/A Were all reported results recalculated and verified for all level IV samples?
(Y) N N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

$$\text{Concentration} = \frac{(A_x)(I_s)(V_t)(DF)(2.0)}{(A_{is})(RRF)(V_o)(V_i)(\%S)}$$

A_x	=	Area of the characteristic ion (EICP) for the compound to be measured
A_{is}	=	Area of the characteristic ion (EICP) for the specific internal standard
I_s	=	Amount of internal standard added in nanograms (ng)
V_o	=	Volume or weight of sample extract in milliliters (ml) or grams (g).
V_i	=	Volume of extract injected in microliters (ul)
V_t	=	Volume of the concentrated extract in microliters (ul)
Df	=	Dilution Factor.
%S	=	Percent solids, applicable to soil and solid matrices only.
2.0	=	Factor of 2 to account for GPC cleanup

Example:

Sample I.D. 1, 1 1 1:

Conc. = $\frac{(611)(94)(2)(520)(1)(\quad)}{(758685)(1.061)(3.39)(1)(\quad)}$

= 187.4 ug/kg

#	Sample ID	Compound	Reported Concentration ( )	Calculated Concentration ( )	Qualification

LDC #: 13204B2b **VALIDATION COMPLETENESS WORKSHEET** Date: 3/10/05
SDG #: HP70 Level II / V Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: 9
2nd Reviewer: 9

METHOD: GC/MS ~~Polynuclear Aromatic Hydrocarbons~~ SVOA (EPA SW 846 Method 8270C) ~~SIM~~

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 11/18/05
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A/N	
IV.	Continuing calibration	A/N	
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A	LDW-SS10-010
VIII.	Laboratory control samples	A	LCS, SRM
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	A	
XI.	Target compound identification	A	
XII.	Compound quantitation/CRQLs	A	
XIII.	Tentitatively identified compounds (TICs)	N	
XIV.	System performance	A	
XV.	Overall assessment of data	SW	
XVI.	Field duplicates	SW	D = 3+4
XVII.	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples

1	LDW-SS23-010 sed	11	MB-012605	21		31	
2	LDW-SS26-010	12		22		32	
3	LDW-SS27-010	13		23		33	
4	LDW-SS200-010	14		24		34	
5	LDW-SS37-010	15		25		35	
6	LDW-SS37-010DL	16		26		36	
7	LDW-SS38-010	17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

LDC #: 13204B26
SDG #: HP70

VALIDATION FINDINGS CHECKLIST

Page: 1 of 3
Reviewer: 9
2nd Reviewer: 5

Method: Semivolatiles (EPA SW 846 Method 8270C)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. GC/MS Instrument performance check				
Were the DFTPP performance results reviewed and found to be within the specified criteria?	✓			
Were all samples analyzed within the 12 hour clock criteria?	✓			
III. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	✓			
Was a curve fit used for evaluation? If Yes, what was the acceptance criteria used?		✓		
Did the initial calibration meet the curve fit acceptance criteria?			✓	
Were all percent relative standard deviations (%RSD) $\leq$ 30% and relative response factors (RRF) $\geq$ 0.05?		✓		
IV. Continuing calibration				
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?	✓			
Were all percent differences (%D) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	✓			
Were all percent differences (%D) $\leq$ 25% and relative response factors (RRF) $\geq$ 0.05?	✓	✓		
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Surrogate spikes				
Were all surrogate %R within QC limits?	✓			
If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?			✓	
If any %R was less than 10 percent, was a reanalysis performed to confirm %R?			✓	
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.	✓			
Was a MS/MSD analyzed every 20 samples of each matrix?	✓			

LDC #: 13204B26
SDG #: HP70

VALIDATION FINDINGS CHECKLIST

Reviewer: Q
2nd Reviewer: T

Validation Area	Yes	No	NA	Findings/Comments
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	✓			
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
X. Internal standards				
Were internal standard area counts within -50% or +100% of the associated calibration standard?	✓			
Were retention times within ± 30 seconds from the associated calibration standard?	✓			
XI. Target compound identification				
Were relative retention times (RRT's) within ± 0.06 RRT units of the standard?	✓			
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	✓			
Were chromatogram peaks verified and accounted for?	✓			
XII. Compound quantitation/CRQLs				
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	✓			
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XIII. Tentatively identified compounds (TICs)				
Were the major ions (> 10 percent relative intensity) in the reference spectrum evaluated in sample spectrum?			✓	
Were relative intensities of the major ions within ± 20% between the sample and the reference spectra?			✓	
Did the raw data indicate that the laboratory performed a library search for all required peaks in the chromatograms (samples and blanks)?		✓		
XIV. System performance				
System performance was found to be acceptable.	✓			
XV. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			

LDC #: 13204B26
SDG #: HP70

VALIDATION FINDINGS CHECKLIST

Page: 3 of 3
Reviewer: 9
2nd Reviewer: N

Validation Area	Yes	No	NA	Findings/Comments
XVI. Field duplicates				
Field duplicate pairs were identified in this SDG.	✓			
Target compounds were detected in the field duplicates.	✓			
XVII. Field blanks				
Field blanks were identified in this SDG.		✓		
Target compounds were detected in the field blanks.			✓	

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

A. Phenol**	P. Bis(2-chloroethoxy)methane	EE. 2,6-Dinitrotoluene	TT. Pentachlorophenol**	III. Benzo(a)pyrene**
B. Bis (2-chloroethyl) ether	Q. 2,4-Dichlorophenol**	FF. 3-Nitroaniline	UU. Phenanthrene	JJJ. Indeno(1,2,3-cd)pyrene
C. 2-Chlorophenol	R. 1,2,4-Trichlorobenzene	GG. Acenaphthene**	VV. Anthracene	KKK. Dibenz(a,h)anthracene
D. 1,3-Dichlorobenzene	S. Naphthalene	HH. 2,4-Dinitrophenol*	WW. Carbazole	LLL. Benzo(g,h,i)perylene
E. 1,4-Dichlorobenzene**	T. 4-Chloroaniline	II. 4-Nitrophenol*	XX. Di-n-butylphthalate	MMM. Bis(2-Chloroisopropyl)ether
F. 1,2-Dichlorobenzene	U. Hexachlorobutadiene**	JJ. Dibenzofuran	YY. Fluoranthene**	NNN. Aniline
G. 2-Methylphenol	V. 4-Chloro-3-methylphenol**	KK. 2,4-Dinitrotoluene	ZZ. Pyrene	OOO. N-Nitrosodimethylamine
H. 2,2'-Oxybis(1-chloropropane)	W. 2-Methylnaphthalene	LL. Diethylphthalate	AAA. Butylbenzylphthalate	PPP. Benzoic Acid
I. 4-Methylphenol	X. Hexachlorocyclopentadiene*	MM. 4-Chlorophenyl-phenyl ether	BBB. 3,3'-Dichlorobenzidine	QQQ. Benzyl alcohol
J. N-Nitroso-di-n-propylamine*	Y. 2,4,6-Trichlorophenol**	NN. Fluorene	CCC. Benzo(a)anthracene	RRR. Pyridine
K. Hexachloroethane	Z. 2,4,5-Trichlorophenol	OO. 4-Nitroaniline	DDD. Chrysene	SSS. Benzidine
L. Nitrobenzene	AA. 2-Chloronaphthalene	PP. 4,6-Dinitro-2-methylphenol	EEE. Bis(2-ethylhexyl)phthalate	TTT.
M. Isophorone	BB. 2-Nitroaniline	QQ. N-Nitrosodiphenylamine (1)**	FFF. Di-n-octylphthalate**	UUU.
N. 2-Nitrophenol**	CC. Dimethylphthalate	RR. 4-Bromophenyl-phenylether	GGG. Benzo(b)fluoranthene	VVV.
O. 2,4-Dimethylphenol	DD. Acenaphthylene	SS. Hexachlorobenzene	HHH. Benzo(k)fluoranthene	WWW.

LDC #: 13204B2b
SDG #: HPT0

VALIDATION FINDINGS WORKSHEET
Initial Calibration

Page: 1 of 1
Reviewer: 9
2nd Reviewer: ✓

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

- (Y) N N/A — Did the laboratory conduct an acceptable 5 point calibration prior to sample analysis?
- (Y) N N/A — Were percent relative standard deviations (%RSD) and relative response factors (RRF) within method criteria for all CCC's and SPCC's?
- Y (N) N/A — Was a curve fit used for evaluation? If yes, what was the acceptance criteria used for evaluation?__________
- Y N (N/A) — Did the initial calibration meet the acceptance criteria?
- Y (N) N/A — Were all %RSDs and RRFs within the validation criteria of ≤30 %RSD and ≥0.05 RRF ?

#	Date	Standard ID	Compound	Finding %RSD (Limit: ≤30.0%)	Finding RRF (Limit: ≥0.05)	Associated Samples	Qualifications
	1/29/05	ICAL	PPP	39.2		All + Blk	J/UJ/A

LDC #: 13204B26
SDG #: HPTO

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

Page: 1 of 1
Reviewer: 9
2nd Reviewer: 9

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Was a continuing calibration standard analyzed at least once every 12 hours of sample analysis for each instrument?
(Y) N N/A Were percent differences (%D) and relative response factors (RRF) within method criteria for all CCC's and SPCC's ?
Y (N) N/A Were all %D and RRFs within the validation criteria of ≤25 %D and ≥0.05 RRF ?

#	Date	Standard ID	Compound	Finding %D (Limit: ≤25.0%)	Finding RRF (Limit: ≥0.05)	Associated Samples	Qualifications
	1/31/05	CC0131	PPP	39.3		1-5.T.	J/UJ/A
	2/3/05	CC0203	PPP	79.3		6	J/UJ/A

CONCAL2S

LDC #: 13204B2b
SDG #: HP70

VALIDATION FINDINGS WORKSHEET
Overall Assessment of Data

Page: 1 of 1
Reviewer: 9
2nd Reviewer: ac

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

All available information pertaining to the data were reviewed using professional judgement to compliment the determination of the overall quality of the data.

(Y) N N/A Was the overall quality and usability of the data acceptable?

#	Date	Sample ID	Finding	Associated Samples	Qualifications
		5	VVV	5	R/A
		6	M/except VVV	6	R/A

Comments: _____

OVR.2S

DC#:13204A2b
SDG#: HP70

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: Q
2nd Reviewer: DK

METHOD: GC/MS BNA (EPA SW 846 Method 8270-SIM)

Y N NA Were field duplicate pairs identified in this SDG?
Y N NA Were target analytes detected in the field duplicate pairs?

Compound	Concentration (ug/Kg)		RPD ≤ 50	
	3	4		
CCC	310	150	70	
GGG	400	270	39	
III	290	220	27	
JJJ	150	180	18	
AAA	42	17	85	

LDC #: 13204 P2b
SDG #: HP70

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: x

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

The Relative Response Factor (RRF), average RRF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

$RRF = (A_x)(C_{is})/(A_{is})(C_x)$
average RRF = sum of the RRFs/number of standards
$\%RSD = 100 * (S/X)$

A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard
S = Standard deviation of the RRFs, X = Mean of the RRFs

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Reported RRF (2.5 std)	Recalculated RRF (2.5 std)	Reported Average RRF (Initial)	Recalculated Average RRF (Initial)	Reported %RSD	Recalculated %RSD
1	ICAL	1/29/05	~~Phenol~~ (1st internal standard) E	1.429	1.429	1.397	1.397	2.5	2.5
			~~Naphthalene~~ (2nd internal standard) K	0.302	0.302	0.303	0.303	2.0	2.0
			~~Fluorene~~ (3rd internal standard) LL	1.114	1.114	1.162	1.162	5.9	5.9
			Pentachlorophenol (4th internal standard)	0.142	0.142	0.129	0.129	18.5	18.5
			~~Bis(2-ethylhexyl)phthalate~~ (5th internal standard) CC C	1.241	1.241	1.225	1.225	2.0	2.0
			Benzo(a)pyrene (6th internal standard)	1.058	1.058	1.061	1.061	3.7	3.7
2			Phenol (1st internal standard)						
			Naphthalene (2nd internal standard)						
			Fluorene (3rd internal standard)						
			Pentachlorophenol (4th internal standard)						
			Bis(2-ethylhexyl)phthalate (5th internal standard)						
			Benzo(a)pyrene (6th internal standard)						
3			Phenol (1st internal standard)						
			Naphthalene (2nd internal standard)						
			Fluorene (3rd nternal standard)						
			Pentachlorophenol (4th internal standard)						
			Bis(2-ethylhexyl)phthalate (5th internal standard)						
			Benzo(a)pyrere (6th internal standard)						

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204B20
SDG #: HP270

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Reviewer: 9
2nd Reviewer: JC

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
RRF = $(A_x)(C_{is})/(A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Average RRF (Initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported %D	Recalculated %D
1	CCP203	2/3/04	~~Phenol~~ (1st internal standard) E	1.397	1.452	1.452	3.9	3.9
			~~Naphthalene~~ (2nd internal standard) F	0.303	0.303	0.303	0.0	0.0
			~~Fluorene~~ (3rd internal standard) LL	1.162	1.155	1.155	0.6	0.6
			Pentachlorophenol (4th internal standard)	0.129	0.138	0.138	7.0	6.8
			~~Bis(2-ethylhexyl)phthalate~~ (5th internal standard) CC	1.225	1.259	1.259	2.8	2.8
			Benzo(a)pyrene (6th internal standard)	1.061	1.066	1.066	0.5	0.5
2			Phenol (1st internal standard)					
			Naphthalene (2nd internal standard)					
			Fluorene (3rd internal standard)					
			Pentachlorophenol (4th internal standard)					
			Bis(2-ethylhexy)phthalate (5th internal standard)					
			Benzo(a)pyrene (6th internal standard)					
3			Phenol (1st internal standard)					
			Naphthalene (2nd internal standard)					
			Fluorene (3rd internal standard)					
			Pentachlorophenol (4th internal standard)					
			Bis(2-ethylhexyl)phthalate (5th internal standard)					
			Benzo(a)pyrene (6th internal standard)					

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204B2b
SDG #: HP270

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Reviewer: 9
2nd Reviewer: 9

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
RRF = $(A_x)(C_{is})/(A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Average RRF (Initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported %D	Recalculated %D
1	CC0129A	1/29/05	Phenol (1st internal standard)					
			Naphthalene (2nd internal standard)					
			Fluorene (3rd internal standard)		see 1C			
			Pentachlorophenol (4th internal standard)					
			Bis(2-ethylhexyl)phthalate (5th internal standard)					
			Benzo(a)pyrene (6th internal standard)					
2	CC0131	1/31/05	~~Phenol~~ (1st internal standard) E	1.397	1.379	1.379	1.3	1.3
			~~Naphthalene~~ (2nd internal standard) R	0.303	0.300	0.300	1.0	1.0
			~~Fluorene~~ (3rd internal standard) LL	1.162	1.128	1.128	2.9	2.9
			Pentachlorophenol (4th internal standard)	0.129	0.134	0.134	3.9	3.5
			Bis(2-ethylhexyl)phthalate (5th internal standard) CCC	1.225	1.226	1.226	0.1	0.1
			Benzo(a)pyrene (6th internal standard)	1.061	1.056	1.056	0.5	0.5
3	CC0201	2/1/05	~~Phenol~~ (1st internal standard) E	1.397	1.380	1.380	1.2	1.2
			~~Naphthalene~~ (2nd internal standard) R	0.303	0.305	0.305	0.7	0.7
			~~Fluorene~~ (3rd internal standard) LL	1.162	1.108	1.108	4.6	4.6
			Pentachlorophenol (4th internal standard)	0.129	0.139	0.139	7.8	7.7
			~~Bis(2-ethylhexyl)phthalate~~ (5th internal standard) CCC	1.225	1.272	1.272	3.8	3.8
			Benzo(a)pyrene (6th internal standard)	1.061	1.058	1.058	0.3	0.3

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204B26
SDG #. HP70

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Page: 1 of 1
Reviewer: 9
2nd reviewer: V

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270)

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: 1

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5	2.5	1.55397	62.0	62.2	0.2
2-Fluorobiphenyl	↓	1.67477	66.8	67.0	0.2
Terphenyl-d14	↓	2.04564	82.0	81.8	0.2
Phenol-d5	3.75	2.71727	72.5	72.5	0
2-Fluorophenol	↓	2.47093	65.9	65.9	↓
2.4.6-Tribromophenol	↓	3.12983	83.5	83.5	↓
2-Chlorophenol-d4	↓	2.46356	65.6	65.6	↓
1,2-Dichlorobenzene-d4	2.5	1.37572	55.2	55.0	0.2

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

LDC #: 13024B2b
SDG #: JHP70

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

Page: 1 of 1
Reviewer: SK
2nd Reviewer: MC

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SC/SA Where: SSC = Spike concentration; SA = Spike added

RPD = | LCS - LCSD | * 2/(LCS + LCSD) LCS = Laboratory control sample percent recovery LCSD = Laboratory control sample duplicate percent recovery

LCS/LCSD samples: LCS-012605

Compound	Spike Added (ug/kg)		Spike Concentration (ug/kg)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
Phenol										
2-Chlorophenol										
1,4-Dichlorobenzene	167	NA	107	NA	64.1	64.1				
N-Nitroso-di-n-propylamine	↓	↓	111	↓	66.5	66.5				
1,2,4-Trichlorobenzene	↓	↓	111	↓	66.5	66.5				
4-Chloro-3-methylphenol										
Acenaphthene										
4-Nitrophenol										
2,4-Dinitrotoluene										
Pentachlorophenol	250	NA	161	NA	64.4	64.4				
Pyrene										

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204B76
SDG #: HPTO

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: 9
2nd reviewer: R

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

$$\text{Concentration} = \frac{(A_x)(I_s)(V_t)(DF)(2.0)}{(A_{is})(RRF)(V_o)(V_i)(\%S)}$$

A_x	=	Area of the characteristic ion (EICP) for the compound to be measured
A_{is}	=	Area of the characteristic ion (EICP) for the specific internal standard
I_s	=	Amount of internal standard added in nanograms (ng)
V_o	=	Volume or weight of sample extract in milliliters (ml) or grams (g).
V_i	=	Volume of extract injected in microliters (ul)
V_t	=	Volume of the concentrated extract in microliters (ul)
Df	=	Dilution Factor.
%S	=	Percent solids, applicable to soil and solid matrices only.
2.0	=	Factor of 2 to account for GPC cleanup

Example:

Sample I.D. 1, 11:

Conc. = $\frac{(1)(9003)(2)(500)(1)(\quad)}{(988713)(1.061)(5.84)(1)(\quad)}$

= 29.2 µg/g

#	Sample ID	Compound	Reported Concentration ( )	Calculated Concentration ( )	Qualification

LDC #: 13204C2b **VALIDATION COMPLETENESS WORKSHEET** Date: 3/9/05

SDG #: HP90 ~~& HQ69~~ Level II Page: 1 of 1

Laboratory: Analytical Resources, Inc. Reviewer: 9

2nd Reviewer: 7

METHOD: GC/MS ~~Polynuclear Aromatic Hydrocarbons~~ SVOA (EPA SW 846 Method 8270C) ~~-~~ SIM

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/19/05
II.	GC/MS Instrument performance check	N	
III.	Initial calibration	N	
IV.	Continuing calibration	N	
V.	Blanks	A	
VI.	Surrogate spikes	SW	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples	A	LCS, SRM
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	N	
XI.	Target compound identification	N	
XII.	Compound quantitation/CRQLs	N	
XIII.	Tentitatively identified compounds (TICs)	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	
XVI.	Field duplicates	SW	D=5+6
XVII.	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples

MI sed's

1	LDW-SS-119-010	11	MB-01=805	21		31	
2	LDW-SS-120-010	12		22		32	
3	LDW-SS-60-010	13		23		33	
4	LDW-SS-99-010	14		24		34	
5	LDW-SS-89-010	15		25		35	
6	LDW-SS-201-010	16		26		36	
7	LDW-SS-201-010MS	17		27		37	
8	LDW-SS-201-01MSD	18		28		38	
9		19		29		39	
10		20		30		40	

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

A. Phenol**	P. Bis(2-chloroethoxy)methane	EE. 2,6-Dinitrotoluene	TT. Pentachlorophenol**	III. Benzo(a)pyrene**
B. Bis (2-chloroethyl) ether	Q. 2,4-Dichlorophenol**	FF. 3-Nitroaniline	UU. Phenanthrene	JJJ. Indeno(1,2,3-cd)pyrene
C. 2-Chlorophenol	R. 1,2,4-Trichlorobenzene	GG. Acenaphthene**	VV. Anthracene	KKK. Dibenz(a,h)anthracene
D. 1,3-Dichlorobenzene	S. Naphthalene	HH. 2,4-Dinitrophenol*	WW. Carbazole	LLL. Benzo(g,h,i)perylene
E. 1,4-Dichlorobenzene**	T. 4-Chloroaniline	II. 4-Nitrophenol*	XX. Di-n-butylphthalate	MMM. Bis(2-Chloroisopropyl)ether
F. 1,2-Dichlorobenzene	U. Hexachlorobutadiene**	JJ. Dibenzofuran	YY. Fluoranthene**	NNN. Aniline
G. 2-Methylphenol	V. 4-Chloro-3-methylphenol**	KK. 2,4-Dinitrotoluene	ZZ. Pyrene	OOO. N-Nitrosodimethylamine
H. 2,2'-Oxybis(1-chloropropane)	W. 2-Methylnaphthalene	LL. Diethylphthalate	AAA. Butylbenzylphthalate	PPP. Benzoic Acid
I. 4-Methylphenol	X. Hexachlorocyclopentadiene*	MM. 4-Chlorophenyl-phenyl ether	BBB. 3,3'-Dichlorobenzidine	QQQ. Benzyl alcohol
J. N-Nitroso-di-n-propylamine*	Y. 2,4,6-Trichlorophenol**	NN. Fluorene	CCC. Benzo(a)anthracene	RRR. Pyridine
K. Hexachloroethane	Z. 2,4,5-Trichlorophenol	OO. 4-Nitroaniline	DDD. Chrysene	SSS. Benzidine
L. Nitrobenzene	AA. 2-Chloronaphthalene	PP. 4,6-Dinitro-2-methylphenol	EEE. Bis(2-ethylhexyl)phthalate	TTT.
M. Isophorone	BB. 2-Nitroaniline	QQ. N-Nitrosodiphenylamine (1)**	FFF. Di-n-octylphthalate**	UUU.
N. 2-Nitrophenol**	CC. Dimethylphthalate	RR. 4-Bromophenyl-phenylether	GGG. Benzo(b)fluoranthene	VVV.
O. 2,4-Dimethylphenol	DD. Acenaphthylene	SS. Hexachlorobenzene	HHH. Benzo(k)fluoranthene	WWW.

SDG #: HP908 & HP869

VALIDATION FINDINGS WORKSHEET
Surrogate Recovery

Page: 1 of 1
Reviewer: a
2nd Reviewer: a

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Please see qualification below for all questions answered "N". Not applicable questions are identified as "N/A".

Y (N) N/A Were percent recoveries (%R) for surrogates within QC limits?

Y (N) N/A If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?

Y N (N/A) If any %R was less than 10 percent, was a reanalysis performed to confirm %R?

#	Date	Sample ID	Surrogate	%R (Limits)	Qualifications
		4	2FP	35.7 (40-130)	J/UJ/R
			PHL	39.5 ( )	
			2CP	39.2 ( )	
			DCB	32.1 ( )	
			NBZ	36.8 ( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	

* QC limits are advisory	QC Limits (Soil)	QC Limits (Water)
S1 (NBZ) = Nitrobenzene-d5	23-120	35-114
S2 (FBP) = 2-Fluorobiphenyl	30-115	43-116
S3 (TPH) = Terphenyl-d14	18-137	33-141
S4 (PHL) = Phenol-d5	24-113	10-94

	QC Limits (Soil)	QC Limts (Water)
S5 (2FP)= 2-Fluorophenol	25-121	21-100
S6 (TBP) = 2,4,6-Tribromophenol	19-122	10-123
S7 (2CP) = 2-Chlorophenol-d4	20-130*	33-110*
S8 (DCB) = 1,2-Dichlorobenzene-d4	20-130*	16-110*

DC#: 13204C2b
SDG#: HP90&HQ69

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer:
2nd Reviewer: SL

METHOD: GC/MS BNA (EPA SW 846 Method 8270) SIM

Y N NA Were field duplicate pairs identified in this SDG?
Y N NA Were target analytes detected in the field duplicate pairs?

Compound	Concentration (ug/Kg)		RPD	
	~~5~~	~~6~~		
CCC	48	20	82	
GGG	38	24	45	
III	31	20	43	
JJJ	11	11	0	

LDC #: 13204D2b **VALIDATION COMPLETENESS WORKSHEET** Date: 3/9/05
SDG #: HQ17 & HQ04 Level II Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: 9
2nd Reviewer: 02

METHOD: GC/MS ~~Polynuclear Aromatic Hydrocarbons~~ SVOA (EPA SW 846 Method 8270C) SIM

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 8/27/04 - 1/20/05
II.	GC/MS Instrument performance check	N	
III.	Initial calibration	N	
IV.	Continuing calibration	N	
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A	LDW-SS-201-010
VIII.	Laboratory control samples	A	LCS, SRM
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	N	
XI.	Target compound identification	N	
XII.	Compound quantitation/CRQLs	N	
XIII.	Tentitatively identified compounds (TICs)	N	
XIV.	System performance	N	
XV.	Overall assessment of data	~~A~~ SW	
XVI.	Field duplicates	N	
XVII.	Field blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples

1	LDW-SS117-010	11	LDW-012805	21		31	
2	LDW-SS13B-010	12		22		32	
3	LDW-SS125-010	13		23		33	
4	LDW-SS126-010	14		24		34	
5	LDW-SS129 010	15		25		35	
6	LDW-B9a-S	16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

LDC #: 13204D2b
SDG #: H0174H004

VALIDATION FINDINGS WORKSHEET
Overall Assessment of Data

Page: 1 of 1
Reviewer: DC
2nd Reviewer: _____

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

All available information pertaining to the data were reviewed using professional judgement to compliment the determination of the overall quality of the data.

(Y) N N/A Was the overall quality and usability of the data acceptable?

#	Date	Sample ID	Finding	Associated Samples	Qualifications
		1	No opds		R/A

Comments: _____

OVR.2S

LDC #: 13234A2b **VALIDATION COMPLETENESS WORKSHEET** Date: 3/9/05
SDG #: HQ48 Level II Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: 9
2nd Reviewer: W

METHOD: GC/MS ~~Polynuclear Aromatic Hydrocarbons~~ SVOA (EPA SW 846 Method 8270C) SIM

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/24/05
II.	GC/MS Instrument performance check	N	
III.	Initial calibration	N	
IV.	Continuing calibration	N	
V.	Blanks	A	
VI	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples	A	LCS, SRM
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	N	
XI.	Target compound identification	N	
XII.	Compound quantitation/CRQLs	N	
XIII.	Tentitatively identified compounds (TICs)	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	
XVI.	Field duplicates	SW	D = 1+4, 7+8
XVII.	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples
11 soils

1	LDW-SS50-010	11	LDW-SS56-010	21		31	
2	LDW-SS72-010	12	LDW-SS28-010	22		32	
3	LDW-SS79-010	13	LDW-SS102-010MS	23		33	
4	LDW-SS202-010	14	LDW-SS102-010MSD	24		34	
5	LDW-SS102-010	15		25		35	
6	LDW-SS142-010	16		26		36	
7	LDW-SS123-010	17		27		37	
8	LDW-SS203-010	18		28		38	
9	LDW-SS64-010	19		29		39	
10	LDW-SS83-010	20		30		40	

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS 3NA (EPA SW 846 Method 8270)

A. Phenol**	P. Bis(2-chloroethoxy)methane	EE. 2,6-Dinitrotoluene	TT. Pentachlorophenol**	III. Benzo(a)pyrene**
B. Bis (2-chloroethyl) ether	Q. 2,4-Dichlorophenol**	FF. 3-Nitroaniline	UU. Phenanthrene	JJJ. Indeno(1,2,3-cd)pyrene
C. 2-Chlorophenol	R. 1,2,4-Trichlorobenzene	GG. Acenaphthene**	VV. Anthracene	KKK. Dibenz(a,h)anthracene
D. 1,3-Dichlorobenzene	S. Naphthalene	HH. 2,4-Dinitrophenol*	WW. Carbazole	LLL. Benzo(g,h,i)perylene
E. 1,4-Dichlorobenzene**	T. 4-Chloroaniline	II. 4-Nitrophenol*	XX. Di-n-butylphthalate	MMM. Bis(2-Chloroisopropyl)ether
F. 1,2-Dichlorobenzene	U. Hexachlorobutadiene**	JJ. Dibenzofuran	YY. Fluoranthene**	NNN. Aniline
G. 2-Methylphenol	V. 4-Chloro-3-methylphenol**	KK. 2,4-Dinitrotoluene	ZZ. Pyrene	OOO. N-Nitrosodimethylamine
H. 2,2'-Oxybis(1-chloropropane)	W. 2-Methylnaphthalene	LL. Diethylphthalate	AAA. Butylbenzylphthalate	PPP. Benzoic Acid
I. 4-Methylphenol	X. Hexachlorocyclopentadiene*	MM. 4-Chlorophenyl-phenyl ether	BBB. 3,3'-Dichlorobenzidine	QQQ. Benzyl alcohol
J. N-Nitroso-di-n-propylamine*	Y. 2,4,6-Trichlorophenol**	NN. Fluorene	CCC. Benzo(a)anthracene	RRR. Pyridine
K. Hexachloroethane	Z. 2,4,5-Trichlorophenol	OO. 4-Nitroaniline	DDD. Chrysene	SSS. Benzidine
L. Nitrobenzene	AA. 2-Chloronaphthalene	PP. 4,6-Dinitro-2-methylphenol	EEE. Bis(2-ethylhexyl)phthalate	TTT.
M. Isophorone	BB. 2-Nitroaniline	QQ. N-Nitrosodiphenylamine (1)**	FFF. Di-n-octylphthalate**	UUU.
N. 2-Nitrophenol**	CC. Dimethylphthalate	RR. 4-Bromophenyl-phenylether	GGG. Benzo(b)fluoranthene	VVV.
O. 2,4-Dimethylphenol	DD. Acenaphthylene	SS. Hexachlorobenzene	HHH. Benzo(k)fluoranthene	WWW.

DC#:13234A2b
SDG#:HQ48

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: CC
2nd Reviewer: SC

METHOD: GC/MS BNA (EPA SW 846 Method 8270-SIM)

Y N NA Were field duplicate pairs identified in this SDG?
Y N NA Were target analytes detected in the field duplicate pairs?

Compound	Concentration (ug/Kg)		RPD ≤ 50	
	1	4		
CCC	23	280	170	
GGG	25	420	178	
III	21	300	174	
JJJ	10	140	173	

Compound	Concentration (ug/Kg)		RPD ≤ 50	
	7	8		
CCC	15	9.6	44	
GGG	16	12	29	
III	11	9.6	14	
JJJ	11	6.4U	~~200~~ NC	
CC	18	6.4U	~~200~~ NC	
AAA	7.6	6.4U	~~200~~ NC	

LDC #: 13234B2b **VALIDATION COMPLETENESS WORKSHEET** Date: 3/9/05

SDG #: HQ27 & HQ28 Level II Page: 1 of 1

Laboratory: Analytical Resources, Inc. Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: GC/MS ~~Polynuclear Aromatic Hydrocarbons~~ SVOA (EPA SW 846 Method 8270C) ~~SIM~~

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/21/05
II.	GC/MS Instrument performance check	N	
III.	Initial calibration	N	
IV.	Continuing calibration	N	
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A	LDW-SS-201-010
VIII.	Laboratory control samples	A	LCS, SRM
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	N	
XI.	Target compound identification	N	
XII.	Compound quantitation/CRQLs	N	
XIII.	Tentitatively identified compounds (TICs)	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	
XVI.	Field duplicates	N	
XVII.	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples

1	LDW-SS43-010 sed	11	MB-012805	21		31	
2	LDW-SS97-010 |	12		22		32	
3	LDW-SS63-010 V	13		23		33	
4		14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

LDC #: 13234C2b **VALIDATION COMPLETENESS WORKSHEET** Date: 3/9/05
SDG #: HR48 Level II Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: 9
2nd Reviewer: R

METHOD: GC/MS ~~Polynuclear Aromatic Hydrocarbons~~ SVOA (EPA SW 846 Method 8270C) SIM

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 2/1/05
II.	GC/MS Instrument performance check	N	
III.	Initial calibration	N	
IV.	Continuing calibration	N	
V.	Blanks	SW	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples	A	LCS. SRM
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	N	
XI.	Target compound identification	N	
XII.	Compound quantitation/CRQLs	N	
XIII.	Tentitatively identified compounds (TICs)	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	
XVI.	Field duplicates	N	
XVII.	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples

1	LDW-SS18-010 sed	11	MB-020905	21		31	
2	LDW-SS18-010MS	12		22		32	
3	LDW-SS18-010MSD	13		23		33	
4		14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

A. Phenol**	P. Bis(2-chloroethoxy)methane	EE. 2,6-Dinitrotoluene	TT. Pentachlorophenol**	III. Benzo(a)pyrene**
B. Bis (2-chloroethyl) ether	Q. 2,4-Dichlorophenol**	FF. 3-Nitroaniline	UU. Phenanthrene	JJJ. Indeno(1,2,3-cd)pyrene
C. 2-Chlorophenol	R. 1,2,4-Trichlorobenzene	GG. Acenaphthene**	VV. Anthracene	KKK. Dibenz(a,h)anthracene
D. 1,3-Dichlorobenzene	S. Naphthalene	HH. 2,4-Dinitrophenol*	WW. Carbazole	LLL. Benzo(g,h,i)perylene
E. 1,4-Dichlorobenzene**	T. 4-Chloroaniline	II. 4-Nitrophenol*	XX. Di-n-butylphthalate	MMM. Bis(2-Chloroisopropyl)ether
F. 1,2-Dichlorobenzene	U. Hexachlorobutadiene**	JJ. Dibenzofuran	YY. Fluoranthene**	NNN. Aniline
G. 2-Methylphenol	V. 4-Chloro-3-methylphenol**	KK. 2,4-Dinitrotoluene	ZZ. Pyrene	OOO. N-Nitrosodimethylamine
H. 2,2'-Oxybis(1-chloropropane)	W. 2-Methylnaphthalene	LL. Diethylphthalate	AAA. Butylbenzylphthalate	PPP. Benzoic Acid
I. 4-Methylphenol	X. Hexachlorocyclopentadiene*	MM. 4-Chlorophenyl-phenyl ether	BBB. 3,3'-Dichlorobenzidine	QQQ. Benzyl alcohol
J. N-Nitroso-di-n-propylamine*	Y. 2,4,6-Trichlorophenol**	NN. Fluorene	CCC. Benzo(a)anthracene	RRR. Pyridine
K. Hexachloroethane	Z. 2,4,5-Trichlorophenol	OO. 4-Nitroaniline	DDD. Chrysene	SSS. Benzidine
L. Nitrobenzene	AA. 2-Chloronaphthalene	PP. 4,6-Dinitro-2-methylphenol	EEE. Bis(2-ethylhexyl)phthalate	TTT.
M. Isophorone	BB. 2-Nitroaniline	QQ. N-Nitrosodiphenylamine (1)**	FFF. Di-n-octylphthalate**	UUU.
N. 2-Nitrophenol**	CC. Dimethylphthalate	RR. 4-Bromophenyl-phenylether	GGG. Benzo(b)fluoranthene	VVV.
O. 2,4-Dimethylphenol	DD. Acenaphthylene	SS. Hexachlorobenzene	HHH. Benzo(k)fluoranthene	WWW.

LDC #: 13234c2b
SDG #: HR48

VALIDATION FINDINGS WORKSHEET
Blanks

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a method blank analyzed for each matrix?
Y N N/A Was a method blank analyzed for each concentration preparation level?
Y N N/A Was a method blank associated with every sample?
Y N N/A Was the blank contaminated? If yes, please see qualification below.

Blank extraction date: 2/9/05 **Blank analysis date:** 2/10/05
Conc. units: ug/kg Associated Samples: MB

Compound	Blank ID	Sample Identification								
MB	MB-020905									
LL	13									

Blank extraction date: _____ **Blank analysis date:** _____
Conc. units: _____ Associated Samples: _____

Compound	Blank ID	Sample Identification								

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Common contaminants such as the phthalates and TICs noted above that were detected in samples within ten times the associated method blank concentration were qualified as not detected, "U". Other contaminants within five times the method blank concentration were also qualified as not detected, "U".

LDC #: 13234E2b **VALIDATION COMPLETENESS WORKSHEET** Date: 2/9/05

SDG #: HQ56 & HQ57 Level II Page: 1 of 1

Laboratory: Analytical Resources, Inc. Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: GC/MS ~~Polynuclear Aromatic Hydrocarbons~~ SVOA (EPA SW 846 Method 8270C) SIM

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/25 - 26/05
II.	GC/MS Instrument performance check	N	
III.	Initial calibration	N	
IV.	Continuing calibration	N	
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	N	No MS/MSD ~~not provided~~
VIII.	Laboratory control samples	A	LCS / SRM
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	N	
XI.	Target compound identification	N	
XII.	Compound quantitation/CRQLs	N	
XIII.	Tentatively identified compounds (TICs)	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	
XVI.	Field duplicates	N	
XVII.	Field blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples

1	LDW-SS92-010 sed	11	MB020105	21		31	
2	LDW-SS104-010	12		22		32	
3	LDW-SS110-010	13		23		33	
4	LDW-SS88-010	14		24		34	
5	LDW-SS143-010	15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

LDC #: 13298B2b **VALIDATION COMPLETENESS WORKSHEET** Date: 3/24/05
SDG #: HT37 Level II Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: [illegible]
2nd Reviewer:

METHOD: GC/MS Polynuclear Aromatic Hydrocarbons (EPA SW 846 Method 8270C SIM)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/20/05 - 1/24/05
II.	GC/MS Instrument performance check	N	
III.	Initial calibration	N	
IV.	Continuing calibration	N	
V.	Blanks	A	
VI.	Surrogate spikes	SW	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples	A	LCS
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	N	
XI.	Target compound identification	N	
XII.	Compound quantitation/CRQLs	N	
XIII.	Tentitatively identified compounds (TICs)	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	
XVI.	Field duplicates	N	
XVII.	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples

1	LDW-SS118-010	11	MB-022105	21		31	
2	LDW-SS101-010	12		22		32	
3	LDW-SS55-010	13		23		33	
4	LDW-SS36-010	14		24		34	
5	LDW-SS55-010MS	15		25		35	
6	LDW-SS55-010MSD	16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

LDC #: [illegible]

SDG #: HT3T

VALIDATION FINDINGS WORKSHEET
Surrogate Recovery

Page: 1 of 1

Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Please see qualification below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were percent recoveries (%R) for surrogates within QC limits?

Y N N/A If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?

Y N N/A If any %R was less than 10 percent, was a reanalysis performed to confirm %R?

#	Date	Sample ID	Surrogate	%R (Limits)	Qualifications
		3	NB2	30.8 (40-130)	No qual
				( )	
		4	NB2	30.4 ( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
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				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	

* QC limits are advisory	QC Limits (Soil)	QC Limits (Water)		QC Limits (Soil)	QC Limits (Water)
S1 (NBZ) = Nitrobenzene-d5	23-120	35-114	S5 (2FP)= 2-Fluorophenol	25-121	21-100
S2 (FBP) = 2-Fluorobiphenyl	30-115	43-116	S6 (TBP) = 2,4,6-Tribromophenol	19-122	10-123
S3 (TPH) = Terphenyl-d14	18-137	33-141	S7 (2CP) = 2-Chlorophenol-d4	20-130*	33-110*
S4 (PHL) = Phenol-d5	24-113	10-94	S8 (DCB) = 1,2-Dichlorobenzene-d4	20-130*	16-110*

LDC #: 13298C2b **VALIDATION COMPLETENESS WORKSHEET** Date: 3/24/05

SDG #: HU13 Level II Page: 1 of 1

Laboratory: Analytical Resources, Inc. Reviewer: 9

2nd Reviewer: AC

METHOD: GC/MS ~~Polynuclear Aromatic Hydrocarbons~~ SVOA (EPA SW 846 Method 8270C~~+SIM~~)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/17-26/05
II.	GC/MS Instrument performance check	N	
III.	Initial calibration	N	
IV.	Continuing calibration	N	
V.	Blanks	SW	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples	SW	LCS
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	N	
XI.	Target compound identification	N	
XII.	Compound quantitation/CRQLs	N	
XIII.	Tentitatively identified compounds (TICs)	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	
XVI.	Field duplicates	N	
XVII.	Field blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples

MS and MSD

1	LDW-SS1-010	11	LDW-SS96-010	21	MB-030305	31	
2	LDW-SS5-010	12	LDW-SS67-010	22		32	
3	LDW-SS12-010	13	LDW-SS54-010	23		33	
4	LDW-SS13-010	14	LDW-SS42-010	24		34	
5	LDW-SS51-010	15	LDW-SS128-010	25		35	
6	LDW-SS116-010	16	LDW-SS52-010	26		36	
7	LDW-SS76-010	17	LDW-SS33-010	27		37	
8	LDW-SS44-010	18	LDW-SS1-010MS	28		38	
9	LDW-SS87-010	19	LDW-SS1-010MSD	29		39	
10	LDW-SS94-010	20		30		40	

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

A. Phenol**	P. Bis(2-chloroethoxy)methane	EE. 2,6-Dinitrotoluene	TT. Pentachlorophenol**	III. Benzo(a)pyrene**
B. Bis (2-chloroethyl) ether	Q. 2,4-Dichlorophenol**	FF. 3-Nitroaniline	UU. Phenanthrene	JJJ. Indeno(1,2,3-cd)pyrene
C. 2-Chlorophenol	R. 1,2,4-Trichlorobenzene	GG. Acenaphthene**	VV. Anthracene	KKK. Dibenz(a,h)anthracene
D. 1,3-Dichlorobenzene	S. Naphthalene	HH. 2,4-Dinitrophenol*	WW. Carbazole	LLL. Benzo(g,h,i)perylene
E. 1,4-Dichlorobenzene**	T. 4-Chloroaniline	II. 4-Nitrophenol*	XX. Di-n-butylphthalate	MMM. Bis(2-Chloroisopropyl)ether
F. 1,2-Dichlorobenzene	U. Hexachlorobutadiene**	JJ. Dibenzofuran	YY. Fluoranthene**	NNN. Aniline
G. 2-Methylphenol	V. 4-Chloro-3-methylphenol**	KK. 2,4-Dinitrotoluene	ZZ. Pyrene	OOO. N-Nitrosodimethylamine
H. 2,2'-Oxybis(1-chloropropane)	W. 2-Methylnaphthalene	LL. Diethylphthalate	AAA. Butylbenzylphthalate	PPP. Benzoic Acid
I. 4-Methylphenol	X. Hexachlorocyclopentadiene*	MM. 4-Chlorophenyl-phenyl ether	BBB. 3,3'-Dichlorobenzidine	QQQ. Benzyl alcohol
J. N-Nitroso-di-n-propylamine*	Y. 2,4,6-Trichlorophenol**	NN. Fluorene	CCC. Benzo(a)anthracene	RRR. Pyridine
K. Hexachloroethane	Z. 2,4,5-Trichlorophenol	OO. 4-Nitroaniline	DDD. Chrysene	SSS. Benzidine
L. Nitrobenzene	AA. 2-Chloronaphthalene	PP. 4,6-Dinitro-2-methylphenol	EEE. Bis(2-ethylhexyl)phthalate	TTT.
M. Isophorone	BB. 2-Nitroaniline	QQ. N-Nitrosodiphenylamine (1)**	FFF. Di-n-octylphthalate**	UUU.
N. 2-Nitrophenol**	CC. Dimethylphthalate	RR. 4-Bromophenyl-phenylether	GGG. Benzo(b)fluoranthene	VVV.
O. 2,4-Dimethylphenol	DD. Acenaphthylene	SS. Hexachlorobenzene	HHH. Benzo(k)fluoranthene	WWW.

LDC #: 13298c4b
SDG #: HU13

VALIDATION FINDINGS WORKSHEET
Blanks

Page: 1 of 1
Reviewer: 9
2nd Reviewer: DK

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a method blank analyzed for each matrix?
Y N N/A Was a method blank analyzed for each concentration preparation level?
Y N N/A Was a method blank associated with every sample?
Y N N/A Was the blank contaminated? If yes, please see qualification below.

Blank extraction date: 3/3/05 **Blank analysis date:** 3/4/05
Conc. units: ug/Kg Associated Samples: All

Compound	Blank ID	Sample Identification								
MB-030305		1	2	3	4	5	6	7	8	9
LL	16	17/U	14/U	14/U	13/U	6.6/U	7.3/U	14/U	11/U	9.2/U

Blank extraction date: _____ **Blank analysis date:** _____
Conc. units: ug/L Associated Samples: All

Compound	Blank ID	Sample Identification								
MB-030305		10	11	12	13	14	15	16	17	
LL	16	14/U	12/U	12/U	15/U	14/U	14/U	7.8/U	36/U	

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Common contaminants such as the phthalates and TICs noted above that were detected in samples within ten times the associated method blank concentration were qualified as not detected, "U". Other contamirants within five times the method blank concentration were also qualified as not detected, "U".

LDC #: 13298C2b
SDG #: HU13

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

[✓ Y] N N/A Was a LCS required?

Y [✓ N] N/A Were the LCS/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		LCS-030305	TT	28.8 (40-130)	( )	( )	All + Blk	J/UJ/P
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

LDC #: 13204A3a **VALIDATION COMPLETENESS WORKSHEET** Date: 3/8/05

SDG #: HP67 Level IV Page: 1 of 1

Laboratory: Analytical Resources, Inc. Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: GC Chlorinated Pesticides (EPA SW 846 Method 8081A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/17/05
II.	GC/ECD Instrument Performance Check	A	
III.	Initial calibration	A	
IV.	Continuing calibration	A	
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples /SRM	SW	LCS
IX.	Regional quality assurance and quality control	N	
Xa.	Florisil cartridge check	N	
Xb.	GPC Calibration	N	Sulfur clean up performed
XI.	Target compound identification	~~N~~ A	
XII.	Compound quantitation and reported CRQLs	~~SW~~ A	
XIII.	Overall assessment of data	A	
XIV.	Field duplicates	N	
XV.	Field blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples:

sediment

1	LDW-SS13-010	11	MB - 12405	21		31	
2	LDW-SS13-010MS	12		22		32	
3	LDW-SS13-010MSD	13		23		33	
4		14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

note: Per case narrative: Lab extracted sample batch for in-house levels. client was notified.

VALIDATION FINDINGS WORKSHEET

METHOD: Pesticide/PCBs (EPASW 846 Method 8081/8082)

A. alpha-BHC	I. Dieldrin	Q. Endrin ketone	Y. Arcclor-1242	GG.
B. beta-BHC	J. 4,4'-DDE	R. Endrin aldehyde	Z. Arcclor-1248	HH.
C. delta-BHC	K. Endrin	S. alpha-Chlordane	AA. Aroclor-1254	II.
D. gamma-BHC	L. Endosulfan II	T. gamma-Chlordane	BB. Aroclor-1260	JJ.
E. Heptachlor	M. 4,4'-DDD	U. Toxaphene	CC. DB 608	KK.
F. Aldrin	N. Endosulfan sulfate	V. Aroclor-1016	DD. DB 1701	LL.
G. Heptachlor epoxide	O. 4,4'-DDT	W. Aroclor-1221	EE. Hexachlorobutadiene	MM.
H. Endosulfan I	P. Methoxychlor	X. Aroclor-1232	FF.	NN.

Notes: _____

LDC #: 13204 A3a
SDG #: HP67

VALIDATION FINDINGS CHECKLIST

Page: 1 of 2
Reviewer:
2nd Reviewer:

Method: Pesticides/PCBs (EPA SW 846 Method 8081/8082)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. GC/ECD Instrument performance check				
Was the instrument performance found to be acceptable?	✓			
III. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Was a linear fit used for evaluation? If yes, were all percent relative standard deviations (%RSD) ≤ 20%?	✓			
Was a curve fit used for evaluation? If Yes, what was the acceptance criteria used?		✓		
Did the initial calibration meet the curve fit acceptance criteria?			✓	
Were the RT windows properly established?	✓			
Were the required standard concentrations analyzed in the initial calibration?	✓			
IV. Continuing calibration				
What type of continuing calibration calculation was performed? ___%D or ___%R	✓			
Were Evaluation mix standards analyzed prior to the initial calibration and sample analysis?	✓			
Were endrin and 4,4'-DDT breakdowns ≤ 15%.0 for individual breakdown in the Evaluation mix standards?	✓			
Was a continuing calibration analyzed daily?	✓			
Were all percent differences (%D) ≤ 15%.0 or percent recovieries 85-115%?	✓			
Were all the retention times within the acceptance windows?	✓			
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed for each matrix and concentration?	✓			
Were extract cleanup blanks analyzed with every batch requiring clean-up?	✓			
Was there contamination in the method blanks or clean-up blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Surrogate spikes				
Were all surrogate %R within the QC limits?	✓			
If the percent recovery (%R) of one or more surrogates was outside QC limits, was a reanalysis performed to confirm %R?			✓	
If any %R was less than 10 percent, was a reanalysis performed to confirm %R?			✓	

LDC #: 13204A3a
SDG #: HP67

VALIDATION FINDINGS CHECKLIST

Reviewer: EJ
2nd Reviewer: AK

Validation Area	Yes	No	NA	Findings/Comments
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.	✓			
Was a MS/MSD analyzed every 20 samples of each matrix?	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	✓			
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?		✓		
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?			✓	
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
X. Target compound identification				
Were the retention times of reported detects within the RT windows?			✓	
XI. Compound quantitation/CRQLs				
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions, dry weight factors, and clean-up activities applicable to level IV validation?	✓			
XII. System performance				
System performance was found to be acceptable.	✓			
XIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XIV. Field duplicates				
Field duplicate pairs were identified in this SDG.		✓		
Target compounds were detected in the field duplicates.			✓	
XV. Field blanks				
Field blanks were identified in this SDG.		✓		
Target compounds were detected in the field blanks.			✓	

LDC #: 13204A3a
SDG #: HP67

VALIDATION FINDINGS WORKSHEET

Laboratory Control Samples (LCS)

Page: 1 of 1
Reviewer: B
2nd Reviewer: R

METHOD: ✓ GC __ HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

[✓ Y] N N/A Were a laboratory control samples (LCS) and laboratory control sample duplicate (LCSD) analyzed for each matrix in this SDG?

Y [✓ N] N/A Were the LCS percent recoveries (%R) and relative percent differences (RPD) within the QC limits?

Level IV/D Only

[✓ Y] N N/A Was an LCS analyzed every 20 samples for each matrix or whenever a sample extraction was performed?

#	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	LCS-012405	D	46 (30-150)	( )	( )	All + BIK	J/UJ/P
		R	19.4 (↓)	( )	( )	↓	↓
		EE	48.4 ( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
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			( )	( )	( )		
			( )	( )	( )		

LDC #: 13204A3a
SDG #: HP67

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer:
2nd Reviewer:

METHOD: GC ✓ HPLC ____

The calibration Factor (CF), average CF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

CF = A/C
average CF = sum of the CF/number of standards
%RSD = 100 * (S/X)

A = Area of compound,
C = Concentration of compound,
S = Standard deviation of the CF
X = Mean of the CFs

#	Standard ID	Calibration Date	Compound	Reported CF (0.02std)	Recalculated CF (0.02std)	Reported Average CF (initial)	Recalculated Average CF (initial)	Reported %RSD	Recalculated %RSD
1	8081A STX-CLP1	1/21/05	endosulfan I	1.0319	1.0319	0.9623	0.9623	7.4	7.4
			methoxychlor	0.4182	0.4182	0.3868	0.3868	12.0	12.0
2	STX-CLP2	↓	↓	1.0393	1.0393	0.9641	0.9641	7.3	7.3
				0.4052	0.4052	0.3733	0.3733	12.6	12.6
3									
4									

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204A3a
SDG #: H867

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Reviewer: 5
2nd Reviewer: 4

METHOD: GC / HPLC_____

The percent difference (%D) of the initial calibration average Calibration Factors (CF) and the continuing calibration CF were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. CF - CF)/ave. CF
CF = A/C

Where: ave. CF = initial calibration average CF
CF = continuing calibration CF
A = Area of compound
C = Concentration of compound

#	Standard ID	Calibration Date	Compound	Average CF(Ical)/ CCV Conc.	Reported CF/Conc. CCV	Recalculated CF/Conc. CCV	Reported %D	Recalculated %D
1	CCV	1/24/05	endosulfan I	0.020	0.019	0.019	5	5
	1115		methoxychlor	0.20	0.18	0.18	10.0	10.0
	STX-CLPI							
2		↓	↓	↓	0.020	0.020	0	0
	STX-CLPII				0.17	0.17	15.0	15.0
3								
4								

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204A3a
SDG #: HP67

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Page: 1 of 1
Reviewer:
2nd reviewer:

METHOD: GC Pesticides/PCBs (EPA SW 846 Method 8081/8082)

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: #1

Surrogate	Column	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
Tetrachloro-m-xylene	STX CLP1					
Tetrachloro-m-xylene		0.04	0.0493	61.6	61.6 ~~123~~	0
Decachlorobiphenyl	STX CLP2	↓	0.0583	72.9	72.9 ~~145.7~~	↓
Decachlorobiphenyl						

Sample ID:

Surrogate	Column	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
Tetrachloro-m-xylene						
Tetrachloro-m-xylene						
Decachlorobiphenyl						
Decachlorobiphenyl						

Sample ID:

Surrogate	Column	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
Tetrachloro-m-xylene						
Tetrachloro-m-xylene						
Decachlorobiphenyl						
Decachlorobiphenyl						

Sample ID:

Surrogate	Column	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
Tetrachloro-m-xylene						
Tetrachloro-m-xylene						
Decachlorobiphenyl						
Decachlorobiphenyl						

Notes:

LDC #: 13204A3a
SDG #: HP67

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Reviewer: JP
2nd Reviewer: AP

METHOD: GC Pesticides/PCBs (EPA SW 846 Method 8081/8082)

The percent recoveries (%R) and Relative Percent difference (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100* (SSC-SC)/SA

Where: SSC = Spiked sample concentration
SA = Spike added
SC = Concentration

RPD = | MS - MSD | * 2/(MS + MSD)

MS = Matrix spike percent recovery

MSD = Matrix spike duplicate percent recovery

MS/MSD samples: 2 + 3

Compound	Spike Added (ug/kg)		Sample Concentration (ug/kg)	Spiked Sample Concentration (ug/kg)		Matrix Spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	-	MS	MSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
gamma-BHC	30.9	30.9	NP	19.9	19.2	64.4	64.4	61.9	61.9	3.6	3.6
Heptachlor	↓	↓	↓	22.2	21.7	71.8	71.8	70.0	70.0	2.3	2.3
Aldrin	↓	↓	↓	23.5	23.3	76.1	76.1	75.2	75.2	0.9	0.9
Dieldrin	61.8	61.8	↓	48.8	47.1	79.0	79.0	76.1	76.1	3.5	3.5
Endrin	↓	↓	↓	55.3	52.9	89.5	89.5	85.5	85.5	4.4	4.4
4,4'-DDT	↓	↓	↓	50.1	47.7	81.1	81.1	77.1	77.1	4.9	4.9

Comments: Refer ot Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204A3a
SDG #: HP67

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample/Laboratory Control Sample Duplicate Results Verification

Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC Pesticides/PCBs (EPA SW 846 Method 8081/8082)

The percent recoveries (%R) and Relative Percent difference (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100* (SSC-SC)/SA

Where: SSC = Spiked sample concentration; SA = Spike added; SC = Concentration

RPD = | LCS - LCSD | * 2/(LCS + LCSD)

LCS = Laboratory control sample percent recovery; LCSD = Laboratory control sample duplicate percent recovery

LCS/LCSD samples: LCS-12405

Compound	Spike Added (ng/kg)		Sample Concentration (ng/kg)	Spiked Sample Concentration (ng/kg)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	-	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
Gamma-BHC	6.67	NA	0	3.07	NA	46	46				
Heptachlor	↓			5.40		81	81				
Aldrin	↓			5.62		84.3	84.3				
Dieldrin	13.3			10.2		76.7	76.7				
Endrin	↓			10.5		78.9	78.9				
4,4'-DDT	↓	↓	↓	10.8	↓	81.2	81.2	NA			

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicate findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204A3a
SDG #: HP67

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: [illegible]
2nd reviewer: [illegible]

METHOD: GC Pesticides/PCBs (EPA SW 846 Method 8081/8082)

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

Example:

Sample I.D. _____ _____:

Conc. = (_____)
( )

= all ND

#	Sample ID	Compound	Reported Concentration ( )	Calculated Concentration ( )	Qualification

Note: _____

C:\WPDOCS\WRK\PEST\RECALC.3S

LDC #: 13204B3a

VALIDATION COMPLETENESS WORKSHEET

Level IV

Date: 3/8/05

SDG #: HP70

Page: 1 of 1

Laboratory: Analytical Resources, Inc.

Reviewer: PJ

2nd Reviewer: JV

METHOD: GC Chlorinated Pesticides (EPA SW 846 Method 8081A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/18/05
II.	GC/ECD Instrument Performance Check	A	
III.	Initial calibration	A	
IV.	Continuing calibration	A	
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A	LDW - SS13 - 010
VIII.	Laboratory control samples /SRM	SW	LCS
IX.	Regional quality assurance and quality control	N	
Xa.	Florisil cartridge check	N	
Xb.	GPC Calibration	N	sulfur clean up performed
XI.	Target compound identification	~~N~~ A	
XII.	Compound quantitation and reported CRQLs	~~SW~~ A	
XIII.	Overall assessment of data	A	
XIV.	Field duplicates	ND	D = 1 + 2
XV.	Field blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: sediment

1	LDW-SS27-010 D	11	MB - 012405	21		31	
2	LDW-SS200-010 D	12		22		32	
3	LDW-SS32-010	13		23		33	
4		14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

note: Per narrative: samples mistakenly extracted using inhouse levels. Client was notified.

SRM same in 13204B.

LDC #: 13204B3a
SDG #: HP7D

VALIDATION FINDINGS CHECKLIST

Reviewer: [illegible]
2nd Reviewer: [illegible]

Method: Pesticides/PCBs (EPA SW 846 Method 8081/8082)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. GC/ECD Instrument performance check				
Was the instrument performance found to be acceptable?	✓			
III. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Was a linear fit used for evaluation? If yes, were all percent relative standard deviations (%RSD) ≤ 20%?	✓			
Was a curve fit used for evaluation? If Yes, what was the acceptance criteria used?		✓		
Did the initial calibration meet the curve fit acceptance criteria?			✓	
Were the RT windows properly established?	✓			
Were the required standard concentrations analyzed in the initial calibration?	✓			
IV. Continuing calibration				
What type of continuing calibration calculation was performed? ___%D or ___%R	✓			
Were Evaluation mix standards analyzed prior to the initial calibration and sample analysis?	✓			
Were endrin and 4,4'-DDT breakdowns ≤ 15%.0 for individual breakdown in the Evaluation mix standards?	✓			
Was a continuing calibration analyzed daily?	✓			
Were all percent differences (%D) ≤ 15%.0 or percent recovieries 85-115%?	✓			
Were all the retention times within the acceptance windows?	✓			
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed for each matrix and concentration?	✓			
Were extract cleanup blanks analyzed with every batch requiring clean-up?	✓			
Was there contamination in the method blanks or clean-up blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Surrogate spikes				
Were all surrogate %R within the QC limits?	✓			
If the percent recovery (%R) of one or more surrogates was outside QC limits, was a reanalysis performed to confirm %R?			✓	
If any %R was less than 10 percent, was a reanalysis performed to confirm %R?			✓	

LDC #: 13204B3a
SDG #: HP70

VALIDATION FINDINGS CHECKLIST

Reviewer: [illegible]
2nd Reviewer: [illegible]

Validation Area	Yes	No	NA	Findings/Comments
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.	✓			
Was a MS/MSD analyzed every 20 samples of each matrix?	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	✓			
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?		✓		
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?			✓	
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
X. Target compound identification				
Were the retention times of reported detects within the RT windows?			✓	
XI. Compound quantitation/CRQLs				
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions, dry weight factors, and clean-up activities applicable to level IV validation?	✓			
XII. System performance				
System performance was found to be acceptable.	✓			
XIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XIV. Field duplicates				
Field duplicate pairs were identified in this SDG.		✓		
Target compounds were detected in the field duplicates.			✓	
XV. Field blanks				
Field blanks were identified in this SDG.		✓		
Target compounds were detected in the field blanks.			✓	

VALIDATION FINDINGS WORKSHEET

METHOD: Pesticide/PCBs (EPASW 846 Method 8081/8082)

A. alpha-BHC	I. Dieldrin	Q. Endrin ketone	Y. Aroclor-1242	GG.
B. beta-BHC	J. 4,4'-DDE	R. Endrin aldehyde	Z. Aroclor-1248	HH.
C. delta-BHC	K. Endrin	S. alpha-Chlordane	AA. Aroclor-1254	II.
D. gamma-BHC	L. Endosulfan II	T. gamma-Chlordane	BB. Aroclor-1260	JJ.
E. Heptachlor	M. 4,4'-DDD	U. Toxaphene	CC. DB 608	KK.
F. Aldrin	N. Endosulfan sulfate	V. Aroclor-1016	DD. DB 1701	LL.
G. Heptachlor epoxide	O. 4,4'-DDT	W. Aroclor-1221	EE.	MM.
H. Endosulfan I	P. Methoxychlor	X. Aroclor-1232	FF.	NN.

Notes:_____

LDC #: 13204B3a
SDG #: HP70

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

Page: 1 of 1
Reviewer: B
2nd Reviewer: DC

METHOD: ✓ GC ___ HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

[✓ Y] N N/A Were a laboratory control samples (LCS) and laboratory control sample duplicate (LCSD) analyzed for each matrix in this SDG?

Y [✓ N] N/A Were the LCS percent recoveries (%R) and relative percent differences (RPD) within the QC limits?

Level IV/D Only

[✓ Y] N N/A Was an LCS analyzed every 20 samples for each matrix or whenever a sample extraction was performed?

#	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	LCS-12405	D	46 (50-150)	( )	( )	All + Blk	J/UJ/P
		R	19.4 (↓)	( )	( )	↓	↓
		EE	48.4 (↓)	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
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			( )	( )	( )		

LDC #: 13204B3a
SDG #: HP70

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer: PJ
2nd Reviewer: AC

METHOD: GC / HPLC

The calibration Factor (CF), average CF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

CF = A/C
average CF = sum of the CF/number of standards
%RSD = 100 * (S/X)

A = Area of compound,
C = Concentration of compound,
S = Standard deviation of the CF
X = Mean of the CFs

#	Standard ID	Calibration Date	Compound	Reported CF 0.2 (0.02 std)	Recalculated CF 0.2 (0.02 std)	Reported Average CF (initial)	Recalculated Average CF (initial)	Reported %RSD	Recalculated %RSD
1	8081A STX-CLP1	1/21/05	endosulfan I	1.0319	1.0319	0.9623	0.9623	7.4	7.4
			methoxychlor	0.4182	0.4182	0.3868	0.3868	12.0	12.0
2	STX-CLP2	↓	↓	1.0393	1.0393	0.9641	0.9641	7.3	7.3
				0.4052	0.4052	0.3733	0.3733	12.6	12.6
3									
4									

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204B3a
SDG #: HP70

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Page: 1 of 1
Reviewer: B
2nd Reviewer: A

METHOD: GC / HPLC_____

The percent difference (%D) of the initial calibration average Calibration Factors (CF) and the continuing calibration CF were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. CF - CF)/ave. CF
CF = A/C

Where: ave. CF = initial calibration average CF
CF = continuing calibration CF
A = Area of compound
C = Concentration of compound

#	Standard ID	Calibration Date	Compound	Average CF(Ical)/ CCV Conc.	Reported CF/Conc. CCV	Recalculated CF/Conc. CCV	Reported %D	Recalculated %D
1	CCV 1115	1/27/05	endosulfan I	0.020	0.019	0.019	5	5
	STX CUP I		methoxychlor	0.20	0.18	0.18	10.0	10.0
2	STX CUP II	↓	↓	↓	0.020	0.020	0	0
					0.17	0.17	15.0	15.0
3								
4								

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204B3a
SDG #: HP70

VALIDATION FINDINGS WORKSHEET

Surrogate Results Verification

Page: 1 of 1
Reviewer:
2nd reviewer:

METHOD: GC Pesticides/PCBs (EPA SW 846 Method 8081/8082)

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: #1

Surrogate	Column	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
Tetrachloro-m-xylene						
Tetrachloro-m-xylene	STX-CLP1	0.04	0.0477	59.6	~~119~~ 59.6	~~0~~ 0
Decachlorobiphenyl	STX-CLPII	↓	0.0544	68.0	~~136~~ 68	~~0~~ 0
Decachlorobiphenyl						

Sample ID:

Surrogate	Column	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
Tetrachloro-m-xylene						
Tetrachloro-m-xylene						
Decachlorobiphenyl						
Decachlorobiphenyl						

Sample ID:

Surrogate	Column	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
Tetrachloro-m-xylene						
Tetrachloro-m-xylene						
Decachlorobiphenyl						
Decachlorobiphenyl						

Sample ID:

Surrogate	Column	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
Tetrachloro-m-xylene						
Tetrachloro-m-xylene						
Decachlorobiphenyl						
Decachlorobiphenyl						

Notes:

LDC #: 13204B3a
SDG #: HP70

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC Pesticides/PCBs (EPA SW 846 Method 8081/8082)

The percent recoveries (%R) and Relative Percent difference (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100* (SSC-SC)/SA

Where: SSC = Spiked sample concentration; SA = Spike added; SC = Concentration

RPD = | MS - MSD | * 2/(MS + MSD)

MS = Matrix spike percent recovery; MSD = Matrix spike duplicate percent recovery

MS/MSD samples: HDW-5513-010

Compound	Spike Added (ug/kg)		Sample Concentration (ug/kg)	Spiked Sample Concentration (ug/kg)		Matrix Spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	-	MS	MSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
gamma-BHC	30.9	30.9	ND	19.9	19.2	64.4	64.4	61.9	61.9	3.6	3.6
Heptachlor	↓	↓	↓	22.2	21.7	71.8	71.8	70.0	70.0	2.3	2.3
Aldrin	↓	↓	↓	23.5	23.3	76.1	76.1	75.2	75.2	0.9	0.9
Dieldrin	61.8	61.8	↓	48.8	47.1	79.0	79.0	76.1	76.1	3.5	3.5
Endrin	↓	↓	↓	55.3	52.9	89.5	89.5	85.5	85.5	4.4	4.4
4,4'-DDT	↓	↓	↓	50.1	47.7	81.1	81.1	77.1	77.1	4.9	4.9

Comments: Refer ot Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204B3a
SDG #: HP70

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample/Laboratory Control Sample Duplicate Results Verification

Reviewer: EV
2nd Reviewer: AE

METHOD: GC Pesticides/PCBs (EPA SW 846 Method 8081/8082)

The percent recoveries (%R) and Relative Percent difference (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100* (SSC-SC)/SA

Where: SSC = Spiked sample concentration
SA = Spike added
SC = Concentration

RPD = | LCS - LCSD | * 2/(LCS + LCSD)

LCS = Laboratory control sample percent recovery
LCSD = Laboratory control sample duplicate percent recovery

LCS/LCSD samples: LCS - 12405

Compound	Spike Added (ng/kg)		Sample Concentration (ng/kg)	Spiked Sample Concentration (ng/kg)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	-	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
Gamma-BHC	6.67	UA	0	3.09	UA	46	46				
Heptachlor	↓	↓	↓	5.40	↓	81	81				
Aldrin	↓	↓	↓	5.62	↓	84.3	84.3				
Dieldrin	13.3	↓	↓	10.2	↓	76.7	76.7				
Endrin	↓	↓	↓	10.5	↓	78.9	78.9				
4,4'-DDT	↓	↓	↓	10.8	↓	81.2	81.2	NA			

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicate findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204B3a
SDG #: HP70

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: [illegible]
2nd reviewer: [illegible]

METHOD: GC Pesticides/PCBs (EPA SW 846 Method 8081/8082)

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

Example:

Sample I.D. _____ _____:

Conc. = (_____) / (_____)

=

all NP

#	Sample ID	Compound	Reported Concentration ( )	Calculated Concentration ( )	Qualification

Note: _____

LDC #: 13204C3a **VALIDATION COMPLETENESS WORKSHEET** Date: 3/7/07

SDG #: HP90 & ~~HQ69~~ ~~&~~ ~~#Q69~~ Level II Page: 1 of 1

Laboratory: Analytical Resources, Inc. Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: GC Chlorinated Pesticides (EPA SW 846 Method 8081A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 01/19/05
II.	GC/ECD Instrument Performance Check	N	
III.	Initial calibration	N	
IV.	Continuing calibration	N	
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples /SRM	SW	LCS
IX.	Regional quality assurance and quality control	N	
Xa.	Florisil cartridge check	N	
Xb.	GPC Calibration	N	Sulfur clean up performed
XI.	Target compound identification	N	
XII.	Compound quantitation and reported CRQLs	~~SW~~ N	
XIII.	Overall assessment of data	A	
XIV.	Field duplicates	N	
XV.	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples:

sediment

1	LDW-SS-99-010	11	MB-012805	21		31	
2	LDW-SS-99-010MS	12		22		32	
3	LDW-SS-99-010MSD	13		23		33	
4		14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

VALIDATION FINDINGS WORKSHEET

METHOD: Pesticide/PCBs (EPASW 846 Method 8081/8082)

A. alpha-BHC	I. Dieldrin	Q. Endrin ketone	Y. Aroclor-1242	GG.
B. beta-BHC	J. 4,4'-DDE	R. Endrin aldehyde	Z. Aroclor-1248	HH.
C. delta-BHC	K. Endrin	S. alpha-Chlordane	AA. Aroclor-1254	II.
D. gamma-BHC	L. Endosulfan II	T. gamma-Chlordane	BB. Aroclor-1260	JJ.
E. Heptachlor	M. 4,4'-DDD	U. Toxaphene	CC. DB 608	KK.
F. Aldrin	N. Endosulfan sulfate	V. Aroclor-1016	DD. DB 1701	LL.
G. Heptachlor epoxide	O. 4,4'-DDT	W. Aroclor-1221	EE.	MM.
H. Endosulfan I	P. Methoxychlor	X. Aroclor-1232	FF.	NN.

Notes:_____

LDC #: 13204c3a

SDG #: HP9U

VALIDATION FINDINGS WORKSHEET

Laboratory Control Samples

Page: 1 of 1

Reviewer:

2nd Reviewer:

METHOD: GC Pesticides/PCBs (EPA SW 846 Method 8081/8082)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

[✓ Y] N N/A Were a laboratory control samples (LCS) and laboratory control sample duplicate (LCSD) analyzed for each matrix in this SDG? ______

Y [✓ N] N/A Were the LCS percent recoveries (%R) and relative percent differences (RPD) within the QC limits?

Level IV/D Only

Y N N/A Was a LCS analyzed every 20 samples for each matrix or whenever a sample extraction was performed?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		LCS-012805	R	31.0 (50-150)	( )	( )	All + Blk	J/UJ/P
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
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LDC #: 13204D3a **VALIDATION COMPLETENESS WORKSHEET** Date: 3/7/05
SDG #: HQ17 & ~~HQ04~~ Level II Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC Chlorinated Pesticides (EPA SW 846 Method 8081A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/19 — 1/20/05
II.	GC/ECD Instrument Performance Check	N	
III.	Initial calibration	N	
IV.	Continuing calibration	N	
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A	LDW-SS-99-010, LDW-SS134-010
VIII.	Laboratory control samples / SRM	SW	
IX.	Regional quality assurance and quality control	N	
Xa.	Florisil cartridge check	N	
Xb.	GPC Calibration	N	sulfur clean-up performed
XI.	Target compound identification	N	
XII.	Compound quantitation and reported CRQLs	~~SW~~ N	
XIII.	Overall assessment of data	A	
XIV.	Field duplicates	N	
XV.	Field blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: sediments

1	LDW-SS13B-010	11	MB-012805	21		31	
2	LDW-SS125-010	12	MB-020105	22		32	
3	LDW-SS126-010	13		23		33	
4	LDW-SS116-010	14		24		34	
5	LDW-SS127-010	15		25		35	
6	LDW-SS129-010	16		26		36	
7	LDW-SS76-010 2/1/05	17		27		37	
8	LDW-SS84-010 SX	18		28		38	
9		19		29		39	
10		20		30		40	

SRM per batch # 1 in LDC # 13204C

VALIDATION FINDINGS WORKSHEET

METHOD: Pesticide/PCBs (EPASW 846 Method 8081/8082)

A. alpha-BHC	I. Dieldrin	Q. Endrin ketone	Y. Aroclor-1242	GG.
B. beta-BHC	J. 4,4'-DDE	R. Endrin aldehyde	Z. Aroclor-1248	HH.
C. delta-BHC	K. Endrin	S. alpha-Chlordane	AA. Aroclor-1254	II.
D. gamma-BHC	L. Endosulfan II	T. gamma-Chlordane	BB. Aroclor-1260	JJ.
E. Heptachlor	M. 4,4'-DDD	U. Toxaphene	CC. DB 608	KK.
F. Aldrin	N. Endosulfan sulfate	V. Aroclor-1016	DD. DB 1701	LL.
G. Heptachlor epoxide	O. 4,4'-DDT	W. Aroclor-1221	EE.	MM.
H. Endosulfan I	P. Methoxychlor	X. Aroclor-1232	FF.	NN.

Notes:_____

LDC #: 13204039
SDG #: HG17 ~~HG04~~

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: ~~GC~~ __ HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were a laboratory control samples (LCS) and laboratory control sample duplicate (LCSD) analyzed for each matrix in this SDG?

Y N N/A Were the LCS percent recoveries (%R) and relative percent differences (RPD) within the QC limits?

Level IV/D Only

Y N N/A Was an LCS analyzed every 20 samples for each matrix or whenever a sample extraction was performed?

#	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	LCS-020105	R	36.8 (50-150)	( )	( )	MB-020105, 7	J/UJ/P
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
	LCS-012805	R	31.0 (↓)	( )	( )	MB-012805, 1-6, 8	↓
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
	~~NO SRM~~	~~All~~	( )	( )	( )	~~MB-020105, 7~~	~~UJ/P~~
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
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LDC #: 13234A3a

SDG #: HQ48

Laboratory: Analytical Resources, Inc.

VALIDATION COMPLETENESS WORKSHEET

Level II

Date: 3/10/05

Page: 1 of 1

Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: GC Chlorinated Pesticides (EPA SW 846 Method 8081A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/24/05
II.	GC/ECD Instrument Performance Check	N	
III.	Initial calibration	N	
IV.	Continuing calibration	N	
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	~~SW~~ A	
VIII.	Laboratory control samples / SRM	SW	LCS
IX.	Regional quality assurance and quality control	N	
Xa.	Florisil cartridge check	N	
Xb.	GPC Calibration	N	sulfur clean up performed
XI.	Target compound identification	N	
XII.	Compound quantitation and reported CRQLs	~~SW~~ N	
XIII.	Overall assessment of data	A	
XIV.	Field duplicates	~~MS SW~~	D = 1-6
XV.	Field blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: sediments

1	LDW-SS50-010 D	11	LDW-SS58-010	21	MB-020105	31	
2	LDW-SS55-010	12	LDW-SS28-010	22	MB-020405	32	
3	LDW-SS72-010	13	LDW-SS134-010	23		33	
4	LDW-SS79-010	14	LDW-SS134-010MS	24		34	
5	LDW-SS54-010	15	LDW-SS134-010MSD	25		35	
6	LDW-SS202-010 D	16		26		36	
72	LDW-SS42-010	17		27		37	
8	LDW-SS128-010	18		28		38	
9	LDW-SS64-010	19		29		39	
10	LDW-SS36-010	20		30		40	

VALIDATION FINDINGS WORKSHEET

METHOD: Pesticide/PCBs (EPASW 846 Method 8081/8082)

A. alpha-BHC	I. Dieldrin	Q. Endrin ketone	Y. Aroclor-1242	GG.
B. beta-BHC	J. 4,4'-DDE	R. Endrin aldehyde	Z. Aroclor-1248	HH.
C. delta-BHC	K. Endrin	S. alpha-Chlordane	AA. Aroclor-1254	II.
D. gamma-BHC	L. Endosulfan II	T. gamma-Chlordane	BB. Aroclor-1260	JJ.
E. Heptachlor	M. 4,4'-DDD	U. Toxaphene	CC. DB 608	KK.
F. Aldrin	N. Endosulfan sulfate	V. Aroclor-1016	DD. DB 1701	LL.
G. Heptachlor epoxide	O. 4,4'-DDT	W. Aroclor-1221	EE.	MM.
H. Endosulfan I	P. Methoxychlor	X. Aroclor-1232	FF.	NN.

Notes: _____

LDC #: 13234A3a
SDG #: HQ4B

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

Page: 1 of 1
Reviewer: P
2nd Reviewer: R

METHOD: ✓ GC ___ HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

[✓ Y] N N/A Were a laboratory contro samples (LCS) and laboratory control sample duplicate (LCSD) analyzed for each matrix in this SDG?

Y [✓ N] N/A Were the LCS percent recoveries (%R) and relative percent differences (RPD) within the QC limits?

Level IV/D Only

Y N [✓ N/A] Was an LCS analyzed every 20 samples for each matrix or whenever a sample extraction was performed?

#	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	LCS-020105	R	36.8 (50-150)	( )	( )	MB-020105, All except #7	J/UJ/P
			( )	( )	( )		
			( )	( )	( )		
	LCS-020405	R	43.5 (↓)	( )	( )	MB-020405, 7	↓
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
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LDC #: 13234B3a

SDG #: HQ27 & ~~HQ28~~ * HQ28

Laboratory: Analytical Resources, Inc.

VALIDATION COMPLETENESS WORKSHEET

Level II

Date: 3/10/05

Page: 1 of 1

Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: GC Chlorinated Pesticides (EPA SW 846 Method 8081A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/21/05
II.	GC/ECD Instrument Performance Check	N	
III.	Initial calibration	N	
IV.	Continuing calibration	N	
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A	LDW-SS-99-010
VIII.	Laboratory control samples /SRM	SW	LCS
IX.	Regional quality assurance and quality control	N	
Xa.	Florisil cartridge check	N	
Xb.	GPC Calibration	N	
XI.	Target compound identification	N	
XII.	Compound quantitation and reported CRQLs	~~SW~~ N	
XIII.	Overall assessment of data	A	
XIV.	Field duplicates	N	
XV.	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples: sediment

1	LDW-SS87-010	11	MB-012805	21		31	
2	LDW-SS96-010	12		22		32	
3	LDW-SS63-010	13		23		33	
4	LDW-SS70-010	14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

VALIDATION FINDINGS WORKSHEET

METHOD: Pesticide/PCBs (EPASW 846 Method 8081/8082)

A. alpha-BHC	I. Dieldrin	Q. Endrin ketone	Y. Aroclor-1242	GG.
B. beta-BHC	J. 4,4'-DDE	R. Endrin aldehyde	Z. Aroclor-1248	HH.
C. delta-BHC	K. Endrin	S. alpha-Chlordane	AA. Aroclor-1254	II.
D. gamma-BHC	L. Endosulfan II	T. gamma-Chlordane	BB. Aroclor-1260	JJ.
E. Heptachlor	M. 4,4'-DDD	U. Toxaphene	CC. DB 608	KK.
F. Aldrin	N. Endosulfan sulfate	V. Aroclor-1016	DD. DB 1701	LL.
G. Heptachlor epoxide	O. 4,4'-DDT	W. Aroclor-1221	EE.	MM.
H. Endosulfan I	P. Methoxychlor	X. Aroclor-1232	FF.	NN.

Notes:_____

LDC #: 13234B3a
SDG #: 4Q27

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

Page: 1 of 1
Reviewer:
2nd Reviewer:

METHOD: [✓ GC] __ HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

[✓ Y] N N/A Were a laboratory control samples (LCS) and laboratory control sample duplicate (LCSD) analyzed for each matrix in this SDG? ____________

Y [✓ N] N/A Were the LCS percent recoveries (%R) and relative percent differences (RPD) within the QC limits?

Level IV/D Only

Y N [✓ N/A] Was an LCS analyzed every 20 samples for each matrix or whenever a sample extraction was performed?

#	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	LCS-012805	R	31.0 (50-150)	( )	( )	All + Blk	J/UJ/P
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
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			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		

LDC #: 13234E3a **VALIDATION COMPLETENESS WORKSHEET** Date: 3/10/05

SDG #: HQ56 ~~& HQ57~~ Level II Page: 1 of 1

Laboratory: Analytical Resources, Inc. Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: GC Chlorinated Pesticides (EPA SW 846 Method 8081A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/25/05
II.	GC/ECD Instrument Performance Check	N	
III.	Initial calibration	N	
IV.	Continuing calibration	N	
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A	LDW-SS134-010
VIII.	Laboratory control samples /SRM	SW	
IX.	Regional quality assurance and quality control	N	
Xa.	Florisil cartridge check	N	
Xb.	GPC Calibration	N	
XI.	Target compound identification	N	
XII.	Compound quantitation and reported CRQLs	SW	
XIII.	Overall assessment of data	A	
XIV.	Field duplicates	N	
XV.	Field blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: Sediment

1	LDW-SS92-010	11	MB-020105	21		31	
2	LDW-SS104-010	12		22		32	
3	LDW-SS115-010	13		23		33	
4		14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

VALIDATION FINDINGS WORKSHEET

METHOD: Pesticide/PCBs (EPASW 846 Method 8081/8082)

A. alpha-BHC	I. Dieldrin	Q. Endrin ketone	Y. Aroclor-1242	GG.
B. beta-BHC	J. 4,4'-DDE	R. Endrin aldehyde	Z. Aroclor-1248	HH.
C. delta-BHC	K. Endrin	S. alpha-Chlordane	AA. Aroclor-1254	II.
D. gamma-BHC	L. Endosulfan II	T. gamma-Chlordane	BB. Aroclor-1260	JJ.
E. Heptachlor	M. 4,4'-DDD	U. Toxaphene	CC. DB 608	KK.
F. Aldrin	N. Endosulfan sulfate	V. Aroclor-1016	DD. DB 1701	LL.
G. Heptachlor epoxide	O. 4,4'-DDT	W. Aroclor-1221	EE.	MM.
H. Endosulfan I	P. Methoxychlor	X. Aroclor-1232	FF.	NN.

Notes:_____

LDC #: 13234E3a
SDG #: HQ56

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

Page: 1 of 1
Reviewer: B
2nd Reviewer: R

METHOD: ✓ **GC** ___ **HPLC**

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

[✓ Y] N N/A Were a laboratory control samples (LCS) and laboratory control sample duplicate (LCSD) analyzed for each matrix in this SDG?

Y [✓ N] N/A Were the LCS percent recoveries (%R) and relative percent differences (RPD) within the QC limits?

Level IV/D Only

Y N [✓ N/A] Was an LCS analyzed every 20 samples for each matrix or whenever a sample extraction was performed?

#	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	LCS-020105	R	36.8 (50-150)	( )	( )	All + 31K	J/UJ/P
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
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			( )	( )	( )		
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			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		

LDC #: 13298C3a

VALIDATION COMPLETENESS WORKSHEET

Level II

Date: 3/25/05

SDG #: HU13

Page: 1 of 1

Laboratory: Analytical Resources, Inc.

Reviewer:

2nd Reviewer:

METHOD: GC Chlorinated Pesticides (EPA SW 846 Method 8081A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/17/05
II.	GC/ECD Instrument Performance Check	N	
III.	Initial calibration	N	
IV.	Continuing calibration	N	
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples /SRM	A	
IX.	Regional quality assurance and quality control	N	
Xa.	Florisil cartridge check	N	
Xb.	GPC Calibration	N	Silica gel clean up performed
XI.	Target compound identification	N	
XII.	Compound quantitation and reported CRQLs	N	
XIII.	Overall assessment of data	A	
XIV.	Field duplicates	N	
XV.	Field blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: sediment

1	LDW-SS130-010	11	MB-030305	21		31	
2	LDW-SS130-010MS	12		22		32	
3	LDW-SS130-010MSD	13		23		33	
4		14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

LDC #: 13298D3a

SDG #: HV08

Laboratory: Analytical Resources, Inc.

VALIDATION COMPLETENESS WORKSHEET

Level II

Date: 3/25/05

Page: 1 of 1

Reviewer: RJ

2nd Reviewer: SK

METHOD: GC Chlorinated Pesticides (EPA SW 846 Method 8081A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/17 - 1/21/05
II.	GC/ECD Instrument Performance Check	N	
III.	Initial calibration	N	
IV.	Continuing calibration	N	
V.	Blanks	A	
VI	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates / DUP	N / A	NO MS/MSD Test
VIII.	Laboratory control samples / SRM	SW / A	LCS
IX.	Regional quality assurance and quality control	N	
Xa.	Florisil cartridge check	N	
Xb.	GPC Calibration	N	Silica gel clean-up performed
XI.	Target compound identification	N	
XII.	Compound quantitation and reported CRQLs	N	
XIII.	Overall assessment of data	A	
XIV.	Field duplicates	N	D = 1 + 3
XV.	Field blanks	N	

Note. A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples: sediments

1	LDW-SS5-010	11	MB-031105	21		31	
2	LDW-SS67-010	12		22		32	
3	LDW-SS5-010DUP	13		23		33	
4		14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

VALIDATION FINDINGS WORKSHEET

METHOD: Pesticide/PCBs (EPASW 846 Method 8081/8082)

A. alpha-BHC	I. Dieldrin	Q. Endrin ketone	Y. Aroclor-1242	GG.
B. beta-BHC	J. 4,4'-DDE	R. Endrin aldehyde	Z. Aroclor-1248	HH.
C. delta-BHC	K. Endrin	S. alpha-Chlordane	AA. Aroclor-1254	II.
D. gamma-BHC	L. Endosulfan II	T. gamma-Chlordane	BB. Aroclor-1260	JJ.
E. Heptachlor	M. 4,4'-DDD	U. Toxaphene	CC. DB 608	KK.
F. Aldrin	N. Endosulfan sulfate	V. Aroclor-1016	DD. DB 1701	LL.
G. Heptachlor epoxide	O. 4,4'-DDT	W. Aroclor-1221	EE.	MM.
H. Endosulfan I	P. Methoxychlor	X. Aroclor-1232	FF.	NN.

Notes:_____

LDC #: L3298D3a
SDG #: HV08

METHOD: ✓ GC ___ HPLC

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

Page: 1 of 1
Reviewer:
2nd Reviewer:

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

[✓ Y] N N/A Were a laboratory control samples (LCS) and laboratory control sample duplicate (LCSD) analyzed for each matrix in this SDG?
Y [✓ N] N/A Were the LCS percent recoveries (%R) and relative percent differences (RPD) within the QC limits?

Level IV/D Only
Y N [✓ N/A] Was an LCS analyzed every 20 samples for each matrix or whenever a sample extraction was performed?

#	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	LCS-031105	R	36.5 (50-150)	( )	( )	All + BlK	J/UJ/P
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
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			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		

LDC #: 13204A3b

SDG #: HP67

Laboratory: Analytical Resources, Inc.

VALIDATION COMPLETENESS WORKSHEET

Level ~~II~~ IV

Date: 3/4/05

Page: 1 of 1

Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: GC Polychlorinated Biphenyls (EPA SW 846 Method 8082)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/17/05
II.	GC/ECD Instrument Performance Check	NA	
III.	Initial calibration	A	
IV.	Continuing calibration	A	
V.	Blanks	A	
VI.	Surrogate spikes /1S	SW	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples /SRM	A	LCS
IX.	Regional quality assurance and quality control	N	
Xa.	Florisil cartridge check	N	
Xb.	GPC Calibration	N	Acid + sulfur clean up performed
XI.	Target compound identification	A	
XII.	Compound quantitation and reported CRQLs	SW	
XIII.	Overall assessment of data	A	
XIV.	Field duplicates	N	
XV.	Field blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: sediment

1	LDW-SS1-010	11	LDW-SS5-010MSD	21		31	
2	LDW-SS4-010	12	MB-012405	22		32	
3	LDW-SS5-010	13		23		33	
4	LDW-SS10-010	14		24		34	
5	LDW-SS12-010	15		25		35	
6	LDW-SS14-010	16		26		36	
7	LDW-SS15-010	17		27		37	
8	LDW-SS22-010	18		28		38	
9	LDW-SS13-010	19		29		39	
10	LDW-SS5-010MS	20		30		40	

SRM/Aroclor 1254 = 120 ug/kg
(SRM SQ-1)

LDC #: 13204A36
SDG #: HP67

VALIDATION FINDINGS CHECKLIST

Reviewer: [illegible]
2nd Reviewer: [illegible]

Method: ✓ GC _____ HPLC

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Was a linear fit used for evaluation? If yes, were all percent relative standard deviations (%RSD) < 20%?	✓			
Was a curve fit used for evaluation? If Yes, what was the acceptance criteria used?		✓		
Did the initial calibration meet the curve fit acceptance criteria?			✓	
Were the RT windows properly established?	✓			
IV. Continuing calibration				
What type of continuing calibration calculation was performed? ____%D or %R	✓			
Was a continuing calibration analyzed daily?	✓			
Were all percent differences (%D) < 15%.0 or percent recoveries 85-115%?	✓			
Were all the retention times within the acceptance windows?	✓			
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Surrogate spikes				
Were all surrogate %R within the QC limits?	✓			
If the percent recovery (%R) of one or more surrogates was outside QC limits, was a reanalysis performed to confirm %R?		✓		
If any %R was less than 10 percent, was a reanalysis performed to confirm %R?			✓	
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.	✓			
Was a MS/MSD analyzed every 20 samples of each matrix?	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	✓			
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			

LDC #: 13204A36
SDG #: HP86-1

VALIDATION FINDINGS CHECKLIST

Reviewer: B
2nd Reviewer: K

Validation Area	Yes	No	NA	Findings/Comments
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?			✓	
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
X. Target compound identification				
Were the retention times of reported detects within the RT windows?	✓			
XI. Compound quantitation/CRQLs				
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XII. System performance				
System performance was found to be acceptable.	✓			
XIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XIV. Field duplicates				
Were field duplicate pairs identified in this SDG?		✓		
Were target compounds idetected in the field duplicates?			✓	
XV. Field blanks				
Were field blanks identified in this SDG?		✓		
Were target compounds detected in the field blanks?			✓	

VALIDATION FINDINGS WORKSHEET

METHOD: Pesticide/PCBs (EPASW 846 Method 8081/8082)

A. alpha-BHC	I. Dieldrin	Q. Endrin ketone	Y. Aroclor-1242	GG.
B. beta-BHC	J. 4,4'-DDE	R. Endrin aldehyde	Z. Aroclor-1248	HH.
C. delta-BHC	K. Endrin	S. alpha-Chlordane	AA. Aroclor-1254	II.
D. gamma-BHC	L. Endosulfan II	T. gamma-Chlordane	BB. Aroclor-1260	JJ.
E. Heptachlor	M. 4,4'-DDD	U. Toxaphene	CC. DB 608	KK.
F. Aldrin	N. Endosulfan sulfate	V. Aroclor-1016	DD. DB 1701	LL.
G. Heptachlor epoxide	O. 4,4'-DDT	W. Aroclor-1221	EE.	MM.
H. Endosulfan I	P. Methoxychlor	X. Aroclor-1232	FF.	NN.

Notes:_____

LDC #: 13204A36
SDG #: H867

VALIDATION FINDINDS WORKSHEET
Surrogate Recovery

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: __GC __HPLC
Are surrogates required by the method? Yes____ or No____.
Please see qualifications below for all questions answered "N". No: applicable questions are identified as "N/A".
Y N N/A Were surrogates spikec into all samples and blanks?
Y N N/A Did all surrogate recoveries (%R) meet the QC limits?

#	Sample ID	Detector/ Column	Surrogate Compound	%R (Limits)	Qualifications
	2	ZB5	DCB	234 (50-150)	J/P detect
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
	note: Lab thinks that they spiked it twice			( )	

	Surrogate Compound		Surrogate Compound		Surrogate Compound		Surrogate Compound
A	Chlorobenzene (CBZ)	G	Octacosane	M	Benzo(e)Pyrene	S	1-Chloro-3-Nitrobenzene
B	4-Bromofluorobenzene (BFB)	H	Ortho-Terphenyl	N	Terphenyl-D14	T	3,4-Dinitrotoluene
C	a,a,a-Trifluorotoluene	I	Fluorobenzene (FBZ)	O	Decafluorobiphenyl (DCB)	U	Tripentyltin
D	Bromochlorobenene	J	n-Triacontane	P	1-methylnaphthalere	V	Tri-n-propyltin
E	1,4-Dichlorobutane	K	Hexacosane	Q	Dichlorophenyl Acetic Acic (DCAA)	W	Tributyl Phosphate
F	1,4-Diflucrobenzene (DFB)	L	Bromobenzene	R	4-Nitrophenol	X	Triphenyl Phosphate

LDC #: 13204A36
SDG #: H867

VALIDATION FINDINDS WORKSHEET
Surrogate Recovery

Page: 1 of 1
Reviewer: B
2nd Reviewer: IK

METHOD: GC ___ HPLC

Are surrogates required by the method? Yes___ or No___.

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were surrogates spiked into all samples and blanks?

Y N N/A Did all surrogate recoveries (%R) meet the QC limits?

#	Sample ID	Detector/ Column	Surrogate Compound	%R (Limits)	Qualifications
	1	ZB5	Heptachlorobiphenyl	65555358 (66506087-26602438)	J/UJ/P Qual All except AA+BB
	2	↓	↓	55076972 (↓)	↓
	3	↓	↓	66177898 (↓)	J/NJ/A Qual All except AA+BB
	5	↓	↓	54440457 (↓)	J/NJ/P Qual All except AA+BB
	6	↓	↓	59559589 (↓)	
	7	↓	↓	57122450 (↓)	
	8	↓	↓	53377065 (↓)	
	9	↓	↓	54405003 (↓)	↓
				( )	
				( )	
				( )	

	Surrogate Compound		Surrogate Compound		Surrogate Compound		Surrogate Compound
A	Chlorobenzene (CBZ)	G	Octacosane	M	Benzo(e)Pyrene	S	1-Chloro-3-Nitrobenzene
B	4-Bromofluorobenzene (BFB)	H	Ortho-Terphenyl	N	Terphenyl-D14	T	3,4-Dinitrotoluene
C	a,a,a-Trifluorotoluene	I	Fluorobenzene (FBZ)	O	Decafluorobiphenyl (DCB)	U	Tripentyltin
D	Bromochlorobenene	J	n-Triacontane	P	1-methylnaphthalene	V	Tri-n-propyltin
E	1,4-Dichlorobutane	K	Hexacosane	Q	Dichlorophenyl Acetic Acid (DCAA)	W	Tributyl Phosphate
F	1,4-Difluorobenzene (DFB)	L	Bromobenzene	R	4-Nitrophenol	X	Triphenyl Phosphate

LDC #: 13204A36
SDG #: HP67

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported CRQLs

Page: 1 of 1
Reviewer: B
2nd Reviewer: K

METHOD: GC __ HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Level IV/D Only

Y N N/A Were CRQLs adjusted for sample dilutions, dry weight factors, etc.?
Y N N/A Did the reported results for detected target compounds agree within 10.0% of the recalculated results?
Y N N/A Did the percent difference of detected compounds between two columns./detectors ≤40%?
If no, please see findings bellow.

#	Compound Name	Sample ID	%D Between Two Columns/Detectors % RPD Limit (≤ 40%)	Qualifications
	BB	7	~~40.8~~ 41	J/A det
	Y	8	~~46.2~~ 46	↓

Comments: See sample calculation verification worksheet for recalculations

LDC #: 13204A36
SDG #: H867

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer: JB
2nd Reviewer: JC

METHOD: GC ✓ HPLC ____

The calibration Factor (CF), average CF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

CF = A/C
average CF = sum of the CF/number of standards
%RSD = 100 * (S/X)

A = Area of compound,
C = Concentration of compound,
S = Standard deviation of the CF
X = Mean of the CFs

#	Standard ID	Calibration Date	Compound	Reported CF (0.25 std)	Recalculated CF (0.25 std)	Reported Average CF (initial)	Recalculated Average CF (initial)	Reported %RSD	Recalculated %RSD
1	Aroclor 1016/1260 ICAV	1/28/05	Aroclor 1260-1 (ZB5)	0.0284	0.0284	0.0279	0.0279	8.3	8.3
2			↓ (ZB35)	0.0567	0.0567	0.0587	0.0587	7.0	7.0
3									
4									

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

INIC SB

LDC #: 13204A36
SDG #: HP67

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Page: 1 of 1
Reviewer: [illegible]
2nc Reviewer: [illegible]

METHOD: GC ✓ HPLC ____

The percent difference (%D) of the initial calibration average Calibration Factors (CF) and the continuing calibration CF were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. CF - CF)/ave. CF
CF = A/C

Where: ave. CF = initial calibration average CF
CF = continuing calibration CF
A = Area of compound
C = Concentration of compound

#	Standard ID	Calibration Date	Compound	Average CF(Ical)/ CCV Conc.	Reported CF/Conc. CCV	Recalculated CF/Conc. CCV	Reported %D	Recalculated %D
1	8082 CCV	1/28/05	Aroclor 1260 - 1	0.50	~~0.50~~	0.57	14.5	14.5
	ZB5	16:26			0.57			
2	ZB35	↓	↓	↓	0.52	0.52	4.5	4.5
3								
4								

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204A3b
SDG #: HP67

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Reviewer: [illegible]
2nd reviewer: [illegible]

METHOD: ___ GC ___ HPLC

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: #1

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
TCMX	ZB5	0.040	0.0370	92.6	92.5	0
DCB	↓	↓	0.0522	130.4	130.5	0

Sample ID:

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference

Sample ID:

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference

LDC #: 13204A36
SDG #: HP67

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Page: 1 of 1
Reviewer: P
2nd Reviewer: K

METHOD: ✓ GC __HPLC

The percent recoveries (%R) and relative percent differences (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

%Recovery = 100 * (SSC - SC)/SA Where SSC = Spiked sample concentration SC = Sample concentration
SA = Spike added
RPD =(({SSCMS - SSCMSD} * 2) / (SSCMS + SSCMSD))*100 MS = Matrix spike MSD = Matrix spike duplicate

MS/MSD samples: 10 + 11

Compound	Spike Added (ug/kg)		Sample Conc. (ug/kg)	Spike Sample Concentration (ug/kg)		Matrix spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	---	MS	MSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)											
Diesel (8015)											
Benzene (802' B)											
Methane (RSK-175)											
2,4-D (8151)											
Dinoseb (8151)											
Naphthalene (8310)											
Anthracene (8310)											
HMX (8330)											
2,4,6-Trinitrotoluene (8330)											
Aroclor 1260	100	100	ND	102	101	102	102	101	101	1	1

Comments: Refer to Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204A3b
SDG #: HP67

VALIDATION FINDINGS WORKSHEET

Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

METHOD: / GC __HPLC

The percent recoveries (%R) and relative percent differences (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

%Recovery = 100 * (SSC - SC)/SA

Where SSC = Spiked sample concentration
SA = Spike added
SC = Sample concentration

RPD =(({SSCLCS - SSCLCSD} * 2) / (SSCLCS + SSCLCSD))*100

LCS = Laboratory Control Sample
LCSD = Laboratory Control Sample duplicate

LCS/LCSD samples: LCS - 012405

Compound	Spike Added (ug/kg)		Sample Conc. (ug/kg)	Spike Sample Concentration (ug/kg)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	---	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)											
Diesel (8015)											
Benzene (8021B)											
Methane (RSK-175)											
2,4-D (8151)											
Dinoseb (8151)											
Naphthalene (8310)											
Anthracene (8310)											
HMX (8330)											
2,4,6-Trinitrotoluene (8330)											
Aroclor 1260	102	NA	0	102	NA	100	100	NA			

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicate findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204A3b
SDG #: HP67

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: / GC ___ HPLC

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds within 10% of the reported results?

Concentration= $\frac{(A)(Fv)(Df)}{(RF)(Vs \text{ or } Ws)(\%S/100)}$

A= Area or height of the compound to be measured
Fv= Final Volume of extract
Df= Dilution Factor
RF= Average response factor of the compound in the initial calibration
Vs= Initial volume of the sample
Ws= Initial weight of the sample
%S= Percent Solid

Example:

Sample ID. #1 Compound Name Aroclor 1260

Concentration = $\frac{0.259 \times 5 \times 000}{26}$

$= \frac{50\ ug}{kg}$

#	Sample ID	Compound	Reported Concentrations ( )	Recalculated Results Concentrations ( )	Qualifications
	Aroclor-2=	$\frac{2914031}{10076277} \times 0.05$			
		0.04596			
	=	0.315			
	Aroclor (2+3+4) =	$\frac{0.315 + 0.244 + .217}{3} = 0.259$			

Comments: _____

LDC #: 13204B3b

SDG #: HP70

Laboratory: Analytical Resources, Inc.

VALIDATION COMPLETENESS WORKSHEET

Level IV

Date: 3/4/05

Page: 1 of 1

Reviewer:

2nd Reviewer:

METHOD: GC Polychlorinated Biphenyls (EPA SW 846 Method 8082)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/18/05
II.	GC/ECD Instrument Performance Check	A	
III.	Initial calibration	A	
IV.	Continuing calibration	A	
V.	Blanks	A	
VI.	Surrogate spikes /1,5	SW	
VII.	Matrix spike/Matrix spike duplicates	A	LDW-SS5-010
VIII.	Laboratory control samples /SRM	A	LCS
IX.	Regional quality assurance and quality control	N	
Xa.	Florisil cartridge check	N	
Xb.	GPC Calibration	N	Acid + Sulfur clean up performed
XI.	Target compound identification	A	
XII.	Compound quantitation and reported CRQLs	SW	
XIII.	Overall assessment of data	A	
XIV.	Field duplicates	SW	D = 4 + 5
XV.	Field blanks	ND ~~NB~~	~~R = 1~~ RB = LDW-SS38-RB

Note: A = Acceptable; ND = No compounds detected; D = Duplicate; N = Not provided/applicable; R = Rinsate; TB = Trip blank; SW = See worksheet; FB = Field blank; EB = Equipment blank

Validated Samples: ~~Soil + Water~~ S

W	1 ~~LDW-SS38-RB~~	11	LDW-SS51-010 S	21		31		
S	2 LDW-SS23-010	12	MB-012405	22		32		
	3 LDW-SS26-010	13	MB-012205	23		33		
	4 LDW-SS27-010	14		24		34		
	5 LDW-SS200-010	15		25		35		
	6 LDW-SS32-010	16		26		36		
	7 LDW-SS37-010	17		27		37		
	8 LDW-SS38-010	18		28		38		
	9 LDW-SS40-010	19		29		39		
	10 LDW-SS48-010	20		30		40		

SRM SQ-1: 1254 = 120 ug/kg found in 13204A

VALIDATION FINDINGS WORKSHEET

METHOD: Pesticide/PCBs (EPASW 846 Method 8081/8082)

A. alpha-BHC	I. Dieldrin	Q. Endrin ketone	Y. Aroclor-1242	GG.
B. beta-BHC	J. 4,4'-DDE	R. Endrin aldehyde	Z. Aroclor-1248	HH.
C. delta-BHC	K. Endrin	S. alpha-Chlordane	AA. Aroclor-1254	II.
D. gamma-BHC	L. Endosulfan II	T. gamma-Chlordane	BB. Aroclor-1260	JJ.
E. Heptachlor	M. 4,4'-DDD	U. Toxaphene	CC. DB 608	KK.
F. Aldrin	N. Endosulfan sulfate	V. Aroclor-1016	DD. DB 1701	LL.
G. Heptachlor epoxide	O. 4,4'-DDT	W. Aroclor-1221	EE.	MM.
H. Endosulfan I	P. Methoxychlor	X. Aroclor-1232	FF.	NN.

Notes:_____

LDC #: 13204B3b
SDG #: HFH0

VALIDATION FINDINGS CHECKLIST

Page: 1 of 1
Reviewer: SB
2nd Reviewer: DC

Method: ✓ GC _____ HPLC

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Was a linear fit used for evaluation? If yes, were all percent relative standard deviations (%RSD) ≤ 20%?	✓			
Was a curve fit used for evaluation? If Yes, what was the acceptance criteria used?	✓			
Did the initial calibration meet the curve fit acceptance criteria?	✓			
Were the RT windows properly established?	✓			
IV. Continuing calibration				
What type of continuing calibration calculation was performed? ____%D or %R	✓			
Was a continuing calibration analyzed daily?	✓			
Were all percent differences (%D) ≤ 15%.0 or percent recoveries 85-115%?	✓			
Were all the retention times within the acceptance windows?	✓			
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.			✓	
VI. Surrogate spikes				
Were all surrogate %R within the QC limits?	✓			
If the percent recovery (%R) of one or more surrogates was outside QC limits, was a reanalysis performed to confirm %R?			✓	
If any %R was less than 10 percent, was a reanalysis performed to confirm %R?			✓	
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.	✓			
Was a MS/MSD analyzed every 20 samples of each matrix?	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	✓			
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			

LDC #: 13204B36
SDG #: HP70

VALIDATION FINDINGS CHECKLIST

Reviewer: R
2nd Reviewer: R

Validation Area	Yes	No	NA	Findings/Comments
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?			✓	
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
X. Target compound identification				
Were the retention times of reported detects within the RT windows?	✓			
XI. Compound quantitation/CRQLs				
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XII. System performance				
System performance was found to be acceptable.	✓			
XIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XIV. Field duplicates				
Were field duplicate pairs identified in this SDG?	✓			
Were target compounds idetected in the field duplicates?	✓			
XV. Field blanks				
Were field blanks identified in this SDG?	✓			
Were target compounds detected in the field blanks?			✓	

LDC #: 13204B36
SDG #: HR70

VALIDATION FINDINDS WORKSHEET
Surrogate Recovery

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: ✓ GC ___ HPLC

Are surrogates required by the method? Yes___ or No___.

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were ~~surrogates~~ IS spikec into all samples and blanks?

Y N N/A Did all ~~surrogate~~ IS recoveries (%R) meet the QC limits?

#	Sample ID	Detector/ Column	~~Surrogate~~ IS Compound	area ~~%R~~ (Limits)	Qualifications
	5	ZB5	Heptachlorobiphenyl	52977551 (55673917 - 72695668)	J/UJ/P QUAL: V, W, X, Y, Z
	6	↓	↓	52779345 (↓)	↓
	8 9	↓	↓	54738954 (↓)	↓
	10	↓	↓	47839147 (↓)	↓
	11	↓	↓	50253001 (↓)	↓
				( )	
				( )	
				( )	

	Surrogate Compound		Surrogate Compound		Surrogate Compound		Surrogate Compound
A	Chlorobenzene (CBZ)	G	Octacosane	M	Benzo(e)Pyrene	S	1-Chloro-3-Nitrobenzene
B	4-Bromofluorobenzene (BFB)	H	Ortho-Terphenyl	N	Terphenyl-D14	T	3,4-Dinitrotoluene
C	a,a,a-Trifluorotoluene	I	Fluorobenzene (FBZ)	O	Decafluorobiphenyl (DCB)	U	Tricentyltin
D	Bromochlorobenene	J	n-Triacontane	P	1-methylnaphthalene	V	Tri-n-propyltin
E	1,4-Dichlorobutane	K	Hexacosane	Q	Dichlorophenyl Acetic Acid (DCAA)	W	Tributyl Phosphate
F	1,4-Difluorobenzene (DFB)	L	Bromobenzene	R	4-Nitrophenol	X	Triphenyl Phosphate

LDC # 13204B36
SDG #: 14870

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported CRQLs

Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC ___ HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Level IV/D Only

Y N N/A Were CRQLs adjusted for sample dilutions, dry weight factors, etc.?
Y N N/A Did the reported results for detected target compounds agree within 10.0% of the recalculated results?
Y N N/A Did the percent difference of detected compounds between two columns./detectors ≤40%?
If no, please see findings bellow.

#	Compound Name	Sample ID	%RPD ~~%D~~ Between Two Columns/Detectors Limit (≤ 40%)	Qualifications
	Y	9	44	J/A det

Comments: See sample calculation verification worksheet for recalculations

LDC #: 13204B3b
SDG #: HP70

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: B
2nd reviewer: R

METHOD: GC ___ HPLC
Y N N/A Were field duplicate pairs identified in this SDG?
Y N N/A Were target compounds detected in the field duplicate pairs?

Compound	Concentration (ug/kg)		%RPD Limit 150	Qualification Parent only / All Samples
	4	5		
Y	21	23	9	
AA	32	37	14	
BB	20u	40	~~200~~ NC	

Compound	Concentration ( )		%RPD Limit _____	Qualification Parent only / All Samples

LDC #: 13204B3b
SDG #: HP70

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Reviewer: B
2nd Reviewer: K

METHOD: GC / HPLC_____

The calibration Factor (CF), average CF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

CF = A/C
average CF = sum of the CF/number of standards
%RSD = 100 * (S/X)

A = Area of compound,
C = Concentration of compound,
S = Standard deviation of the CF
X = Mean of the CFs

#	Standard ID	Calibration Date	Compound	Reported CF (0.25 std)	Recalculated CF (0.25 std)	Reported Average CF (initial)	Recalculated Average CF (initial)	Reported %RSD	Recalculated %RSD
1	82601CAL ZB5	1/24/05	1260-1	0.0278	0.0278	0.0278	0.0278	5.0	5.0
	ZB35		↓	0.0555	0.0555	0.0576	0.0576	8.6	8.6
2	ZB5	1/31/05	↓	0.0876	0.0876	0.0797	0.0797	7.5	7.5
	ZB35			0.0613	0.0613	0.0601	0.0601	7.3	7.3
3									
4									

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

INIC[illegible] SB

LDC #: 13204B3b
SDG #: HP70

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC ✓ HPLC ____

The percent difference (%D) of the initial calibration average Calibration Factors (CF) and the continuing calibration CF were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. CF - CF)/ave. CF
CF = A/C

Where: ave. CF = initial calibration average CF
CF = continuing calibration CF
A = Area of compound
C = Concentration of compound

#	Standard ID	Calibration Date	Compound	Average CF(Ical)/ CCV Conc.	Reported CF/Conc. CCV	Recalculated CF/Conc. CCV	Reported %D	Recalculated %D
1	8082 CCV	1/31/05 1427	1260-1 ZB5	~~0.49~~ 0.50	~~0.50~~ 0.49	0.49	1.2	1.2
			↓ ZB35	0.50	0.47	0.47	6.2	6.2
2								
3								
4								

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204B36
SDG #: HP70

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Page: 1 of 1
Reviewer: [illegible]
2nd reviewer: [illegible]

METHOD: ~~GC~~ / GC ___ HPLC

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: #1

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
2 DCB	DB-35	0.04	0.0499	125	125	
TCMX	↓	↓	0.0351	87.8	87.8	↓

Sample ID:

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference

Sample ID:

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference

LDC #: 13204B36
SDG #: HP70

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Page: 1 of 1
Reviewer: FT
2nd Reviewer: [illegible]

METHOD: ✓GC __HPLC

The percent recoveries (%R) and relative percent differences (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

%Recovery = 100 * (SSC - SC)/SA Where SSC = Spiked sample concentration SC = Sample concentration
SA = Spike added
RPD = ((SSCMS - SSCMSD) * 2) / (SSCMS + SSCMSD))*100 MS = Matrix spike MSD = Matrix spike duplicate

MS/MSD samples: LDW-555-010

Compound	Spike Added ( )		Sample Conc. ( )	Spike Sample Concentration ( )		Matrix spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	---	MS	MSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)											
Diesel (8015)											
Benzene (8021B)											
Methane (RSK-175)											
2,4-D (8151)											
Dinoseb (8151)											
Naphthalene (8310)											
Anthracene (8310)											
HMX (8330)											
2,4,6-Trinitrotoluene (8330)											

Comments: Refer to Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204B30
SDG #: HP70

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

Reviewer: JS
2nd Reviewer:

_____METHOD: ✓ GC __HPLC

The percent recoveries (%R) and relative percent differences (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

%Recovery = 100 * (SSC - SC)/SA

Where SSC = Spiked sample concentration; SA = Spike added; SC = Sample concentration; LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample duplicate

RPD =(({SSCLCS - SSCLCSD} * 2) / (SSCLCS + SSCLCSD))*100

LCS/LCSD samples:_____

Compound	Spike Added ( )		Sample Conc. ( )	Spike Sample Concentration ( )		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	---	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)											
Diesel (8015)											
Benzene (8021B)											
Methane (RSK-175)											
2,4-D (8151)											
Dinoseb (8151)											
Naphthalene (8310)											
Anthracene (8310)											
HMX (8330)											
2,4,6-Trinitrotoluene (8330)											

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicate findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204B3b
SDG #: HP10

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: ✓ GC ___ HPLC

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds within 10% of the reported results?

Concentration= $\frac{(A)(Fv)(Df)}{(RF)(Vs \text{ or } Ws)(\%S/100)}$

A= Area or height of the compound to be measured
Fv= Final Volume of extract
Df= Dilution Factor
RF= Average response factor of the compound in the initial calibration
Vs= Initial volume of the sample
Ws= Initial weight of the sample
%S= Percent Solid

Example:

Sample ID. #2 Compound Name 1260

Concentration = $\frac{0.157 \times 5 \times 1000}{26.2}$

= 30 ug/kg

#	Sample ID	Compound	Reported Concentrations ( )	Recalculated Results Concentrations ( )	Qualifications
	Aroclor 1260-2	= (1609390)(0.05) / (9452964)(0.0468)	=		
		= 0.182			
	1260-(2+3+4)/3	= 0.182 + 0.172 + 0.118 / 3	=	0.157	

Comments: _____

SAMPCALew.wpd

LDC #: 13204C3b

VALIDATION COMPLETENESS WORKSHEET

SDG #: HP90 ~~& HQ69~~ ~~& HQ69~~

Level II

Laboratory: Analytical Resources, Inc.

Date: 3/4/05

Page: 1 of 1

Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: GC Polychlorinated Biphenyls (EPA SW 846 Method 8082)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/19/05
II.	GC/ECD Instrument Performance Check	N	
III.	Initial calibration	N	
IV.	Continuing calibration	N	
V.	Blanks	A	
VI.	Surrogate spikes ~~/TS~~ A	~~SW~~	
VII.	Matrix spike/Matrix spike duplicates	SW	LDW-SS97-010
VIII.	Laboratory control samples /SRM	A	LCS
IX.	Regional quality assurance and quality control	N	
Xa.	Florisil cartridge check	N	
Xb.	GPC Calibration	N	
XI.	Target compound identification	N	
XII.	Compound quantitation and reported CRQLs	SW	
XIII.	Overall assessment of data	N	
XIV.	Field duplicates	SW	D = 7 + 8
XV.	Field blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: Sediment

1 2	LDW-SS-111-010 S	11	MB-012609	21		31	
2	LDW-SS-112-010	12 2	MB-02015	22		32	
3	LDW-SS-119-010	13		23		33	
4	LDW-SS-120-010	14		24		34	
5	LDW-SS-60-010	15		25		35	
6	LDW-SS-99-010	16		26		36	
7	LDW-SS-89-010 D	17		27		37	
8	LDW-SS-201-010 D	18		28		38	
9	LDW-SS-60-010MS	19		29		39	
10	LDW-SS-60-010MSD	20		30		40	

(Batch #1) SRM SQ-1 (1254 = 120 ug/kg)

~~No SRM Associated w/ batch #2~~

LDC #: 13204C36
SDG #: HP90

VALIDATION FINDINDS WORKSHEET
Surrogate Recovery

Page: 1 of 1
Reviewer: PT
2nd Reviewer: R

METHOD: ✓ GC ___ HPLC

Are surrogates required by the method? Yes___ or No___.

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Were surrogates spiked into all samples and blanks?

Y (N) N/A Did all surrogate recoveries (%R) meet the QC limits?

#	Sample ID	Detector/ Column	Surrogate Compound	%R	(Limits)	Qualifications
	7	ZB5	DCB	155	(50-150)	no qual 20x Dil
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	

	Surrogate Compound		Surrogate Compound		Surrogate Compound		Surrogate Compound
A	Chlorobenzene (CBZ)	G	Octacosane	M	Benzo(e)Pyrene	S	1-Chloro-3-Nitrobenzene
B	4-Bromofluorobenzene (BFB)	H	Ortho-Terphenyl	N	Terphenyl-D14	T	3,4-Dinitrotoluene
C	a,a,a-Trifluorotoluene	I	Fluorobenzene (FBZ)	O	Decafluorobiphenyl (DCB)	U	Tripentyltin
D	Bromochlorobenene	J	n-Triacontane	P	1-methylnaphthalene	V	Tri-n-propyltin
E	1,4-Dichlorobutane	K	Hexacosane	Q	Dichlorophenyl Acetic Acid (DCAA)	W	Tributyl Phosphate
F	1,4-Difluorobenzene (DFB)	L	Bromobenzene	R	4-Nitrophenol	X	Tripheny Phosphate

LDC #: 1320ye3b
SDG #: HP9D

VALIDATION FINDINGS WORKSHEET

Matrix Spike/Matrix Spike Duplicates

Page: 1 of 1
Reviewer: FT
2nd Reviewer: K

METHOD: ✓GC ___ HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

[✓ Y] N N/A Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG?

[✓ Y] N N/A Was an MS/MSD analyzed every 20 samples for each matrix or whenever a sample extraction was performed?

Y [✓ N] N/A Were the MS/MSD percent recoveries (%R) and relative percent differences (RPD) within QC limits?

#	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	9+10	BB	35.2 (50-150)	31.0 (50-150)	( )	✓ ~~2→8~~ 5	J/UJ/A
			( )	( )	( )		QUAL AA,
			( )	( )	( )		BB+7
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		

DC #: 13204C36
SDG #: HP90

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported CRQLs

Reviewer: B
2nd Reviewer: [illegible]

METHOD: ✓ GC ___ HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Level IV/D Only

Y N N/A Were CRQLs adjusted for sample dilutions, dry weight factors, etc.?

Y N N/A Did the reported results for detected target compounds agree within 10.0% of the recalculated results?

#	Compound Name	Sample ID ~~Finding~~	%RPD But column ≤ 40 Associated Samples	Qualifications
	BB	# 1	80	J/A det
	↓	3	44	↓
	↓	4	63	↓

Comments: See sample calculation verification worksheet for recalculations

LDC #: 13204c3b
SDG #: HP90

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: 5
2nd reviewer: DC

METHOD: ___ GC ___ HPLC
Y N N/A Were field duplicate pairs identified in this SDG?
Y N N/A Were target compounds detected in the field duplicate pairs?

Compound	Concentration (ug/kg)		%RPD Limit 150	Qualification Parent only / All Samples
	7	8		
AA	2300	46	192	
BB	1200	39	187	

Compound	Concentration ( )		%RPD Limit _____	Qualification Parent only / All Samples
note # 7 20x all				

LDC #: 13204D3b

VALIDATION COMPLETENESS WORKSHEET

Level II

Date: 3/4/05

SDG #: HQ17 & ~~HQ04~~

Page: 1 of 1

Laboratory: Analytical Resources, Inc.

Reviewer: R

2nd Reviewer: R

METHOD: GC Polychlorinated Biphenyls (EPA SW 846 Method 8082)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/20/05
II.	GC/ECD Instrument Performance Check	N	
III.	Initial calibration	N	
IV.	Continuing calibration	N	
V.	Blanks	A	
VI.	Surrogate spikes TCS A	~~SW~~	
VII.	Matrix spike/Matrix spike duplicates	ASW	
VIII.	Laboratory control samples SRM	A	
IX.	Regional quality assurance and quality control	N	
Xa.	Florisil cartridge check	N	
Xb.	GPC Calibration	N	Acid + Sulfur clean up performed
XI.	Target compound identification	N	
XII.	Compound quantitation and reported CRQLs	SW	
XIII.	Overall assessment of data	SW	
XIV.	Field duplicates	N	
XV.	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples: sediments

1	LDW-SS114-010	11	LDW-SS76-010	21		31	
2	LDW-SS117-010	12	LDW-SS84-010	22		32	
3	LDW-SS13B-010	13	LDW-SS84-010DL	23		33	
4	LDW-SS125-010	14	LDW-SS116-010MS	24		34	
5	LDW-SS126-010	15	LDW-SS116-010MSD	25		35	
6	LDW-SS116-010	16	MB-012905	26		36	
7	LDW-SS127-010	17		27		37	
8	LDW-SS130-010	18		28		38	
9	LDW-SS129-010	19		29		39	
10	LDW-SS118-010	20		30		40	

SRM 52-1 (1254 = 75ug/kg)

VALIDATION FINDINGS WORKSHEET

METHOD: Pesticide/PCBs (EPASW 846 Method 8081/8082)

A. alpha-BHC	I. Dieldrin	Q. Endrin ketone	Y. Aroclor-1242	GG.
B. beta-BHC	J. 4,4'-DDE	R. Endrin aldehyde	Z. Aroclor-1248	HH.
C. delta-BHC	K. Endrin	S. alpha-Chlordane	AA. Aroclor-1254	II.
D. gamma-BHC	L. Endosulfan II	T. gamma-Chlordane	BB. Aroclor-1260	JJ.
E. Heptachlor	M. 4,4'-DDD	U. Toxaphene	CC. DB 608	KK.
F. Aldrin	N. Endosulfan sulfate	V. Aroclor-1016	DD. DB 1701	LL.
G. Heptachlor epoxide	O. 4,4'-DDT	W. Aroclor-1221	EE.	MM.
H. Endosulfan I	P. Methoxychlor	X. Aroclor-1232	FF.	NN.

Notes:_____

LDC #: 13204D3b
SDG #: HQ17 + HQ04

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Page: 1 of 1
Reviewer: FT
2nd Reviewer: K

METHOD: ✓ GC __ HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

[✓ Y] N N/A Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG?
[✓ Y] N N/A Was an MS/MSD analyzed every 20 samples for each matrix or whenever a sample extraction was performed?
Y [✓ N] N/A Were the MS/MSD percent recoveries (%R) and relative percent differences (RPD) within QC limits?

#	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	14 & 15	BB	49.8 (50-150)	( )	( )	~~All~~ 6	J/UJ/A
			( )	( )	( )		Qual AA, BB
			( )	( )	( )		+ Z
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
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			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		

LDC #: 13204D3b
SDG #: 11917 + 11904

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported CRQLs

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: ✓ GC __ HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Level IV/D Only

Y N N/A Were CRQLs adjusted for sample dilutions, dry weight factors, etc.?

Y N N/A Did the reported results for detected target compounds agree within 10.0% of the recalculated results?

#	Compound Name	~~Finding~~ sample ID	Associated Samples % RPD but 2 column ≤ 40	Qualifications
	BB	2	50	J/A det
	BB	6	41	✓

Comments: See sample calculation verification worksheet for recalculations

LDC #: 13204D3b
SDG #: H917 + H904

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported CRQLs

Page: 1 of 1
Reviewer:
2nd Reviewer:

METHOD: ✓ GC ___ HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Level IV/D Only

Y N N/A Were CRQLs adjusted for sample dilutions, dry weight factors, etc.?

Y N N/A Did the reported results for detected target compounds agree within 10.0% of the recalculated results?

#	~~Compound Name~~ sample ID	Finding	Associated Samples	Qualifications
	12	2 exceeded cal range		J/A det

Comments: See sample calculation verification worksheet for recalculations

LDC #: 13204D3b
SDG #: H917 + H604

VALIDATION FINDINGS WORKSHEET
Overall Assessment of Data

Page: 1 of 1
Reviewer: EJ
2nd Reviewer:

METHOD: ✓ GC __ HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

All available information pertaining to the data were reviewed using professional judgement to compliment the determination of the overall quality of the data.

Y N N/A Was the overal quality and usability of the data acceptable?

#	Compound Name	Finding	Associated Samples	Qualifications
	Z, AA, BB	Z, exceeded cal range	12	R/A
		AA + BB lomes result		
	All except Above	diluted	13	R/A

Comments:

LDC #: 13234A3b
SDG #: HQ48
Laboratory: Analytical Resources, Inc.

VALIDATION COMPLETENESS WORKSHEET
Level II

Date: 3/10/05
Page: 1 of 1
Reviewer:
2nd Reviewer:

METHOD: GC Polychlorinated Biphenyls (EPA SW 846 Method 8082)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/24/05
II.	GC/ECD Instrument Performance Check	N	
III.	Initial calibration	N	
IV.	Continuing calibration	N	
V.	Blanks	A	
VI.	Surrogate spikes	SW	
VII.	Matrix spike/Matrix spike duplicates	A	LDW-SS97-010
VIII.	Laboratory control samples	A	LCS
IX.	Regional quality assurance and quality control	N	
Xa.	Florisil cartridge check	N	
Xb.	GPC Calibration	N	Acid + Sulfur clean up performed
XI.	Target compound identification	A	
XII.	Compound quantitation and reported CRQLs	SW	
XIII.	Overall assessment of data	SW	
XIV.	Field duplicates	SW	D = 2 + 8 3 + 8
XV.	Field blanks	ND	RB = ~~15~~ LDW-SS64-RB

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples: Sediment

1 3	LDW-SS17-010	11 3	LDW-SS128-010	21 3	LDW-SS56-010	31	~~MB-012805~~
2 3	LDW-SS50-010 D	12 3	LDW-SS142-010	22 3	LDW-SS28-010	32 2	MB-020105 (2/1)
3 3	LDW-SS50-010DL	13 3	LDW-SS123-010	23 2	LDW-SS134-010	33 3	MB-020205
4 3	LDW-SS55-010	14 3	LDW-SS203-010	24 3	LDW-SS203-010MS	34	
5 3	LDW-SS72-010	15 1	~~LDW-SS64-RB~~ W	25 3	LDW-SS203-010MSD	35	
6 3	LDW-SS79-010	16 3	LDW-SS64-010	26		36	
7 3	LDW-SS54-010	17 3	LDW-SS83-010	27		37	
8 3	LDW-SS202-010 D	18 3	LDW-SS36-010	28		38	
9 3	LDW-SS42-010	19 3	LDW-SS58-010	29		39	
10 3	LDW-SS102-010	20 3	LDW-SS57-010	30		40	

SRM in 13234B = 125Y = 120 ug/kg for 020105

VALIDATION FINDINGS WORKSHEET

METHOD: Pesticide/PCBs (EPASW 846 Method 8081/8082)

A. alpha-BHC	I. Dieldrin	Q. Endrin ketone	Y. Aroclor-1242	GG.
B. beta-BHC	J. 4,4'-DDE	R. Endrin aldehyde	Z. Aroclor-1248	HH.
C. delta-BHC	K. Endrin	S. alpha-Chlordane	AA. Aroclor-1254	II.
D. gamma-BHC	L. Endosulfan II	T. gamma-Chlordane	BB. Aroclor-1260	JJ.
E. Heptachlor	M. 4,4'-DDD	U. Toxaphene	CC. DB 608	KK.
F. Aldrin	N. Endosulfan sulfate	V. Aroclor-1016	DD. DB 1701	LL.
G. Heptachlor epoxide	O. 4,4'-DDT	W. Aroclor-1221	EE.	MM.
H. Endosulfan I	P. Methoxychlor	X. Aroclor-1232	FF.	NN.

Notes: _____

LDC #: 13234A36
SDG #: 1tQ48

VALIDATION FINDINDS WORKSHEET
Surrogate Recovery

Page: 1 of 1
Reviewer: B
2nd Reviewer: R

METHOD: X GC __ HPLC

Are surrogates required by the method? Yes___ or No___.
Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were surrogates spiked into all samples and blanks?
Y N N/A Did all surrogate recoveries (%R) meet the QC limits?

#	Sample ID	Detector/ Column	Surrogate Compound	%R (Limits)	Qualifications
	21	not specified	DcB	151 (50 - 150)	J/P detect
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	

	Surrogate Compound		Surrogate Compound		Surrogate Compound		Surrogate Compound
A	Chlorobenzene (CBZ)	G	Octacosane	M	Benzo(e)Pyrene	S	1-Chloro-3-Nitrobenzene
B	4-Bromofluorobenzene (BFB)	H	Ortho-Terphenyl	N	Terphenyl-D14	T	3,4-Dinitrotoluene
C	a,a,a-Trifluorotoluere	I	Fluorobenzene (FBZ)	O	Decafluorobiphenyl (DCB)	U	Tripentyltin
D	Bromochlorobenene	J	n-Triacontane	P	1-methylnaphthalene	V	Tri-n-propyltin
E	1,4-Dichlorobutane	K	Hexacosane	Q	Dichlorophenyl Acetic Acid (DCAA)	W	Tributyl Phosphate
F	1,4-Difluorobenzene (DFB)	L	Bromobenzene	R	4-Nitrophenol	X	Triphenyl Phosphate

LDC #: 13234A3b
SDG #: HQ48

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported CRQLs

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: ✓ GC __ HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".
Level IV/D Only

Y N N/A Were CRQLs adjusted for sample dilutions, dry weight factors, etc.?
Y N N/A Did the reported results for detected target compounds agree within 10.0% of the recalculated results?

#	Compound Name	Finding	%RPD Between column ≤ 40 Associated Samples	Qualifications
	BB	12	42	J/A det
	BB	21	44	↓

Comments: See sample calculation verification worksheet for recalculations

DC #: 132234A3b
SDG #: HQ48

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported CRQLs

Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: / GC __ HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".
Level IV/D Only
Y N N/A Were CRQLs adjusted for sample dilutions, dry weight factors, etc.?
Y N N/A Did the reported results for detected target compounds agree within 10.0% of the recalculated results?

#	Compound Name	Finding	Associated Samples	Qualifications
	Z, AA	exceeded cal range	2	J/A dut

Comments: See sample calculation verification worksheet for recalculations

LDC #: 13234A3b
SDG #: H048

VALIDATION FINDINGS WORKSHEET
Overall Assessment of Data

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: ✓ GC ___ HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

All available information pertaining to the data were reviewed using professional judgement to compliment the determination of the overall quality of the data.

Y N N/A Was the overal quality and usability of the data acceptable?

#	Compound Name	Finding	Associated Samples	Qualifications
	Z, AA, BB	exceeded cal range (Z, AA)	2	R/A
		lower Result (BB)		
	All except Above	diluted	3	↓

Comments: _____

OVRNew.wpd

LDC #: 13234A3b
SDG #: HQ48

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Page: 1 of 1
Reviewer: [illegible]
2nd reviewer: [illegible]

METHOD: ✓ GC __ HPLC

Y N N/A Were field duplicate pairs identified in this SDG?
Y N N/A Were target compounds detected in the field duplicate pairs?

Compound	Concentration (ug/kg)		%RPD Limit 50	Qualification Parent only / All Samples
	2	8		
Z	300	160	61	
AA	280	150	60	
BB	110	59	60	

Compound	Concentration (ug/kg)		%RPD Limit 50	Qualification Parent only / All Samples
	3	8		
Z	330	160	69	
AA	320	150	72	
BB	140	59	81	

LDC #: 13234B3b

SDG #: HQ27 & ~~HQ28~~

Laboratory: Analytical Resources, Inc.

VALIDATION COMPLETENESS WORKSHEET

Level II

Date: 3/10/05

Page: 1 of 1

Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: GC Polychlorinated Biphenyls (EPA SW 846 Method 8082)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/20/05 - 1/21/05
II.	GC/ECD Instrument Performance Check	N	
III.	Initial calibration	N	
IV.	Continuing calibration	N	
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	~~SW~~ A	
VIII.	Laboratory control samples /SRM	A	LCS
IX.	Regional quality assurance and quality control	N	
Xa.	Florisil cartridge check	N	
Xb.	GPC Calibration	N	
XI.	Target compound identification	N	
XII.	Compound quantitation and reported CRQLs	N	
XIII.	Overall assessment of data	N	
XIV.	Field duplicates	N	
XV.	Field blanks	ND	~~LDW-SS43-RB = R~~ RB = LDW-SS43-RB

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet

ND = No compounds detected
R = Rinsate
FB = Field blank

D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples:

1	LDW-SS43-010	11	LDW-SS75-010	21	MB-020105	31	
2	LDW-SS44-010	12	~~LDW-SS43-RB~~	22	~~MB-012005~~	32	
3	LDW-SS87-010	13	LDW-SS97-010MS	23	MB-012005	33	
4	LDW-SS94-010	14	LDW-SS97-010MSD	24		34	
5	LDW-SS96-010	15	LDW-SS101-010	25		35	
6	LDW-SS97-010	16		26		36	
7	LDW-SS31-010	17		27		37	
8	LDW-SS67-010	18		28		38	
9	LDW-SS63-010	19		29		39	
10	LDW-SS70-010	20		30		40	

SRM SQ-1 = 1254 = 20ug/kg (020105)

LDC #: 13234D3b

VALIDATION COMPLETENESS WORKSHEET

Level II

Date: 3/10/05

SDG #: HR49

Page: 1 of 1

Laboratory: Analytical Resources, Inc.

Reviewer: F7

2nd Reviewer: CV

METHOD: GC Polychlorinated Biphenyls (EPA SW 846 Method 8082)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/31 – 2/2/05
II.	GC/ECD Instrument Performance Check	N	
III.	Initial calibration	N	
IV.	Continuing calibration	N	
V.	Blanks	A	
VI.	Surrogate spikes	SW	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples / SRM	SW	LCS
IX.	Regional quality assurance and quality control	N	
Xa.	Florisil cartridge check	N	
Xb.	GPC Calibration	N	
XI.	Target compound identification	A	
XII.	Compound quantitation and reported CRQLs	N	
XIII.	Overall assessment of data	N	
XIV.	Field duplicates	N	
XV.	Field blanks N	~~ND~~	~~EB = 2~~ , 0 F7

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: sediment

1	SC-SS1a-010	11	LU-SS9a-010MS	21	MB-020905	31	
2	~~EB-SS2a-010~~ OK don't dilute	12	LU SS9a 010MSD	22		32	
3	LW-SS3-010	13		23		33	
4	SB-SS6-010	14		24		34	
5	DRD-SS7-010	15		25		35	
6	LU-SS9a-010	16		26		36	
7	LU-SS9b-010	17		27		37	
8	UB-SS8-010	18		28		38	
9	LW-SS6-010	19		29		39	
10	~~EB-SS2b-010~~ OK don't dilute	20		30		40	

note: No SRM was analyzed due to analyst oversight

LDC #: 13234D36
SDG #: HR49

VALIDATION FINDINDS WORKSHEET
Surrogate Recovery

Page: 1 of 1
Reviewer:
2nd Reviewer:

METHOD: ✓ **GC** ___ **HPLC**

Are surrogates required by the method? Yes____ or No____.

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

[✓ Y] N N/A Were surrogates spiked into all samples and blanks?

Y [✓ N] N/A Did all surrogate recoveries (%R) meet the QC limits?

#	Sample ID	Detector/ Column	Surrogate Compound	%R (Limits)	Qualifications
	8	not specified	TCMX	35.2 (50-150)	J/UJ/P
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
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				( )	
				( )	
				( )	
				( )	
				( )	
				( )	

	Surrogate Compound		Surrogate Compound		Surrogate Compound		Surrogate Compound
A	Chlorobenzene (CBZ)	G	Octacosane	M	Benzo(e)Pyrene	S	1-Chloro-3-Nitrobenzene
B	4-Bromofluorobenzene (BFB)	H	Ortho-Terphenyl	N	Terphenyl-D14	T	3,4-Dinitrotoluene
C	a,a,a-Trifluorotoluene	I	Fluorobenzene (FBZ)	O	Decafluorobiphenyl (DCB)	U	Tripentyltin
D	Bromochlorobenene	J	n-Triacontane	P	1-methylnaphthalene	V	Tri-n-propyltin
E	1,4-Dichlorobutane	K	Hexacosane	Q	Dichlorophenyl Acetic Acid (DCAA)	W	Tributyl Phosphate
F	1,4-Difluorobenzene (DFB)	L	Bromobenzene	R	4-Nitrophenol	X	Triphenyl Phosphate

LDC #: 13234D
SDG #: HR49
METHOD: ✓ GC __ HPLC

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS) /SRM

Page: 1 of 1
Reviewer: RT
2nd Reviewer: DC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N [✓ N/A] Were a laboratory control samples (LCS) and laboratory control sample duplicate (LCSD) analyzed for each matrix in this SDG?
Y N [✓ N/A] Were the LCS percent recoveries (%R) and relative percent differences (RPD) within the QC limits?

Level IV/D Only
Y N [✓ N/A] Was an LCS analyzed every 20 samples for each matrix or whenever a sample extraction was performed?

#	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
			( )	( )	( )		
	No SRM	was analyzed	( )	( )	( )	All	~~noe~~/p txt
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		

LDC #: 13234E3b

VALIDATION COMPLETENESS WORKSHEET

SDG #: HQ56 & HQ57

Level II

Laboratory: Analytical Resources, Inc.

Date: 3/10/05

Page: 1 of 1

Reviewer:

2nd Reviewer:

METHOD: GC Polychlorinated Biphenyls (EPA SW 846 Method 8082)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/24/05 → 1/25/05
II.	GC/ECD Instrument Performance Check	N	
III.	Initial calibration	N	
IV.	Continuing calibration	N	
V.	Blanks	N	
VI.	Surrogate spikes	SW	LDW
VII.	Matrix spike/Matrix spike duplicates	SW	-SS97 - 010
VIII.	Laboratory control samples /SRM	A	LCS
IX.	Regional quality assurance and quality control	N	
Xa.	Florisil cartridge check	N	
Xb.	GPC Calibration	N	
XI.	Target compound identification	N	
XII.	Compound quantitation and reported CRQLs	SW	
XIII.	Overall assessment of data	SW	
XIV.	Field duplicates	N	
XV.	Field blanks	~~ND~~	~~R = 1~~ RB = LDW-SS10-RB

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: Sediment

1	~~LDW-SS110-RB~~	11 1	LDW-SS121-010	21 1	MB-020205	31	
2 1	LDW SS52 010	12 1	LDW SS121-010DL	22 2	MB-020105	32	
3 1	LDW-SS92-010	13 1	LDW-SS88-010	23		33	
4 1	LDW-SS92-010DL	14 1	LDW-SS88-010DL	24		34	
5 1	LDW-SS104-010	15 2	LDW-SS33-010	25		35	
6 1	LDW-SS110-010	16 2	LDW-SS49-010	26		36	
7 1	LDW-SS110-010DL	17 2	LDW-SS143-010	27		37	
8 1	LDW-SS109-010	18 2	LDW-SS143-010DL	28		38	
9 1	LDW-SS109-010DL	19 1	LDW-SS92-010MS	29		39	
10 1	LDW-SS115-010	20 1	LDW-SS92-010MSD	30		40	

SRM for 020105 = 1754 = 120ug/k in 13234B

VALIDATION FINDINGS WORKSHEET

METHOD: Pesticide/PCBs (EPASW 846 Method 8081/8082)

A. alpha-BHC	I. Dieldrin	Q. Endrin ketone	Y. Aroclor-1242	GG.
B. beta-BHC	J. 4,4'-DDE	R. Endrin aldehyde	Z. Aroclor-1248	HH.
C. delta-BHC	K. Endrin	S. alpha-Chlordane	AA. Aroclor-1254	II.
D. gamma-BHC	L. Endosulfan II	T. gamma-Chlordane	BB. Aroclor-1260	JJ.
E. Heptachlor	M. 4,4'-DDD	U. Toxaphene	CC. DB 608	KK.
F. Aldrin	N. Endosulfan sulfate	V. Aroclor-1016	DD. DB 1701	LL.
G. Heptachlor epoxide	O. 4,4'-DDT	W. Aroclor-1221	EE.	MM.
H. Endosulfan I	P. Methoxychlor	X. Aroclor-1232	FF.	NN.

Notes: _____

LDC #: 13234E36
SDG #: HQ56 + HQ57

VALIDATION FINDINDS WORKSHEET
Surrogate Recovery

Page: 1 of 1
Reviewer: B
2nd Reviewer: K

METHOD: X GC ___ HPLC

Are surrogates required by the method? Yes___ or No____.

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were surrogates spiked into all samples and blanks?

Y N N/A Did all surrogate recoveries (%R) meet the QC limits?

#	Sample ID	Detector/ Column	Surrogate Compound	%R (Limits)	Qualifications
	18	not specified	DCB	D (50 - 150)	MC QUAL 50X D/L
			TCMX	D (↓)	↓
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	

	Surrogate Compound		Surrogate Compound		Surrogate Compound		Surrogate Compound
A	Chlorobenzene (CBZ)	G	Octacosane	M	Benzo(e)Pyrene	S	1-Chloro-3-Nitrobenzene
B	4-Bromofluorobenzene (BFB)	H	Ortho-Terphenyl	N	Terphenyl-D14	T	3,4-Dinitrotoluene
C	a,a,a-Trifluorotoluene	I	Fluorobenzene (FBZ)	O	Decafluorobiphenyl (DCB)	U	Tripentyltin
D	Bromochlorobenene	J	n-Triacontane	P	1-methylnaphthalene	V	Tri-n-propyltin
E	1,4-Dichlorobutane	K	Hexacosane	Q	Dichlorophenyl Acetic Acid (DCAA)	W	Tributyl Phosphate
F	1,4-Difluorobenzene (DFB)	L	Bromobenzene	R	4-Nitrophenol	X	Tripheny Phosphate

LDC #: 13234E36
SDG #: HQ56 + HQ57

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Page: 1 of 1
Reviewer:
2nd Reviewer:

METHOD: ✓ GC __ HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

[✓ Y] N N/A Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG?
[✓ Y] N N/A Was an MS/MSD analyzed every 20 samples for each matrix or whenever a sample extraction was performed?
Y [✓ N] N/A Were the MS/MSD percent recoveries (%R) and relative percent differences (RPD) within QC limits?

#	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	19+20	BB	% recovery	not (reported	( )		no QUAL
			( )	( )	( )		parent 72x
			Result ex	ceeded(cal)	range( )		Spike Amt
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		

LDC #: 13234E36
SDG #: HQ56 + HQ57

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported CRQLs

Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: ✓ GC __ HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Level V/D Only

Y N N/A Were CRQLs adjusted for sample dilutions, dry weight factors, etc.?

Y N N/A Did the reported results for detected target compounds agree within 10.0% of the recalculated results?

#	Compound Name	%R PD Between Columns >40 Finding	Associated Samples	Qualifications
	BB	44	12	J/A det

Comments: See sample calculation verification worksheet for recalculations

DC #: 13234E36
SDG #: H9556 + H9557

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported CRQLs

Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: ✓ GC ___ HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Level IV/D Only

Y N N/A Were CRQLs adjusted for sample dilutions, dry weight factors, etc.?

Y N N/A Did the reported results for detected target compounds agree within 10.0% of the recalculated results?

#	Compound Name	Finding	Associated Samples	Qualifications
	AA, BB	exceeded cal range	3, 11, 13	J/A det
	AA	↓	6, 8	↓
	Y	↓	17	↓

Comments: See sample calculation verification worksheet for recalculations

LDC #: 13234E36
SDG #: HQ56 & HQ57

VALIDATION FINDINGS WORKSHEET
Overall Assessment of Data

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: / GC __ HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

All available information pertaining to the data were reviewed using professional judgement to compliment the determination of the overall quality of the data.

Y N N/A Was the overall quality and usability of the data acceptable?

#	Compound Name	Finding	Associated Samples	Qualifications
	AA + BB	exceeded cal range	3, 11, 13	R/A
	all except AA + BB	diluted	4, 12, 14	
	AA	exceeded cal range	6, 8	
	All except AA	diluted	7, 9	
	Y	exceeded cal range	17	
	all except Y	diluted	18 L	

Comments: _____

OVRNew.wpd

LDC #: 13298A3b

SDG #: HQ93

Laboratory: Analytical Resources, Inc.

VALIDATION COMPLETENESS WORKSHEET

Level II

Date: 3/29/0

Page: 1 of 1

Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: GC Polychlorinated Biphenyls (EPA SW 846 Method 8082)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/28/05
II.	GC/ECD Instrument Performance Check	NA	
III.	Initial calibration	N	
IV.	Continuing calibration	N	
V.	Blanks	SW A	
VI.	Surrogate spikes	SW	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples /SRM	A	LCS
IX.	Regional quality assurance and quality control	N	
Xa.	Florisil cartridge check	N	
Xb.	GPC Calibration	N	
XI.	Target compound identification	N	
XII.	Compound quantitation and reported CRQLs	N	
XIII.	Overall assessment of data	N	
XIV.	Field duplicates	N	
XV.	Field blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: sediment

1	LDW-SSCR20-010	11		21		31	
2	LDW-SSCR23-010	12		22		32	
3	LDW-MSMP43-010	13		23		33	
4	LDW-MSMP43-010MS	14		24		34	
5	LDW-MSMP43-010MSD	15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

LDC #: 13298A3b
SDG #: 17093

VALIDATION FINDINDS WORKSHEET
Surrogate Recovery

Page: 1 of 1
Reviewer:
2nd Reviewer:

METHOD: ✓ **GC** __ **HPLC**

Are surrogates required by the method? Yes____ or No____.

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

[✓ Y] N N/A Were surrogates spiked into all samples and blanks?

Y [✓ N] N/A Did all surrogate recoveries (%R) meet the QC limits?

#	Sample ID	Detector/ Column	Surrogate Compound	%R (Limits)	Qualifications
	MB-020705	not specified	DCB	155 (50-150)	J/P det
			~~TCMX~~	( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	

	Surrogate Compound		Surrogate Compound		Surrogate Compound		Surrogate Compound
A	Chlorobenzene (CBZ)	G	Octacosane	M	Benzo(e)Pyrene	S	1-Chloro-3-Nitrobenzene
B	4-Bromofluorobenzene (BFB)	H	Ortho-Terphenyl	N	Terphenyl-D14	T	3,4-Dinitrotoluene
C	a,a,a-Trifluorotoluene	I	Fluorobenzene (FBZ)	O	Decafluorobiphenyl (DCB)	U	Tripentyltin
D	Bromochlorobenene	J	n-Triacontane	P	1-methylnaphthalene	V	Tri-n-propyltin
E	1,4-Dichlorobutane	K	Hexacosane	Q	Dichlorophenyl Acetic Acid (DCAA)	W	Tributyl Phosphate
F	1,4-Difluorobenzene (DFB)	L	Bromobenzene	R	4-Nitrophenol	X	Triphenyl Phosphate

LDC #: 13204A4

VALIDATION COMPLETENESS WORKSHEET

Level III

Date: 3/4/05

SDG #: HP67

Page: 1 of 1

Laboratory: Analytical Resources, Inc.

Reviewer: MH

2nd Reviewer: R

METHOD: Metals (EPA SW 846 Method 6010B/~~6020~~/200.8/7000)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/17/05
II.	Calibration	A ~~N~~	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	SW	
V.	Matrix Spike Analysis	SW	3 MS/dup LDW-SS23-010
VI.	Duplicate Sample Analysis	A	
VII.	Laboratory Control Samples (LCS)	A	LCS + SRM
VIII.	Internal Standard (ICP-MS)	A	
IX.	Furnace Atomic Absorption QC	N	Not utilized
X.	ICP Serial Dilution	N	Not required
XI.	Sample Result Verification	~~A~~ N SW	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	N	
XIV.	Field Blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: sediment

1	LDW-SS1-010	11		21		31	
2	LDW-SS4-010	12		22		32	
3	LDW-SS5-010	13		23		33	
4	LDW-SS10-010	14		24		34	
5	LDW-SS12-010	15		25		35	
6	LDW-SS14-010	16		26		36	
7	LDW-SS15-010	17		27		37	
8	LDW-SS22-010	18		28		38	
9	LDW-SS13-010	19		29		39	
10	PB	20		30		40	

Notes:

LDC #: 13204A4
SDG #: Hp67

VALIDATION FINDINGS CHECKLIST

Page: 1 of 1
Reviewer: MM
2nd Reviewer: DC

Method: Metals (EPA SW 846 Method 6010/7000/6020) 4

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. Calibration				
Were all instruments calibrated daily, each set-up time?	✓			
Were the proper number of standards used?	✓			
Were all initial and continuing calibration verification %Rs within the 90-110% (80-120% for mercury and 85-115% for cyanide) QC limits?	✓			
Were all initial calibration correlation coefficients ≥ 0.995?	✓			
Was a midrange cyanide standard distilled?			✓	
III. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
IV. ICP Interference Check Sample				
Were ICP interference check samples performed daily?	✓			
Were the AB solution percent recoveries (%R) with the 80-120% QC limits?	✓			
IV. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.		✓		
Were the MS/MSD or duplicate relative percent differences (RPD) ≤ 20% for waters and ≤ 35% for soil samples? A control limit of +/- RL(+/-2X RL for soil) was used for samples that were ≤ 5X the RL, including when only one of the duplicate sample values were ≤ 5X the RL.	✓			
V. Laboratory control samples				
Was an LCS anaylzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% QC limits for water samples and laboratory established QC limits for soils?	✓			
VI. Furnace Atomic Absorption QC				
If MSA was performed, was the correlation coefficients ≥ 0.995?			✓	
Do all applicable analysies have duplicate injections?			✓	

LDC #: 13204 A4
SDG #: 4p67

VALIDATION FINDINGS CHECKLIST

Page: 1 of 1
Reviewer: MR
2nd Reviewer: R

Validation Area	Yes	No	NA	Findings/Comments
For sample concentrations > RL, are applicable duplicate injection RSD values < 20%?			✓	
Were analytical spike recoveries within the 85-115% QC limits?			✓	
VII. ICP Serial Dilution				
Was an ICP serial dilution analyzed if analyte concentrations were > 50X the IDL?		✓		
Were all percent differences (%Ds) ≤ 10%?			✓	
Was there evidence of negative interference? If yes, professional judgement will be used to qualify the data.			✓	
VIII. Internal Standards (EPA SW 846 Method ~~6020~~ 200.8)				
Were all the percent recoveries (%R) within the ~~30-120%~~ 60-125 of the intensity of the internal standard in the associated initial calibration?	✓			
If the %Rs were outside the criteria, was a reanalysis performed?			✓	
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?			✓	
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
X. Sample Result Verification				
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XI. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XII. Field duplicates				
Field duplicate pairs were identified in this SDG.		✓		
Target analytes were detected in the field duplicates.			✓	
XIII. Field blanks				
Field blanks were identified in this SDG.		✓		
Target analytes were detected in the field blanks.			✓	

LDC #: 13304A4
SDG #: 14P67

VALIDATION FINDINGS WORKSHEET
Sample Specific Element Reference

Page: 1 of 1
Reviewer: MH
2nd reviewer:

All circled elements are applicable to each sample.

Sample ID	Matrix	Target Analyte List (TAL)
1-9	Sediment	Al, [✓ Sb], [✓ As], Ba, Be, [✓ Cd], Ca, [✓ Cr], [✓ Co], [✓ Cu], Fe, [✓ Pb], Mg, Mn, Hg, [✓ Ni], K, [✓ Se], [✓ Ag], Na, [✓ Tl], [✓ V], [✓ Zn], [✓ Mo], B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Analysis Method
ICP		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
ICP Trace		Al, Sb, As, Ba, Be, [✓ Cd], Ca, [✓ Cr], [✓ Co], [✓ Cu], Fe, [✓ Pb], Mg, Mn, Hg, [✓ Ni], K, [✓ Se], [✓ Ag], Na, Tl, [✓ V], [✓ Zn], [✓ Mo], B, Si, CN^-, ___ ___
ICP-MS		Al, [✓ Sb], [✓ As], Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, [✓ Tl], V, Zn, Mo, B, Si, CN^-, ___ ___
GFAA		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___

Comments: [✓ Mercury by CVAA if performed]

LDC #: 13204A4
SDG #: H9067

VALIDATION FINDINGS WORKSHEET
ICP Interference Check Sample

Reviewer: ulz
2nd Reviewer: DC

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Were ICP interference check samples performed as required?

(Y) N N/A Were the AB solution percent recoveries (%R) within the control limits of 80-120% ?

LEVEL IV ONLY:

(Y) N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Date	ICS Identification	Analyte	Finding	Associated Samples	Qualifications
1	1/26/05	ICSA	Se	-69.2 ug/L	2, 6, 8. (Fe >90% in ICSA)	UJ/P
2	↓	↓	↓	↓	1, 3-5, 7, 9 (Al, Ca, Mg, Fe (90% in ICSA)	No qual.

Comments:

LDC #: 13204A4
SDG #: 4P67

VALIDATION FINDINGS WORKSHEET
Matrix Spike Analysis

Reviewer: MH
2nd Reviewer: a

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Was a matrix spike analyzed for each matrix in this SDG?

Y (N) N/A Were matrix spike percent recoveries (%R) within the control limits of ~~75-125?~~ 70-130 If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.

Y (N) N/A Was a post digestion spike analyzed for ICP elements that did not meet the required criteria for matrix spike recovery?

LEVEL IV ONLY:

(Y) N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Matrix Spike ID	Matrix	Analyte	%R	Associated Samples	Qualifications
1	LDW-SS-23-010	Sediment	Sb	3.7	All	J- (R/A UNJ/A (post spiked was not performed > 25%))

Comments:

LDC #: 13204 A4
SDG #: HP67

VALIDATION FINDINGS WORKSHEET
Sample Result Verification

Reviewer: MH
2nd Reviewer: [illegible]

METHOD: Trace metals (EPA SW-846 6010/7000)

#	Sample ID	Analyte	APP Result (units)	lab reported. RL (units)	Finding	Qualifications
1	All	Sb, As, Tl.	6020.	200.8	Lab method was different from APP method.	Text.

Comments:

LDC #: 13204A4
SDG #: H967

VALIDATION FINDINGS WORKSHEET
Initial and Continuing Calibration Calculation Verification

Reviewer: MG
2nd Reviewer: AK

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

An initial and continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

%R = Found / True x 100 Where, Found = concentration (in ug/L) of each analyte measured in the analysis of the ICV or CCV solution
True = concentration (in ug/L) of each analyte in the ICV or CCV source

Standard ID	Type of Analysis	Element	Found (ug/L)	True (ug/L)	Recalculated %R	Reported %R	Acceptable (Y/N)
ICV	ICP (Initial calibration)	Pb	1942	2000	97.1	97.1	Y
↓	~~GFAA~~ (Initial calibration) ICP/MS	As	50.757	50	101.5	101.5	
↓	CVAA (Initial calibration)	Hg	8.82	8.0	110.3	110.3	
CCV	ICP (Continuing calibration)	Co	999.9	1000	100.0	100.0	
↓	~~GFAA~~ (Continuing calibration) ICP/MS	Tl	50.672	50	101.3	101.3	
↓	CVAA (Continuing calibration)	Hg	4.35	4.0	108.8	108.8	↓
	Cyanide (Initial calibration)						
	Cyanide (Continuing calibation)						

Comments: Refer to Calibration Verification findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204B4
SDG #: 4p67

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

Page: 1 of 1
Reviewer: MM
2nd Reviewer: DC

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

Percent recoveries (%R) for an ICP interference check sample, a laboratory control sample and a matrix spike sample were recaluculated using the following formula:

$$\%R = \frac{Found}{True} \times 100$$

Where, Found = Concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation, Found = SSR (spiked sample result) - SR (sample result).
True = Concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

$$RPD = \frac{|S-D|}{(S+D)/2} \times 100$$

Where, S = Original sample concentration
D = Duplicate sample concentration

An ICP serial dilution percent difference (%D) was recalculated using the following formula:

$$\%D = \frac{|I-SDR|}{I} \times 100$$

Where, I = Initial Sample Result (mg/L)
SDR = Serial Dilution Result (mg/L) (Instrument Reading x 5)

Sample ID	Type of Analysis	Element	Found / S / I (units)	True / D / SDR (units)	Recalculated %R / RPD / %D	Reported %R / RPD / %D	Acceptable (Y/N)
ICSAB	ICP interference check	Zn	886.8	1000	88.7	88.7	Y
LCS	Laboratory control sample	Cd	50.7	50.0	101	~~99.5~~ 101	
LBW-5553-010	Matrix spike	Ag	(SSR-SR) 60.6	61.9	97.9	97.9	
↓	Duplicate	Ni	9.44	9.14	3.1	10.5	↓
↓ MB	ICP serial diluton						

Comments: Refer to appropriate worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204A4
SDG #: HP67

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: MV
2nd reviewer: [illegible]

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Have results been reported and calculated correctly?
(Y) N N/A Are results within the calibrated range of the instruments and within the linear range of the ICP?
(Y) N N/A Are all detection limits below the CRDL?

Detected analyte results for 1 were recalculated and verified using the following equation:

Concentration = $\frac{(RD)(FV)(Dil)}{(In.\ Vol.)(\%S)}$

RD = Raw data concentration
FV = Final volume (ml)
In Vol = Initial volume (ml) or weight (G)
Dil = Dilution factor
%S = Decimal percent solids

Recalculation:

$$As = \frac{4.764\ ug/L \times 0.05\ L \times 20}{1.056\ g \times 0.727} = 6.2\ ug/g$$

Sample ID	Analyte	Reported Concentration (mg/kg)	Calculated Concentration (mg/kg)	Acceptable (Y/N)
1	As	6.2	6.2	Y
	Cr	18.9	18.9	
	Co	4.9	4.9	
	Cu	32.3	32.3	
	Pb	24	24	
	Hg	0.09	0.09	
	Mo	1.1	1.1	
	Ni	10	10	
	V	42.3	42.3	
	Zn	60.3	60.3	

LDC #: 13204B4 **VALIDATION COMPLETENESS WORKSHEET** Date: 3/7/05

SDG #: HP70 Level ~~III~~ IV Page: 1 of 1

Laboratory: Analytical Resources, Inc. 200.8 Reviewer: MM

2nd Reviewer: DC

METHOD: Metals (EPA SW 846 Method 6010B/~~6020~~/7000)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/18/05
II.	Calibration	A N	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	SW	
V.	Matrix Spike Analysis	SW	
VI.	Duplicate Sample Analysis	A	
VII.	Laboratory Control Samples (LCS)	A	Lcs + SRM,
VIII.	Internal Standard (ICP-MS)	N	Not reviewed
IX.	Furnace Atomic Absorption QC	N	Not Utilized
X.	ICP Serial Dilution	N	Not required
XI.	Sample Result Verification	SW	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	SW	(4, 5)
XIV.	Field Blanks	ND	RB = LDW-SS38-RB

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples:

1	~~LDW-SS38-RB~~ AD	11	LDW-SS51-010 Sediment	21		31	
2	LDW-SS23-010 Sediment	12	LDW-SS23-010MS	22		32	
3	LDW-SS26-010	13	LDW-SS23-010DUP	23		33	
4	LDW-SS27-010	14	PR>	24		34	
5	LDW-SS200-010	15		25		35	
6	LDW-SS32-010	16		26		36	
7	LDW-SS37-010	17		27		37	
8	LDW-SS38-010	18		28		38	
9	LDW-SS40-010	19		29		39	
10	LDW-SS48-010	20		30		40	

Notes: _____

LDC #: 13204B4
SDG #: 42970

VALIDATION FINDINGS CHECKLIST

Reviewer: MM
2nd Reviewer: SC

Method: Metals (EPA SW 846 Method 6010/7000/6020) 4

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. Calibration				
Were all instruments calibrated daily, each set-up time?	✓			
Were the proper number of standards used?	✓			
Were all initial and continuing calibration verification %Rs within the 90-110% (80-120% for mercury and 85-115% for cyanide) QC limits?	✓			
Were all initial calibration correlation coefficients ≥ 0.995?	✓			
Was a midrange cyanide standard distilled?			✓	
III. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
IV. ICP Interference Check Sample				
Were ICP interference check samples performed daily?	✓			
Were the AB solution percent recoveries (%R) with the 80-120% QC limits?	✓			
IV. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.		✓		
Were the MS/MSD or duplicate relative percent differences (RPD) ≤ 20% for waters and ≤ 35% for soil samples? A control limit of +/- RL(+/-2X RL for soil) was used for samples that were ≤ 5X the RL, including when only one of the duplicate sample values were ≤ 5X the RL.	✓			
V. Laboratory control samples				
Was an LCS anaylzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% QC limits for water samples and laboratory established QC limits for soils?	✓			
VI. Furnace Atomic Absorption QC				
If MSA was performed, was the correlation coefficients ≥ 0.995?			✓	
Do all applicable analysies have duplicate injections?			✓	

LDC #: 13204B4
SDG #: 420070

VALIDATION FINDINGS CHECKLIST

Reviewer: MR
2nd Reviewer: JV

Validation Area	Yes	No	NA	Findings/Comments
For sample concentrations > RL, are applicable duplicate injection RSD values < 20%?			✓	
Were analytical spike recoveries within the 85-115% QC limits?			✓	
VII. ICP Serial Dilution				
Was an ICP serial dilution analyzed if analyte concentrations were > 50X the IDL?		✓		
Were all percent differences (%Ds) ≤ 10%?			✓	
Was there evidence of negative interference? If yes, professional judgement will be used to qualify the data.			✓	
VIII. Internal Standards (EPA SW 846 Method ~~6020~~ 6020A)				
Were all the percent recoveries (%R) within the ~~30-120%~~ 60-125 of the intensity of the internal standard in the associated initial calibration?				
If the %Rs were outside the criteria, was a reanalysis performed?				
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?			✓	
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
X. Sample Result Verification				
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XI. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XII. Field duplicates				
Field duplicate pairs were identified in this SDG.	✓			
Target analytes were detected in the field duplicates.	✓			
XIII. Field blanks				
Field blanks were identified in this SDG.	✓			
Target analytes were detected in the field blanks.		✓		

LDC #: 13204B4
SDG #: 4P70

VALIDATION FINDINGS WORKSHEET
Sample Specific Element Reference

Page: 1 of 1
Reviewer: MH
2nd reviewer:

All circled elements are applicable to each sample.

Sample ID	Matrix	Target Analyte List (TAL)
2-11	AA/Sediment	Al, [✓ Sb], [✓ As], Ba, Be, [✓ Cd], Ca, [✓ Cr, Co, Cu], Fe, [✓ Pb], Mg, Mn, [✓ Hg], [✓ Ni], K, [✓ Se], [✓ Ag], Na, [✓ Tl], [✓ V], [✓ Zn], [✓ Mo], B, Si, CN^-, ___ ___
MS 12,13	Sediment	Al, [✓ Sb], [✓ As], Ba, Be, [✓ Cd], Ca, [✓ Cr, Co, Cu], Fe, [✓ Pb], Mg, Mn, [✓ Hg, Ni], K, [✓ Se, Ag], Na, [✓ Tl, V, Zn, Mo], B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
Analysis Method		
ICP		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
ICP Trace		Al, Sb, As, Ba, Be, [✓ Cd], Ca, [✓ Cr, Co, Cu], Fe, [✓ Pb], Mg, Mn, Hg, [✓ Ni], K, [✓ Se, Ag], Na, Tl, [✓ V, Zn, Mo], B, Si, CN^-, ___ ___
ICP-MS		Al, [✓ Sb], [✓ As], Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, [✓ Tl], V, Zn, Mo, B, Si, CN^-, ___ ___
GFAA		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-,

Comments: Mercury by CVAA if performed

LDC #: 13204B4
SDG #: HP70

VALIDATION FINDINGS WORKSHEET
ICP Interference Check Sample

Reviewer: WJ
2nd Reviewer: VC

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Were ICP interference check samples performed as required?
(Y) N N/A Were the AB solution percent recoveries (%R) within the control limits of 80-120% ?

LEVEL IV ONLY:

(Y) N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Date	ICS Identification	Analyte	Finding	Associated Samples	Qualifications
1	1/26/05	ICSA	Se	-62.2 ug/L	6,7,9,11 (Fe ≥ 90% in ICSA)	WJ/P
					1-5, 8,	No qual (Al, Ca, Mg, Fe < 90% in ICSA)
2	1/27/05	ICSA	Se	-76.2 ug/L	10	↓
			Mo	5.5 ↓	↓	

Comments:

LDC #: 13204B4
SDG #: H970

VALIDATION FINDINGS WORKSHEET
Matrix Spike Analysis

Reviewer: MY
2nd Reviewer: AC

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Was a matrix spike analyzed for each matrix in this SDG?

Y (N) N/A Were matrix spike percent recoveries (%R) within the control limits of 75-125? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.

Y (N) N/A Was a post digestion spike analyzed for ICP elements that did not meet the required criteria for matrix spike recovery?

LEVEL IV ONLY:

Y N (N/A) Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Matrix Spike ID	Matrix	Analyte	%R	Associated Samples	Qualifications
1	12	Sediment	Sb	3.7 (70-130)	All Sediment	~~J/R/A~~ ~~J/UJ/A~~ (post spiked was not performed) >5%

Comments:

LDC #: 13204B4
SDG #: 4470

VALIDATION FINDINGS WORKSHEET
Sample Result Verification

Reviewer: MH
2nd Reviewer: ak

METHOD: Trace metals (EPA SW-846 6010/7000)

#	Sample ID	Analyte	APP Result (units)	lab reported. RL (units)	Finding	Qualifications
1	All	Sb, As, Tl.	6020.	200.8	Lab method was different from APP method.	Text.

Comments:

LDC#: 13204 B6
SDG#: HP70

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Page: 1 of 1
Reviewer: MM
2nd Reviewer: A

METHOD: Metals (EPA Method 6010B/7000)

(Y) N NA Were field duplicate pairs identified in this SDG?
(Y) N NA Were target analytes detected in the field duplicate pairs?

Compound	Concentration (mg/kg)		(≤ 150) RPD	
	4	5		
Arsenic	13.7	10.6	26	
Chromium	24	22.9	5	
Cobalt	6.4	6.3	2	
Copper	52.5	52.3	0	
Lead	28	30	7	
Mercury	0.11	0.12	9	
Nickel	14	14	0	
Vanadium	49.8	49.7	0	
Zinc	87	88	1	
Molybdenum	3	2.7	11	

LDC #: 13204B4
SDG #: HP070

VALIDATION FINDINGS WORKSHEET
Initial and Continuing Calibration Calculation Verification

Reviewer: MD
2nd Reviewer: [illegible]

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

An initial and continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

$$\%R = \frac{\text{Found}}{\text{True}} \times 100$$

Where, Found = concentration (in ug/L) of each analyte measured in the analysis of the ICV or CCV solution
True = concentration (in ug/L) of each analyte in the ICV or CCV source

Standard ID	Type of Analysis	Element	Found (ug/L)	True (ug/L)	Recalculated %R	Reported %R	Acceptable (Y/N)
ICV	ICP (Initial calibration)	Pb	194.2	200	97.1	97.1	Y
↓	~~GFAA~~ (Initial calibration) ICP/MS	As	50.757	50	101.5	101.5	↓
↓	CVAA (Initial calibration)	Hg	8.82	8.0	110.3	110.3	↓
CCV	ICP (Continuing calibration)	Mo	993.9	1000	99.4	99.4	↓
↓	~~GFAA~~ (Continuing calibration) ICP/MS	Sb	50.95	50	101.9	101.9	↓
↓	CVAA (Continuing calibration)	Hg	4.35	4.0	108.8	108.8	↓
	Cyanide (Initial calibration)						
	Cyanide (Continuing calibation)						

Comments: Refer to Calibration Verification findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204B4
SDG #: 4p70

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

Page: 1 of 1
Reviewer: MM
2nd Reviewer: DC

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

Percent recoveries (%R) for an ICP interference check sample, a laboratory control sample and a matrix spike sample were recaluculated using the following formula:

$$\%R = \frac{Found}{True} \times 100$$

Where, Found = Concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation, Found = SSR (spiked sample result) - SR (sample result).
True = Concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

$$RPD = \frac{|S-D|}{(S+D)/2} \times 100$$

Where, S = Original sample concentration
D = Duplicate sample concentration

An ICP serial dilution percent difference (%D) was recalculated using the following formula:

$$\%D = \frac{|I-SDR|}{I} \times 100$$

Where, I = Initial Sample Result (mg/L)
SDR = Serial Dilution Result (mg/L) (Instrument Reading x 5)

Sample ID	Type of Analysis	Element	Found / S / I (units)	True / D / SDR (units)	Recalculated %R / RPD / %D	Reported %R / RPD / %D	Acceptable (Y/N)
ICSAB	ICP interference check	Zn	586.8	1000	88.7	88.7	Y
LCS	Laboratory control sample	Cd	50.7	50.0	101	101	|
12	Matrix spike	Ag	(SSR-SR) 60.6	61.9	97.9	97.9	|
13	Duplicate	Ni	9.44	9.74	3.1	10.5	U
MS	ICP serial dilution						

Comments: Refer to appropriate worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204B4
SDG #: 4p70

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: MW
2nd reviewer: [signature]

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Have results been reported and calculated correctly?
(Y) N N/A Are results within the calibrated range of the instruments and within the linear range of the ICP?
(Y) N N/A Are all detection limits below the CRDL?

Detected analyte results for 1 were recalculated and verified using the following equation:

Concentration = $\frac{(RD)(FV)(Dil)}{(In.\ Vol.)(\%S)}$

RD = Raw data concentration
FV = Final volume (ml)
In. Vol. = Initial volume (ml) or weight (G)
Dil = Dilution factor
%S = Decimal percent solids

Recalculation:

$$Cr = \frac{0.1299\ mg/L \times 0.05\ L \times 2 \times 1000\ g/kg}{1.02g \times 0.764} = 16.0\ mg/kg$$

Sample ID	Analyte	Reported Concentration (mg/kg)	Calculated Concentration (mg/kg)	Acceptable (Y/N)
1	As	4.5	4.5	Y
	Cr	16.0	16.0	
	Co	5.0	5.0	
	Cu	26.4	26.4	
	Pb	16	16	
	Hg	0.07	0.07	
	Mo	0.9	0.9	
	Ni	10	10	
	V	42.4	42.4	
	Zn	49.2	49.2	

LDC #: 13204C4 **VALIDATION COMPLETENESS WORKSHEET** Date: 3/7/05

SDG #: HP90 & HQ69 Level II Page: 1 of 1

Laboratory: Analytical Resources, Inc. Reviewer: MM

2nd Reviewer: [illegible]

METHOD: Metals (EPA SW 846 Method 6010B/~~6020~~ 200.8 /7000)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/19/05
II.	Calibration	N	
III.	Blanks	SW	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Matrix Spike Analysis	SW	
VI.	Duplicate Sample Analysis	A	
VII.	Laboratory Control Samples (LCS)	A	LCS + SRM
VIII.	Internal Standard (ICP-MS)	N	Not reviewed
IX.	Furnace Atomic Absorption QC	N	Not utilized
X.	ICP Serial Dilution	N	Not required
XI.	Sample Result Verification	SW	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	SW	(7,8)
XIV.	Field Blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: Sediment

1	LDW-SS-111-010	11	PB	21		31	
2	LDW-SS-112-010	12		22		32	
3	LDW-SS-119-010	13		23		33	
4	LDW-SS-120-010	14		24		34	
5	LDW-SS-60-010	15		25		35	
6	LDW-SS-99-010	16		26		36	
7	LDW-SS-89-010	17		27		37	
8	LDW-SS-201-010	18		28		38	
9	LDW-SS-119-010MS	19		29		39	
10	LDW-SS-119-010DUP	20		30		40	

Notes: _____

LDC #: 13204C4
SDG #: L4p90 + 4069

VALIDATION FINDINGS WORKSHEET
Sample Specific Element Reference

Page: 1 of 1
Reviewer: MH
2nd reviewer: PC

All circled elements are applicable to each sample.

Sample ID	Matrix	Target Analyte List (TAL)
1-8	Calint	Al, [✓ Sb], [✓ As], Ba, Be, [✓ Cd], Ca, [✓ Cr, Co, Cu], Fe, [✓ Pb], Mg, Mn, [✓ Hg], [✓ Ni], K, [✓ Se], [✓ Ag], Na, [✓ Tl], [✓ V], [✓ Zn], [✓ Mo], B, Si, CN^-, ___ ___
or 9,10	↓	Al, [✓ Sb], [✓ As], Ba, Be, [✓ Cd], Ca, [✓ Cr, Co, Cu], Fe, [✓ Pb], Mg, Mn, [✓ Hg], [✓ Ni], K, [✓ Se], [✓ Ag], Na, [✓ Tl], [✓ V], [✓ Zn], [✓ Mo], B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Analysis Method
ICP		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
ICP Trace		Al, Sb, As, Ba, Be, [✓ Cd], Ca, [✓ Cr, Co, Cu], Fe, [✓ Pb], Mg, Mn, Hg, [✓ Ni], K, [✓ Se, Ag], Na, Tl, [✓ V, Zn, Mo], B, Si, CN^-, ___ ___
ICP-MS		Al, [✓ Sb], [✓ As], Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, [✓ Tl], V, Zn, Mo, B, Si, CN^-, ___ ___
GFAA		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-,

Comments: Mercury by CVAA if performed

ELEMENTS.4

LDC #: 13204c4
SDG #: HPQ0+HP069

VALIDATION FINDINGS WORKSHEET
PB/ICB/CCB QUALIFIED SAMPLES

Page: 1 of 1
Reviewer: HH
2nd Reviewer: DC

METHOD: Trace Metals (EPA SW 846 Method 6010/7000) Soil preparation factor applied: _____
Sample Concentration units, unless otherwise noted: mg/kg Associated Samples: All (>10X)

					Sample Identification										
Analyte	Maximum PB[a] (mg/Kg)	Maximum FB[a] (ug/L)	Maximum ICB/CCB[a] (ug/L)	Blank Action Limit											
Al															Al
Sb							No	samples	qualified.						Sb
As															As
Ba															Ba
Be															Be
Cd															Cd
Ca															Ca
Cr															Cr
Co															Co
Cu	0.2														Cu
Fe															Fe
Pb															Pb
Mg															Mg
Mn															Mn
Hg															Hg
Ni															Ni
K															K
Se															Se
Ag															Ag
Na															Na
Tl															Tl
V															V
Zn															Zn
B															B
Mo															Mo
Sr															Sr

Samples with analyte concentrations within five times the associated ICB, CCB or PB concentration are listed above with the identifications from the Validation Completeness Worksheet. These sample results were qualified as not detected, "U".
Note : a - The listed analyte concentration is the highest ICB, CCB, or PB detected in the analysis of each element.

LDC #: 13204 cf
SDG #: HP90 + HP69

VALIDATION FINDINGS WORKSHEET
Matrix Spike Analysis

Page: 1 of 1
Reviewer: MW
2nd Reviewer: K

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Was a matrix spike analyzed for each matrix in this SDG?

(Y) N N/A Were matrix spike percent recoveries (%R) within the control limits of 75-125? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.

Y N (N/A) Was a post digestion spike analyzed for ICP elements that did not meet the required criteria for matrix spike recovery?

LEVEL IV ONLY:

Y N (N/A) Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Matrix Spike ID	Matrix	Analyte	%R	Associated Samples	Qualifications
1	9	Sediment	Sb	3.3 (70-130)	All	J- (R for all) UJ/A (Post spike > 4x S)

Comments:

LDC #: 13204C4
SDG #: HPQ1 + H069

VALIDATION FINDINGS WORKSHEET
Sample Result Verification

Reviewer: MH
2nd Reviewer: [illegible]

METHOD: Trace metals (EPA SW-846 6010/7000)

#	Sample ID	Analyte	APP Result (units)	lab reported. RL (units)	Finding	Qualifications
1	All	Sb, As, Tl.	6020.	200.8	Lab method was different from APP method.	Test.

Comments:

LDC#: 13204c4
SDG#: HP90 + HP89

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: MM
2nd Reviewer: [illegible]

METHOD: Metals (EPA Method 6010B/7000)

(Y) N NA Were field duplicate pairs identified in this SDG?
(Y) N NA Were target analytes detected in the field duplicate pairs?

Compound	Concentration (mg/kg)		RPD (≤ 50)	
	7	8		
Arsenic	4.2	4.2	0	
Chromium	14.8	14.0	6	
Cobalt	4.9	4.8	2	
Copper	18.6	18.5	1	
Lead	10	9	11	
Nickel	10	9	11	
Vanadium	43.9	43.3	1	
Zinc	38.4	39.7	3	
Molybdenum	0.7	0.7	0	

LDC #: 13204D4 **VALIDATION COMPLETENESS WORKSHEET** Date: 3/7/05

SDG #: HQ17 ~~& HQ04~~ Level II Page: 1 of 1

Laboratory: Analytical Resources, Inc. Reviewer: MM

2nd Reviewer: [illegible]

METHOD: Metals (EPA SW 846 Method 6010B/~~6020~~/7000) 200.8

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/19, 20, 05
II.	Calibration	N	
III.	Blanks	SW	
IV.	ICP Interference Check Sample (ICS) Analysis	A	
V.	Matrix Spike Analysis	SW	
VI.	Duplicate Sample Analysis	SW	
VII.	Laboratory Control Samples (LCS)	A	LCS + SRM
VIII.	Internal Standard (ICP-MS)	N	Not reviewed
IX.	Furnace Atomic Absorption QC	N	Not required
X.	ICP Serial Dilution	N	Not required
XI.	Sample Result Verification	SW	
XII.	Overall Assessment of Data	A	
XIII	Field Duplicates	N	
XIV.	Field Blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: sediment

1	LDW-SS114-010	11	LDW-SS76-010	21		31	
2	LDW-SS117-010	12	LDW-SS84-010	22		32	
3	LDW-SS13B-010	13	LDW-SS114-010MS	23		33	
4	LDW-SS125-010	14	LDW-SS114-010DUP	24		34	
5	LDW-SS126-010	15	PB	25		35	
6	LDW-SS116-010	16		26		36	
7	LDW-SS127-010	17		27		37	
8	LDW-SS130-010	18		28		38	
9	LDW-SS129-010	19		29		39	
10	LDW-SS118-010	20		30		40	

Notes: _____

LDC #: 13204 04
SDG #: 4217

VALIDATION FINDINGS WORKSHEET

Sample Specific Element Reference

Page: 1 of 1
Reviewer: MV
2nd reviewer:

All circled elements are applicable to each sample.

Sample ID	Matrix	Target Analyte List (TAL)
1-12	Sedimt	Al, [✓ Sb], [✓ As], Ba, Be, [✓ Cd], Ca, [✓ Cr, Co, Cu], Fe, [✓ Pb], Mg, Mn, [✓ Hg], [✓ Ni], K, [✓ Se], [✓ Ag], Na, [✓ Tl], [✓ V], [✓ Zn], [✓ Mo], B, Si, CN^-, ___ ___
2-13,14	✓	Al, [✓ Sb], [✓ As], Ba, Be, [✓ Cd], Ca, [✓ Cr, Co, Cu], Fe, [✓ Pb], Mg, Mn, [✓ Hg, Ni], K, [✓ Se, Ag], Na, [✓ Tl, V, Zn, Mo], B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Analysis Method
ICP		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
ICP Trace		Al, Sb, As, Ba, Be, [✓ Cd], Ca, [✓ Cr, Co, Cu], Fe, [✓ Pb], Mg, Mn, Hg, [✓ Ni], K, [✓ Se, Ag], Na, Tl, [✓ V, Zn, Mo], B, Si, CN^-, ___ ___
ICP-MS		Al, [✓ Sb], [✓ As], Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, [✓ Tl], V, Zn, Mo, B, Si, CN^-, ___ ___
GFAA		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-,

Comments: Mercury by CVAA if performed

LDC #: 132040Y
SDG #: HQ17

VALIDATION FINDINGS WORKSHEET
PB/ICB/CCB QUALIFIED SAMPLES

Reviewer: HH
2nd Reviewer: AC

METHOD: Trace Metals (EPA SW 846 Method 6010/7000) Soil preparation factor applied: _____
Sample Concentration units, unless otherwise noted: mg/kg Associated Samples: All (>10X)

					Sample Identification										
Analyte	Maximum PB[a] (mg/Kg)	Maximum PB[a] (ug/L)	Maximum ICB/CCB[a] (ug/L)	Blank Action Limit											
Al															Al
Sb															Sb
As															As
Ba															Ba
Be															Be
Cd															Cd
Ca															Ca
Cr															Cr
Co															Co
Cu	0.2														Cu
Fe															Fe
Pb															Pb
Mg															Mg
Mn															Mn
Hg															Hg
Ni															Ni
K															K
Se															Se
Ag															Ag
Na															Na
Tl															Tl
V															V
Zn															Zn
B															B
Mo															Mo
Sr															Sr

Samples with analyte concentrations within five times the associated ICB, CCB or PB concentration are listed above with the identifications from the Validation Completeness Worksheet. These sample results were qualified as not detected, "U".
Note : a - The listed analyte concentration is the highest ICB, CCB, or PB detected in the analysis of each element.

LDC #: 132074
SDG #: 1A17

VALIDATION FINDINGS WORKSHEET
Matrix Spike Analysis

Reviewer: MY
2nd Reviewer: [illegible]

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y (N) N/A Was a matrix spike analyzed for each matrix in this SDG?

Y (N) N/A Were matrix spike percent recoveries (%R) within the control limits of 75-125? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.

Y N (N/A) Was a post digestion spike analyzed for ICP elements that did not meet the required criteria for matrix spike recovery?

LEVEL IV ONLY:

Y N (N/A) Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Matrix Spike ID	Matrix	Analyte	%R	Associated Samples	Qualifications
1	13	Solid	Sb	4.3 (70-130)	A1	~~J / P / A~~ J/UJ/A (Post Spike was not performed >2x) key

Comments:

LDC #: 132040 4
SDG #: H017

VALIDATION FINDINGS WORKSHEET
Duplicate Analysis

Reviewer: MH
2nd Reviewer: [signature]

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Was a duplicate sample analyzed for each matrix in this SDG?

Y (N) N/A Were all duplicate sample relative percent differences (RPD) ≤ 20% for water samples and ≤ 35% for soil samples? If no, see qualifications below. A control limit of ±R.L. (±2X R.L. for soil) was used for sample values that were <5X the R.L., including the case when only one of the duplicate sample values was <5X R.L.. If field blanks were used for laboratory duplicates, note in the Overall Assessment.

LEVEL IV ONLY:

Y N (N/A) Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Duplicate ID	Matrix	Analyte	RPD (Limits)	Difference (Limits)	Associated Samples	Qualifications
1	14	Sediment	cd		0.9 (≤0.6) mg/kg	All	J (all detects) / A
			cr	65.9 (≤30)		↓	↓

Comments:

LDC #: 132404
SDG #: 1017

VALIDATION FINDINGS WORKSHEET
Sample Result Verification

Reviewer: MP
2nd Reviewer: DC

METHOD: Trace metals (EPA SW-846 6010/7000)

#	Sample ID	Analyte	QAPP Result (units)	Lab reported. RL (units)	Finding	Qualifications
1	All	Sb, As, Tl.	6020.	200.8	Lab method was different from QAPP method.	Test.

Comments:

LDC #: 13234A4 **VALIDATION COMPLETENESS WORKSHEET** Date: 3/9/05

SDG #: HQ48 Level II Page: 1 of 1

Laboratory: Analytical Resources, Inc. Reviewer: lm

2nd Reviewer:

METHOD: Metals (EPA SW 846 Method 6010B/~~6020~~2008/7000)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/24/05
II.	Calibration	N	
III.	Blanks	SW	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Matrix Spike Analysis	SW	
VI.	Duplicate Sample Analysis	A	
VII.	Laboratory Control Samples (LCS)	A	LCS + SRM
VIII.	Internal Standard (ICP-MS)	N	Not reviewed
IX.	Furnace Atomic Absorption QC	N	Not utilized
X.	ICP Serial Dilution	N	Not required
XI.	Sample Result Verification	SW	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	SW	(2,7) (12,13)
XIV.	Field Blanks	SW	RB = ~~HA~~ LDW-SS64-RB

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: ~~All~~ Sediment ~~soil~~ ~~# 14 AS~~

1	LDW-SS17-010	11	LDW-SS142-010	21	LDW-SS28-010	31	
2	LDW-SS50-010	12	LDW-SS123-010	22	LDW-SS134-010	32	
3	LDW-SS55-010	13	LDW-SS203-010	23	LDW-SS17-010MS	33	
4	LDW-SS72-010	~~14~~	~~LDW-SS64-RB~~ ~~AS~~ mm	24	LDW-SS17-010DUP	34	
5	LDW-SS79-010	15	LDW-SS64-010	25	LDW-SS134-010MS	35	
6	LDW-SS54-010	16	LDW-SS83-010	26	LDW-SS134-010DUP	36	
7	LDW-SS202-010	17	LDW-SS36-010	27		37	
8	LDW-SS42-010	18	LDW-SS58-010	28		38	
9	LDW-SS102-010	19	LDW-SS57-010	29		39	
10	LDW-SS128-010	20	LDW-SS56-010	30		40	

Notes:

LDC #: 13234A4
SDG #: H048

VALIDATION FINDINGS WORKSHEET
Sample Specific Element Reference

Page: 1 of 1
Reviewer: MG
2nd reviewer:

All circled elements are applicable to each sample.

Sample ID	Matrix	Target Analyte List (TAL)
1-13, 15-22	Sediment	Al, [✓ Sb], [✓ As], Ba, Be, [✓ Cd], Ca, [✓ Cr], [✓ Co], [✓ Cu], Fe, [✓ Pb], Mg, Mn, [✓ Hg], [✓ Ni], K, [✓ Se], [✓ Ag], Na, [✓ Tl], [✓ V], [✓ Zn], [✓ Mo], B, Si, CN⁻, ___ ___
23,24		Al, [✓ Sb], [✓ As], Ba, Be, [✓ Cd], Ca, [✓ Cr], [✓ Co], [✓ Cu], Fe, [✓ Pb], Mg, Mn, [✓ Hg], [✓ Ni], K, [✓ Se], [✓ Ag], Na, [✓ Tl], [✓ V], [✓ Zn], [✓ Mo], B, Si, CN⁻, ___ ___
25,26		Al, [✓ Sb], [✓ As], Ba, Be, [✓ Cd], Ca, [✓ Cr], [✓ Co], [✓ Cu], Fe, [✓ Pb], Mg, Mn, [✓ Hg], [✓ Ni], K, [✓ Se], [✓ Ag], Na, [✓ Tl], [✓ V], [✓ Zn], [✓ Mo], B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
Analysis Method		
ICP		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
ICP Trace		Al, Sb, As, Ba, Be, [✓ Cd], Ca, [✓ Cr], [✓ Co], [✓ Cu], Fe, [✓ Pb], Mg, Mn, Hg, [✓ Ni], K, [✓ Se], [✓ Ag], Na, Tl, [✓ V], [✓ Zn], [✓ Mo], B, Si, CN⁻, ___ ___
ICP-MS		Al, [✓ Sb], [✓ As], Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, [✓ Tl], V, Zn, Mo, B, Si, CN⁻, ___ ___
GFAA		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻,

Comments: [✓ Mercury by CVAA if performed]

LDC #: 13234A6
SDG #: H048

VALIDATION FINDINGS WORKSHEET
PB/ICB/CCB QUALIFIED SAMPLES

Page: 1 of 1
Reviewer: MH
2nd Reviewer: [illegible]

METHOD: Trace Metals (EPA SW 846 Method 6010/7000) Soil preparation factor applied: _____
Sample Concentration units, unless otherwise noted: mg/kg Associated Samples: 1-13, 15-21 (All > 10X PB)

Analyte	Maximum PB[a] (mg/Kg)	Maximum PB[a] (ug/L)	Maximum ICB/CCB[a] (ug/L)	Blank Action Limit	Sample Identification										
Al															Al
Sb							No	Samples	qualified						Sb
As															As
Ba															Ba
Be															Be
Cd															Cd
Ca															Ca
Cr															Cr
Co															Co
Cu															Cu
Fe															Fe
Pb															Pb
Mg															Mg
Mn															Mn
Hg															Hg
Ni															Ni
K															K
Se															Se
Ag															Ag
Na															Na
Tl															Tl
V															V
Zn	0.6														Zn
B															B
Mo															Mo
Sr															Sr

Samples with analyte concentrations within five times the associated ICB, CCB or PB concentration are listed above with the identifications from the Validation Completeness Worksheet. These sample results were qualified as not detected, "U".
Note : a - The listed analyte concentration is the highest ICB, CCB, or PB detected in the analysis of each element.

LDC #: 13234B4
SDG #: 1840

VALIDATION FINDINGS WORKSHEET
Field Blanks

Page: 1 of 1
Reviewer: MD
2nd Reviewer: [illegible]

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

(Y) N N/A Field blanks were identified in this SDG.

(Y) N N/A Were target analytes detected in the field blanks?

Blank units: mg/L Associated sample units: mg/kg 50X

Sampling date: 1/14/05 Soil factor applied _____

Field blank type: (circle one) Field Blank / Rinsate / Other: RB Associated Samples: 01

Analyte	Blank ID	Blank Action Level	Sample Identification									
	LDW-5564-RB											
Zn	0.006	1.5			No Samples qualified							

Blank units: _____ Associated sample units: _____

Sampling date: _____ Soil factor applied _____

Field blank type: (circle one) Field Blank / Rinsate / Other: _____ Associated Samples: _____

Analyte	Blank ID	Blank Action Level	Sample Identification									

ALL RESULTS WERE QUALIFIED BY THE FOLLOWING STATEMENT:

Samples with analyte concentrations within five times the associated field blank concentration are listed above, these sample results were qualified as not detected, "U".

LDC #: 13234A4
SDG #: H028

VALIDATION FINDINGS WORKSHEET
Matrix Spike Analysis

Page: 1 of 1
Reviewer: MH
2nd Reviewer: [illegible]

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y (N) N/A Was a matrix spike analyzed for each matrix in this SDG?

Y (N) N/A Were matrix spike percent recoveries (%R) within the control limits of 75-125? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken. (75 RPP limit)

Y (N) N/A Was a post digestion spike analyzed for ICP elements that did not meet the required criteria for matrix spike recovery?

LEVEL IV ONLY:

Y N (N/A) Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Matrix Spike ID	Matrix	Analyte	%R	Associated Samples	Qualifications
1	23	Solid	Sb	2.0 (70-130)	1-13, 15-21	~~J (L) (A)~~ J (all detects) UJ (all non-detects) (post spike was not performed)
2	25	↓	Sb	3.1 (70-130)	22	↓

Comments: _____

MS.4S2

LDC #: 132484
SDG #: 4248

VALIDATION FINDINGS WORKSHEET
Sample Result Verification

Page: 1 of 1
Reviewer: MH
2nd Reviewer: AC

METHOD: Trace metals (EPA SW-846 6010/7000)

#	Sample ID	Analyte	APP Result (units)	lab reported. RL (units)	Finding	Qualifications
1	All	Sb, As, Tl.	6020.	200.8	Lab method was different from APP method.	Text.

Comments:

LDC#: 13234A4
SDG#: 11048

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: MM
2nd Reviewer: [illegible]

METHOD: Metals (EPA Method 6010B/7000/200.8)

Y N NA Were field duplicate pairs identified in this SDG?
Y N NA Were target analytes detected in the field duplicate pairs?

Compound	Concentration (mg/kg)		RPD (≤ 50)	
	2	7		
Arsenic	16.8	15.8	6	
Cadmium	1.2	1.3	8	
Chromium	44	45.5	3	
Cobalt	8.7	9.2	6	
Copper	89.4	88.6	1	
Lead	87	92	6	
Mercury	0.41	0.40	2	
Nickel	26	26	0	
Silver	1.2	1.4	15	
Vanadium	68.3	69.6	2	
Zinc	181	179	1	
Molybdenum	3	3.3	10	

LDC#: 13234A4
SDG#: Ha48

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: MM
2nd Reviewer: AR

METHOD: Metals (EPA Method 6010B/7000/200.8)

(Y)N NA Were field duplicate pairs identified in this SDG?
(Y)N NA Were target analytes detected in the field duplicate pairs?

Compound	Concentration (mg/kg)		(≤150) RPD	
	12	13		
Arsenic	7.2	7.5	4	
Cadmium	0.3	0.3	0	
Chromium	20.9	18.8	11	
Cobalt	7.0	6.6	6	
Copper	28.0	27.6	1	
Lead	18	17	6	
Mercury	0.08	0.08	0	
Nickel	14	13	7	
Vanadium	55.6	54.5	2	
Zinc	60.9	58.7	4	
Molybdenum	1.4	1.3	7	

LDC #: 13234B4 **VALIDATION COMPLETENESS WORKSHEET** Date: 3/11/05

SDG #: HQ27 & HQ28 Level II Page: 1 of 1

Laboratory: Analytical Resources, Inc. Reviewer: MM

2nd Reviewer: [illegible]

METHOD: Metals (EPA SW 846 Method 6010B/~~6020~~/7000) 200.8

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/20, 21/05
II.	Calibration	N	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Matrix Spike Analysis	SW	
VI	Duplicate Sample Analysis	A	
VII.	Laboratory Control Samples (LCS)	A	LCS+SRM
VIII.	Internal Standard (ICP-MS)	N	Not required
IX.	Furnace Atomic Absorption QC	N	Not utilized
X.	ICP Serial Dilution	N	Not required.
XI.	Sample Result Verification	SW	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	N	
XIV.	Field Blanks	ND	RB = LDW-SS43-RB

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: Sediment

1	LDW-SS43-010	11	LDW-SS75-010	21		31	
2	LDW-SS44-010	12	~~LDW-SS43-RB~~	22		32	
3	LDW-SS87-010	13	LDW-SS101-010	23		33	
4	LDW-SS94-010	14	LDW-SS43-010MS	24		34	
5	LDW-SS96-010	15	LDW-SS43-010DUP	25		35	
6	LDW-SS97-010	16	RB	26		36	
7	LDW-SS31-010	17		27		37	
8	LDW-SS67-010	18		28		38	
9	LDW-SS63-010	19		29		39	
10	LDW-SS70-010	20		30		40	

Notes: _____

LDC #: 13234B4
SDG #: 6H27 + 6H28

VALIDATION FINDINGS WORKSHEET

Sample Specific Element Reference

Page: 1 of 1
Reviewer: MB
2nd reviewer: B

All circled elements are applicable to each sample.

Sample ID	Matrix	Target Analyte List (TAL)
1-11,13	Sdmt	Al, [✓ Sb], [✓ As], Ba, Be, [✓ Cd], Ca, [✓ Cr], [✓ Co], [✓ Cu], Fe, [✓ Pb], Mg, Mn, [✓ Hg], [✓ Ni], K, [✓ Se], [✓ Ag], Na, [✓ Tl], [✓ V], [✓ Zn], [✓ Mo], B, Si, CN⁻, ___ ___
14,15	↓	Al, [✓ Sb], [✓ As], Ba, Be, [✓ Cd], Ca, [✓ Cr], [✓ Co], [✓ Cu], Fe, [✓ Pb], Mg, Mn, [✓ Hg], [✓ Ni], K, [✓ Se], [✓ Ag], Na, [✓ Tl], [✓ V], [✓ Zn], [✓ Mo], B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Analysis Method
ICP		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
ICP Trace		Al, Sb, As, Ba, Be, [✓ Cd], Ca, [✓ Cr], [✓ Co], [✓ Cu], Fe, [✓ Pb], Mg, Mn, Hg, [✓ Ni], K, [✓ Se], [✓ Ag], Na, Tl, [✓ V], [✓ Zn], [✓ Mo], B, Si, CN⁻, ___ ___
ICP-MS		Al, [✓ Sb], [✓ As], Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, [✓ Tl], V, Zn, Mo, B, Si, CN⁻, ___ ___
GFAA		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻,

Comments: [✓ Mercury by CVAA if performed]

ELEMENTS.4

LDC #: 13234B4
SDG #: 1H27+1H28

VALIDATION FINDINGS WORKSHEET
Matrix Spike Analysis

Reviewer: MY
2nd Reviewer: AC

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Was a matrix spike analyzed for each matrix in this SDG?

Y (N) N/A Were matrix spike percent recoveries (%R) within the control limits of 75-125? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.

Y (N) N/A Was a post digestion spike analyzed for ICP elements that did not meet the required criteria for matrix spike recovery?

LEVEL IV ONLY:

Y N (N/A) Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Matrix Spike ID	Matrix	Analyte	%R	Associated Samples	Qualifications
1	14	Sediment	Sb	2,4 (70-130)	All	J (all detects) UJ (all non-detects) (post spiked was not performed >25%)

Comments:

LDC #: 13234B4
SDG #: 480717 + 480728

VALIDATION FINDINGS WORKSHEET
Sample Result Verification

Reviewer: MH
2nd Reviewer: AC

METHOD: Trace metals (EPA SW-346 6010/7000)

#	Sample ID	Analyte	APP Result (units)	Lab reported. RL (units)	Finding	Qualifications
1	All	Sb, As, Tl.	6020.	200.8	Lab method was different from APP method.	Test.

Comments:

LDC #: 13234E4 **VALIDATION COMPLETENESS WORKSHEET** Date: 3/14/05

SDG #: HQ56 & HQ57 Level II Page: 1 of 1

Laboratory: Analytical Resources, Inc. Reviewer: MM

2nd Reviewer: SL

METHOD: Metals (EPA SW 846 Method 6010B/~~6020~~/7000) 2000.8

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/25, 26/05
II.	Calibration	N	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Matrix Spike Analysis	SW	
VI.	Duplicate Sample Analysis	A	
VII.	Laboratory Control Samples (LCS)	A	LCS + SRM
VIII.	Internal Standard (ICP-MS)	N	Not reviewed
IX.	Furnace Atomic Absorption QC	N	Not utilized
X.	ICP Serial Dilution	N	Not required
XI.	Sample Result Verification	SW	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	N	
XIV.	Field Blanks	ND	RB = LDW-SS110-RB

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: Sediment.

1	~~LDW-SS110-RB~~	11	LDW-SS49-010	21		31	
2	LDW-SS52-010	12	LDW-SS143-010	22		32	
3	LDW-SS92-010	13	LDW-SS52-010MS	23		33	
4	LDW-SS104-010	14	LDW-SS52-010DUP	24		34	
5	LDW-SS110-010	15	PB	25		35	
6	LDW-SS109-010	16		26		36	
7	LDW-SS115-010	17		27		37	
8	LDW-SS121-010	18		28		38	
9	LDW-SS88-010	19		29		39	
10	LDW-SS33-010	20		30		40	

Notes:

LDC #: 13234E4
SDG #: H256 + H257

VALIDATION FINDINGS WORKSHEET
Sample Specific Element Reference

Page: 1 of 1
Reviewer: MG
2nd reviewer: X

All circled elements are applicable to each sample.

Sample ID	Matrix	Target Analyte List (TAL)
1-12	Sediment	Al, [✓ Sb], [✓ As], Ba, Be, [✓ Cd], Ca, [✓ Cr], [✓ Co], [✓ Cu], Fe, [✓ Pb], Mg, Mn, [✓ Hg], [✓ Ni], K, [✓ Se], [✓ Ag], Na, [✓ Tl], [✓ V], [✓ Zn], [✓ Mo], B, Si, CN^-, ___ ___
QC 13,14	↓	Al, [✓ Sb], [✓ As], Ba, Be, [✓ Cd], Ca, [✓ Cr], [✓ Co], [✓ Cu], Fe, [✓ Pb], Mg, Mn, [✓ Hg], [✓ Ni], K, [✓ Se], [✓ Ag], Na, [✓ Tl], [✓ V], [✓ Zn], [✓ Mo], B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___

Analysis Method		
ICP		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
ICP Trace		Al, Sb, As, Ba, Be, [✓ Cd], Ca, [✓ Cr], [✓ Co], [✓ Cu], Fe, [✓ Pb], Mg, Mn, Hg, [✓ Ni], K, [✓ Se], [✓ Ag], Na, Tl, [✓ V], [✓ Zn], [✓ Mo], B, Si, CN^-, ___ ___
ICP-MS		Al, [✓ Sb], [✓ As], Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, [✓ Tl], V, Zn, Mo, B, Si, CN^-, ___ ___
GFAA		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-,

Comments: Mercury by CVAA if performed

LDC #: 133424
SDG #: H056 + H057

VALIDATION FINDINGS WORKSHEET
Matrix Spike Analysis

Page: 1 of 1
Reviewer: MY
2nd Reviewer: [illegible]

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a matrix spike analyzed for each matrix in this SDG?

Y N N/A Were matrix spike percent recoveries (%R) within the control limits of 75-125? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.

Y N N/A Was a post digestion spike analyzed for ICP elements that did not meet the required criteria for matrix spike recovery?

LEVEL IV ONLY:

Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Matrix Spike ID	Matrix	Analyte	%R	Associated Samples	Qualifications
1	13	sediment	Sb	212 (70-130)	All	~~J~~ ~~UJ~~ ~~A~~ UJ/UJ/A (Post Spike was not ~~performed~~) >75%

Comments:

MS.4S2

LDC #: 13234Z4
SDG #: 4056 + 4057

VALIDATION FINDINGS WORKSHEET
Sample Result Verification

Reviewer: MH
2nd Reviewer: M

METHOD: Trace metals (EPA SW-846 6010/7000)

#	Sample ID	Analyte	QAPP Result (units)	lab reported. RL (units)	Finding	Qualifications
1	All	Sb, As, Tl.	6020.	200.8	Lab method was different from QAPP method.	Text.

Comments:

LDC #: 13298A4 **VALIDATION COMPLETENESS WORKSHEET** Date: 3/24/05
SDG #: HQ93 Level II Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: MH
2nd Reviewer: DL

METHOD: Metals (EPA SW 846 Method 6010B/~~6020~~200.8/7000)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/28/05
II.	Calibration	N	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Matrix Spike Analysis	SW	
VI.	Duplicate Sample Analysis	A	
VII.	Laboratory Control Samples (LCS)	A	LCS + SRM
VIII.	Internal Standard (ICP-MS)	N	Not reviewed.
IX.	Furnace Atomic Absorption QC	N	Not utilized
X.	ICP Serial Dilution	N	Not required
XI.	Sample Result Verification	SW	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	N	
XIV.	Field Blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples: sediment

1	LDW-SSCR20-010	11		21		31	
2	LDW-SSCR23-010	12		22		32	
3	LDW-MSMP43-010	13		23		33	
4	LDW-SSCR20-010MS	14		24		34	
5	LDW-SSCR20-010DUP	15		25		35	
6	PB	16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes:

LDC #: 13298A4
SDG #: A293

VALIDATION FINDINGS WORKSHEET
Sample Specific Element Reference

Page: 1 of 1
Reviewer: MH
2nd reviewer: R

All circled elements are applicable to each sample.

Sample ID	Matrix	Target Analyte List (TAL)
1-3	Sediment	Al, [✓ Sb], [✓ As], Ba, Be, [✓ Cd], Ca, [✓ Cr], [✓ Co], [✓ Cu], Fe, [✓ Pb], Mg, Mn, [✓ Hg], [✓ Ni], K, [✓ Se], [✓ Ag], Na, [✓ Tl], [✓ V], [✓ Zn], [✓ Mo], B, Si, CN^-, ___ ___
MS4.5	✓	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
Analysis Method		
ICP		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
ICP Trace		Al, Sb, As, Ba, Be, [✓ Cd], Ca, [✓ Cr], [✓ Co], [✓ Cu], Fe, [✓ Pb], Mg, Mn, Hg, [✓ Ni], K, [✓ Se], [✓ Ag], Na, Tl, [✓ V], [✓ Zn], [✓ Mo], B, Si, CN^-, ___ ___
ICP-MS		Al, [✓ Sb], [✓ As], Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, [✓ Tl], ~~V~~, Zn, Mo, B, Si, CN^-, ___ ___
GFAA		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-,

Comments: Mercury by CVAA if performed

ELEMENTS.4

LDC #: 13298A4
SDG #: H893

VALIDATION FINDINGS WORKSHEET
Matrix Spike Analysis

Reviewer: MH
2nd Reviewer: [illegible]

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Was a matrix spike analyzed for each matrix in this SDG?

Y (N) N/A Were matrix spike percent recoveries (%R) within the control limits of 75-125? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken. (4APP limit)

Y N N/A Was a post digestion spike analyzed for ICP elements that did not meet the required criteria for matrix spike recovery?

LEVEL IV ONLY:

Y N (N/A) Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Matrix Spike ID	Matrix	Analyte	%R	Associated Samples	Qualifications
1	4	Solid	Sb	1.6 (70-130)	All	J/UJ / R/A (~~not~~ post spiked only)

Comments:

LDC #: 13398A4
SDG #: HA93

VALIDATION FINDINGS WORKSHEET
Sample Result Verification

Reviewer: MH
2nd Reviewer: DC

METHOD: Trace metals (EPA SW-846 6010/7000)

#	Sample ID	Analyte	Result (units)	RL (units)	Finding	Qualifications
1	All	Sb, As, Tl			Lab reported by 200.8. App. 6020.	Test.

Comments:

LDC #: 13315B4 **VALIDATION COMPLETENESS WORKSHEET** Date: 3/28/05
SDG #: HT56 Level IV II Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: WW
2nd Reviewer:

METHOD: Arsenic (EPA Method 200.8)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 2/1, 9/05
II.	Calibration	~~A~~ N	
III.	Blanks	~~A~~ A	
IV.	ICP Interference Check Sample (ICS) Analysis	N ~~N~~ A	
V.	Matrix Spike Analysis	A	
VI.	Duplicate Sample Analysis	A	
VII.	Laboratory Control Samples (LCS)	A	LCS + SRM
VIII.	Internal Standard (ICP-MS)	~~A~~ N	not reviewed
IX.	Furnace Atomic Absorption QC	N	Not required
X.	ICP Serial Dilution	N	Not required
XI.	Sample Result Verification	SW	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	N	
XIV.	Field Blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples: Solimit

1	DR-SS5-010	11	DR-SS5-010DUP	21		31	
2	DR-SS6-010	12	PB	22		32	
3	DR-SS7-010	13		23		33	
4	DR-SS9-010	14		24		34	
5	DR-SS10-010	15		25		35	
6	DR-SS11-010	16		26		36	
7	DR-SS13-010	17		27		37	
8	DR-SS14-010	18		28		38	
9	DR-SS15-010	19		29		39	
10	DR-SS5-010MS	20		30		40	

Notes:

LDC #: 13204A6

SDG #: HP67

Laboratory: Analytical Resources, Inc.

VALIDATION COMPLETENESS WORKSHEET

Level III/IV

Date: 3/4/05

Page: 1 of 1

Reviewer: MH

2nd Reviewer: [illegible]

METHOD: Ammonia-N (EPA Method 350.1), Grain Size (PSEP), Sulfide (EPA Method 376.2), Total Solids (EPA Method 160.3), TOC (Plumb),

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/17/05
IIa.	Initial calibration	A ~~N~~	
IIb.	Calibration verification	A ~~N~~	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	A	} MS/MSD
V	Duplicates	A	
VI.	Laboratory control samples	A	LCS + SRM. No SRM for S Test.
VII.	Sample result verification	A ~~N~~	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X	Field blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: Sediment

1	LDW-SS1-010	11	LDW SS1 010DUP	21	MB	31	
2	LDW-SS4-010	12	LDW-SS4-010DUP	22		32	
3	LDW-SS5-010	13	LDW-SS4-010TRP	23		33	
4	LDW-SS10-10	14	~~LDW-SS10-10MS~~	24		34	
5	LDW-SS12-010	15	~~LDW-SS10-10DUP~~	25		35	
6	LDW-SS14-010	16	LDW-SS13-010MS	26		36	
7	LDW-SS15-010	17	LDW-SS13-010DUP	27		37	
8	LDW-SS22-010	18	~~LDW-SS10-10TRP~~	28		38	
9	LDW-SS13-010	19	LDW-SS1-010TRP	29		39	
10	LDW-SS1-010MS	20	LDW-SS4-010MS	30		40	

Notes: _____

LDC #: 13204A6
SDG #: HP67

VALIDATION FINDINGS CHECKLIST

Reviewer: MM
2nd Reviewer: SK

Method: Inorganics (EPA Method See cover)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. Calibration				
Were all instruments calibrated daily, each set-up time?	✓			
Were the proper number of standards used?	✓			
Were all initial calibration correlation coefficients ≥ 0.995?	✓			
Were all initial and continuing calibration verification %Rs within the 90-110% QC limits?	✓			
Were titrant checks performed as required?			✓	
Were balance checks performed as required?				
Were all initial and continuing calibration verification %Rs within the 90-110% QC limits?	✓			
III. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
IV. Matrix spike/Matrix spike duplicates and Duplicates				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.	✓			
Were the MS/MSD or duplicate relative percent differences (RPD) ≤ 20% for waters and ≤ 35% for soil samples? A control limit of ≤ CRDL(≤ 2X CRDL for soil) was used for samples that were ≤ 5X the CRDL, including when only one of the duplicate sample values were ≤ 5X the CRDL.	✓			
V. Laboratory control samples				
Was an LCS anaylzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% (85-115% for Method 300.0) QC limits?	✓			
VI. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?			✓	
Were the performance evaluation (PE) samples within the acceptance limits?			✓	

LDC #: 13204A6
SDG #: Hp67

VALIDATION FINDINGS CHECKLIST

Reviewer: MM
2nd Reviewer: [illegible]

Validation Area	Yes	No	NA	Findings/Comments
VII. Sample Result Verification				
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
Were detection limits < RL?	✓			
VIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
IX. Field duplicates				
Field duplicate pairs were identified in this SDG.		✓		
Target analytes were detected in the field duplicates.			✓	
X. Field blanks				
Field blanks were identified in this SDG.		✓		
Target analytes were detected in the field blanks.			✓	

LDC #: 13204A6
SDG #: 1+P67

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: MM
2nd reviewer: R

All circled methods are applicable to each sample.

Sample ID	Parameter
1-9	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- [✓ NH_3] TKN [✓ TOC] CR^{6+} [✓ S] [✓ Grain size] [✓ TS] ____
AC 10	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- [✓ NH_3] TKN TOC CR^{6+} ____ ____ ____ ____
11	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- [✓ NH_3] TKN TOC CR^{6+} ____ ____ [✓ TS] ____
12	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN ~~TOC~~ CR^{6+} ____ [✓ Grain size] ____ ____
13	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN [✓ TOC] CR^{6+} ____ ____ ____ ____
~~14~~	~~pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN [✓ TOC] CR^{6+}~~ ____ ____ ____ ____
~~15~~	~~pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN [✓ TOC] CR^{6+}~~ ____ ____ ____ ____
16	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} [✓ S] ____ ____ ____
17	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} [✓ S] ____ ____ ____
~~18~~	~~pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN [✓ TOC] CR^{6+}~~ ____ ____ ____ ____
19	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ [✓ TS] ____
20	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN [✓ TOC] CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____

Comments:

LDC #: 13204A6
SDG #: 4P67

VALIDATION FINDINGS WORKSHEET
Initial and Continuing Calibration Calculation Verification

Reviewer: MM
2nd Reviewer: DB

METHOD: Inorganics, Method See cover

The correlation coefficient (r) for the calibration of NH_3-N was recalculated. Calibration date: 1/21/05

An initial or continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

$$\%R = \frac{Found}{True} \times 100$$

Where, Found = concentration of each analyte measured in the analysis of the ICV or CCV solution
True = concentration of each analyte in the ICV or CCV source

Type of Analysis	Analyte		conc. (mg/L) (units)	Area (units)	Recalculated r or %R	Reported r or %R	Acceptable (Y/N)
Initial calibration	NH_3-N	Blank	0	0.1216	r = 0.99998	r = 0.99998	Y
Calibration verification		Standard 1	0.01	0.8781			
		Standard 2	0.02	1.3529			
		Standard 3	0.05	2.6191			
		Standard 4	0.2	9.1622			
		Standard 5	0.5	22.5645			
		Standard 6	0.8	35.8826			
		Standard 7	1	44.6144			
Calibration verification ICV	NH_3-N	0.5	0.542		108.4	108.4	Y
Calibration verification CCV	TOC	5	4.822		96.4	96.4	Y
Calibration verification CCV	S	0.769	0.693		90	90	Y

Comments: Refer to Calibration Verification findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204A6
SDG #: HP67

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

Reviewer: MH
2nd Reviewer: DC

METHOD: Inorganics, Method See cover

Percent recoveries (%R) for a laboratory control sample and a matrix spike sample were recalculated using the following formula:

%R = Found / True x 100 Where, Found = concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation, Found = SSR (spiked sample result) - SR (sample result).
True = concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

RPD = |S-D| / (S+D)/2 x 100 Where, S = Original sample concentration
D = Duplicate sample concentration

Sample ID	Type of Analysis	Element	Found / S (units)	True / D (units)	Recalculated %R / RPD	Reported %R / RPD	Acceptable (Y/N)
LCS	Laboratory control sample	S	0.727	0.77	94.4	94	Y
10	Matrix spike sample	NH3-N	(SSR-SR) 113-5	124	91.8	91.1	
2/12/13	Duplicate sample	Tot	2.46 2.26	2.50	6.82	6.0 ~~4.3~~	

Comments: Refer to appropriate worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204A6
SDG #: 4pb67

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: MM
2nd reviewer: R

METHOD: Inorganics, Method see Cover

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Have results been reported and calculated correctly?
Y N N/A Are results within the calibrated range of the instruments?
Y N N/A Are all detection limits below the CRQL?

Compound (analyte) results for 1 reported with a positive detect were recalculated and verified using the following equation:

Concentration = S

Recalculation:

$S = \frac{(0.144-0.007)\ mg/L \times 0.10 \times 1000\ g/kg}{0.530 \times 2.4215\ g \times 0.719}$

$= 14.8\ mg/kg$

$Abs = 0.530 \times conc + 0.007$

#	Sample ID	Analyte	Reported Concentration (mg/kg)	Calculated Concentration (mg/kg)	Acceptable (Y/N)
1	1	TS (%)	70.8	70.8	Y
		NH3-N	3.58	3.58	|
		S	15	15	|
		TOC (%)	1.58	~~1.55~~ 1.58	↓
			% Retained		
		Grain 5.7ϕ Phi 5.8			
		<-1	0.6	0.64	Y
		-1 to 0	1.0	1.00	|
		0 to 1	10.9	10.9	|
		1 to 2	46.1	46.1	|
		2 to 3	26.7	26.7	|
		3 to 4	5.4	5.4	↓
		4 to 5	1.2	1.2	Y ✓
		5 to 6	1.3	1.3	Y
		6 to 7	1.6	1.6	|
		7 to 8	1.6	1.6	|
		8 to 9	1.1	1.1	|
		9 to 10	0.9	0.9	↓
		≥10	1.6	1.6	Y ✓ ✓

Note:

LDC #: 13204B6

VALIDATION COMPLETENESS WORKSHEET

Level ~~III~~ IV

Date: 3/1/05

SDG #: HP70

Page: 1 of 1

Laboratory: Analytical Resources, Inc.

Reviewer: hm

2nd Reviewer: R

METHOD: Ammonia-N (EPA Method 350.1), Grain Size (PSEP), Sulfide (EPA Method 376.2), Total Solids (EPA Method 160.3), TOC (Plumb),

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/18/05
IIa.	Initial calibration	A ~~N~~	
IIb.	Calibration verification	A N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	SW	
V	Duplicates	A	Triplicates.
VI	Laboratory control samples	A	LCS + SRM. No SRM for S. Test.
VII.	Sample result verification	A ~~SW~~ N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	SW	(3,4)
X	Field blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: Sediment.

1	LDW-SS23-010	11	LDW-SS48-010MS	21		31	
2	LDW-SS26-010	12	LDW-SS48-010DUP	22		32	
3	LDW-SS27-010	13	LDW-SS51-010MS	23		33	
4	LDW-SS200-010	14	LDW-SS51-010DUP	24		34	
5	LDW-SS32-010	15	MB	25		35	
6	LDW-SS37-010	16		26		36	
7	LDW-SS38-010	17		27		37	
8	LDW-SS40-010	18		28		38	
9	LDW-SS48-010	19		29		39	
10	LDW-SS51-010	20		30		40	

Notes:

LDC #: 13204
SDG #: ______

VALIDATION FINDINGS WORKSHEET

Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: WM
2nd reviewer: ______

All circled methods are applicable to each sample.

Sample ID	Parameter
1-10	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ [✓ NH$_3$] TKN [✓ TOC] CR^{6+} [✓ Grain Size] ____ [✓ S] [✓ TS]
w 11,12	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ [✓ S] ____
J 13,14	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ [✓ NH$_3$] TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____

Comments: ______

LDC #: 13204 B6
SDG #: HP90

VALIDATION FINDINGS CHECKLIST

Reviewer: MH
2nd Reviewer: [illegible]

Method: Inorganics (EPA Method see comment

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. Calibration				
Were all instruments calibrated daily, each set-up time?	✓			
Were the proper number of standards used?	✓			
Were all initial calibration correlation coefficients ≥ 0.995?	✓			
Were all initial and continuing calibration verification %Rs within the 90-110% QC limits?	✓			
Were titrant checks performed as required?			✓	
Were balance checks performed as required?	✓			
Were all initial and continuing calibration verification %Rs within the 90-110% QC limits?	✓			
III. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
IV. Matrix spike/Matrix spike duplicates and Duplicates				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.		✓		
Were the MS/MSD or duplicate relative percent differences (RPD) ≤ 20% for waters and ≤ 35% for soil samples? A control limit of ≤ CRDL(≤ 2X CRDL for soil) was used for samples that were ≤ 5X the CRDL, including when only one of the duplicate sample values were ≤ 5X the CRDL.	✓			
V. Laboratory control samples				
Was an LCS anaylzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% (85-115% for Method 300.0) QC limits?	✓			
VI. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?			✓	
Were the performance evaluation (PE) samples within the acceptance limits?			✓	

LDC #: 13204 B6
SDG #: HP70

VALIDATION FINDINGS CHECKLIST

Reviewer: MH
2nd Reviewer: W

Validation Area	Yes	No	NA	Findings/Comments
VII. Sample Result Verification				
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
Were detection limits < RL?	✓			
VIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
IX. Field duplicates				
Field duplicate pairs were identified in this SDG.	✓	a		
Target analytes were detected in the field duplicates.	✓			
X. Field blanks				
Field blanks were identified in this SDG.		✓		
Target analytes were detected in the field blanks.			✓	

LDC #: 13204 B6
SDG #: VP70

VALIDATION FINDINGS WORKSHEET
Matrix Spike Analysis

Reviewer: MM
2nd Reviewer: [illegible]

METHOD: Inorganics, Method See cover

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Was a matrix spike analyzed for each matrix in this SDG?

Y (N) N/A Were matrix spike percent recoveries (%R) within the control limits of 75-125 (85-115% for Method 300.0)? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.

LEVEL IV ONLY:

Y N (N/A) Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Matrix Spike ID	Matrix	Analyte	%R	Associated Samples	Qualifications
1	11	Sediment	S	71.1 (75-125)	All	J- (4) J/A

Comments:

LDC #: 13204B6
SDG #: HP70

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Page: 1 of 2
Reviewer: MH
2nd reviewer: SL

METHOD: Inorganics, Method See cover

(Y) N N/A Were field duplicate pairs identified in this SDG?
(Y) N N/A Were target analytes detected in the field duplicate pairs?

Analyte	Concentration ( )		RPD (~~Limits~~) ≤50	Qualifier
	3	4		
TS (%)	47.30	48.50	3	
NH_3-N (mg/kg)	5.59	5.75	6	
S ↓	310	220	34	
TOC (%)	1.60	1.68	5	

Analyte	Concentration ( )		RPD (Limits)	Qualifier

Analyte	Concentration ( )		RPD (Limits)	Qualifier

Analyte	Concentration ( )		RPD (Limits)	Qualifier

LDC#: 13204B6
SDG#: HP70

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Page: 1 of 2
Reviewer: MM
2nd Reviewer: VL

Grain Size, Method PSEP

(Y) N NA Were field duplicate pairs identified in this SDG?
(Y) N NA Were target analytes detected in the field duplicate pairs?

Phi Size	% Finer (%)		(≤50) RPD	
	3	4		
-2	100.0	99.9	0	
-1	98.6	98.7	0	
0	96.9	96.6	0	
1	93.0	92.3	1	
2	81.1	80.3	1	
3	59.4	58.8	1	
4	37.8	36.8	3	
5	30.0	28.4	5	
6	20.1	19.2	5	
7	12.5	11.7	7	
8	9.0	8.5	6	
9	6.4	6.3	2	
10	4.8	4.7	2	

LDC #: 13204B6
SDG #: HP96

VALIDATION FINDINGS WORKSHEET
Initial and Continuing Calibration Calculation Verification

Reviewer: MM
2nd Reviewer: AC

METHOD: Inorganics, Method Soil conv

The correlation coefficient (r) for the calibration of S was recalculated. Calibration date: 1/24/05

An initial or continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

%R = Found x 100 / True

Where, Found = concentration of each analyte measured in the analysis of the ICV or CCV solution
True = concentration of each analyte in the ICV or CCV source

Type of Analysis	Analyte		conc. (mg/L) (units)	blank (units)	Recalculated r or %R	Reported r or %R	Acceptable (Y/N)
Initial calibration	S	Blank	0	0	r^2=0.9999	r^2=0.9999	Y
Calibration verification		Standard 1	0.05	0.027			
		Standard 2	0.125	0.066			
		Standard 3	0.250	0.122			
		Standard 4	~~1.00~~ 0.50	0.246			
		Standard 5	1.00	0.491			
		Standard 6					
		Standard 7					
Calibration verification CCV	NH3-N	0.5	0.5473		108.6	108.66	Y
Calibration verification CCV	TOC	5000	4997		99.94	99.93	↓
Calibration verification ICV	S	0.692	0.653		97	97	↓

Comments: Refer to Calibration Verification findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204B6
SDG #: HP70

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

Page: 1 of 1
Reviewer: MH
2nd Reviewer: DR

METHOD: Inorganics, Method See cover

Percent recoveries (%R) for a laboratory control sample and a matrix spike sample were recalculated using the following formula:

$\%R = \frac{Found}{True} \times 100$ Where, Found = concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation, Found = SSR (spiked sample result) - SR (sample result).
True = concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

$RPD = \frac{|S-D|}{(S+D)/2} \times 100$ Where, S = Original sample concentration
D = Duplicate sample concentration

Sample ID	Type of Analysis	Element	Found / S (units)	True / D (units)	Recalculated %R / RPD	Reported %R / RPD	Acceptable (Y/N)
LCS	Laboratory control sample	S	0.65	0.73	89.0	89.4	Y
LOW-SSIP-010	Matrix spike sample	TOC	(SSR-SR) 2.66	2.69	99	98.9 ~~123.2~~	
15	Duplicate sample	NH_3-N	8.04	8.06 ~~8.09~~	0.2	0.2	

Comments: Refer to appropriate worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204B6
SDG #: HP710

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: MM
2nd reviewer: ✓

METHOD: Inorganics, Method fee cover

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Have results been reported and calculated correctly?
(Y) N N/A Are results within the calibrated range of the instruments?
(Y) N N/A Are all detection limits below the CRQL?

Compound (analyte) results for 1 reported with a positive detect were recalculated and verified using the following equation:

Concentration =

$$T\text{-}C = T\text{-}C \times \frac{\%\ \text{Solid at } 70^\circ C}{\%\ \text{Solid at } 104^\circ C}$$

Recalculation:

$$T\text{-}C = 12079\ mg/kg \times \frac{79.36}{77.8}$$

$$= 12321\ mg/kg = 1.23\%$$

#	Sample ID	Analyte	Reported Concentration ( )	Calculated Concentration ( )	Acceptable (Y/N)
1	1	TS (%)	77.8	77.8	Y
		NH_3-N (mg/kg)	2.59	2.59	↓
		T-C (%)	1.23	1.23	↓
2		Phi Size	% Retained	% Retained	↓
		<-1 ~~int~~	0.8	0.8	↓
		-1 to 0	2.3	2.3	↓
		0 to 1	12.1	12.1	
		1 to 2	41.9	41.9	
		2 to 3	21.0	21.0	
		3 to 4	5.0	5.0	
		4 to 5	2.8	2.8	
		5 to 6	2.8 ~~4-6 M~~	2.8	
		6 to 7	3.1 ~~1.4~~	3.2	
		7 to 8	2.4	2.4	
		8 to 9	1.8	1.8	
		9 to 10	1.4	1.4	
		>10	7.6	7.6	↓

Note:

LDC #: 13204C6 **VALIDATION COMPLETENESS WORKSHEET** Date: 3/2/05

SDG #: HP90 & ~~HQ69~~ & HQ69 Level II Page: 1 of 1

Laboratory: Analytical Resources, Inc. Reviewer: MM

2nd Reviewer: SC

METHOD: Ammonia-N (EPA Method 350.1), Grain Size (PSEP), Sulfide (EPA Method 376.2), Total Solids (EPA Method 160.3), TOC (Plumb),

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	SW	Sampling dates: 1/19/05
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	SW	
V	Duplicates	A	Triplicates.
VI.	Laboratory control samples	A	LCS + SRM. No SRM for S Test.
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	SW	(7, 8)
X	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples: sediment

1	LDW-SS-111-010	11	LDW-SS-112-010MS	21		31	
2	LDW-SS-112-010	12	LDW-SS-112-010DUP	22		32	
3	LDW-SS-119-010	13	LDW-SS-119-010DUP	23		33	
4	LDW-SS-120-010	14	LDW-SS-119-010TRP	24		34	
5	LDW-SS-60-010	15	LDW-SS-111-010 TRP	25		35	
6	LDW-SS-99-010	16	MB	26		36	
7	LDW-SS-89-010	17		27		37	
8	LDW-SS-201-010	18		28		38	
9	LDW-SS-111-010MS	19		29		39	
10	LDW-SS-111-010DUP	20		30		40	

Notes:

LDC #: 13204C6
SDG #: 1HP907-H069

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: MH
2nd reviewer: YC

All circled methods are applicable to each sample.

Sample ID	Parameter				
1-8	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- [✓ NH_3] TKN [✓ TOC] CR^{6+}	[✓ Grain Size]		[✓ S]	[✓ TS]
9, 10	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- [✓ NH_3] TKN [✓ TOC] CR^{6+}				
~~10, 11~~, 15	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN [✓ TOC] CR^{6+}				
11, 12	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- [✓ NH_3] TKN TOC CR^{6+}				
13, 14	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}	[✓ Grain Size]			
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}				

Comments:

LDC #: 13204C6
SDG #: HP90

VALIDATION FINDINGS WORKSHEET
Technical Holding Times

Page: 1 of 1
Reviewer: MM
2nd reviewer: DC

All circled dates have exceeded the technical holding time.
(Y) N N/A Were all samples preserved as applicable to each method ?
(Y) N N/A Were all cooler temperatures within validation criteria?

Method:		376.2					
Parameters:		S					
Technical holding time:		7 days					
Sample ID	Sampling date	~~Analysis~~ prep date	Analysis date	Analysis date	Analysis date	Analysis date	Qualifier
1	1/19/05	1/28/05	(9 days)				J- K/P

HT.6

LDC #: 13204C6
SDG #: 14990

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Reviewer: MH
2nd Reviewer: DC

METHOD: Inorganics, EPA Method See cover

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a matrix spike analyzed for each matrix in this SDG?

Y (N) N/A Were matrix spike percent recoveries (%R) within the control limits of 75-125? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.

(Y) N N/A Were al duplicate sample relative percent differences (RPD) ≤ 20% for water samples and ≤35% for soil samples?

LEVEL IV ONLY:

Y N (N/A) Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	MS/MSD ID	Matrix	Analyte	MS %Recovery	MSD %Recovery	RPD (Limits)	Associated Samples	Qualifications
1	LDW-SS101-MS	Sediment	S	60.2	54.8		A1	J-/UJ/A

Comments:

LDC #: 13204C6
SDG #: HP90

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Page: 1 of 1
Reviewer: WH
2nd reviewer: C

METHOD: Inorganics, Method See cover

(Y) N N/A Were field duplicate pairs identified in this SDG?
(Y) N N/A Were target analytes detected in the field duplicate pairs?

Analyte	Concentration ( )		RPD (Limits) ≤ 5/50	Qualifier
	7	8		
TS (%)	71.70	69.30	3	
NH_3-N (mg/kg)	1.30	1.40	7	
TOC (%)	1.01	1.02	1	

Analyte	Concentration (% Finer)		RPD (Limits) ≤ 5/50	Qualifier
	7	8		
Phi Size -3	~~100~~	~~100~~	~~0~~	
-2	99.9	100	0	
-1	99.5	99.5	0	
0	97.8	97.7	0	
1	76.6	76.5	0	

Analyte	Concentration (% Finer)		RPD (Limits) ≤ 5/50	Qualifier
	7	8		
2	42.9	43.4	1	
3	31.0	31.1	0	
4	16.3	16.4	1	
5	10.9	10.8	1	
6	7.7	7.7	0	

Analyte	Concentration (% Finer)		RPD (Limits) ≤ 5/50	Qualifier
	7	8		
7	5.2	5.1	2	
8	3.4	3.5	3	
9	2.4	2.4	0	
10	1.6	1.7	6	

LDC #: 13204D6 **VALIDATION COMPLETENESS WORKSHEET** Date: 3/7/15

SDG #: HQ17 Level II Page: 1 of 1

Laboratory: Analytical Resources, Inc. Reviewer: JMM

2nd Reviewer: M

METHOD: Ammonia-N (EPA Method 350.1M), Grain Size (PSEP),Sulfide (EPA Method 376.2), Total Solids (EPA Method 160.3), TOC (Plumb),

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I	Technical holding times	A	Sampling dates: 1/19, 20/07
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	SW	
V	Duplicates	A	Triplicates.
VI.	Laboratory control samples	A	LCS +SRM, No SRM for S. Test.
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples: all but

1	LDW-SS114-010	11	LDW-SS76-010	21		31	
2	LDW-SS117-010	12	LDW-SS84-010	22		32	
3	LDW-SS13B-010	13	LDW-SS114-010MS	23		33	
4	LDW-SS125-010	14	LDW-SS114-010DUP	24		34	
5	LDW-SS126-010	15	LDW-SS114-010TRP	25		35	
6	LDW-SS116-010	16	LDW-SS76-010MS	26		36	
7	LDW-SS127-010	17	LDW-SS76-010MSD	27		37	
8	LDW-SS130-010	18	LDW-SS76-010DUP	28		38	
9	LDW-SS129-010	19	↓ TRP	29		39	
10	LDW-SS118-010	20	MB	30		40	

Notes:

LDC #: 13204C6
SDG #: HP90

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: MH
2nd reviewer:

All circled methods are applicable to each sample.

Sample ID	Parameter
1-12	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- [✓ NH_3] TKN [✓ TOC] CR^{6+} [✓ S] [✓ Grain Size] [✓ TS] ____
or 13	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- [✓ NH_3] TKN [✓ TOC] CR^{6+} ____ ____ ____ ____
14	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN [✓ TOC] CR^{6+} ____ [✓ Grain Size] [✓ TS] ____
15	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN [✓ TOC] CR^{6+} ____ ____ [✓ TS] ____
16,17	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} [✓ S] ____ ____ ____
18,19	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} [✓ S] ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____

Comments:

LDC #: 1320406
SDG #: H217

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Page: 1 of 1
Reviewer: MH
2nd Reviewer: [signature]

METHOD: Inorganics, EPA Method See cover

Please see qualifications below for all questions answered "N" Not applicable questions are identified as "N/A".

(Y) N N/A Was a matrix spike analyzed for each matrix in this SDG?

Y (N) N/A Were matrix spike percent recoveries (%R) within the control limits of 75-125? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.

(Y) N N/A Were all duplicate sample relative percent differences (RPD) ≤ 20% for water samples and ≤35% for soil samples?

LEVEL IV ONLY:

Y N (N/A) Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	MS/MSD ID	Matrix	Analyte	MS %Recovery	MSD %Recovery	RPD (Limits)	Associated Samples	Qualifications
1	16/17	Sediment	S	65.7	60.7		A1	J-/UJ/A

Comments:

LDC #: 13234A6 **VALIDATION COMPLETENESS WORKSHEET** Date: 3/11/05
SDG #: HQ48 Level II Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: MM
2nd Reviewer: SC

METHOD: Ammonia-N (EPA Method 350.1) IM, Grain Size (PSEP), Sulfide (EPA Method 376.2), Total Solids (EPA Method 160.3), TOC (Plumb),

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/24/05
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	SW	
IV	Matrix Spike/Matrix Spike Duplicates	A	
V	Duplicates	A	Triplicates
VI	Laboratory control samples	SW	LCS + SRM, No SRM for S. Test.
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	SW	(2,7), (12,13)
X	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples: All Sediments

1	LDW-SS17-010	11	LDW-SS142-010	21	LDW-SS134-010	31	LDW-SS134 010DUP
2	LDW-SS50-010	12	LDW-SS123-010	22	LDW-SS17-010MS	32	LDW-SS28-010 TRP
3	LDW-SS55-010	13	LDW-SS203-010	23	LDW-SS17-010DUP	33	LDW-SS134-010 TRP
4	LDW-SS72-010	14	LDW-SS64-010	24	LDW-SS17-010TRP	34	MB
5	LDW-SS79-010	15	LDW-SS83-010	25	LDW-SS79-010MS	35	
6	LDW-SS54-010	16	LDW-SS36-010	26	LDW-SS79-010MSD	36	
7	LDW-SS202-010	17	LDW-SS58-010	27	LDW-SS79-010DUP	37	
8	LDW-SS42-010	18	LDW-SS57-010	28	LDW-SS57-010DUP	38	
9	LDW-SS102-010	19	LDW-SS56-010	29	LDW-SS28-010MS	39	
10	LDW-SS120-010	20	LDW SS28 010	30	LDW-SS28-010DUP	40	

Notes:

LDC #: 13234A6
SDG #: H248

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: MH
2nd reviewer:

All circled methods are applicable to each sample.

Sample ID	Parameter				
1-21	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- [✓ NH_3] TKN [✓ TOC] CR^{6+}	[✓ S]	[✓ TS]	[✓ Grain size]	
OU 22	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- [✓ NH_3] TKN [✓ TOC] CR^{6+}				
23.24	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- [✓ NH_3] TKN [✓ TOC] CR^{6+}		[✓ TS]	[✓ Grain size]	
24	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN [✓ TOC] CR^{6+}		[✓ TS]	↓	
25	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}	[✓ S]			
26	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}	[✓ S]			
27	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}	[✓ S]			
28	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}	[✓ S]			
29	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- [✓ NH_3] TKN [✓ TOC] CR^{6+}				
30	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- ~~NH_3~~ NA TKN [✓ TOC] CR^{6+}		[✓ TS]		
31	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- [✓ NH_3] TKN TOC CR^{6+}			[✓ Grain size]	
32	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN [✓ TOC] CR^{6+}		[✓ TS]		
33	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}			[✓ Grain size]	
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}				

Comments:

LDC #: 132346
SDG #: 1-1048

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer: MH
2nd Reviewer: [illegible]

Inorganics (SEB cover)
METHOD: ~~Trace metals~~ (~~EPA SW 846~~)

#	Blank ID	Analyte	Finding	Associated Samples	Qualifications
	MB	NH_3-N	21 samples were associated with an MB	All	Text

Comments:

LDC #: 13234A6
SDG #: H848

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

Reviewer: MH
2nd Reviewer: [illegible]

METHOD: Inorganics, Method See work

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a laboratory control sample (LCS) analyzed for each matrix in this SDG?

Y N N/A Were all LCS percent recoveries (%R) within the control limits of 80-120% (85-115% for Method 300.0)?

LEVEL IV ONLY:

Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	LCS ID	Matrix	Analyte	%R (limits)	Associated Samples	Qualifications
1	SRM	Sediment	Hg-W	21 samples were associated with a SRM	All	Target.

Comments:

LDC #: 13234A6
SDG #: H048

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: MH
2nd reviewer: M

METHOD: Inorganics, Method see cover

(Y) N N/A Were field duplicate pairs identified in this SDG?
(Y) N N/A Were target analytes detected in the field duplicate pairs?

Analyte	Concentration ( ) 2	Concentration ( ) 7	RPD (Limits) (≤/150)	Qualifier
TS (%)	50.90	51.50	1	
NH3-N (mg/kg)	8.22	8.03	2	
S ↓	110	770	150	
TOC (%)	1.94	1.90	2	

Analyte	Concentration ( ) 12	Concentration ( ) 13	RPD (Limits) ≤/150	Qualifier
TS (%)	69.00	68.90	0	
NH3-N (mg/kg)	3.49	5.05	37	
TOC (%)	1.77	1.81	2	

Analyte	Concentration ( )	Concentration ( )	RPD (Limits)	Qualifier

Analyte	Concentration ( )	Concentration ( )	RPD (Limits)	Qualifier

LDC#: 13234 A6
SDG#: 140485

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: MM
2nd Reviewer: DL

Grain Size, Method PSEP

Y N NA Were field duplicate pairs identified in this SDG?
Y N NA Were target analytes detected in the field duplicate pairs?

Phi Size	% Finer (%)		RPD (≤50)	
	2	7		
-2	100.0	99.8	0	
-1	99.8	99.3	1	
0	99.0	98.7	0	
1	92.4	95.0	3	
2	78.7	84.1	7	
3	73.6	76.1	3	
4	62.9	67.8	7	
5	49.5	52.7	6	
6	35.5	38.2	7	
7	23.7	19.8	18	
8	15.6	13.6	14	
9	11.2	10.0	11	
10	7.6	6.8	11	

LDC#: 13234 A6
SDG#: 4048

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: MM
2nd Reviewer: DV

Grain Size, Method PSEP

(Y) N NA Were field duplicate pairs identified in this SDG?
(Y) N NA Were target analytes detected in the field duplicate pairs?

Phi Size	% Finer (%)		(5/150) RPD	
	12	13		
-2	100.0	97.1	3	
-1	99.5	96.0	4	
0	95.2	92.0	3	
1	69.2	66.5	4	
2	37.2	34.6	7	
3	31.5	29.4	7	
4	27.0	25.0	8	
5	22.9	21.3	7	
6	16.1	15.7	3	
7	10.9	10.7	2	
8	7.5	7.2	4	
9	5.5	5.2	6	
10	3.8	3.7	3	

LDC #: 13234B6 **VALIDATION COMPLETENESS WORKSHEET** Date: 3/11/05

SDG #: HQ27 & HQ28 Level II Page: 1 of 1

Laboratory: Analytical Resources, Inc. Reviewer: MM

2nd Reviewer: JL

METHOD: Ammonia-N (EPA Method 350.1), Grain Size (PSEP), Sulfide (EPA Method 376.2), Total Solids (EPA Method 160.3), TOC (Plumb),

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/20, 21/05
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	SW	
V	Duplicates	SW	Triplicates
VI.	Laboratory control samples	A	LCS + SRM. No SRM for S. Test.
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X	Field blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: Sediment

1	LDW-SS43-010	11	LDW-SS75 010	21	LDW SS101-010MS	31	
2	LDW-SS44-010	12	LDW-SS101-010	22	LDW-SS101-010MSD	32	
3	LDW-SS87-010	13	LDW-SS43-010MS	23	LDW-SS101-010DUP	33	
4	LDW-SS94-010	14	LDW-SS43-010DUP	24	LDW-SS43-010 TRP	34	
5	LDW-SS96-010	15	LDW-SS87-010DUP	25	LDW-SS75-010TRP	35	
6	LDW-SS97-010	16	LDW-SS87-010TRP	26	LDW-SS101-010TRP	36	
7	LDW-SS31-010	17	~~LDW-SS67-010MS~~	27	MB	37	
8	LDW-SS67-010	18	~~LDW-SS67-010MSD~~	28		38	
9	LDW-SS63-010	19	LDW-SS75-010MS	29		39	
10	LDW-SS70-010	20	LDW-SS75-010DUP	30		40	

Notes:

LDC #: 13234B6
SDG #: H227 + H228

VALIDATION FINDINGS WORKSHEET

Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: MH
2nd reviewer: JL

All circled methods are applicable to each sample.

Sample ID	Parameter
1-12	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ [✓ NH$_3$] TKN [✓ TOC] CR^{6+} [✓ S] [✓ TS] [✓ Grain Size] ____
[illegible] 13	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ [✓ NH$_3$] TKN [✓ TOC] CR^{6+} ____ ____ ____ ____
14	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ [✓ NH$_3$] TKN [✓ TOC] CR^{6+} ____ [✓ TS] ____ ____
15	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ [✓ Grain Size] ____
16	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ↓ ____
~~17~~	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
~~18~~	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
19	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} [✓ S] ____ ____ ____
20	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} [✓ S] ____ ____ ____
21	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} [✓ S] ____ ____ ____
22	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} [✓ S] ____ ____ ____
↓ 23	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} [✓ S] [✓ TS] ____ ____
↓ 24	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN [✓ TOC] CR^{6+} ____ [✓ TS] ____ ____
↓ 25	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} [✓ S] ____ ____ ____
↓ 26	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} [✓ S] [✓ TS] ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+}

Comments: ____________________

METHODS.6

LDC #: 132486
SDG #: HQ27 + HQ28

VALIDATION FINDINGS WORKSHEET
Matrix Spike Analysis

Page: 1 of 1
Reviewer: MW
2nd Reviewer: [illegible]

METHOD: Inorganics, Method See cover

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Was a matrix spike analyzed for each matrix in this SDG?

Y (N) N/A Were matrix spike percent recoveries (%R) within the control limits of 75-125 (85-115% for Method 300.0)? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.

RPD limits

LEVEL IV ONLY:

Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Matrix Spike ID	Matrix	Analyte	%R	Associated Samples	Qualifications
1	19	Sediment	S	65.7	1-11	J- / UJ / A

Comments:

LDC #: 13234Bb
SDG #: 1A29 + 1A28

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Reviewer: MH
2nd Reviewer: KC

METHOD: Inorganics, EPA Method See cover

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Was a matrix spike analyzed for each matrix in this SDG?

Y (N) N/A Were matrix spike percent recoveries (%R) within the control limits of 75-125? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken. ØAPP 6mpley

Y N N/A Were all duplicate sample relative percent differences (RPD) ≤ 20% for water samples and ≤35% for soil samples?

LEVEL IV ONLY:

Y N (N/A) Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	MS/MSD ID	Matrix	Analyte	MS %Recovery	MSD %Recovery	RPD (Limits)	Associated Samples	Qualifications
1	21/22	Sediment	S	60.2	54.8		12	J-/UJ/A

Comments:

LDC #: 13234B6
SDG #: HA27+HA28

VALIDATION FINDINGS WORKSHEET
Duplicate Analysis

Page: 1 of 1
Reviewer: MH
2nd Reviewer: [illegible]

METHOD: Inorganics, Method see cover

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a duplicate sample analyzed for each matrix in this SDG?

Y N N/A Were all duplicate sample relative percent differences (RPD) ≤ 20% for water and ≤ 35% for soil samples (≤ 10% for Method 300.0)? If no, see qualification below. A control limit of ±CRDL (±2X CRDL for soil) was used for samples that were ≤5X the CRDL, including when only one of the duplicate sample values were ≤5X the CRDL. If field blanks were used for laboratory duplicates, see overall assessment. ospor limits

LEVEL IV ONLY:

Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Duplicate ID	Matrix	Analyte	RSD ~~RPD~~ (Limits)	Associated Samples	Qualifications
1	11, 20, 25 (Triplicates)	Sediment	S	40.2 (≤ 20)	1-11	J+ UJ/R

Comments:

LDC #: 13234D6
SDG #: HR49
Laboratory: Analytical Resources, Inc.

VALIDATION COMPLETENESS WORKSHEET
Level II

Date: 3/11/05
Page: 1 of 1
Reviewer: MM
2nd Reviewer: JC

METHOD: Total Solids (EPA Method 160.3), TOC (Plumb),

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	SW	Sampling dates: 1/31/05 - 2/2/05
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	A	
V	Duplicates	A	Triplicates
VI.	Laboratory control samples	A	Lcs + SRM
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D – Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples:

1	SC-SS1a-010	11	EB-SS2a-010MS	21		31	
2	EB-SS2a-010	12	EB-SS2a-010DUP	22		32	
3	LW-SS3-010	13	LW-SS3-010DUP	23		33	
4	SB-SS6-010	14	↓ TRP	24		34	
5	DRD-SS7-010	15	EB-SS2a-010 TRP	25		35	
6	LU-SS9a-010	16	MB	26		36	
7	LU-SS9b-010	17		27		37	
8	UB-SS8-010	18		28		38	
9	LW-SS6-010	19		29		39	
10	EB-SS2b-010	20		30		40	

Notes:

LDC #: 1323406
SDG #: 14R49

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: MH
2nd reviewer:

All circled methods are applicable to each sample.

Sample ID	Parameter
1-10	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN [✓ TOC] CR^{6+} [✓ TS] ___ ___ ___
w 11	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN [✓ TOC] CR^{6+} ___ ___ ___ ___
12	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN [✓ TOC] CR^{6+} ___ ___ ___ ___
13,14	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} [✓ TS] ___ ___ ___
S 15	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN [✓ TOC] CR^{6+} ___ ___ ___ ___
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___ ___
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___ ___
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___ ___
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___ ___
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___ ___
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___ ___
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___ ___
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___ ___
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___ ___
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___ ___
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___ ___
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___ ___
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___ ___
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___ ___
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___ ___
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___ ___
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___ ___
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___ ___
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___ ___
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___ ___

Comments:

LDC #: 13234D6
SDG #: HR49

VALIDATION FINDINGS WORKSHEET
Technical Holding Times

Page: 1 of 1
Reviewer: MM
2nd reviewer: [illegible]

All circled dates have exceeded the technical holding time.
Y N (N/A) Were all samples preserved as applicable to each method ?
(Y) N N/A Were all cooler temperatures within validation criteria?

Method:	160.3					
Parameters:	TS					
Technical holding time:	7 days					

Sample ID	Sampling date	Analysis date	Analysis date	Analysis date	Analysis date	Analysis date	Qualifier
1,3,7,9,13,14	2/1/05	2/14/05	(13 days)				J-/B/P
2,5,8,10	2/2/05	↓	(12 days)				↓
4,6,	1/31/05	↓	(14 days)				↓

LDC #: 13234E6 **VALIDATION COMPLETENESS WORKSHEET** Date: 3/11/05

SDG #: HQ56 & HQ57 Level II Page: 1 of 1

Laboratory: Analytical Resources, Inc. Reviewer: MM

2nd Reviewer: JC

METHOD: Ammonia-N (EPA Method 350.1), Grain Size (PSEP), Sulfide (EPA Method 376.2), Total Solids (EPA Method 160.3), TOC (Plumb),

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A~~SW~~	Sampling dates: 1/25, 26/05
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	A	
V	Duplicates	A	Triplicates.
VI.	Laboratory control samples	A	LCS + SRM. No SRM for S. Treat.
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X	Field blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: Sediment

1	LDW-SS52-010	11	LDW-SS143-010	21	MB	31	
2	LDW-SS92-010	12	LDW-SS52-010MS	22		32	
3	LDW-SS104-010	13	LDW-SS52-010DUP	23		33	
4	LDW-SS110-010	14	LDW-SS109-010MS	24		34	
5	LDW-SS109-010	15	LDW-SS109-010DUP	25		35	
6	LDW-SS115-010	16	LDW-SS49-010MS	26		36	
7	LDW-SS121-010	17	LDW-SS49-010DUP	27		37	
8	LDW-SS88-010	18	LDW-SS52-010 TRP	28		38	
9	LDW-SS33-010	19	LDW-SS109-010 TRP	29		39	
10	LDW-SS49-010	20	LDW-SS49-010TRP	30		40	

Notes:

LDC #: 13234G6
SDG #: 426 ~~A~~ A10-51

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: WM
2nd reviewer: JL

All circled methods are applicable to each sample.

Sample ID	Parameter				
1-11	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- [✓ NH_3] TKN [✓ TOC] CR^{6+}	[✓ S]	[✓ TS]	[✓ Grain Size]	
~~[illegible]~~	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}				
12	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- [✓ NH_3] TKN TOC CR^{6+}				
13	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- [✓ NH_3] TKN TOC CR^{6+}		[✓ TS]		
14	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}	[✓ S]			
15	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}	[✓ S]			
16	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN [✓ TOC] CR^{6+}				
17	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN [✓ TOC] CR^{6+}				
18	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}		[✓ TS]		
19	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}	[✓ S]			
20	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN [✓ TOC] CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}				

Comments:

LDC #: 13298A6 **VALIDATION COMPLETENESS WORKSHEET** Date: 3/24/05

SDG #: HQ93 Level II Page: 1 of 1

Laboratory: Analytical Resources, Inc. Reviewer: MM

2nd Reviewer: SC

METHOD: Ammonia-N (EPA Method 350.1), Grain Size (PSEP),Sulfide (EPA Method 376.2), Total Solids (EPA Method 160.3), TOC (Plumb),

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/28/05
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	A	
V	Duplicates	A	Triplicates
VI.	Laboratory control samples	A	LCS + SRM. No SRM for S, Test.
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples: Sediment

1	LDW-SSCR20 010	11		21		31	
2	LDW-SSCR23-010	12		22		32	
3	LDW-MSMP43-010	13		23		33	
4	LDW-SSCR20-010MS	14		24		34	
5	LDW-SSCR20-010DUP	15		25		35	
6	LDW-MSMP43-010MS	16		26		36	
7	LDW-MSMP43-010DUP	17		27		37	
8	LDW-SSCR20-010TRP	18		28		38	
9	LDW-MSMP43-010TRP	19		29		39	
10	[illegible]	20		30		40	

Notes:

LDC #: 13298A6
SDG #: H093

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: MH
2nd reviewer: DL

All circled methods are applicable to each sample.

Sample ID	Parameter
1-3	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ [✓ NH$_3$] TKN [✓ TOC] CR^{6+} [✓ TS] [✓ S] [✓ Grain Size] ____
4	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ [✓ NH$_3$] TKN [✓ TOC] CR^{6+} ____ ____ ____ ____
5	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ [✓ NH$_3$] TKN [✓ TOC] CR^{6+} [✓ TS] ____ ____ ____
6	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ [✓ S] ____ ____
7	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ [✓ S] ____ ____
8	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN [✓ TOC] CR^{6+} [✓ TS] ____ ____ ____
9	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ [✓ S] ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____

Comments: ____________________

LDC #: 13315B6 **VALIDATION COMPLETENESS WORKSHEET** Date: 3/28/05
SDG #: HT56 Level II Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: MH
2nd Reviewer: [illegible]

METHOD: Grain Size (PSEP)Total Solids (EPA Method 160.3)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	SW	Sampling dates: 2/1, 9/05
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	N	Not required
V	Duplicates	A	Triplicates
VI.	Laboratory control samples	N	Not required
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples: Sediment.

1	DR-SS5-010	11	DR-SS5-010TRP	21		31	
2	DR SS6 010	12	FB	22		32	
3	DR-SS7-010	13		23		33	
4	DR-SS9-010	14		24		34	
5	DR-SS10-010	15		25		35	
6	DR-SS11-010	16		26		36	
7	DR-SS13-010	17		27		37	
8	DR-SS14-010	18		28		38	
9	DR-SS15-010	19		29		39	
10	DR-SS5-010DUP	20		30		40	

Notes: _____

LDC #: 13315B6
SDG #: H756

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: MH
2nd reviewer:

All circled methods are applicable to each sample.

Sample ID	Parameter
1-9	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} [✓ TS] [✓ Grain size] ____ ____
D2 10, 11	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ✓ ✓ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+}

Comments: ____________________

LDC #: 13215B6
SDG #: WT56

VALIDATION FINDINGS WORKSHEET
Technical Holding Times

Page: 1 of 1
Reviewer: WM
2nd reviewer: cgl

All circled dates have exceeded the technical holding time.
Y N ~~N/A~~ Were all samples preserved as applicable to each method ?
(Y) N N/A Were all cooler temperatures within validation criteria?

Method:		160.3					
Parameters:		TS					
Technical holding time:		7 days					
Sample ID	Sampling date	Analysis date	Analysis date	Analysis date	Analysis date	Analysis date	Qualifier
1-4, 10, 11	2/1/05	(2/28/05)	(29 days)				J-/R/P
5-9	2/9/05	↓	(19 days)				↓

LDC #: 13204A19 **VALIDATION COMPLETENESS WORKSHEET** Date: 3/9/05
SDG #: HP67 Level IV Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: Q
2nd Reviewer: V

METHOD: GC/MS Tributyl Tin(EPA SW 846 Method 8270C-SIM3/ krone)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/17/05
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	no spccs & ccCs ✓
IV.	Continuing calibration	A	
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples	A	LCS. SRM
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	A	
XI.	Target compound identification	A	
XII.	Compound quantitation/CRQLs	A	
XIII.	Tentitatively identified compounds (TICs)	N	
XIV.	System performance	A	
XV.	Overall assessment of data	A	
XVI.	Field duplicates	N	
XVII.	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples

1	LDW-SS4-010 sed		MB-012205				
2	LDW-SS14-010						
3	LDW-SS15-010						
4	LDW-SS14-010MS						
5	LDW SS14 010MSD						
6							
7							
8							
9							
10							

LDC #: 13204019
SDG #: HP67

VALIDATION FINDINGS CHECKLIST

Reviewer: Q
2nd Reviewer: K

Method: Semivolatiles (EPA SW 846 Method 8270C)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. GC/MS Instrument performance check				
Were the DFTPP performance results reviewed and found to be within the specified criteria?	✓			
Were all samples analyzed within the 12 hour clock criteria?	✓			
III. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?			✓	
Was a curve fit used for evaluation? If Yes, what was the acceptance criteria used?		✓		
Did the initial calibration meet the curve fit acceptance criteria?			✓	
Were all percent relative standard deviations (%RSD) $\leq$ 30% and relative response factors (RRF) $\geq$ 0.05?	✓			
IV. Continuing calibration				
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?	✓			
Were all percent differences (%D) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?			✓	
Were all percent differences (%D) $\leq$ 25% and relative response factors (RRF) $\geq$ 0.05?	✓			
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Surrogate spikes				
Were all surrogate %R within QC limits?	✓			
If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?			✓	
If any %R was less than 10 percent, was a reanalysis performed to confirm %R?			✓	
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.	✓			
Was a MS/MSD analyzed every 20 samples of each matrix?	✓			

LDC #: 13204D19
SDG #: HP67

VALIDATION FINDINGS CHECKLIST

Reviewer: Q
2nd Reviewer: SC

Validation Area	Yes	No	NA	Findings/Comments
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	✓			
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
X. Internal standards				
Were internal standard area counts within -50% or +100% of the associated calibration standard?	✓			
Were retention times within ± 30 seconds from the associated calibration standard?	✓			
XI. Target compound identification				
Were relative retention times (RRT's) within ± 0.06 RRT units of the standard?	✓			
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	✓			
Were chromatogram peaks verified and accounted for?	✓			
XII. Compound quantitation/CRQLs				
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	✓			
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XIII. Tentatively identified compounds (TICs)				
Were the major ions (> 10 percent relative intensity) in the reference spectrum evaluated in sample spectrum?			✓	
Were relative intensities of the major ions within ± 20% between the sample and the reference spectra?			✓	
Did the raw data indicate that the laboratory performed a library search for all required peaks in the chromatograms (samples and blanks)?		✓		
XIV. System performance				
System performance was found to be acceptable.	✓			
XV. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			

Validation Area	Yes	No	NA	Findings/Comments
XVI. Field duplicates				
Field duplicate pairs were identified in this SDG.		✓		
Target compounds were detected in the field duplicates.			✓	
XVII. Field blanks				
Field blanks were identified in this SDG.		✓	✓	
Target compounds were detected in the field blanks.				

LDC #: 13204B19
SDG #: HP67

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer: Q
2nd Reviewer: K

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

The Relative Response Factor (RRF), average RRF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

RRF = $(A_x)(C_{is})/(A_{is})(C_x)$
average RRF = sum of the RRFs/number of standards
%RSD = 100 * (S/X)

A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard
S = Standard deviation of the RRFs, X = Mean of the RRFs

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Reported RRF (/ std)	Recalculated RRF (/ std)	Reported Average RRF (Initial)	Recalculated Average RRF (initial)	Reported %RSD	Recalculated %RSD
1	ICAL	1/18/05	Phenol (1st internal standard) TBT	0.561	0.561	0.558	0.558	6.1	6.1
			Naphthalene (2nd internal standard)						
			Fluorene (3rd internal standard)						
			Pentachlorophenol (4th internal standard)						
			Bis(2-ethylhexyl)phthalate (5th internal standard)						
			Benzo(a)pyrene (6th internal standard)						
2			Phenol (1st internal standard)						
			Naphthalene (2nd internal standard)						
			Fluorene (3rd internal standard)						
			Pentachlorophenol (4th internal standard)						
			Bis(2-ethylhexyl)phthalate (5th internal standard)						
			Benzo(a)pyrene (6th internal standard)						
3			Phenol (1st internal standard)						
			Naphthalene (2nd internal standard)						
			Fluorene (3rd internal standard)						
			Pentachlorophenol (4th internal standard)						
			Bis(2-ethylhexyl)phthalate (5th internal standard)						
			Benzo(a)pyrene (6th internal standard)						

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204A19
SDG #: HP67

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Reviewer: 9
2nd Reviewer: M

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
RRF = $(A_x)(C_{is})/(A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Average RRF (Initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported %D	Recalculated %D
1	CC025	1/5/05	Phenol (1st internal standard) TBT	0.558	0.560	0.560	0.4	0.4
			Naphthalene (2nd internal standard)					
			Fluorene (3rd internal standard)					
			Pentachlorophenol (4th internal standard)					
			Bis(2-ethylhexyl)phthalate (5th internal standard)					
			Benzo(a)pyrene (6th internal standard)					
2			Phenol (1st internal standard)					
			Naphthalene (2nd internal standard)					
			Fluorene (3rd internal standard)					
			Pentachlorophenol (4th internal standard)					
			Bis(2-ethylhexyl)phthalate (5th internal standard)					
			Benzo(a)pyrene (6th internal standard)					
3			Phenol (1st internal standard)					
			Naphthalene (2nd internal standard)					
			Fluorene (3rd internal standard)					
			Pentachlorophenol (4th internal standard)					
			Bis(2-ethylhexyl)phthalate (5th internal standard)					
			Benzo(a)pyrene (6th internal standard)					

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204B19
SDG #: HP67

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Page: 1 of 1
Reviewer: 9
2nd reviewer: R

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270)

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: 1

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
~~Nitrobenzene-d5~~ Tripropyltin	0.5	0.3585	71.7	71.7	0
2-Fluorobiphenyl Tripentyltin	✓	0.3457	69.0	69.0	0
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
~~2,4,6-Tribromophenol~~					
2-Chlorophenol-d4					
~~1,2-Dichlorobenzene-d4~~					

Sample ID: _____

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

Sample ID: _____

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

LDC #: B204D19
SDG #: HP67

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Reviewer: 9
2nd Reviewer: PC

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SSC - SC)/SA Where: SSC = Spiked sample concentration; SA = Spike added; SC = Sample concentation

RPD = | MS - MSD | * 2/(MS + MSD) MS = Matrix spike percent recovery; MSD = Matrix spike duplicate percent recovery

MS/MSD samples: 4/5

Compound	Spike Added (µg/L)		Sample Concentration (µg/L)	Spiked Sample Concentration (µg/L)		Matrix Spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	------	MS	MSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
~~Phenol~~ TBT	47.3	47.4	ND	53.4	49.4	113	113	104	104	7.8	7.8
2-Chlorophenol											
1,4-Dichlorobenzene											
N-Nitroso-di-n-propylamine											
1 2,4-Trichlorobenzene											
4-Chloro-3-methylphenol											
Acenaphthene											
4-Nitrophenol											
2,4-Dinitrotoluene											
Pentachlorophenol											
~~Pyrene~~											

Comments: Refer to Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and asscciated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204A19
SDG #: HP67

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

Reviewer:
2nd Reviewer: JC

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SC/SA Where: SSC = Spike concertration; SA = Spike added

RPD = | LCS - LCSD | * 2/(LCS + LCSD) LCS = Laboratory control sample percent recovery LCSD = Laboratory control sample duplicate percent recovery

LCS/LCSD samples: LCS-012205

Compound	Spike Added (ug/kg)		Spike Concentration (ug/kg)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
~~Phenol~~ TBT	50	NA	59	NA	118	118				
2-Chlorophenol										
1,4-Dichlorobenzene										
N-Nitroso-di-n-propylamine										
1,2,4-Trichlorobenzene										
4-Chloro-3-methylphenol										
Acenaphthene										
4-Nitrophenol										
2,4-Dinitrotoluene										
Pentachlorophenol										
~~Pyrene~~										

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204A19
SDG #: HPGT

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: 9
2nd reviewer: RL

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

$$\text{Concentration} = \frac{(A_x)(I_s)(V_t)(DF)(2.0)}{(A_{is})(RRF)(V_o)(V_i)(\%S)}$$

A_x = Area of the characteristic ion (EICP) for the compound to be measured

A_{is} = Area of the characteristic ion (EICP) for the specific internal standard

I_s = Amount of internal standard added in nanograms (ng)

V_o = Volume or weight of sample extract in milliliters (ml) or grams (g).

V_i = Volume of extract injected in microliters (ul)

V_t = Volume of the concentrated extract in microliters (ul)

Df = Dilution Factor.

%S = Percent solids, applicable to soil and solid matrices only.

2.0 = Factor of 2 to account for GPC cleanup

Example:

Sample I.D. 1, TBT:

Conc. = $\frac{(11848)(2)(0.500)(\quad)(\quad)(\quad)}{(\text{Hexyl})(166858)(0.558)(5.19)(1)(0.45\text{f})}$

= 24.52 µg/Kg

Conc final (chloride) = 24.52 × 0.8675 = 21.27 µg/Kg

#	Sample ID	Compound	Reported Concentration ( )	Calculated Concentration ( )	Qualification

LDC #: 13204B19 **VALIDATION COMPLETENESS WORKSHEET** Date: 3/9/05
SDG #: HP70 Level IV Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS Tributyl Tin(EPA SW 846 Method 8270C-SIM)(Krone)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/18/05
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	no CCC & SPCCs
IV.	Continuing calibration	A	↓
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A	LDW-SS14-010
VIII.	Laboratory control samples	A	LCS. SRM
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	A	
XI.	Target compound identification	A	
XII.	Compound quantitation/CRQLs	A	
XIII.	Tentitatively identified compounds (TICs)	N	
XIV.	System performance	A	
XV.	Overall assessment of data	A	
XVI.	Field duplicates	SW	D=1+2
XVII.	Field blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples

1	LDW-SS27-010 sed		MB-012205				
2	LDW-SS200-010						
3	LDW-SS32-010						
4	LDW-SS38-010						
5	LDW-SS51-010						
6							
7							
8							
9							
10							

LDC #: 13204B19
SDG #: 4P70

VALIDATION FINDINGS CHECKLIST

Page: 1 of 3
Reviewer: 9
2nd Reviewer: 9

Method: Semivolatiles (EPA SW 846 Method 8270C)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. GC/MS Instrument performance check				
Were the DFTPP performance results reviewed and found to be within the specified criteria?	✓			
Were all samples analyzed within the 12 hour clock criteria?	✓			
III. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?			✓	
Was a curve fit used for evaluation? If Yes, what was the acceptance criteria used?		✓		
Did the initial calibration meet the curve fit acceptance criteria?			✓	
Were all percent relative standard deviations (%RSD) $\leq$ 30% and relative response factors (RRF) $\geq$ 0.05?	✓			
IV. Continuing calibration				
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?	✓			
Were all percent differences (%D) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?			✓	
Were all percent differences (%D) $\leq$ 25% and relative response factors (RRF) $\geq$ 0.05?	✓			
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Surrogate spikes				
Were all surrogate %R within QC limits?	✓			
If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?			✓	
If any %R was less than 10 percent, was a reanalysis performed to confirm %R?			✓	
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.	✓			
Was a MS/MSD analyzed every 20 samples of each matrix?	✓			

LDC #: 13204B19
SDG #: HP70

VALIDATION FINDINGS CHECKLIST

Reviewer: 9
2nd Reviewer: K

Validation Area	Yes	No	NA	Findings/Comments
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	✓			
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
X. Internal standards				
Were internal standard area counts within -50% or +100% of the associated calibration standard?	✓			
Were retention times within ± 30 seconds from the associated calibration standard?	✓			
XI. Target compound identification				
Were relative retention times (RRT's) within ± 0.06 RRT units of the standard?	✓			
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	✓			
Were chromatogram peaks verified and accounted for?	✓			
XII. Compound quantitation/CRQLs				
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	✓			
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XIII. Tentatively identified compounds (TICs)				
Were the major ions (> 10 percent relative intensity) in the reference spectrum evaluated in sample spectrum?			✓	
Were relative intensities of the major ions within ± 20% between the sample and the reference spectra?			✓	
Did the raw data indicate that the laboratory performed a library search for all required peaks in the chromatograms (samples and blanks)?		✓		
XIV. System performance				
System performance was found to be acceptable.	✓			
XV. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			

Validation Area	Yes	No	NA	Findings/Comments
XVI. Field duplicates				
Field duplicate pairs were identified in this SDG.	✓			
Target compounds were detected in the field duplicates.	✓			
XVII. Field blanks				
Field blanks were identified in this SDG.		✓		
Target compounds were detected in the field blanks.			✓	

LDC #: 13204B19
SDG #: HP70

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Page: 1 of 1
Reviewer: 9
2nd reviewer: JK

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Y N N/A Were field duplicate pairs identified in this SDG?
Y N N/A Were target compounds identified in the field duplicate pairs?

Compound	Concentration (ug/kg)		RPD (≤50)
	1	2	
Tributyltin chloride	4.2	4.2	0

Compound	Concentration ( )		RPD

Compound	Concentration ( )		RPD

Compound	Concentration ( )		RPD

LDC #: 13204B19
SDG #: HR70

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: M

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

The Relative Response Factor (RRF), average RRF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

RRF = $(A_x)(C_{is})/(A_{is})(C_x)$
average RRF = sum of the RRFs/number of standards
%RSD = 100 * (S/X)

A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard
S = Standard deviation of the RRFs, X = Mean of the RRFs

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Reported RRF (/ std)	Recalculated RRF (/ std)	Reported Average RRF (initial)	Recalculated Average RRF (initial)	Reported %RSD	Recalculated %RSD
1	ICAL	1/18/05	Phenol (1st internal standard) TBT	0.56 /	0.56 /	0.558	0.558	6.1	6.1
			Naphthalene (2nd internal standard)						
			Fluorene (3rd internal standard)						
			Pentachlorophenol (4th internal standard)						
			Bis(2-ethylhexyl)phthalate (5th internal standard)						
			Benzo(a)pyrene (6th internal standard)						
2			Phenol (1st internal standard)						
			Naphthalene (2nd internal standard)						
			Fluorene (3rd internal standard)						
			Pentachlorophenol (4th internal standard)						
			Bis(2-ethylhexyl)phthalate (5th internal standard)						
			Benzo(a)pyrene (6th internal standard)						
3			Phenol (1st internal standard)						
			Naphthalene (2nd internal standard)						
			Fluorene (3rd internal standard)						
			Pentachlorophenol (4th internal standard)						
			Bis(2-ethylhexyl)phthalate (5th internal standard)						
			Benzo(a)pyrene (6th internal standard)						

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204B19
SDG #: HP70

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
RRF = $(A_x)(C_{is})/(A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Average RRF (Initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported %D	Recalculated %D
1	CC025	1/25/05	Phenol (1st internal standard) TBT	0.558	0.560	0.560	0.4	0.4
			Naphthalene (2nd internal standard)					
			Fluorene (3rd internal standard)					
			Pentachlorophenol (4th internal standard)					
			Bis(2-ethylhexyl)phthalate (5th internal standard)					
			Benzo(a)pyrene (6th internal standard)					
2			Phenol (1st internal standard)					
			Naphthalene (2nd internal standard)					
			Fluorene (3rd internal standard)					
			Pentachlorophenol (4th internal standard)					
			Bis(2-ethylhexyl)phthalate (5th interral standard)					
			Benzo(a)pyrene (6th internal standard)					
3			Phenol (1st internal standard)					
			Naphthalene (2nd internal standard)					
			Fluorene (3rd internal standard)					
			Pentachlorophenol (4th internal standard)					
			Bis(2-ethylhexyl)phthalate (5th internal standard)					
			Benzo(a)pyrene (6th internal standard)					

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204B19
SDG #: HP70

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Reviewer: 9
2nd reviewer: VC

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270)

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: 1

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
~~Nitrobenzene-d5~~ Tripropyl Tin	0.5	0.3224	64.7	64.5	0.2
2-Fluorobiphenyl Tripentyl Tin	V	0.3390	66.9	67.8	0.9
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
~~2,4,6 Tribromophenol~~					
2-Chlorophenol-d4					
~~1,2-Dichlorobenzene-d4~~					

Sample ID:_____

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

Sample ID:_____

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

LDC #: 13204B19
SDG #: HP70

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

Reviewer: 9
2nd Reviewer: AK

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SC/SA Where: SSC = Spike concentration
SA = Spike added

RPD = | LCS - LCSD | * 2/(LCS + LCSD) LCS = Laboratory control sample percent recovery LCSD = Laboratory control sample duplicate percent recovery

LCS/LCSD samples: LCS-013205

Compound	Spike Added (ug/kg)		Spike Concentration (ug/kg)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
~~Phenol~~ TBT	50	NA	59	NA	118	118				
2-Chlorophenol										
1,4-Dichlorobenzene										
N-Nitroso-di-n-propylamine										
1,2,4-Trichlorobenzene										
4-Chloro-3-methylphenol										
Acenaphthene										
4-Nitrophenol										
2,4-Dinitrotoluene										
Pentachlorophenol										
~~Pyrene~~										

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204B19
SDG #: HPTU

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: 9
2nd reviewer: VL

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

M N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

$$\text{Concentration} = \frac{(A_x)(I_s)(V_t)(DF)(2.0)}{(A_{is})(RRF)(V_o)(V_i)(\%S)}$$

A_x	=	Area of the characteristic ion (EICP) for the compound to be measured
A_{is}	=	Area of the characteristic ion (EICP) for the specific internal standard
I_s	=	Amount of internal standard added in nanograms (ng)
V_o	=	Volume or weight of sample extract in milliliters (ml) or grams (g).
V_i	=	Volume of extract injected in microliters (ul)
V_t	=	Volume of the concentrated extract in microliters (ul)
Df	=	Dilution Factor.
%S	=	Percent solids, applicable to soil and solid matrices only.
2.0	=	Factor of 2 to account for GPC cleanup

Example:

Sample I.D. 1 , TBT :

Conc. = $\frac{(2257)(2)(500)(1)(\quad)}{(\text{Hexyl})(177699)(0.558)(5.15)(\quad)(\quad)}$

= 44.17 MS/Kg

Conc chloride = 44.17 × 0.8675 = 38.3 MS/Kg

#	Sample ID	Compound	Reported Concentration ( )	Calculated Concentration ( )	Qualification

LDC #: 13234A19 **VALIDATION COMPLETENESS WORKSHEET** Date: 3/9/05
SDG #: HQ48 Level II Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS Butyltins (Krone/EPA SW 846 Method 8270C-SIM) TBT only

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/24/05
II.	GC/MS Instrument performance check	N	
III.	Initial calibration	N	
IV.	Continuing calibration	N	
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A	LDW-SS6T-010 (HXDT)
VIII.	Laboratory control samples	A	LCS. SRM.
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	N	
XI.	Target compound identification	N	
XII.	Compound quantitation/CRQLs	N	
XIII.	Tentitatively identified compounds (TICs)	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	
XVI.	Field duplicates	N	R
XVII.	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples

1	LDW-SS55-010 sed		MB-012405				31	
2	LDW-SS79-010						32	
3	LDW-SS58-010						33	
4	LDW-SS56-010						34	
5	LDW-SS28-010						35	
6							36	
7							37	
8							38	
9							39	
10							40	

LDC #: 13234B19 **VALIDATION COMPLETENESS WORKSHEET** Date: 3/9/05

SDG #: HQ27 ~~& HQ28~~ Level II Page: 1 of 1

Laboratory: Analytical Resources, Inc. Reviewer: A

2nd Reviewer: W

METHOD: GC/MS Butyltins (Krone/EPA SW 846 Method 8270C-SIM) TBT only

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/21/05
II.	GC/MS Instrument performance check	N	
III.	Initial calibration	N	
IV.	Continuing calibration	N	
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples	A	LCS. SRM
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	N	
XI.	Target compound identification	N	
XII.	Compound quantitation/CRQLs	N	
XIII.	Tentitatively identified compounds (TICs)	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	
XVI.	Field duplicates	N	
XVII.	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples

1	LDW-SS43-010 sed		MB-012905			31	
2	LDW-SS31-010					32	
3	LDW-SS67-010					33	
4	LDW-SS67-010MS					34	
5	LDW-SS67-010MSD					35	
6						36	
7						37	
8						38	
9						39	
10						40	

LDC #: 13234C19 **VALIDATION COMPLETENESS WORKSHEET** Date: 3/9/05
SDG #: HR48 Level II Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer:
2nd Reviewer: JC

METHOD: GC/MS Butyltins (Krone/EPA SW 846 Method 8270C-SIM) TBT only

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 2/2/05
II.	GC/MS Instrument performance check	N	
III.	Initial calibration	N	
IV.	Continuing calibration	N	
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples	A	LCS. SRM
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	N	
XI.	Target compound identification	N	
XII.	Compound quantitation/CRQLs	N	
XIII	Tentitatively identified compounds (TICs)	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	
XVI.	Field duplicates	N	
XVII.	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples

1	LDW-SS20-010 SDG		MB-020805			31	
2	LDW-SS20-010MS					32	
3	LDW-SS20-010MSD					33	
4						34	
5						35	
6						36	
7						37	
8						38	
9						39	
10						40	

LDC #: 13234G19 **VALIDATION COMPLETENESS WORKSHEET** Date: 3/9/05
SDG #: ~~HQ56 & HQ57~~ Level II Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: QL
2nd Reviewer: R

METHOD: GC/MS Butyltins (Krone/EPA SW 846 Method 8270C-SIM) TBT only

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/26/05
II.	GC/MS Instrument performance check	N	
III.	Initial calibration	N	
IV.	Continuing calibration	N	
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A	LDW-SS6T-010
VIII.	Laboratory control samples	A	LCS, SRM
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	N	
XI.	Target compound identification	N	
XII.	Compound quantitation/CRQLs	N	
XIII.	Tentitatively identified compounds (TICs)	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	
XVI.	Field duplicates	N	
XVII.	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples

1	LDW-SS33-010 sed		MB-012905			31	
2	LDW-SS49-010 V					32	
3						33	
4						34	
5						35	
6						36	
7						37	
8						38	
9						39	
10						40	

LDC #: 13234D33 **VALIDATION COMPLETENESS WORKSHEET** Date: 3/15/05
SDG #: HR49 Level IV Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: EZ
2nd Reviewer: NC

METHOD: GC Pentachlorophenol (EPA SW846 Method 8041)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 2/1/05
IIa.	Initial calibration	A N	
IIb.	Calibration verification	A N	
III.	Blanks	A	
IVa.	Surrogate recovery	A	
IVb.	Matrix spike/Matrix spike duplicates	A	
IVc.	Laboratory control samples / SRM	SW	LCS ~~MS~~ SRM ~~SMSD~~ DC (SWDA)
V.	Target compound identification	A N	
VI.	Compound Quantitation and CRQLs	A N	
VII.	System Performance	A N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X.	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples: Sediment

1	SC-SS1a-010	11	MB-020905	21		31	
2	SC-SS1a-010MS	12		22		32	
3	SC-SS1a-010MSD	13		23		33	
4		14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

LDC #: 13234D33
SDG #: H1249

VALIDATION FINDINGS CHECKLIST

Reviewer: 13
2nd Reviewer: 1C

Method: ✓ GC _____ HPLC

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Was a linear fit used for evaluation? If yes, were all percent relative standard deviations (%RSD) < 20%?	✓			
Was a curve fit used for evaluation? If Yes, what was the acceptance criteria used?		✓	✓	
Did the initial calibration meet the curve fit acceptance criteria?			✓	
Were the RT windows properly established?	✓			
IV. Continuing calibration				
What type of continuing calibration calculation was performed? ____%D or %R	✓			
Was a continuing calibration analyzed daily?	✓			
Were all percent differences (%D) < 15%.0 or percent recoveries 85-115%?	✓			
Were all the retention times within the acceptance windows?	✓			
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Surrogate spikes				
Were all surrogate %R within the QC limits?	✓			
If the percent recovery (%R) of one or more surrogates was outside QC limits, was a reanalysis performed to confirm %R?			✓	
If any %R was less than 10 percent, was a reanalysis performed to confirm %R?			✓	
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.	✓			
Was a MS/MSD analyzed every 20 samples of each matrix?	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	✓			
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			

LDC #: 13234D33
SDG #: H249

VALIDATION FINDINGS CHECKLIST

Page: 2 of 2
Reviewer: [illegible]
2nd Reviewer: [illegible]

Validation Area	Yes	No	NA	Findings/Comments
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?			✓	
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
X. Target compound identification				
Were the retention times of reported detects within the RT windows?			✓	
XI. Compound quantitation/CRQLs				
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XII. System performance				
System performance was found to be acceptable.	✓			
XIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XIV. Field duplicates				
Were field duplicate pairs identified in this SDG?		✓		
Were target compounds idetected in the field duplicates?			✓	
XV. Field blanks				
Were field blanks identified in this SDG?		✓		
Were target compounds detected in the field blanks?			✓	

LDC #: 13234D33
SDG #: HR49

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer:
2nd Reviewer:

METHOD: GC ✓ HPLC ____

The calibration Factor (CF), average CF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

CF = A/C
average CF = sum of the CF/number of standards
%RSD = 100 * (S/X)

A = Area of compound,
C = Concentration of compound,
S = Standard deviation of the CF
X = Mean of the CFs

#	Standard ID	Calibration Date	Compound	Reported CF (0.0125 std)	Recalculated CF (0.0125 std)	Reported Average CF (initial)	Recalculated Average CF (initial)	Reported %RSD	Recalculated %RSD
1	Pentachlorophenol DB5	11/9/04	Pentachlorophenol	4.4×10^7	4.4×10^7	4.37×10^7	4.37×10^7	2.8	2.8
2	DB608		↓	2.7×10^7	2.7×10^7	2.72×10^7	2.72×10^7	1.6	1.6
3									
4									

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

INIC[illegible] SB

LDC #: 13234D33
SDG #: HR49

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC ✓ HPLC ____

The percent difference (%D) of the initial calibration average Calibration Factors (CF) and the continuing calibration CF were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. CF - CF)/ave. CF
CF = A/C

Where: ave. CF = initial calibration average CF
CF = continuing calibration CF
A = Area of compound
C = Concentration of compound

#	Standard ID	Calibration Date	Compound	Average CF(Ical)/ CCV Conc.	Reported CF/Conc. CCV	Recalculated CF/Conc. CCV	Reported %D	Recalculated %D
1	ccv	2/14/05	Pentachlorophenol	~~0.0246~~	~~0.0250~~	0.0246	1.6	1.6
	DB5			0.0250	0.0246			
2	DB608		↓	0.0250	0.0251	0.0251	0.4	0.4
3								
4								

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13234D33
SDG #: HR49

METHOD: GC ___ HPLC

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Reviewer: [illegible]
2nd reviewer: [illegible]

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: 1

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
2,4,6-Tribromophenol	DB-5	100	83.6	83.6	83.6	0

Sample ID:

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	

Sample ID:

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	

LDC #: 13234D33
SDG #: HR49

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: ___GC ___HPLC

The percent recoveries (%R) and relative percent differences (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

%Recovery = 100 * (SSC - SC)/SA Where SSC = Spiked sample concentration SC = Sample concentration
SA = Spike added
RPD =(({SSCMS - SSCMSD} * 2) / (SSCMS + SSCMSD))*100 MS = Matrix spike MSD = Matrix spike duplicate

MS/MSD samples: 2 & 3

Compound	Spike Added (ug/kg)		Sample Conc. (ug/kg)	Spike Sample Concentration (ug/kg)		Matrix spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	---	MS	MSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)											
Diesel (8015)											
Benzene (8021B)											
Methane (RSK-175)											
2,4-D (8151)											
Dinoseb (8151)											
Naphthalene (8310)											
Anthracene (8310)											
HMX (8330)											
2,4,6-Trinitrotoluene (8330)											
Pentachlorophenol	78.3	78.3	MD	66.1	76.8	84.4	84.4	~~78.3~~ 98.1	98.1	15	15

Comments: Refer to Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13234D33
SDG #: HR49

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

Page: 1 of 1
Reviewer: 5
2nd Reviewer:

METHOD: GC HPLC

The percent recoveries (%R) and relative percent differences (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

%Recovery = 100 * (SSC - SC)/SA

Where SSC = Spiked sample concentration; SA = Spike added; SC = Sample concentration

RPD =(((SSCLCS - SSCLCSD) * 2) / (SSCLCS + SSCLCSD))*100

LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample duplicate

LCS/LCSD samples: LCS-020905

Compound	Spike Added (ug/kg)		Sample Conc. (ug/kg)	Spike Sample Concentration (ug/kg)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	---	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)											
Diesel (8015)											
Benzene (8021B)											
Methane (RSK-175)											
2,4-D (8151)											
Dinoseb (8151)											
Naphthalene (8310)											
Anthracene (8310)											
HMX (8330)											
2,4,6-Trinitrotoluene (8330)											
Pentachlorophenol	61.5	NA	0	62.5	NA	98.4	98.4	NA			

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicate findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13234D33
SDG #: HR49

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Reviewer: 5
2nd Reviewer: M

METHOD: X **GC** __ **HPLC**

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds within 10% of the reported results?

Concentration= $\frac{(A)(Fv)(Df)}{(RF)(Vs \text{ or } Ws)(\%S/100)}$

A= Area or height of the compound to be measured
Fv= Final Volume of extract
Df= Dilution Factor
RF= Average response factor of the compound in the initial calibration
Vs= Initial volume of the sample
Ws= Initial weight of the sample
%S= Percent Solid

Example:

Sample ID._____ Compound Name _____

Concentration =_____

#	Sample ID	Compound	Reported Concentrations ( )	Recalculated Results Concentrations ( )	Qualifications

Comments: _____

LDC #: 13315A33 **VALIDATION COMPLETENESS WORKSHEET** Date: 3/29/05
SDG #: HS56 Level II Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC Pentachlorophenol (EPA SW846 Method 8041)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 2/10/05
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	N	
IVa.	Surrogate recovery	A	
IVb	Matrix spike/Matrix spike duplicates	A	
IVc.	Laboratory control samples SRM	A	LCS ~~NO~~ SRM (SVOA) was analyzed
V.	Target compound identification	N	
VI.	Compound Quantitation and CRQLs	N	
VII.	System Performance	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X.	Field blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: sediment

1	SC-SS1b-010	11	MB-021805	21		31	
2	SC-SS1b-010MS	12		22		32	
3	SC-SS1b-010MSD	13		23		33	
4		14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

LDC #: 13204A2a **VALIDATION COMPLETENESS WORKSHEET** Date: 3/10/05

SDG #: HP67 Level ~~III~~ IV Page: 1 of 1

Laboratory: Analytical Resources, Inc. Reviewer: 9

2nd Reviewer: ~~A~~

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	~~A~~	Sampling dates: 1/17/05
II.	GC/MS Instrument performance check	~~A~~	
III.	Initial calibration	~~A~~	%RSD, r^2
IV.	Continuing calibration	~~SW~~ N	
V.	Blanks	SW	
VI.	Surrogate spikes	~~A~~	
VII.	Matrix spike/Matrix spike duplicates	~~A~~	
VIII.	Laboratory control samples	~~A~~	LCS, SRM
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	~~SW~~ N	
XI.	Target compound identification	~~A~~	
XII.	Compound quantitation/CRQLs	~~A~~	
XIII.	Tentitatively identified compounds (TICs)	N	
XIV.	System performance	~~A~~	
XV.	Overall assessment of data	SW	
XVI.	Field duplicates	N	
XVII.	Field blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples

MI sed

1 2	LDW-SS1-010	11 1	LDW-SS13-010DL	21 2	MB-012405	31	
2 2	LDW-SS4-010	12 2	LDW-SS14-010MS	22		32	
3 2	LDW-SS5-010	13 2	LDW-SS14-010MSD	23		33	
4 2	LDW-SS10-010	14		24		34	
5 2	LDW-SS12-010	15		25		35	
6 2	LDW-SS14-010	16		26		36	
7 2	LDW-SS15-010	17		27		37	
8 2	LDW-SS22-010	18		28		38	
9 1	LDW-SS22-010DL	19		29		39	
10 2	LDW-SS13-010	20		30		40	

LDC #: 13204A2a
SDG #: HP67

VALIDATION FINDINGS CHECKLIST

Page: 1 of 3
Reviewer: Q
2nd Reviewer: R

Method: Semivolatiles (EPA SW 846 Method 8270C)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. GC/MS instrument performance check				
Were the DFTPP performance results reviewed and found to be within the specified criteria?	✓			
Were all samples analyzed within the 12 hour clock criteria?	✓			
III. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	✓			
Was a curve fit used for evaluation? If Yes, what was the acceptance criteria used?	✓			
Did the initial calibration meet the curve fit acceptance criteria?	✓			
Were all percent relative standard deviations (%RSD) $\leq$ 30% and relative response factors (RRF) $\geq$ 0.05?	✓			
IV. Continuing calibration				
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?	✓			
Were all percent differences (%D) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	✓			
Were all percent differences (%D) $\leq$ 25% and relative response factors (RRF) $\geq$ 0.05?		✓		
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.	✓			
VI. Surrogate spikes				
Were all surrogate %R within QC limits?	✓			
If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?			✓	
If any %R was less than 10 percent, was a reanalysis performed to confirm %R?			✓	
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.	✓			
Was a MS/MSD analyzed every 20 samples of each matrix?	✓			

LDC #: 13204A29
SDG #: HP67

VALIDATION FINDINGS CHECKLIST

Reviewer: 9
2nd Reviewer:

Validation Area	Yes	No	NA	Findings/Comments
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	✓			
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
X. Internal standards				
Were internal standard area counts within -50% or +100% of the associated calibration standard?		✓		
Were retention times within ± 30 seconds from the associated calibration standard?	✓			
XI. Target compound identification				
Were relative retention times (RRT's) within ± 0.06 RRT units of the standard?	✓			
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	✓			
Were chromatogram peaks verified and accounted for?	✓			
XII. Compound quantitation/CRQLs				
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	✓			
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XIII. Tentatively identified compounds (TICs)				
Were the major ions (> 10 percent relative intensity) in the reference spectrum evaluated in sample spectrum?			✓	
Were relative intensities of the major ions within ± 20% between the sample and the reference spectra?			✓	
Did the raw data indicate that the laboratory performed a library search for all required peaks in the chromatograms (samples and blanks)?		✓		
XIV. System performance				
System performance was found to be acceptable.	✓			
XV. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			

LDC #: 13204A29
SDG #: HP67

VALIDATION FINDINGS CHECKLIST

Reviewer: 9
2nd Reviewer: X

Validation Area	Yes	No	NA	Findings/Comments
XVI. Field duplicates				
Field duplicate pairs were identified in this SDG.		✓		
Target compounds were detected in the field duplicates.			✓	
XVII. Field blanks				
Field blanks were identified in this SDG.		✓		
Target compounds were detected in the field blanks.			✓	

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

A. Phenol**	P. Bis(2-chloroethoxy)methane	EE. 2,6-Dinitrotoluene	TT. Pentachlorophenol**	III. Benzo(a)pyrene**
B. Bis (2-chloroethyl) ether	Q. 2,4-Dichlorophenol**	FF. 3-Nitroaniline	UU. Phenanthrene	JJJ. Indeno(1,2,3-cd)pyrene
C. 2-Chlorophenol	R. 1,2,4-Trichlorobenzene	GG. Acenaphthene**	VV. Anthracene	KKK. Dibenz(a,h)anthracene
D. 1,3-Dichlorobenzene	S. Naphthalene	HH. 2,4-Dinitrophenol*	WW. Carbazole	LLL. Benzo(g,h,i)perylene
E. 1,4-Dichlorobenzene**	T. 4-Chloroaniline	II. 4-Nitrophenol*	XX. Di-n-butylphthalate	MMM. Bis(2-Chloroisopropyl)ether
F. 1,2-Dichlorobenzene	U. Hexachlorobutadiene**	JJ. Dibenzofuran	YY. Fluoranthene**	NNN. Aniline
G. 2-Methylphenol	V. 4-Chloro-3-methylphenol**	KK. 2,4-Dinitrotoluene	ZZ. Pyrene	OOO. N-Nitrosodimethylamine
H. 2,2'-Oxybis(1-chloropropane)	W. 2-Methylnaphthalene	LL. Diethylphthalate	AAA. Butylbenzylphthalate	PPP. Benzoic Acid
I. 4-Methylphenol	X. Hexachlorocyclopentadiene*	MM. 4-Chlorophenyl-phenyl ether	BBB. 3,3'-Dichlorobenzidine	QQQ. Benzyl alcohol
J. N-Nitroso-di-n-propylamine*	Y. 2,4,6-Trichlorophenol**	NN. Fluorene	CCC. Benzo(a)anthracene	RRR. Pyridine
K. Hexachloroethane	Z. 2,4,5-Trichlorophenol	OO. 4-Nitroaniline	DDD. Chrysene	SSS. Benzidine
L. Nitrobenzene	AA. 2-Chloronaphthalene	PP. 4,6-Dinitro-2-methylphenol	EEE. Bis(2-ethylhexyl)phthalate	TTT.
M. Isophorone	BB. 2-Nitroaniline	QQ. N-Nitrosodiphenylamine (1)**	FFF. Di-n-octylphthalate**	UUU.
N. 2-Nitrophenol**	CC. Dimethylphthalate	RR. 4-Bromophenyl-phenylether	GGG. Benzo(b)fluoranthene	VVV.
O. 2,4-Dimethylphenol	DD. Acenaphthylene	SS. Hexachlorobenzene	HHH. Benzo(k)fluoranthene	WWW.

LDC #: 13204B2a

SDG #: HPGT

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

VALIDATION FINDINGS WORKSHEET

Continuing Calibration

Reviewer: [signature]

2nd Reviewer: [signature]

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Was a continuing calibration standard analyzed at least once every 12 hours of sample analysis for each instrument?

(Y) N N/A Were percent differences (%D) and relative response factors (RRF) within method criteria for all CCC's and SPCC's ?

Y (N) N/A Were all %D and RRFs within the validation criteria of ≤25 %D and ≥0.05 RRF ?

#	Date	Standard ID	Compound	Finding %D (Limit: ≤25.0%)	Finding RRF (Limit: ≥0.05)	Associated Samples	Qualifications
	2/1/05	CC0201	X	28.53297		1-8, 10, 12-13 Blk	J/UJ/A

LDC #: 13204A2a
SDG #: HP87

VALIDATION FINDINGS WORKSHEET
Blanks

Page: 1 of 1
Reviewer: 9
2nd Reviewer: K

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a method blank analyzed for each matrix?
Y N N/A Was a method blank analyzed for each concentration preparation level?
Y N N/A Was a method blank associated with every sample?
Y N N/A Was the blank contaminated? If yes, please see qualification below.

Blank extraction date: 1/24/05 **Blank analysis date:** 2/1/05
Conc. units: ug/kg Associated Samples: all

Compound	Blank ID	Sample Identification								
	MB-012405	1	2	3	5	6	7	8	9 (5X)	10
zzz	15	67/U	83/U	82/U	(180)	(160)	64/U	(1100)	(900)	(180)

+ug

Blank extraction date: same **Blank analysis date:** _____
Conc. units: _____ Associated Samples: all

Compound	Blank ID	Sample Identification								
	MB-012405	11 (5X)								
zzz	15	180/U								

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Common contaminants such as the phthalates and TICs noted above that were detected in samples within ten times the associated method blank concentration were qualified as not detected, "U". Other contaminants within five times the method blank concentration were also qualified as not detected, "U".

LDC #: 13204A29
SDG #: HP87

VALIDATION FINDINGS WORKSHEET
Internal Standards

Reviewer: 9
2nd Reviewer: K

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y (N) N/A Were all interral standard area counts within -50 to +100 of the associated calibration standard?

Y N N/A Were the retention times of the internal standards within +/- 30 seconds of the retention times of the associated calibration stancard?

#	Date	Sample ID	Internal Standard	Area (Limits)	RT (Limits)	Qualifications
		13 (MSD)	PRY	115555 (116217-464868)		No qual.
		8	PRY	73931 (	)	J/UJ/A
		10	PRY	102609 (	)	(GGG → LLL)

* QC limits are advisory

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10
IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

LDC #: 13204A29
SDG #: HP67

VALIDATION FINDINGS WORKSHEET
Overall Assessment of Data

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

All available information pertaining to the data were reviewed using professional judgement to compliment the determination of the overall quality of the data.

Y N N/A Was the overall quality and usability of the data acceptable?

#	Date	Sample ID	Finding	Associated Samples	Qualifications
		8, 10	~~FFF~~ → LLL	8, 10	R/A
					↓
		9, 11	All except ~~FFF~~ → LLL	9, 11	

Comments: _____

OVR.2S

LDC #: 13204A29
SDG #: HP67

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Reviewer: 9
2nd Reviewer: K

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

The Relative Response Factor (RRF), average RRF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

RRF = $(A_x)(C_{is})/(A_{is})(C_x)$
average RRF = sum of the RRFs/number of standards
%RSD = 100 * (S/X)

A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard
S = Standard deviation of the RRFs, X = Mean of the RRFs

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Reported RRF (25 std)	Recalculated RRF (25 std)	Reported Average RRF (initial)	Recalculated Average RRF (initial)	Reported %RSD	Recalculated %RSD
1	ICAL	1/29/15	Phenol (1st internal standard)	2.15562	2.15562	2.1869	2.1869	10.64	10.64
			Naphthalene (2nd internal standard)	curve fit					
			Fluorene (3rd internal standard)						
			~~Pentachlorophenol (4th~~ internal standard)						
			~~Bis(2-ethylhexyl)phthalate~~ (5th internal standard)	1.39735	1.39735	1.47223	1.47223	11.459	11.459
			Benzo(a)pyrene (6th internal standard)	1.14851	1.14851	1.17510	1.17510	9.8411	9.8412
2			~~Phenol~~ (1st internal standard)	0.58814	0.58814	0.59056	0.59056	5.0147	5.0146
			Naphthalene (2nd internal standard)						
			Fluorene (3rd internal standard)						
			Pentachlorophenol (4th internal standard)						
			Bis(2-ethylhexyl)phthalate (5th internal standard)						
			Benzo(a)pyrene (6th internal standard)						
3			Phenol (1st internal standard)						
			Naphthalene (2nd internal standard)						
			Fluorene (3rd internal standard)						
			Pentachlorophenol (4th internal standard)						
			Bis(2-ethylhexyl)phthalate (5th internal standard)						
			Benzo(a)pyrene (6th internal standard)						

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204A2a
SDG#: HP67

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer:
2nd Reviewer:

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270)

Parameter: Naphthalene

Order of regression: Quad

DATE	GCMS ID	COLUMN	(Y) CONC RATIO	(X) AREA RATIO	(X^2) AREA RATIO
01/29/2005	NT6	CAP	0.05	0.07050	0.00497
			0.25	0.33156	0.10993
			0.50	0.62253	0.38754
			1.25	1.37134	1.88057
			2.00	2.13061	4.53952
			3.00	2.89979	8.40879
			4.00	3.65117	13.33104

Regression Output:

Constant		0.0000
Std Err of Y Est		0.0257
R Squared		0.9997540
No. of Observations		7
Degrees of Freedom		5
X Coefficient (s)	0.7597	0.0923
Std Err of Coef.	0.0191	0.0062
Correlation Coefficient (r) =		0.9998770
Coefficient of Determination (r^2) =		0.9997540

LDC #: 13204A2a
SDG#: HD67

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer:
2nd Reviewer: AC

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270)

Parameter: Fluorene

Order of regression: Quac

DATE	GCMS ID	COLUMN	(Y) CONC RATIO	(X) AREA RATIO	(X^2) AREA RATIO
01/29/2005	NT6	CAP	0.05	0.08005	0.00641
			0.25	0.37229	0.13860
			0.50	0.70479	0.49673
			1.25	1.51081	2.28254
			2.00	2.35067	5.52564
			3.00	3.12574	9.77028
			4.00	3.97161	15.77370

Regression Output:

Constant		0.0000
Std Err of Y Est		0.0425
R Squared		0.9993286
No. of Observations		7
Degrees of Freedom		5
X Coefficient (s)	0.6770	0.0844
Std Err of Coef.	0.0289	0.0086
Correlation Coefficient (r) =		0.9996643
Coefficient of Determination (r^2) =		0.9993286

LDC #: 13204A2a
SDG#: HP67

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Reviewer: 1
2nd Reviewer: AC

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270)

Parameter: Phenanthrene

Order of regression: Quad

DATE	GCMS ID	COLUMN	(Y) CONC RATIO	(X) AREA RATIO	(X^2) AREA RATIO
01/29/2005	NT6	CAP	0.05	0.08072	0.00652
			0.25	0.35484	0.12591
			0.50	0.65729	0.43202
			1.25	1.44590	2.09064
			2.00	2.23477	4.99422
			3.00	3.01402	9.08432
			4.00	3.85558	14.86552

Regression Output:

Constan:		0.0000
Std Err of Y Est		0.0372
R Squared		0.9994857
No. of Observations		7
Degrees of Freedom		5
X Coefficient (s)	0.7347	0.0801
Std Err of Coef.	0.0260	0.0080
Correlation Coefficient (r) =		0.9997428
Coefficient of Determination (r^2) =		0.9994857

LDC #: 13204A20
SDG #: HP67

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Reviewer: 9
2nd Reviewer: DR

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
$RRF = (A_x)(C_{is})/(A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
A_x = Area of compound, A_{is} = Area of associated nternal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Average RRF (Initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported %D	Recalculated %D
1	CC0B1	1/31/05	Phenol (1st internal standard)	2.18692	2.10036	2.10036	3.958	3.958
			Naphthalene (2nd internal standard)	25.00	24.06	24.06	3.85	3.85
			Fluorene (3rd internal standard)	↓	24.72	24.72	1.12	1.12
			~~Pentachlorophenol~~ (4th internal standard) DDD		24.06	24.06	3.8	3.76
			~~Bis(2-ethylhexyl)phthal~~ate (5th internal standard)	1.47223	1.38989	1.38989	5.59	5.59
			Benzo(a)pyrene (6th internal standard)	1.17510	1.14073	1.14073	2.925	2.925
2			~~Phenol~~ (1st internal standard)	0.59056	0.58563	0.58563	0.834	0.835
			Naphthalene (2nd internal standard)					
			Fluorene (3rd nternal standard)					
			Pentachlorophenol (4th internal standard)					
			Bis(2-ethylhexyl)phthalate (5th internal standard)					
	CC0201	2/1/05	~~Benzo(a)pyrene~~ (6th internal standard)	0.59056	0.58979	0.58979	0.12989	0.131
3			Phenol (1st internal standard)	2.18692	2.09375	2.09375	4.26044	4.26023
			Naphthalene (2nd internal standard)	25.00	24.14209	24.14	3.432	3.44
			Fluorene (3rd internal standard)	↓	24.89932	24.83	0.683	0.68
			~~Pentachlorophenol~~ (4th internal standard) DDD		24.10492	24.10	3.580	3.60
			~~Bis(2-ethylhexyl)phthalate~~ (5th internal standard)	1.47223	1.40347	1.40347	4.67053	4.6706
			Benzo(a)pyrene (6th internal standard)	1.17510	1.12883	1.12883	3.93808	3.938

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204A29
SDG #: HP6T

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Page: 1 of 1
Reviewer: 9
2nd reviewer: K

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270)

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: 1

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5	25	18.3417	73.2	73.4	0.2
2-Fluorobiphenyl	↓	20.7956	83.2	83.2	0
Terphenyl-d14	↓	19.8475	79.2	79.4	0.2
Phenol-d5	37.5	28.9920	77.3	77.3	0
2-Fluorophenol	↓	18.2782	48.8	48.7	0.1
2,4,6-Tribromophenol	↓	38.6869	103	103	0
2-Chlorophenol-d4	↓	30.8607	82.4	82.3	0.1
1,2-Dichlorobenzene-d4	25	18.9443	75.6	75.8	0.2

Sample ID: _____

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

Sample ID: _____

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

LDC #: 13204A29
SDG #: HP6T

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Reviewer: 9
2nd Reviewer: DC

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SSC - SC)/SA Where: SSC = Spiked sample concentration; SA = Spike added; SC = Sample concentation

RPD = | MS - MSD | * 2/(MS + MSD) MS = Matrix spike percent recovery MSD = Matrix spike duplicate percent recovery

MS/MSD samples: 12/13

Compound	Spike Added (ug/kg)		Sample Concentration (ug/kg)	Spiked Sample Concentration (ug/kg)		Matrix Spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	------	MS	MSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
Phenol	729	731	ND	587	571	80.5	80.5	78.1	78.1	2.8	2.8
2-Chlorophenol	↓	↓		594	585	81.5	81.5	80.0	80.0	1.5	1.5
1,4-Dichlorobenzene	486	487		356	359	73.3	73.3	73.7	73.7	0.8	0.8
N-Nitroso-di-n-propylamine	↓	↓		337	334	69.3	69.3	68.6	68.6	0.9	0.9
1,2,4-Trichlorobenzene	↓	↓		413	406	85.0	85.0	83.4	83.4	1.7	1.7
4-Chloro-3-methylphenol	729	731		705	686	96.7	96.7	93.8	93.8	2.7	2.7
Acenaphthene	486	487		483	451	99.4	99.4	92.6	92.6	6.9	6.9
4-Nitrophenol	729	731		814	813	112	112	111	111	0.1	0.1
2,4-Dinitrotoluene	486	487		442	426	90.9	90.9	87.5	87.5	3.7	3.7
Pentachlorophenol	729	731	↓	762	786	105	105	108	108	3.1	3.1
Pyrene	486	487	106	678	586	118	118	98.6	98.6	14.6	14.6

Comments: Refer to Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204B29
SDG #: HP67

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: [illegible]

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SC/SA Where: SSC = Spike concentration; SA = Spike added

RPD = | LCS - LCSD | * 2/(LCS + LCSD) LCS = Laboratory control sample percent recovery LCSD = Laboratory control sample duplicate percent recovery

LCS/LCSD samples: LCS-012405

Compound	Spike Added (ug/kg)		Spike Concentration (ug/kg)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
Phenol	T50	NA	496	NA	66.1	66.1				
2-Chlorophenol	↓		518		69.1	69.1				
1,4-Dichlorobenzene	500		349		69.8	69.8				
N-Nitroso-di-n-propylamine			323		64.6	64.6				
1,2,4-Trichlorobenzene	↓		389		TT.8	TT.8				
4-Chloro-3-methylphenol	T50		585		T8.0	T8.0				
Acenaphthene	500		384		T6.8	T6.8				
4-Nitrophenol	T50		6T01		89.5	89.5				
2,4-Dinitrotoluene	500		383		T6.6	T6.6				
Pentachlorophenol	T50		T33		9T.T	9T.T				
Pyrene	500	↓	482	↓	96.4	96.4				

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204A2a
SDG #: HD6T

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: 9
2nd reviewer: DC

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

Concentration = $\frac{(A_x)(I_s)(V_t)(DF)(2.0)}{(A_{is})(RRF)(V_o)(V_i)(\%S)}$

A_x	=	Area of the characteristic ion (EICP) for the compound to be measured
A_{is}	=	Area of the characteristic ion (EICP) for the specific internal standard
I_s	=	Amount of internal standard added in nanograms (ng)
V_o	=	Volume or weight of sample extract in milliliters (ml) or grams (g).
V_i	=	Volume of extract injected in microliters (ul)
V_t	=	Volume of the concentrated extract in microliters (ul)
Df	=	Dilution Factor.
%S	=	Percent solids, applicable to soil and solid matrices only.
2.0	=	Factor of 2 to account for GPC cleanup

Example:

Sample I.D. 2 , 11 :

Conc. = $\frac{(44495)(20)(500)(1)(\quad)}{(226068)(1.1T510)(25.6)(1)(\quad)}$

= 65.4 Mg/g

#	Sample ID	Compound	Reported Concentration ( )	Calculated Concentration ( )	Qualification

LDC #: 13204B2a **VALIDATION COMPLETENESS WORKSHEET** Date: 3/10/05
SDG #: HP70 Level N IV Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: 9
2nd Reviewer: 9

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/18/05
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	%RSD. r²
IV.	Continuing calibration	SW	
V.	Blanks	SW	
VI.	Surrogate spikes	SW	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples	A	LCS, SRM
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	SW	
XI.	Target compound identification	A	
XII.	Compound quantitation/CRQLs	SW	
XIII.	Tentitatively identified compounds (TICs)	N	
XIV.	System performance	A	
XV.	Overall assessment of data	SW	
XVI.	Field duplicates	SW	D = 5+7, 6+8.
XVII	Field blanks	ND	RB = LDW-SS38-RB

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples
All soils

1	~~LDW-SS38-RB~~	11	LDW-SS37-010	21	MB-012405	31	
2	LDW-SS23-010	12	LDW-SS37-010DL	22		32	
3	LDW-SS20-010	13	LDW-SS38-010	23		33	
4	LDW-SS26-010DL	14	LDW-SS40-010	24		34	
5	LDW-SS27-010	15	LDW-SS48-010	25		35	
6	LDW-SS27-010DL	16	LDW-SS48-010DL	26		36	
7	LDW-SS200-010	17	LDW-SS51-010	27		37	
8	LDW-SS200-010DL	18		28		38	
9	LDW-SS32-010	19		29		39	
10	LDW-SS32-010DL	20		30		40	

LDC #: 13204B29
SDG #: HP70

VALIDATION FINDINGS CHECKLIST

Page: 1 of 3
Reviewer: Q
2nd Reviewer: DC

Method: Semivolatiles (EPA SW 846 Method 8270C)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. GC/MS Instrument performance check				
Were the DFTPP performance results reviewed and found to be within the specified criteria?	✓			
Were all samples analyzed within the 12 hour clock criteria?	✓			
III. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	✓			
Was a curve fit used for evaluation? If Yes, what was the acceptance criteria used?	✓			
Did the initial calibration meet the curve fit acceptance criteria?	✓			
Were all percent relative standard deviations (%RSD) $\leq$ 30% and relative response factors (RRF) $\geq$ 0.05?	✓			
IV. Continuing calibration				
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?	✓			
Were all percent differences (%D) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	✓			
Were all percent differences (%D) $\leq$ 25% and relative response factors (RRF) $\geq$ 0.05?		✓		
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.	✓			
VI. Surrogate spikes				
Were all surrogate %R within QC limits?		✓		
If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?			✓	
If any %R was less than 10 percent, was a reanalysis performed to confirm %R?			✓	
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.	✓			
Was a MS/MSD analyzed every 20 samples of each matrix?	✓			

Validation Area	Yes	No	NA	Findings/Comments
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	✓			
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
X. Internal standards				
Were internal standard area counts within -50% or +100% of the associated calibration standard?		✓		
Were retention times within ± 30 seconds from the associated calibration standard?	✓			
XI. Target compound identification				
Were relative retention times (RRT's) within ± 0.06 RRT units of the standard?	✓			
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	✓			
Were chromatogram peaks verified and accounted for?	✓			
XII. Compound quantitation/CRQLs				
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	✓			
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XIII. Tentatively identified compounds (TICs)				
Were the major ions (> 10 percent relative intensity) in the reference spectrum evaluated in sample spectrum?			✓	
Were relative intensities of the major ions within ± 20% between the sample and the reference spectra?			✓	
Did the raw data indicate that the laboratory performed a library search for all required peaks in the chromatograms (samples and blanks)?		✓		
XIV. System performance				
System performance was found to be acceptable.	✓			
XV. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			

Validation Area	Yes	No	NA	Findings/Comments
XVI. Field duplicates				
Field duplicate pairs were identified in this SDG.	✓			
Target compounds were detected in the field duplicates.	✓			
XVII. Field blanks				
Field blanks were identified in this SDG.	✓			
Target compounds were detected in the field blanks.		✓		

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

A. Phenol**	P. Bis(2-chloroethoxy)methane	EE. 2,6-Dinitrotoluene	TT. Pentachlorophenol**	III. Benzo(a)pyrene**
B. Bis (2-chloroethyl) ether	Q. 2,4-Dichlorophenol**	FF. 3-Nitroaniline	UU. Phenanthrene	JJJ. Indeno(1,2,3-cd)pyrene
C. 2-Chlorophenol	R. 1,2,4-Trichlorobenzene	GG. Acenaphthene**	VV. Anthracene	KKK. Dibenz(a,h)anthracene
D. 1,3-Dichlorobenzene	S. Naphthalene	HH. 2,4-Dinitrophenol*	WW. Carbazole	LLL. Benzo(g,h,i)perylene
E. 1,4-Dichlorobenzene**	T. 4-Chloroaniline	II. 4-Nitrophenol*	XX. Di-n-butylphthalate	MMM. Bis(2-Chloroisopropyl)ether
F. 1,2-Dichlorobenzene	U. Hexachlorobutadiene**	JJ. Dibenzofuran	YY. Fluoranthene**	NNN. Aniline
G. 2-Methylphenol	V. 4-Chloro-3-methylphenol**	KK. 2,4-Dinitrotoluene	ZZ. Pyrene	OOO. N-Nitrosodimethylamine
H. 2,2'-Oxybis(1-chloropropane)	W. 2-Methylnaphthalene	LL. Diethylphthalate	AAA. Butylbenzylphthalate	PPP. Benzoic Acid
I. 4-Methylphenol	X. Hexachlorocyclopentadiene*	MM. 4-Chlorophenyl-phenyl ether	BBB. 3,3'-Dichlorobenzidine	QQQ. Benzyl alcohol
J. N-Nitroso-di-n-propylamine*	Y. 2,4,6-Trichlorophenol**	NN. Fluorene	CCC. Benzo(a)anthracene	RRR. Pyridine
K. Hexachloroethane	Z. 2,4,5-Trichlorophenol	OO. 4-Nitroaniline	DDD. Chrysene	SSS. Benzidine
L. Nitrobenzene	AA. 2-Chloronaphthalene	PP. 4,6-Dinitro-2-methylphenol	EEE. Bis(2-ethylhexyl)phthalate	TTT.
M. Isophorone	BB. 2-Nitroaniline	QQ. N-Nitrosodiphenylamine (1)**	FFF. Di-n-octylphthalate**	UUU.
N. 2-Nitrophenol**	CC. Dimethylphthalate	RR. 4-Bromophenyl-phenylether	GGG. Benzo(b)fluoranthene	VVV.
O. 2,4-Dimethylphenol	DD. Acenaphthylene	SS. Hexachlorobenzene	HHH. Benzo(k)fluoranthene	WWW.

LDC #: 13204B29
SDG #: HP70

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

Page: 1 of 1
Reviewer: 9
2nd Reviewer: [illegible]

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a continuing calibration standard analyzed at least once every 12 hours of sample analysis for each instrument?
Y N N/A Were percent differences (%D) and relative response factors (RRF) within method criteria for all CCC's and SPCC's ?
Y N N/A Were all %D and RRFs within the validation criteria of ≤25 %D and ≥0.05 RRF ?

#	Date	Standard ID	Compound	Finding %D (Limit: ≤25.0%)	Finding RRF (Limit: ≥0.05)	Associated Samples	Qualifications
	2/1/05	cc0201	X	28.53297		2-3.5.7.9.11	J/UJ/A
						Blk	
	2/3/05	cc0202	QQQ	57.44199		13-15.17	J/UJ/A
			HH	38.07925			
			PP	41.76197			
	2/3/05	cc0203	QQQ	46.26238		16	J/UJ/A
			HH	34.77659			
			PP	37.90387			
			KKK	38.57960			
			LLL	40.04920			

LDC #: 13202 B29
SDG #: HPTO

VALIDATION FINDINGS WORKSHEET
Blanks

Page: 1 of 1
Reviewer: a
2nd Reviewer: M

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a method blank analyzed for each matrix?
Y N N/A Was a method blank analyzed for each concentration preparation level?
Y N N/A Was a method blank associated with every sample?
Y N N/A Was the blank contaminated? If yes, please see qualification below.

Blank extraction date: 1/24/05 **Blank analysis date:** 2/1/05
Conc. units: ug/kg Associated Samples: M

Compound	Blank ID	Sample Identification								
	MB-012405	3	4(5x)	5	7	9	11	12(5)	13	14
EEE	15	(200)	190/U	30/U	88/U	93/U	(760)	650/U	100/U	(270)

Blank extraction date: _____ **Blank analysis date:** _____
Conc. units: Sand Associated Samples: M

Compound	Blank ID	Sample Identification								
	MB-012405	15	16(5x)	17						
EEE	15	(770)	660/U	120/U						

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Common contaminants such as the phthalates and TICs noted above that were detected in samples within ten times the associated method blank concentration were qualified as not detected, "U". Other contamirants within five times the method blank concentration were also qualified as not detected, "U".

LDC #: 12404D2

SDG #: HD70

VALIDATION FINDINGS WORKSHEET
Surrogate Recovery

Page: 1 of 1
Reviewer: Q
2nd Reviewer: K

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Please see qualification below for all questions answered "N". Not applicable questions are identified as "N/A".

Y (N) N/A Were percent recoveries (%R) for surrogates within QC limits?
Y N N/A If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?
Y N N/A If any %R was less than 10 percent, was a reanalysis performed to confirm %R?

#	Date	Sample ID	Surrogate	%R (Limits)	Qualifications
		4	TBP	31.9 (40-130)	No qual
				( )	
		8	TBP	32.1 ( )	
				( )	
		10	TBP	36.4 ( )	
				( )	
		12	TBP	31.5 ( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	

* QC limits are advisory	QC Limits (Soil)	QC Limits (Water)
S1 (NBZ) = Nitrobenzene-d5	23-120	35-114
S2 (FBP) = 2-Fluorobiphenyl	30-115	43-116
S3 (TPH) = Terphenyl-d14	18-137	33-141
S4 (PHL) = Phenol-d5	24-113	10-94
S5 (2FP)= 2-Fluorophenol	25-121	21-100
S6 (TBP) = 2,4,6-Tribromophenol	19-122	10-123
S7 (2CP) = 2-Chlorophenol-d4	20-130*	33-110*
S8 (DCB) = 1,2-Dichlorobenzene-d4	20-130*	16-110*

LDC #: 13204B29
SDG #: HPT0

VALIDATION FINDINGS WORKSHEET
Internal Standards

Page: 1 of 1
Reviewer: 9
2nd Reviewer: K

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y (N) N/A Were all internal standard area counts within -50 to +100 of the associated calibration standard?

(Y) N N/A Were the retention times of the nternal standards within +/- 30 seconds of the retention times of the associated calibration standard?

#	Date	Sample ID	Internal Standard	Area (Limits)	RT (Limits)	Qualifications
		3	PRY	91698 (11621T-464868)		J/UJ/A
		5	PRY	110608 ( )		
		7	PRY	94243 ( )		
		~~8~~	*			
		9	PRY	93876 ( )		
		11	PRY	59280 ( )		
						(RRR → UUU)

* QC limits are advisory

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10
IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

LDC #: 15204B2A
SDG #: HP70

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported CRQLs

Page: 1 of 1
Reviewer: 9
2nd Reviewer: SR

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?

Y N N/A Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?

#	Date	Sample ID	Finding	Associated Samples	Qualifications
		15	uu. YY. ZZ. DDD. ~~EEE~~	15	~~dets~~ / A
			>calib range		

Comments: See sample calculation verification worksheet for recalculations

LDC #: 13204B29
SDG #: HP70

VALIDATION FINDINGS WORKSHEET
Overall Assessment of Data

Page: 1 of 1
Reviewer: Q
2nd Reviewer: SC

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

All available information pertaining to the data were reviewed using professional judgement to compliment the determination of the overall quality of the data.

(Y) N N/A Was the overall quality and usability of the data acceptable?

#	Date	Sample ID	Finding	Associated Samples	Qualifications
		15	UU, YY. 22. DDD. ~~GGG~~	15	R/A
		16	All except above	16	↓
		3,5,7,9,11	~~GGG~~ → LL	3.5.7.9.11	R/A
			(IS out)		
		4.6.8.10.12	All except ~~GGG~~ → LL	4.6.8.10.12	R/A

Comments: _____

OVR.2S

DC#:13204A2a (B)
SDG#:HP70

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: a
2nd Reviewer: C

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Y N NA Were field duplicate pairs identified in this SDG?
Y N NA Were target analytes detected in the field duplicate pairs?

Compound	Concentration (ug/Kg) 5	7	RPD ≤50	
UU	120	130	8	
VV	28	57	68	
YY	390	390	0	
ZZ	270	300	11	
CCC	120	160	29	
EEE	30	88	98	
DDD	240	370	43	
GGG	230	180	24	
HHH	140	170	19	
III	140	140	0	
JJJ	41	46	11	
LLL	36	43	18	
WW	20U	21	~~200~~ NC	
KKK	20U	22	~~200~~ NC	

Compound	Concentration (ug/Kg) ~~56~~	8	RPD	
UU	110	120	9	
YY	330	360	9	
ZZ	220	230	4	
CCC	120	160	29	
DDD	240	390	48	
GGG	170	140	19	
HHH	100	120	18	
III	140	140	0	

LDC #: 13204B2A
SDG #: #P70

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: R

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

The Relative Response Factor (RRF), average RRF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

RRF = $(A_x)(C_{is})/(A_{is})(C_x)$
average RRF = sum of the RRFs/number of standards
%RSD = 100 * (S/X)

A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard
S = Standard deviation of the RRFs, X = Mean of the RRFs

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Reported RRF (25 std)	Recalculated RRF (25 std)	Reported Average RRF (initial)	Recalculated Average RRF (initial)	Reported %RSD	Recalculated %RSD
1	ICAL	1/29/05	Phenol (1st internal standard)	2.15562	2.15562	2.1869	2.1869	10.6455	10.6455
			Naphthalene (2nd internal standard)						
			Fluorene (3rd internal standard)	curve fit					
			~~Pentachlorophenol~~ (4th internal standard)						
			~~Bis(2-ethylhexyl)phthalate~~ (5th internal standard)	1.39735	1.39735	1.47223	1.47223	11.459	11.459
			Benzo(a)pyrene (6th internal standard)	1.14851	1.14851	1.17510	1.17510	9.84111	9.84112
2			~~Phenol~~ (1st internal standard)	0.58814	0.58814	0.59056	0.59056	5.0147	5.01456
			Naphthalene (2nd internal standard)						
			Fluorene (3rd internal standard)						
			Pentachlorophenol (4th internal standard)						
			Bis(2-ethylhexyl)phthalate (5th internal standard)						
			Benzo(a)pyrene (6th internal standard)						
3			Phenol (1st internal standard)						
			Naphthalene (2nd internal standard)						
			Fluorene (3rd internal standard)						
			Pentachlorophenol (4th internal standard)						
			Bis(2-ethylhexyl)phthalate (5th internal standard)						
			Benzo(a)pyrene (6th internal standard)						

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204B29
SDG#: HP70

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Reviewer: a
2nd Reviewer: a

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270)

Parameter: Phenanthrene

Order of regression: Quad

DATE	GCMS ID	COLUMN	(Y) CONC RATIO	(X) AREA RATIO	(X^2) AREA RATIO
01/29/2005	NT6	CAP	0.05	0.08072	0.00652
			0.25	0.35484	0.12591
			0.50	0.65729	0.43202
			1.25	1.44590	2.09064
			2.00	2.23477	4.99422
			3.00	3.01402	9.08432
			4.00	3.85558	14.86552

Regression Output:

Constant		0.0000
Std Err of Y Est		0.0372
R Squared		0.9994857
No. of Observations		7
Degrees of Freedom		5
X Coefficient (s)	0.7347	0.0801
Std Err of Coef.	0.0260	0.0080
Correlation Coefficient (r) =		0.9997428
Coefficient of Determination (r^2) =		0.9994857

LDC #: 13204B29
SDG#: HP70

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: [illegible]

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270)

Parameter: Naphthalene

Order of regression: Quad

DATE	GCMS ID	COLUMN	(Y) CONC RATIO	(X) AREA RATIO	(X^2) AREA RATIO
01/29/2005	NT6	CAP	0.05	0.07050	0.00497
			0.25	0.33156	0.10993
			0.50	0.62253	0.38754
			1.25	1.37134	1.88057
			2.00	2.13061	4.53952
			3.00	2.89979	8.40879
			4.00	3.65117	13.33104

Regression Output:

Constant		0.0000
Std Err of Y Est		0.0257
R Squared		0.9997540
No. of Observations		7
Degrees of Freedom		5
X Coefficient (s)	0.7597	0.0923
Std Err of Coef.	0.0191	0.0062
Correlation Coefficient (r) =		0.9998770
Coefficient of Determination (r^2) =		0.9997540

LDC #: 13204B2a
SDG#: HP70

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Reviewer: a
2nd Reviewer: a

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270)

Parameter: Fluorene

Order of regression: Quad

DATE	GCMS ID	COLUMN	(Y) CONC RATIO	(X) AREA RATIO	(X^2) AREA RATIO
01/29/2005	NT6	CAP	0.05	0.08005	0.00641
			0.25	0.37229	0.13860
			0.50	0.70479	0.49673
			1.25	1.51081	2.28254
			2.00	2.35067	5.52564
			3.00	3.12574	9.77028
			4.00	3.97161	15.77370

Regression Output:

Constant		0.0000
Std Err of Y Est		0.0425
R Squared		0.9993286
No. of Observations		7
Degrees of Freedom		5
X Coefficient (s)	0.6770	0.0844
Std Err of Coef.	0.0289	0.0086
Correlation Coefficient (r) =		0.9996643
Coefficient of Determination (r^2) =		0.9993286

LDC #: 13204B29
SDG #: HD70

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: K

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
$RRF = (A_x)(C_{is})/(A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Average RRF (Initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported %D	Recalculated %D
1	CC031	1/31/05	Phenol (1st internal standard)	2.18692	2.10036	2.10036	3.958	3.958
			Naphthalene (2nd internal standard)	25.00	24.06	24.06	3.85	3.85
			Fluorene (3rd internal standard)	↓	24.72	24.72	1.12	1.12
			~~Pentachlorophenol~~ (4th internal standard)		24.06	24.06	3.8	3.76
			~~Bis(2-ethylhexyl)phthalate~~ (5th internal standard)	1.47223	1.38989	1.38989	5.59	5.59
			Benzo(a)pyrene (6th internal standard)	1.17510	1.14073	1.14073	2.925	2.925
2			~~Phenol~~ (1st internal standard)	0.59056	0.58563	0.58563	0.834	0.835
			Naphthalene (2nd internal standard)					
			Fluorene (3rd internal standard)					
			Pentachlorophenol (4th internal standard)					
			Bis(2-ethylhexyl)phthalate (5th internal standard)					
	CC0201	2/1/05	~~Benzo(a)pyrene~~ (6th internal standard)	0.59056	0.58979	0.58979	0.12989	0.131
3			Phenol (1st internal standard)	2.18692	2.09375	2.09375	4.26044	4.26023
			Naphthalene (2nd internal standard)	25.00	24.14209	24.14	3.432	3.44
			Fluorene (3rd internal standard)	↓	24.8932	24.83	0.683	0.68
			~~Pentachlorophenol~~ (4th internal standard)		24.10492	24.10	3.580	3.60
			~~Bis(2-ethylhexyl)phthalate~~ (5th internal standard)	1.47223	1.40347	1.40347	4.67053	4.6706
			Benzo(a)pyrene (6th internal standard)	1.17510	1.12883	1.12883	3.93808	3.938

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204B20
SDG #: HP7U

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Reviewer: 9
2nd Reviewer: a

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
$RRF = (A_x)(C_{is})/(A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Average RRF (Initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported %D	Recalculated %D
1	CC0203	2/3/05	Phenol (1st internal standard)	2.18692	1.91205	1.91205	12.5692	12.569
			Naphthalene (2nd internal standard)	25	24.261	24.26	2.95549	2.961
			Fluorene (3rd internal standard)	↓	24.67368	24.67	1.30529	1.32
			~~Pentachlorophenol~~ (4th internal standard)		24.03533	24.04	3.85866	3.858
			~~Bis(2-ethylhexyl)phthalate~~ (5th internal standard)	1.47223	1.40362	1.40362	4.66007	4.660
			Benzo(a)pyrene (6th internal standard)	1.17510	1.11272	1.11272	5.30845	5.308
2			~~Phenol~~ (1st internal standard)	0.59056	0.57522	0.57522	2.59731	2.598
			Naphthalene (2nd internal standard)					
			Fluorene (3rd internal standard)					
			Pentachlorophenol (4th internal standard)					
			Bis(2-ethylhexyl)phthalate (5th internal standard)					
	CC0207	2/3/05	~~Benzo(a)pyrene~~ (6th internal standard)	0.59056	0.58255	0.58255	1.35484	1.356
3			Phenol (1st internal standard)	2.18692	1.94681	1.94681	10.9943	10.979
			Naphthalene (2nd internal standard)	25	24.17483	24.17	3.30067	3.32
			Fluorene (3rd internal standard)	↓	24.9548	24.95	0.18079	0.183
			~~Pentachlorophenol~~ (4th internal standard)		24.06056	24.06	3.75778	3.76
			~~Bis(2-ethylhexyl)phthalate~~ (5th internal standard)	1.47223	1.40565	1.40565	4.52219	4.522
			Benzo(a)pyrene (6th internal standard)	~~0.59056~~ 1.17510	1.11340	1.11340	5.25057	5.250

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13201B2a
SDG #: HPTO

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Page: 1 of 1
Reviewer: 9
2nd reviewer: R

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270)

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: 2

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5	25	12.5=T9	50.0	50.1	0.1
2-Fluorobiphenyl	↓	13.8296	55.2	55.4	0.2
Terphenyl-d14	↓	13.T256	54.8	54.9	0.1
Phenol-d5	37.5	15.9087	42.4	42.4	0
2-Fluorophenol	↓	17.3542	46.4	46.3	0.1
2,4,6-Tribromophenol	26.9605	~~18.1923~~	72.0	T2.0	0
2-Chlorophenol-d4	↓	20.6899	55.2	55.2	0
1,2-Dichlorobenzene-d4	25	12.1922	48.8	48.8	0

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

LDC #: 13204B29
SDG #: HP70

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: 1

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SC/SA Where: SSC = Spike concentration
SA = Spike added

RPD = | LCS - LCSD | * 2/(LCS + LCSD) LCS = Laboratory control sample percent recovery LCSD = Laboratory control sample duplicate percent recovery

LCS/LCSD samples: LCS-012405

Compound	Spike Added (ug/kg)		Spike Concentration (ug/kg)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
Phenol	750	NA	496	NA	66.1	66.1				
2-Chlorophenol	↓		518		69.1	69.1				
1,4-Dichlorobenzene	500		349		69.8	69.8				
N-Nitroso-di-n-propylamine	↓		323		64.6	64.6				
1,2,4-Trichlorobenzene	↓		389		77.8	77.8				
4-Chloro-3-methylphenol	750		585		78.0	78.0				
Acenaphthene	500		384		76.8	76.8				
4-Nitrophenol	750		671		89.5	89.5				
2,4-Dinitrotoluene	500		383		76.6	76.6				
Pentachlorophenol	750		733		97.7	97.7				
Pyrene	500	↓	482	↓	96.4	96.4				

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204B29
SDG #: HPT0

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: 9
2nd reviewer: DK

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

$$\text{Concentration} = \frac{(A_x)(I_s)(V_t)(DF)(2.0)}{(A_{is})(RRF)(V_o)(V_i)(\%S)}$$

A_x = Area of the characteristic ion (EICP) for the compound to be measured

A_{is} = Area of the characteristic ion (EICP) for the specific internal standard

I_s = Amount of internal standard added in nanograms (ng)

V_o = Volume or weight of sample extract in milliliters (ml) or grams (g).

V_i = Volume of extract injected in microliters (ul)

V_t = Volume of the concentrated extract in microliters (ul)

Df = Dilution Factor.

%S = Percent solids, applicable to soil and solid matrices only.

2.0 = Factor of 2 to account for GPC cleanup

Example:

Sample I.D. 3 , EEC :

Conc. = $\frac{(122088)(20)(500)(1)(\quad)}{(395977)(0.59056)(48.7)(1)(0.53)}$

= 201.9 ug/kg

#	Sample ID	Compound	Reported Concentration ( )	Calculated Concentration ( )	Qualification

LDC #: 13204C2a **VALIDATION COMPLETENESS WORKSHEET** Date: 3/7/05

SDG #: HP90 ~~& HQ69~~ Level II Page: 1 of 1

Laboratory: Analytical Resources, Inc. Reviewer: 9

2nd Reviewer: R

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/19/05
II.	GC/MS Instrument performance check	N	
III.	Initial calibration	N	
IV.	Continuing calibration	N	
V.	Blanks	A	
VI.	Surrogate spikes	SW	
VII.	Matrix spike/Matrix spike duplicates/DUP	A/A	~~LDW-SS6T-010~~ MS only @
VIII.	Laboratory control samples	A	LCS. SRM
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	N	
XI.	Target compound identification	N	
XII.	Compound quantitation/CRQLs	N	
XIII.	Tentitatively identified compounds (TICs)	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	
XVI.	Field duplicates	SW	D=6+7 .
XVII.	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples
All soils

1	LDW-SS-112-010	11	MB-012705	21		31	
2	LDW-SS-119-010	12	LDW-SS-111-010	22		32	
3	LDW-SS-120-010	13	MB-013105	23		33	
4	LDW-SS-60-010	14		24		34	
5	LDW-SS-99-010	15		25		35	
6	LDW-SS-89-010	16		26		36	
7	LDW-SS-201-010	17		27		37	
8	~~LDW-SS-201-010MS~~ LDW-SS-201-010MS	18		28		38	
9	LDW-SS-201-01~~MSD~~DUP	19		29		39	
10		20		30		40	

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

A. Phenol**	P. Bis(2-chloroethoxy)methane	EE. 2,6-Dinitrotoluene	TT. Pentachlorophenol**	III. Benzo(a)pyrene**
B. Bis (2-chloroethyl) ether	Q. 2,4-Dichlorophenol**	FF. 3-Nitroaniline	UU. Phenanthrene	JJJ. Indeno(1,2,3-cd)pyrene
C. 2-Chlorophenol	R. 1,2,4-Trichlorobenzene	GG. Acenaphthene**	VV. Anthracene	KKK. Dibenz(a,h)anthracene
D. 1,3-Dichlorobenzene	S. Naphthalene	HH. 2,4-Dinitrophenol*	WW. Carbazole	LLL. Benzo(g,h,i)perylene
E. 1,4-Dichlorobenzene**	T. 4-Chloroaniline	II. 4-Nitrophenol*	XX. Di-n-butylphthalate	MMM. Bis(2-Chloroisopropyl)ether
F. 1,2-Dichlorobenzene	U. Hexachlorobutadiene**	JJ. Dibenzofuran	YY. Fluoranthene**	NNN. Aniline
G. 2-Methylphenol	V. 4-Chloro-3-methylphenol**	KK. 2,4-Dinitrotoluene	ZZ. Pyrene	OOO. N-Nitrosodimethylamine
H. 2,2'-Oxybis(1-chloropropane)	W. 2-Methylnaphthalene	LL. Diethylphthalate	AAA. Butylbenzylphthalate	PPP. Benzoic Acid
I. 4-Methylphenol	X. Hexachlorocyclopentadiene*	MM. 4-Chlorophenyl-phenyl ether	BBB. 3,3'-Dichlorobenzidine	QQQ. Benzyl alcohol
J. N-Nitroso-di-n-propylamine*	Y. 2,4,6-Trichlorophenol**	NN. Fluorene	CCC. Benzo(a)anthracene	RRR. Pyridine
K. Hexachloroethane	Z. 2,4,5-Trichlorophenol	OO. 4-Nitroaniline	DDD. Chrysene	SSS. Benzidine
L. Nitrobenzene	AA. 2-Chloronaphthalene	PP. 4,6-Dinitro-2-methylphenol	EEE. Bis(2-ethylhexyl)phthalate	TTT.
M. Isophorone	BB. 2-Nitroaniline	QQ. N-Nitrosodiphenylamine (1)**	FFF. Di-n-octylphthalate**	UUU.
N. 2-Nitrophenol**	CC. Dimethylphthalate	RR. 4-Bromophenyl-phenylether	GGG. Benzo(b)fluoranthene	VVV.
O. 2,4-Dimethylphenol	DD. Acenaphthylene	SS. Hexachlorobenzene	HHH. Benzo(k)fluoranthene	WWW.

LDC #: [illegible]
SDG #: HP908 & HR89

VALIDATION FINDINGS WORKSHEET
Surrogate Recovery

Page: 1 of 1
Reviewer: 9
2nd Reviewer: R

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Please see qualification below for all questions answered "N". Not applicable questions are identified as "N/A".

Y (N) N/A Were percent recoveries (%R) for surrogates within QC limits?
Y N N/A If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?
Y N N/A If any %R was less than 10 percent, was a reanalysis performed to confirm %R?

#	Date	Sample ID	Surrogate	%R (Limits)	Qualifications
		1	TBP	39.7 (40-130)	No qual.
				( )	↓
		2	TBP	37.5 ( )	↓
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	

* QC limits are advisory	QC Limits (Soil)	QC Limits (Water)
S1 (NBZ) = Nitrobenzene-d5	23-120	35-114
S2 (FBP) = 2-Fluorobiphenyl	30-115	43-116
S3 (TPH) = Terphenyl-d14	18-137	33-141
S4 (PHL) = Phenol-d5	24-113	10-94

	QC Limits (Soil)	QC Limits (Water)
S5 (2FP)= 2-Fluorophenol	25-121	21-100
S6 (TBP) = 2,4,6-Tribromophenol	19-122	10-123
S7 (2CP) = 2-Chlorophenol-d4	20-130*	33-110*
S8 (DCB) = 1,2-Dichlorobenzene-d4	20-130*	16-110*

DC#:13204C2a
SDG#: HP90&~~HQ69~~

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer:
2nd Reviewer:

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Y N NA Were field duplicate pairs identified in this SDG?
Y N NA Were target analytes detected in the field duplicate pairs?

Compound	Concentration (ug/Kg)		RPD (≤ 50)	
	6	7		
UU	32	42	27	
YY	90	170	62	
ZZ	100	160	46	
CCC	42	59	34	
EEE	25	36	36	
DDD	78	120	42	
GGG	62	72	15	
HHH	38	49	25	
III	47	54	14	
JJJ	20	22	10	

LDC #: 13204D2a **VALIDATION COMPLETENESS WORKSHEET** Date: 3/7/05

SDG #: HQ17 & ~~HQ04~~ Level II Page: 1 of 1

Laboratory: Analytical Resources, Inc. Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/19-20/05
II.	GC/MS Instrument performance check	N	
III.	Initial calibration	N	
IV.	Continuing calibration	N	
V.	Blanks	A	
VI.	Surrogate spikes	SW	
VII.	Matrix spike/Matrix spike duplicates	SW	
VIII.	Laboratory control samples	A	LCS/D, SRM
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	N	
XI.	Target compound identification	N	
XII.	Compound quantitation/CRQLs	N	
XIII.	Tentatively identified compounds (TICs)	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	
XVI.	Field duplicates	N	
XVII.	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples

All soils

1	LDW-SS114-010	11	LDW-SS76-010	21	MB-012805	31	
2	LDW-SS117-010	12	LDW-SS84-010	22		32	
3	LDW-SS13B-010	13	LDW-SS116-010MS	23		33	
4	LDW-SS125-010	14	LDW-SS116-010MSD	24		34	
5	LDW-SS126-010	15		25		35	
6	LDW-SS116-010	16		26		36	
7	LDW-SS127-010	17		27		37	
8	LDW-SS130-010	18		28		38	
9	LDW-SS129-010	19		29		39	
10	LDW-SS118-010	20		30		40	

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

A. Phenol**	P. Bis(2-chloroethoxy)methane	EE. 2,6-Dinitrotoluene	TT. Pentachlorophenol**	III. Benzo(a)pyrene**
B. Bis (2-chloroethyl) ether	Q. 2,4-Dichlorophenol**	FF. 3-Nitroaniline	UU. Phenanthrene	JJJ. Indeno(1,2,3-cd)pyrene
C. 2-Chlorophenol	R. 1,2,4-Trichlorobenzene	GG. Acenaphthene**	VV. Anthracene	KKK. Dibenz(a,h)anthracene
D. 1,3-Dichlorobenzene	S. Naphthalene	HH. 2,4-Dinitrophenol*	WW. Carbazole	LLL. Benzo(g,h,i)perylene
E. 1,4-Dichlorobenzene**	T. 4-Chloroaniline	II. 4-Nitrophenol*	XX. Di-n-butylphthalate	MMM. Bis(2-Chloroisopropyl)ether
F. 1,2-Dichlorobenzene	U. Hexachlorobutadiene**	JJ. Dibenzofuran	YY. Fluoranthene**	NNN. Aniline
G. 2-Methylphenol	V. 4-Chloro-3-methylphenol**	KK. 2,4-Dinitrotoluene	ZZ. Pyrene	OOO. N-Nitrosodimethylamine
H. 2,2'-Oxybis(1-chloropropane)	W. 2-Methylnaphthalene	LL. Diethylphthalate	AAA. Butylbenzylphthalate	PPP. Benzoic Acid
I. 4-Methylphenol	X. Hexachlorocyclopentadiene*	MM. 4-Chlorophenyl-phenyl ether	BBB. 3,3'-Dichlorobenzidine	QQQ. Benzyl alcohol
J. N-Nitroso-di-n-propylamine*	Y. 2,4,6-Trichlorophenol**	NN. Fluorene	CCC. Benzo(a)anthracene	RRR. Pyridine
K. Hexachloroethane	Z. 2,4,5-Trichlorophenol	OO. 4-Nitroaniline	DDD. Chrysene	SSS. Benzidine
L. Nitrobenzene	AA. 2-Chloronaphthalene	PP. 4,6-Dinitro-2-methylphenol	EEE. Bis(2-ethylhexyl)phthalate	TTT.
M. Isophorone	BB. 2-Nitroaniline	QQ. N-Nitrosodiphenylamine (1)**	FFF. Di-n-octylphthalate**	UUU.
N. 2-Nitrophenol**	CC. Dimethylphthalate	RR. 4-Bromophenyl-phenylether	GGG. Benzo(b)fluoranthene	VVV.
O. 2,4-Dimethylphenol	DD. Acenaphthylene	SS. Hexachlorobenzene	HHH. Benzo(k)fluoranthene	WWW.

LDC #: [illegible]
SDG #: HRIT.

VALIDATION FINDINGS WORKSHEET
Surrogate Recovery

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Please see qualification below for all questions answered "N". Not applicable questions are identified as "N/A".

Y (N) N/A Were percent recoveries (%R) for surrogates within QC limits?
Y N (N/A) If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?
Y N (N/A) If any %R was less than 10 percent, was a reanalysis performed to confirm %R?

#	Date	Sample ID	Surrogate	%R (Limits)	Qualifications
		2	TBP	145 (40-130)	No qual.
				( )	
		10	DCB	31.6 (↓)	J/UJ/A (NDMA only)
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	

* QC limits are advisory	QC Limits (Soil)	QC Limits (Water)
S1 (NBZ) = Nitrobenzene-d5	23-120	35-114
S2 (FBP) = 2-Fluorobiphenyl	30-115	43-116
S3 (TPH) = Terphenyl-d14	18-137	33-141
S4 (PHL) = Phenol-d5	24-113	10-94
S5 (2FP)= 2-Fluorophenol	25-121	21-100
S6 (TBP) = 2,4,6-Tribromophenol	19-122	10-123
S7 (2CP) = 2-Chlorophenol-d4	20-130*	33-110*
S8 (DCB) = 1,2-Dichlorobenzene-d4	20-130*	16-110*

LDC #: 13204029
SDG #: HRCT

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Page: 1 of 1
Reviewer: a
2nd Reviewer: [illegible]

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A'.

Y N N/A Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Scil / Water.

Y N N/A Was a MS/MSD analyzed every 20 samples of each matrix?

Y N N/A Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		13/14	ZZ	35T (40-130)	( )	78.0 (≤ 57)	6	Y/M/A*
				( )	( )	( )		* No Final for ZR (5X)
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

	Compound	QC Limits (Soil)	RPD (Soil)	QC Limits (Water)	RPD (Water)		Compound	QC Limits (Soil)	RPD (Soil)	QC Limits (Water)	RPD (Water)
A.	Phenol	26-90%	≤ 35%	12-110%	≤ 42%	GG.	Acenaphthene	31-137%	≤ 19%	46-118%	≤ 31%
C.	2-Chlorophenol	25-102%	≤ 50%	27-123%	≤ 40%	II.	4-Nitrophenol	11-114%	≤ 50%	10-80%	≤ 50%
E.	1,4-Dichlorobenzene	28-104%	≤ 27%	36-97%	≤ 28%	KK.	2,4-Dinitrotoluene	28-89%	≤ 47%	24-96%	≤ 38%
J.	N-Nitroso-di-n-propylamine	41-126%	≤ 38%	41-116%	≤ 38%	TT.	Pentachlorophenol	17-109%	≤ 47%	9-103%	≤ 50%
R.	1,2,4-Trichlorobenzene	38-107%	≤ 23%	39-98%	≤ 28%	ZZ.	Pyrene	35-142%	≤ 36%	26-127%	≤ 31%
V.	4-Chloro-3-methylphenol	26-103%	≤ 33%	23-97%	≤ 42%						

LDC #: 13234A2a **VALIDATION COMPLETENESS WORKSHEET** Date: 3/9/05

SDG #: HQ48 Level II Page: 1 of 1

Laboratory: Analytical Resources, Inc. Reviewer: 9

2nd Reviewer: K

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/24/05
II.	GC/MS Instrument performance check	N	
III.	Initial calibration	N	
IV.	Continuing calibration	N	
V.	Blanks	A	
VI.	Surrogate spikes	SW	
VII.	Matrix spike/Matrix spike duplicates	A	LDW-SS6T-010 (HQ27)
VIII.	Laboratory control samples	~~A~~	LCS, SRM
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	N	
XI.	Target compound identification	N	
XII.	Compound quantitation/CRQLs	N	
XIII.	Tentitatively identified compounds (TICs)	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	
XVI.	Field duplicates	SW	5=2+7. 12+13
XVII.	Field blanks	ND	~~FB-14~~ LDW-SS64-EB

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples

1	LDW-SS17-010	11	LDW-SS142-010	21	LDW-SS28-010	31	MB-020105
2	LDW-SS50-010	12	LDW-SS123-010	22	LDW-SS134-010	32	MB-013105
3	LDW-SS55-010	13	LDW-SS203-010	23	LDW-SS123-010MS	33	~~MB-012905~~
4	LDW-SS72-010	14	~~LDW-SS64-RB~~	24	LDW-SS123-010MSD	34	
5	LDW-SS79-010	15	LDW-SS64-010	25		35	
6	LDW-SS54-010	16	LDW-SS83-010	26		36	
7	LDW-SS202-010	17	LDW-SS36-010	27		37	
8	LDW-SS42-010	18	LDW-SS58-010	28		38	
9	LDW-SS102-010	19	LDW-SS57-010	29		39	
10	LDW-SS128-010	20	LDW-SS56-010	30		40	

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

A. Phenol**	P. Bis(2-chloroethoxy)methane	EE. 2,6-Dinitrotoluene	TT. Pentachlorophenol**	III. Benzo(a)pyrene**
B. Bis (2-chloroethyl) ether	Q. 2,4-Dichlorophenol**	FF. 3-Nitroaniline	UU. Phenanthrene	JJJ. Indeno(1,2,3-cd)pyrene
C. 2-Chlorophenol	R. 1,2,4-Trichlorcbenzene	GG. Acenaphthene**	VV. Anthracene	KKK. Dibenz(a,h)anthracene
D. 1,3-Dichlorobenzene	S. Naphthalene	HH. 2,4-Dinitrophenol*	WW. Carbazole	LLL. Benzo(g,h,i)perylene
E. 1,4-Dichlorobenzene**	T. 4-Chloroaniline	II. 4-Nitrophenol*	XX. Di-n-butylphthalate	MMM. Bis(2-Chloroisopropyl)ether
F. 1,2-Dichlorobenzene	U. Hexachlorobutadiene**	JJ. Dibenzofuran	YY. Fluoranthene**	NNN. Aniline
G. 2-Methylphenol	V. 4-Chloro-3-methylphenol**	KK. 2,4-Dinitrotoluene	ZZ. Pyrene	OOO. N-Nitrosodimethylamine
H. 2,2'-Oxybis(1-chloropropane)	W. 2-Methylnaphthalene	LL. Diethylphthalate	AAA. Butylbenzylphthalate	PPP. Benzoic Acid
I. 4-Methylphenol	X. Hexachlorocyclopentadiene*	MM. 4-Chlorophenyl-phenyl ether	BBB. 3,3'-Dichlorobenzidine	QQQ. Benzyl alcohol
J. N-Nitroso-di-n-propylamine*	Y. 2,4,6-Trichlorophenol**	NN. Fluorene	CCC. Benzo(a)anthracene	RRR. Pyridine
K. Hexachloroethane	Z. 2,4,5-Trichlorophenol	OO. 4-Nitroaniline	DDD. Chrysene	SSS. Benzidine
L. Nitrobenzene	AA. 2-Chloronaphthalene	PP. 4,6-Dinitro-2-methylphenol	EEE. Bis(2-ethylhexyl)phthalate	TTT.
M. Isophorone	BB. 2-Nitroaniline	QQ. N-Nitrosodiphenylamine (1)**	FFF. Di-n-octylphthalate**	UUU.
N. 2-Nitrophenol**	CC. Dimethylphthalate	RR. 4-Bromophenyl-phenylether	GGG. Benzo(b)fluoranthene	VVV.
O. 2,4-Dimethylphenol	DD. Acenaphthylene	SS. Hexachlorobenzene	HHH. Benzo(k)fluoranthene	WWW.

LDC #: [illegible]
SDG #: H848

VALIDATION FINDINGS WORKSHEET
Surrogate Recovery

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Please see qualification below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were percent recoveries (%R) for surrogates within QC limits?
Y N N/A If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?
Y N N/A If any %R was less than 10 percent, was a reanalysis performed to confirm %R?

#	Date	Sample ID	Surrogate	%R (Limits)	Qualifications
		2	DCB	38.8 (16-130)	No qual.
				( )	↓
		12	DCB	39.9 ( )	↓
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
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				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	

* QC limits are advisory	QC Limits (Soil)	QC Limits (Water)
S1 (NBZ) = Nitrobenzene-d5	23-120	35-114
S2 (FBP) = 2-Fluorobiphenyl	30-115	43-116
S3 (TPH) = Terphenyl-d14	18-137	33-141
S4 (PHL) = Phenol-d5	24-113	10-94

	QC Limits (Soil)	QC Limits (Water)
S5 (2FP) = 2-Fluorophenol	25-121	21-100
S6 (TBP) = 2,4,6-Tribromophenol	19-122	10-123
S7 (2CP) = 2-Chlorophenol-d4	20-130*	33-110*
S8 (DCB) = 1,2-Dichlorobenzene-d4	20-130*	16-110*

DC#:13234A2a
SDG#: HQ48

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Y N NA Were field duplicate pairs identified in this SDG?
Y N NA Were target analytes detected in the field duplicate pairs?

Compound	Concentration (ug/Kg)		RPD	
	2	7		
UU	160	430	92	
VV	110	150	31	
YY	270	470	54	
ZZ	670	890	28	
CCC	170	240	34	
EEE	560	560	0	
DDD	300	460	42	
GGG	400	370	8	
HHH	350	410	16	
III	260	300	14	
JJJ	73	80	9	
LLL	61	87	35	

Compound	Concentration (ug/Kg)		RPD	
	12	13		
I	15	30	67	
UU	21	39	60	
YY	48	78	48	
ZZ	57	89	44	
CCC	14	58U	~~200~~ NC	
EEE	31	36	15	
DDD	22	36	48	
GGG	24	32	29	
HHH	27	31	14	
III	15	58U	~~200~~ NC	

LDC #: 13234B2a **VALIDATION COMPLETENESS WORKSHEET** Date: 3/9/05
SDG #: HQ27 & HQ28 Level II Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer:
2nd Reviewer:

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/20/05 - 1/21/05
II.	GC/MS Instrument performance check	N	
III.	Initial calibration	N	
IV.	Continuing calibration	N	
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples	A	LCS/D, SRM
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	N	
XI.	Target compound identification	N	
XII.	Compound quantitation/CRQLs	N	
XIII.	Tentitatively identified compounds (TICs)	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	
XVI.	Field duplicates	N	
XVII.	Field blanks	ND	~~RB=12~~ RB=LDW-SS43-RB

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples

1	LDW-SS43-010	11	LDW-SS75-010	21	~~MB01=805~~	31	
2	LDW-SS44-010	~~12~~	~~LDW-SS43-RB~~	22	MB-013105	32	
3	LDW-SS87-010	13	LDW-SS101-010	23	MB-012805	33	
4	LDW-SS94-010	14	LDW-SS67-010MS	24		34	
5	LDW-SS96-010	15	LDW-SS67-010MSD	25		35	
6	LDW-SS97-010	16		26		36	
7	LDW-SS31-010	17		27		37	
8	LDW-SS67-010	18		28		38	
9	LDW-SS63-010	19		29		39	
10	LDW-SS70-010	20		30		40	

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

A. Phenol**	P. Bis(2-chloroethoxy)methane	EE. 2,6-Dinitrotoluene	TT. Pentachlorophenol**	III. Benzo(a)pyrene**
B. Bis (2-chloroethyl) ether	Q. 2,4-Dichlorophenol**	FF. 3-Nitroaniline	UU. Phenanthrene	JJJ. Indeno(1,2,3-cd)pyrene
C. 2-Chlorophenol	R. 1,2,4-Trichlorobenzene	GG. Acenaphthene**	VV. Anthracene	KKK. Dibenz(a,h)anthracene
D. 1,3-Dichlorobenzene	S. Naphthalene	HH. 2,4-Dinitrophenol*	WW. Carbazole	LLL. Benzo(g,h,i)perylene
E. 1,4-Dichlorobenzene**	T. 4-Chloroaniline	II. 4-Nitrophenol*	XX. Di-n-butylphthalate	MMM. Bis(2-Chloroisopropyl)ether
F. 1,2-Dichlorobenzene	U. Hexachlorobutadiene**	JJ. Dibenzofuran	YY. Fluoranthene**	NNN. Aniline
G. 2-Methylphenol	V. 4-Chloro-3-methylphenol**	KK. 2,4-Dinitrotoluene	ZZ. Pyrene	OOO. N-Nitrosodimethylamine
H. 2,2'-Oxybis(1-chloropropane)	W. 2-Methylnaphthalene	LL. Diethylphthalate	AAA. Butylbenzylphthalate	PPP. Benzoic Acid
I. 4-Methylphenol	X. Hexachlorocyclopentadiene*	MM. 4-Chlorophenyl-phenyl ether	BBB. 3,3'-Dichlorobenzidine	QQQ. Benzyl alcohol
J. N-Nitroso-di-n-propylamine*	Y. 2,4,6-Trichlorophenol**	NN. Fluorene	CCC. Benzo(a)anthracene	RRR. Pyridine
K. Hexachloroethane	Z. 2,4,5-Trichlorophenol	OO. 4-Nitroaniline	DDD. Chrysene	SSS. Benzidine
L. Nitrobenzene	AA. 2-Chloronaphthalene	PP. 4,6-Dinitro-2-methylphenol	EEE. Bis(2-ethylhexyl)phthalate	TTT.
M. Isophorone	BB. 2-Nitroaniline	QQ. N-Nitrosodiphenylamine (1)**	FFF. Di-n-octylphthalate**	UUU.
N. 2-Nitrophenol**	CC. Dimethylphthalate	RR. 4-Bromophenyl-phenylether	GGG. Benzo(b)fluoranthene	VVV.
O. 2,4-Dimethylphenol	DD. Acenaphthylene	SS. Hexachlorobenzene	HHH. Benzo(k)fluoranthene	WWW.

LDC #: 15234I5D4

SDG #: HQ27&HQ28

VALIDATION FINDINGS WORKSHEET
Surrogate Recovery

Page: 1 of 1
Reviewer: 9
2nd Reviewer: [illegible]

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Please see qualification below for all questions answered "N". Not applicable questions are identified as "N/A".

Y [✓ N] N/A Were percent recoveries (%R) for surrogates within QC limits?

Y N [✓ N/A] If 2 or more base neutra or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?

Y N [✓ N/A] If any %R was less than 10 percent, was a reanalysis performed to confirm %R?

#	Date	Sample ID	Surrogate	%R (Limits)	Qualifications
		10	PHL	33.2 (40-130)	No Qual
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	

* QC limits are advisory	QC Limits (Soil)	QC Limits (Water)		QC Limits (Soil)	QC Limits (Water)
S1 (NBZ) = Nitrobenzene-d5	23-120	35-114	S5 (2FP) = 2-Fluorophenol	25-121	21-100
S2 (FBP) = 2-Fluorobiphenyl	30-115	43-116	S6 (TBP) = 2,4,6-Tribromophenol	19-122	10-123
S3 (TPH) = Terphenyl-d14	18-137	33-141	S7 (2CP) = 2-Chlorophenol-d4	20-130*	33-110*
S4 (PHL) = Phenol-d5	24-113	10-94	S8 (DCB) = 1,2-Dichlorobenzene-d4	20-130*	16-110*

LDC #: 13234B29
SDG #: HQ27 & HQ28

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Page: 1 of 1
Reviewer: 9
2nd Reviewer: K

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A'.

(Y) N N/A Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Scil / Water.

(Y) N N/A Was a MS/MSD analyzed every 20 samples of each matrix?

Y (N) N/A Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		LDW-SS116-010	22	35 (40-130)	( )	78.0 (≤ 50)	None	No Qual
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

	Compound	QC Limits (Soil)	RPD (Soil)	QC Limits (Water)	RPD (Water)		Compound	QC Limits (Soil)	RPD (Soil)	QC Limits (Water)	RPD (Water)
A.	Phenol	26-90%	≤ 35%	12-110%	≤ 42%	GG.	Acenaphthene	31-137%	≤ 19%	46-118%	≤ 31%
C.	2-Chlorophenol	25-102%	≤ 50%	27-123%	≤ 40%	II.	4-Nitrophenol	11-114%	≤ 50%	10-80%	≤ 50%
E.	1,4-Dichlorobenzene	28-104%	≤ 27%	36-97%	≤ 28%	KK.	2,4-Dinitrotoluene	28-89%	≤ 47%	24-96%	≤ 38%
J.	N-Nitroso-di-n-propylamine	41-126%	≤ 38%	41-116%	≤ 38%	TT.	Pentachlorophenol	17-109%	≤ 47%	9-103%	≤ 50%
R.	1,2,4-Trichlorobenzene	38-107%	≤ 23%	39-98%	≤ 28%	ZZ.	Pyrene	35-142%	≤ 36%	26-127%	≤ 31%
V.	4-Chloro-3-methylphenol	26-103%	≤ 33%	23-97%	≤ 42%						

LDC #: 13234E2a **VALIDATION COMPLETENESS WORKSHEET** Date: 3/9/05

SDG #: HQ56 & HQ57 Level II Page: 1 of 1

Laboratory: Analytical Resources, Inc. Reviewer: 9

2nd Reviewer: M

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/25 - 26/05
II.	GC/MS Instrument performance check	N	
III.	Initial calibration	N	
IV.	Continuing calibration	N	
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	SW	
VIII.	Laboratory control samples	~~SW~~ A	LCS. SRM
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	N	
XI.	Target compound identification	N	
XII.	Compound quantitation/CRQLs	N	
XIII.	Tentitatively identified compounds (TICs)	N	
XIV.	System performance	N	
XV.	Overall assessment of data	SW	
XVI.	Field duplicates	N	
XVII.	Field blanks	ND	~~FB~~ LDW-SS110-RB

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples

1	~~LDW-SS110-RB~~ W	11	LDW-SS33-010 Sed	21	MB-020405 S	31	
2	LDW-SS52-010 Sed	12	LDW-SS49-010	22	~~MB-012905~~ W	32	
3	LDW-SS92-010	13	LDW-SS143-010	23		33	
4	LDW-SS104-010	14	LDW-SS92-010MS	24		34	
5	LDW-SS110-010	15	LDW-SS92-010MSD	25		35	
6	LDW-SS109-010	16		26		36	
7	LDW-SS115-010	17		27		37	
8	LDW-SS121-010	18		28		38	
9	LDW-SS88-010	19		29		39	
10	LDW-SS88-010DL	20		30		40	

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

A. Phenol**	P. Bis(2-chloroethoxy)methane	EE. 2,6-Dinitrotoluene	TT. Pentachlorophenol**	III. Benzo(a)pyrene**
B. Bis (2-chloroethyl) ether	Q. 2,4-Dichlorophenol**	FF. 3-Nitroaniline	UU. Phenanthrene	JJJ. Indeno(1,2,3-cd)pyrene
C. 2-Chlorophenol	R. 1,2,4-Trichlorobenzene	GG. Acenaphthene**	VV. Anthracene	KKK. Dibenz(a,h)anthracene
D. 1,3-Dichlorobenzene	S. Naphthalene	HH. 2,4-Dinitrophenol*	WW. Carbazole	LLL. Benzo(g,h,i)perylene
E. 1,4-Dichlorobenzene**	T. 4-Chloroaniline	II. 4-Nitrophenol*	XX. Di-n-butylphthalate	MMM. Bis(2-Chloroisopropyl)ether
F. 1,2-Dichlorobenzene	U. Hexachlorobutadiene**	JJ. Dibenzofuran	YY. Fluoranthene**	NNN. Aniline
G. 2-Methylphenol	V. 4-Chloro-3-methylphenol**	KK. 2,4-Dinitrotoluene	ZZ. Pyrene	OOO. N-Nitrosodimethylamine
H. 2,2'-Oxybis(1-chloropropane)	W. 2-Methylnaphthalene	LL. Diethylphthalate	AAA. Butylbenzylphthalate	PPP. Benzoic Acid
I. 4-Methylphenol	X. Hexachlorocyclopentadiene*	MM. 4-Chlorophenyl-phenyl ether	BBB. 3,3'-Dichlorobenzidine	QQQ. Benzyl alcohol
J. N-Nitroso-di-n-propylamine*	Y. 2,4,6-Trichlorophenol**	NN. Fluorene	CCC. Benzo(a)anthracene	RRR. Pyridine
K. Hexachloroethane	Z. 2,4,5-Trichlorophenol	OO. 4-Nitroaniline	DDD. Chrysene	SSS. Benzidine
L. Nitrobenzene	AA. 2-Chloronaphthalene	PP. 4,6-Dinitro-2-methylphenol	EEE. Bis(2-ethylhexyl)phthalate	TTT.
M. Isophorone	BB. 2-Nitroaniline	QQ. N-Nitrosodiphenylamine (1)**	FFF. Di-n-octylphthalate**	UUU.
N. 2-Nitrophenol**	CC. Dimethylphthalate	RR. 4-Bromophenyl-phenylether	GGG. Benzo(b)fluoranthene	VVV.
O. 2,4-Dimethylphenol	DD. Acenaphthylene	SS. Hexachlorobenzene	HHH. Benzo(k)fluoranthene	WWW.

LDC #: 13234229
SDG #: HQ56 & HQ5T

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Page: 1 of 1
Reviewer: Q
2nd Reviewer: R

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.

(Y) N N/A Was a MS/MSD analyzed every 20 samples of each matrix?

Y (N) N/A Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		14/15 (3X)	22	T90 (40-130)	199 (40-130)	94.6 (≤50)	3	J/UJ/A*
				( )	( )	( )		
				( )	( )	( )		*only RPD
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

	Compound	QC Limits (Soil)	RPD (Soil)	QC Limits (Water)	RPD (Water)		Compound	QC Limits (Soil)	RPD (Soil)	QC Limits (Water)	RPD (Water)
A.	Phenol	26-90%	≤ 35%	12-110%	≤ 42%	GG.	Acenaphthene	31-137%	≤ 19%	46-118%	≤ 31%
C.	2-Chlorophenol	25-102%	≤ 50%	27-123%	≤ 40%	II.	4-Nitrophenol	11-114%	≤ 50%	10-80%	≤ 50%
E.	1,4-Dichlorobenzene	28-104%	≤ 27%	36-97%	≤ 28%	KK.	2,4-Diritrotoluene	28-89%	≤ 47%	24-96%	≤ 38%
J.	N-Nitroso-di-n-propylamine	41-126%	≤ 38%	41-116%	≤ 38%	TT.	Pentachlorophenol	17-109%	≤ 47%	9-103%	≤ 50%
R.	1,2,4-Trichlorobenzene	38-107%	≤ 23%	39-98%	≤ 28%	ZZ.	Pyrene	35-142%	≤ 36%	26-127%	≤ 31%
V.	4-Chloro-3-methylphenol	26-103%	≤ 33%	23-97%	≤ 42%						

LDC #: 13234229
SDG #: #8568 HRST

VALIDATION FINDINGS WORKSHEET
Overall Assessment of Data

Page: 1 of 1
Reviewer: R
2nd Reviewer: R

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

All available information pertaining to the data were reviewed using professional judgement to compliment the determination of the overall quality of the data.

Y N N/A Was the overall quality and usability of the data acceptable?

#	Date	Sample ID	Finding	Associated Samples	Qualifications
		9	~~All except A, GG, NN~~ WW, VV		
		9	~~All except GGG~~ → LLL (IS out)	9	R/A
		10	All except ~~GGG~~ → LLL (high RLs)	10	✓

Comments: _____

OVR.2S

LDC #: 13298A2a **VALIDATION COMPLETENESS WORKSHEET** Date: 3/24/05

SDG #: HQ93 Level II Page: 1 of 1

Laboratory: Analytical Resources, Inc. Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/28/05
II.	GC/MS Instrument performance check	N	
III.	Initial calibration	N	
IV.	Continuing calibration	N	
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	SW	LDW-SS92-010 (HQ56C)
VIII.	Laboratory control samples	A	LCS
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	N	
XI.	Target compound identification	N	
XII.	Compound quantitation/CRQLs	N	
XIII.	Tentitatively identified compounds (TICs)	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	
XVI.	Field duplicates	N	
XVII.	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples

1	LDW-SSCR20-010 Sed	11		21		31	
2	LDW-SSCR23-010	12		22		32	
3	LDW-MSMP43-010	13		23		33	
4	MB-020405	14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

A. Phenol**	P. Bis(2-chloroethoxy)methane	EE. 2,6-Dinitrotoluene	TT. Pentachlorophenol**	III. Benzo(a)pyrene**
B. Bis (2-chloroethyl) ether	Q. 2,4-Dichlorophenol**	FF. 3-Nitroaniline	UU. Phenanthrene	JJJ. Indeno(1,2,3-cd)pyrene
C. 2-Chlorophenol	R. 1,2,4-Trichlorobenzene	GG. Acenaphthene**	VV. Anthracene	KKK. Dibenz(a,h)anthracene
D. 1,3-Dichlorobenzene	S. Naphthalene	HH. 2,4-Dinitrophenol*	WW. Carbazole	LLL. Benzo(g,h,i)perylene
E. 1,4-Dichlorobenzene**	T. 4-Chloroaniline	II. 4-Nitrophenol*	XX. Di-n-butylphthalate	MMM. Bis(2-Chloroisopropyl)ether
F. 1,2-Dichlorobenzene	U. Hexachlorobutadiene**	JJ. Dibenzofuran	YY. Fluoranthene**	NNN. Aniline
G. 2-Methylphenol	V. 4-Chloro-3-methylphenol**	KK. 2,4-Dinitrotoluene	ZZ. Pyrene	OOO. N-Nitrosodimethylamine
H. 2,2'-Oxybis(1-chloropropane)	W. 2-Methylnaphthalene	LL. Diethylphthalate	AAA. Butylbenzylphthalate	PPP. Benzoic Acid
I. 4-Methylphenol	X. Hexachlorocyclopentadiene*	MM. 4-Chlorophenyl-phenyl ether	BBB. 3,3'-Dichlorobenzidine	QQQ. Benzyl alcohol
J. N-Nitroso-di-n-propylamine*	Y. 2,4,6-Trichlorophenol**	NN. Fluorene	CCC. Benzo(a)anthracene	RRR. Pyridine
K. Hexachloroethane	Z. 2,4,5-Trichlorophenol	OO. 4-Nitroaniline	DDD. Chrysene	SSS. Benzidine
L. Nitrobenzene	AA. 2-Chloronaphthalene	PP. 4,6-Dinitro-2-methylphenol	EEE. Bis(2-ethylhexyl)phthalate	TTT.
M. Isophorone	BB. 2-Nitroaniline	QQ. N-Nitrosodiphenylamine (1)**	FFF. Di-n-octylphthalate**	UUU.
N. 2-Nitrophenol**	CC. Dimethylphthalate	RR. 4-Bromophenyl-phenylether	GGG. Benzo(b)fluoranthene	VVV.
O. 2,4-Dimethylphenol	DD. Acenaphthylene	SS. Hexachlorobenzene	HHH. Benzo(k)fluoranthene	WWW.

LDC #: 13298A29
SDG #: H893

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Page: 1 of 1
Reviewer: 9
2nd Reviewer: DC

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.

(Y) N N/A Was a MS/MSD analyzed every 20 samples of each matrix?

Y (N) N/A Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		LDW-3592-010	22	790 (40-130)	199 (40-130)	946 (≤ 50)	None	No Qual
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

	Compound	QC Limits (Soil)	RPD (Soil)	QC Limits (Water)	RPD (Water)		Compound	QC Limits (Soil)	RPD (Soil)	QC Limits (Water)	RPD (Water)
A.	Phenol	26-90%	≤ 35%	12-110%	≤ 42%	GG.	Acenaphthene	31-137%	≤ 19%	46-113%	≤ 31%
C.	2-Chlorophenol	25-102%	≤ 50%	27-123%	≤ 40%	II.	4-Nitrophenol	11-114%	≤ 50%	10-80%	≤ 50%
E.	1,4-Dichlorobenzene	28-104%	≤ 27%	35-97%	≤ 28%	KK.	2,4-Diritrotoluene	28-89%	≤ 47%	24-96%	≤ 38%
J.	N-Nitroso-di-n-propylamine	41-126%	≤ 38%	41-116%	≤ 38%	TT.	Pentachlorophenol	17-109%	≤ 47%	9-103%	≤ 50%
R.	1,2,4-Trichlorobenzene	38-107%	≤ 23%	39-98%	≤ 28%	ZZ.	Pyrene	35-142%	≤ 36%	26-127%	≤ 31%
V.	4-Chloro-3-methylphenol	26-103%	≤ 33%	23-97%	≤ 42%						

LDC #: 13204A2b **VALIDATION COMPLETENESS WORKSHEET** Date: 3/10/05

SDG #: HP67 Level ~~II~~ IV Page: 1 of 1

Laboratory: Analytical Resources, Inc. Reviewer: 2

2nd Reviewer: M

METHOD: GC/MS ~~Polynuclear Aromatic Hydrocarbons~~ SVOA (EPA SW 846 Method 8270C) ~~SIM~~

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/17/05
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	~~A~~ N	
IV.	Continuing calibration	~~A~~ N	
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples	A	LCS. SRM
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	A	
XI.	Target compound identification	A	
XII.	Compound quantitation/CRQLs	A	
XIII.	Tentitatively identified compounds (TICs)	N	
XIV.	System performance	A	
XV.	Overall assessment of data	A	
XVI.	Field duplicates	N	
XVII.	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples

1	LDW-SS4-010 sed	11	MB-012605	21		31	
2	LDW-SS10-010	12		22		32	
3	LDW-SS14-010	13		23		33	
4	LDW-SS22-010	14		24		34	
5	LDW-SS10-010MS	15		25		35	
6	LDW-SS10-010MSD	16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

LDC #: 13204A-b
SDG #: HP67

VALIDATION FINDINGS CHECKLIST

Reviewer: 9
2nd Reviewer: K

Method: Semivolatiles (EPA SW 846 Method 8270C)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. GC/MS Instrument performance check				
Were the DFTPP performance results reviewed and found to be within the specified criteria?	✓			
Were all samples analyzed within the 12 hour clock criteria?	✓			
III. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	✓			
Was a curve fit used for evaluation? If Yes, what was the acceptance criteria used?		✓		
Did the initial calibration meet the curve fit acceptance criteria?			✓	
Were all percent relative standard deviations (%RSD) $\leq$ 30% and relative response factors (RRF) $\geq$ 0.05?		✓		
IV. Continuing calibration				
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?	✓			
Were all percent differences (%D) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	✓			
Were all percent differences (%D) $\leq$ 25% and relative response factors (RRF) $\geq$ 0.05?		✓		
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Surrogate spikes				
Were all surrogate %R within QC limits?	✓			
If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?			✓	
If any %R was less than 10 percent, was a reanalysis performed to confirm %R?			✓	
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.	✓			
Was a MS/MSD analyzed every 20 samples of each matrix?	✓			

LDC #: 13204A2b
SDG #: HP67

VALIDATION FINDINGS CHECKLIST

Reviewer: 9
2nd Reviewer: K

Validation Area	Yes	No	NA	Findings/Comments
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	✓			
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
X. Internal standards				
Were internal standard area counts within -50% or +100% of the associated calibration standard?	✓			
Were retention times within ± 30 seconds from the associated calibration standard?	✓			
XI. Target compound identification				
Were relative retention times (RRT's) within ± 0.06 RRT units of the standard?	✓			
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	✓			
Were chromatogram peaks verified and accounted for?	✓			
XII. Compound quantitation/CRQLs				
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	✓			
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XIII. Tentatively identified compounds (TICs)				
Were the major ions (> 10 percent relative intensity) in the reference spectrum evaluated in sample spectrum?			✓	
Were relative intensities of the major ions within ± 20% between the sample and the reference spectra?			✓	
Did the raw data indicate that the laboratory performed a library search for all required peaks in the chromatograms (samples and blanks)?		✓		
XIV. System performance				
System performance was found to be acceptable.	✓			
XV. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			

Validation Area	Yes	No	NA	Findings/Comments
XVI. Field duplicates				
Field duplicate pairs were identified in this SDG.		✓		
Target compounds were detected in the field duplicates.			✓	
XVII. Field blanks				
Field blanks were identified in this SDG.		✓		
Target compounds were detected in the field blanks.			✓	

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

A. Phenol**	P. Bis(2-chloroethoxy)methane	EE. 2,6-Dinitrotoluene	TT. Pentachlorophenol**	III. Benzo(a)pyrene**
B. Bis (2-chloroethyl) ether	Q. 2,4-Dichlorophenol**	FF. 3-Nitroaniline	UU. Phenanthrene	JJJ. Indeno(1,2,3-cd)pyrene
C. 2-Chlorophenol	R. 1,2,4-Trichlorobenzene	GG. Acenaphthene**	VV. Anthracene	KKK. Dibenz(a,h)anthracene
D. 1,3-Dichlorobenzene	S. Naphthalene	HH. 2,4-Dinitrophenol*	WW. Carbazole	LLL. Benzo(g,h,i)perylene
E. 1,4-Dichlorobenzene**	T. 4-Chloroaniline	II. 4-Nitrophenol*	XX. Di-n-butylphthalate	MMM. Bis(2-Chloroisopropyl)ether
F. 1,2-Dichlorobenzene	U. Hexachlorobutadiene**	JJ. Dibenzofuran	YY. Fluoranthene**	NNN. Aniline
G. 2-Methylphenol	V. 4-Chloro-3-methylphenol**	KK. 2,4-Dinitrotoluene	ZZ. Pyrene	OOO. N-Nitrosodimethylamine
H. 2,2'-Oxybis(1-chloropropane)	W. 2-Methylnaphthalene	LL. Diethylphthalate	AAA. Butylbenzylphthalate	PPP. Benzoic Acid
I. 4-Methylphenol	X. Hexachlorocyclopentadiene*	MM. 4-Chlorophenyl-phenyl ether	BBB. 3,3'-Dichlorobenzidine	QQQ. Benzyl alcohol
J. N-Nitroso-di-n-propylamine*	Y. 2,4,6-Trichlorophenol**	NN. Fluorene	CCC. Benzo(a)anthracene	RRR. Pyridine
K. Hexachloroethane	Z. 2,4,5-Trichlorophenol	OO. 4-Nitroaniline	DDD. Chrysene	SSS. Benzidine
L. Nitrobenzene	AA. 2-Chloronaphthalene	PP. 4,6-Dinitro-2-methylphenol	EEE. Bis(2-ethylhexyl)phthalate	TTT.
M. Isophorone	BB. 2-Nitroaniline	QQ. N-Nitrosodiphenylamine (1)**	FFF. Di-n-octylphthalate**	UUU.
N. 2-Nitrophenol**	CC. Dimethylphthalate	RR. 4-Bromophenyl-phenylether	GGG. Benzo(b)fluoranthene	VVV.
O. 2,4-Dimethylphenol	DD. Acenaphthylene	SS. Hexachlorobenzene	HHH. Benzo(k)fluoranthene	WWW.

LDC #: 13204A2b
SDG #: HP6T
METHOD: GC/MS BNA (EPA SW 846 Method 8270)

VALIDATION FINDINGS WORKSHEET
Initial Calibration

Page: 1 of 1
Reviewer: 9
2nd Reviewer: R

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

- (Y) N N/A — Did the laboratory conduct an acceptable 5 point calibration prior to sample analysis?
- (Y) N N/A — Were percent relative standard deviations (%RSD) and relative response factors (RRF) within method criteria for all CCC's and SPCC's?
- Y (N) N/A — Was a curve fit used for evaluation? If yes, what was the acceptance criteria used for evaluation?________
- Y N (N/A) — Did the initial calibration meet the acceptance criteria?
- Y (N) N/A — Were all %RSDs and RRFs within the validation criteria of ≤30 %RSD and ≥0.05 RRF ?

#	Date	Standard ID	Compound	Finding %RSD (Limit: ≤30.0%)	Finding RRF (Limit: ≥0.05)	Associated Samples	Qualifications
	1/29/05	ICAL	PPP	39.2		All + Blk	J/UJ/A

LDC #: 13204B2b
SDG #: HP6T
METHOD: GC/MS BNA (EPA SW 846 Method 8270)

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

Page: 1 of 1
Reviewer: 9
2nd Reviewer: AC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y (N) N/A Was a continuing calibration standard analyzed at least once every 12 hours of sample analysis for each instrument?
Y (N) N/A Were percent differences (%D) and relative response factors (RRF) within method criteria for all CCC's and SPCC's ?
Y (N) N/A Were all %D and RRFs within the validation criteria of ≤25 %D and ≥0.05 RRF ?

#	Date	Standard ID	Compound	Finding %D (Limit: ≤25.0%)	Finding RRF (Limit: ≥0.05)	Associated Samples	Qualifications
	1/31/05	CC0131	PPP	39.3		~~All~~ NB, 2-6	J/UJ/A
	2/1/05	CC0201	PPP	37.2		1	J/UJ/A

CONCAL.2S

LDC #: 13204A2v
SDG #: H76T

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: 0K

METHOD: GC/MS BNA (EPA SW 846 Method 3270)

The Relative Response Factor (RRF), average RRF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

RRF = $(A_x)(C_{is})/(A_{is})(C_x)$
average RRF = sum of the RRFs/number of standards
%RSD = 100 * (S/X)

A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard
S = Standard deviation of the RRFs, X = Mean of the RRFs

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Reported RRF (2.5 std)	Recalculated RRF (2.5 std)	Reported Average RRF (Initial)	Recalculated Average RRF (Initial)	Reported %RSD	Recalculated %RSD
1	ICAL	1/29/05	~~Phenol~~ (1st internal standard) E	1.429	1.429	1.397	1.397	2.5	2.5
			~~Naphthalene~~ (2nd internal standard) K	0.302	0.302	0.303	0.303	2.0	2.0
			~~Fluorene~~ (3rd internal standard) LL	1.114	1.114	1.162	1.162	5.9	5.9
			Pentachlorophenol (4th internal standard)	0.142	0.142	0.129	0.129	18.5	18.5
			~~Bis(2-ethylhexyl)phthalate~~ (5th internal standard) CC C	1.241	1.241	1.225	1.225	2.0	2.0
			Benzo(a)pyrene (6th internal standard)	1.058	1.058	1.061	1.061	3.7	3.7
2			Phenol (1st internal standard)						
			Naphthalene (2nd internal standard)						
			Fluorene (3rd internal standard)						
			Pentachlorophenol (4th internal standard)						
			Bis(2-ethylhexyl)phthalate (5th internal standard)						
			Benzo(a)pyrene (6th internal standard)						
3			Phenol (1st internal standard)						
			Naphthalene (2nd internal standard)						
			Fluorene (3rd internal standard)						
			Pentachlorophenol (4th internal standard)						
			Bis(2-ethylhexyl)phthalate (5th internal standard)						
			Benzo(a)pyrene (6th internal standard)						

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: B20483b
SDG #: HP67

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Reviewer: 9
2nd Reviewer: ac

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
RRF = $(A_x)(C_{is})/(A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Average RRF (Initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported %D	Recalculated %D
1	CC129A	1/29/05	Phenol (1st internal standard)					
			Naphthalene (2nd internal standard)					
			Fluorene (3rd internal standard)	see 1c				
			Pentachlorophenol (4th internal standard)					
			Bis(2-ethylhexyl)phthalate (5th internal standard)					
			Benzo(a)pyrene (6th internal standard)					
2	CC131	1/31/05	~~Phenol~~ (1st internal standard) E	1.397	1.379	1.379	1.3	1.3
			~~Naphthalene~~ (2nd internal standard) R	0.303	0.300	0.300	1.0	1.0
			~~Fluorene~~ (3rd internal standard) LL	1.162	1.128	1.128	2.9	2.9
			Pentachlorophenol (4th internal standard)	0.129	0.134	0.134	3.9	3.5
			Bis(2-ethylhexy)phthalate (5th internal standard) CC	1.225	1.226	1.226	0.1	0.1
			Benzo(a)pyrene (6th internal standard)	1.061	1.056	1.056	0.5	0.5
3	CC0201	2/1/05	~~Phenol~~ (1st internal standard) E	1.397	1.380	1.380	1.2	1.2
			~~Naphthalene~~ (2nd internal standard) R	0.303	0.305	0.305	0.7	0.7
			~~Fluorene~~ (3rd internal standard) LL	1.162	1.108	1.108	4.6	4.6
			Pentachlorophenol (4th internal standard)	0.129	0.139	0.139	7.8	7.7
			~~Bis(2-ethylhexyl)phthalate~~ (5th internal standard) CC	1.225	1.272	1.272	3.8	3.8
			Benzo(a)pyrene (6th internal standard)	1.061	1.058	1.058	0.3	0.3

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204B2b
SDG #: HPGT

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Page: 1 of 1
Reviewer: 9
2nd reviewer: SK

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270)

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: 1

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5	2.5	1.14473	45.6	45.8	0.2
2-Fluorobiphenyl	↓	1.26450	50.4	50.6	0.2
Terphenyl-d14	↓	1.53774	61.6	61.5	0.1
Phenol-d5	3.75	1.91626	51.2	51.1	0.1
2-Fluorophenol	↓	1.78516	47.7	47.6	0.1
2,4,6-Tribromophenol	↓	2.43437	64.8	64.9	0.1
2-Chlorophenol-d4	↓	1.81981	48.5	48.5	0
1,2-Dichlorobenzene-d4	2.5	1.08092	43.2	43.2	0

Sample ID: _____

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

Sample ID: _____

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

LDC #: 13204A7b
SDG #: HP67

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Page: 6 of 7
Reviewer: 9
2nd Reviewer: R

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SSC - SC)/SA Where: SSC = Spiked sample concentration; SA = Spike added; SC = Sample concentation

RPD = | MS - MSD | * 2/(MS + MSD) MS = Matrix spike percent recovery; MSD = Matrix spike duplicate percent recovery

MS/MSD samples: 5/6

Compound	Spike Added (MS)		Sample Concentration (MS)	Spiked Sample Concentration (MS)		Matrix Spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	------	MS	MSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
Phenol											
2-Chlorophenol											
1,4-Dichlorobenzene	340	341	ND	200	210	58.8	58.8	61.6	61.6	4.9	4.9
N-Nitroso-di-n-propylamine	340	341	↓	211	210	62.1	62.1	~~34~~ 61.6	61.6	0.5	0.5
1,2,4-Trichlorobenzene	340	341	↓	231	225	67.9	67.9	66.0	66.0	2.6	2.6
4-Chloro-3-methylphenol											
Acenaphthene											
4-Nitrophenol											
2,4-Dinitrotoluene											
Pentachlorophenol	510	511	ND	508	~~454~~	99.6	99.6	88.8	88.8	11.2	11.2
Pyrene											

Comments: Refer to Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204A2b
SDG #: HP67

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

Reviewer: 9
2nd Reviewer: [illegible]

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SC/SA Where: SSC = Spike concertration; SA = Spike added

RPD = I LCS - LCSD I * 2/(LCS + LCSD) LCS = Laboratory ccntrol sample percent recovery LCSD = Laboratory control sample duplicate percent recovery

LCS/LCSD samples: LCS-012605

Compound	Spike Added (ug/L)		Spike Concentration (ug/L)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
Phenol										
2-Chlorophenol										
1,4-Dichlorobenzene	167	NA	107	NA	64.1	64.1				
N-Nitroso-di-n-propylamine	↓	↓	111	↓	66.5	66.5				
1,2,4-Trichlorobenzene	↓	↓	111	↓	66.5	66.5				
4-Chloro-3-methylphenol										
Acenaphthene										
4-Nitrophenol										
2,4-Dinitrotoluene										
Pentachlorophenol	250	NA	161	NA	64.4	64.4				
Pyrene										

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204A2b
SDG #: HP6T

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: 9
2nd reviewer: DV

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

(Y) N N/A Were all reported results recalculated and verified for all level IV samples?
(Y) N N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

$$\text{Concentration} = \frac{(A_x)(I_s)(V_t)(DF)(2.0)}{(A_{is})(RRF)(V_o)(V_i)(\%S)}$$

A_x	=	Area of the characteristic ion (EICP) for the compound to be measured
A_{is}	=	Area of the characteristic ion (EICP) for the specific internal standard
I_s	=	Amount of internal standard added in nanograms (ng)
V_o	=	Volume or weight of sample extract in milliliters (ml) or grams (g).
V_i	=	Volume of extract injected in microliters (ul)
V_t	=	Volume of the concentrated extract in microliters (ul)
Df	=	Dilution Factor.
%S	=	Percent solids, applicable to soil and solid matrices only.
2.0	=	Factor of 2 to account for GPC cleanup

Example:

Sample I.D. 1, 1 1 1:

Conc. = $\frac{(611)(94)(2)(520)(1)(\quad)}{(758685)(1.061)(3.39)(1)(\quad)}$

= 187.4 ug/kg

#	Sample ID	Compound	Reported Concentration ( )	Calculated Concentration ( )	Qualification

LDC #: 13204B2b **VALIDATION COMPLETENESS WORKSHEET** Date: 3/10/05
SDG #: HP70 Level II / V Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: 9
2nd Reviewer: 9

METHOD: GC/MS ~~Polynuclear Aromatic Hydrocarbons~~ SVOA (EPA SW 846 Method 8270C) ~~SIM~~

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 11/18/05
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A/N	
IV.	Continuing calibration	A/N	
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A	LDW-SS10-010
VIII.	Laboratory control samples	A	LCS, SRM
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	A	
XI.	Target compound identification	A	
XII.	Compound quantitation/CRQLs	A	
XIII.	Tentitatively identified compounds (TICs)	N	
XIV.	System performance	A	
XV.	Overall assessment of data	SW	
XVI.	Field duplicates	SW	D = 3+4
XVII.	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples

1	LDW-SS23-010 sed	11	MB-012605	21		31	
2	LDW-SS26-010	12		22		32	
3	LDW-SS27-010	13		23		33	
4	LDW-SS200-010	14		24		34	
5	LDW-SS37-010	15		25		35	
6	LDW-SS37-010DL	16		26		36	
7	LDW-SS38-010	17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

LDC #: 13204B26
SDG #: HP70

VALIDATION FINDINGS CHECKLIST

Page: 1 of 3
Reviewer: 9
2nd Reviewer: 5

Method: Semivolatiles (EPA SW 846 Method 8270C)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. GC/MS Instrument performance check				
Were the DFTPP performance results reviewed and found to be within the specified criteria?	✓			
Were all samples analyzed within the 12 hour clock criteria?	✓			
III. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	✓			
Was a curve fit used for evaluation? If Yes, what was the acceptance criteria used?		✓		
Did the initial calibration meet the curve fit acceptance criteria?			✓	
Were all percent relative standard deviations (%RSD) $\leq$ 30% and relative response factors (RRF) $\geq$ 0.05?		✓		
IV. Continuing calibration				
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?	✓			
Were all percent differences (%D) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	✓			
Were all percent differences (%D) $\leq$ 25% and relative response factors (RRF) $\geq$ 0.05?	✓	✓		
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Surrogate spikes				
Were all surrogate %R within QC limits?	✓			
If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?			✓	
If any %R was less than 10 percent, was a reanalysis performed to confirm %R?			✓	
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.	✓			
Was a MS/MSD analyzed every 20 samples of each matrix?	✓			

LDC #: 13204B26
SDG #: HP70

VALIDATION FINDINGS CHECKLIST

Reviewer: Q
2nd Reviewer: T

Validation Area	Yes	No	NA	Findings/Comments
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	✓			
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
X. Internal standards				
Were internal standard area counts within -50% or +100% of the associated calibration standard?	✓			
Were retention times within ± 30 seconds from the associated calibration standard?	✓			
XI. Target compound identification				
Were relative retention times (RRT's) within ± 0.06 RRT units of the standard?	✓			
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	✓			
Were chromatogram peaks verified and accounted for?	✓			
XII. Compound quantitation/CRQLs				
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	✓			
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XIII. Tentatively identified compounds (TICs)				
Were the major ions (> 10 percent relative intensity) in the reference spectrum evaluated in sample spectrum?			✓	
Were relative intensities of the major ions within ± 20% between the sample and the reference spectra?			✓	
Did the raw data indicate that the laboratory performed a library search for all required peaks in the chromatograms (samples and blanks)?		✓		
XIV. System performance				
System performance was found to be acceptable.	✓			
XV. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			

LDC #: 13204B26
SDG #: HP70

VALIDATION FINDINGS CHECKLIST

Page: 3 of 3
Reviewer: 9
2nd Reviewer: N

Validation Area	Yes	No	NA	Findings/Comments
XVI. Field duplicates				
Field duplicate pairs were identified in this SDG.	✓			
Target compounds were detected in the field duplicates.	✓			
XVII. Field blanks				
Field blanks were identified in this SDG.		✓		
Target compounds were detected in the field blanks.			✓	

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

A. Phenol**	P. Bis(2-chloroethoxy)methane	EE. 2,6-Dinitrotoluene	TT. Pentachlorophenol**	III. Benzo(a)pyrene**
B. Bis (2-chloroethyl) ether	Q. 2,4-Dichlorophenol**	FF. 3-Nitroaniline	UU. Phenanthrene	JJJ. Indeno(1,2,3-cd)pyrene
C. 2-Chlorophenol	R. 1,2,4-Trichlorobenzene	GG. Acenaphthene**	VV. Anthracene	KKK. Dibenz(a,h)anthracene
D. 1,3-Dichlorobenzene	S. Naphthalene	HH. 2,4-Dinitrophenol*	WW. Carbazole	LLL. Benzo(g,h,i)perylene
E. 1,4-Dichlorobenzene**	T. 4-Chloroaniline	II. 4-Nitrophenol*	XX. Di-n-butylphthalate	MMM. Bis(2-Chloroisopropyl)ether
F. 1,2-Dichlorobenzene	U. Hexachlorobutadiene**	JJ. Dibenzofuran	YY. Fluoranthene**	NNN. Aniline
G. 2-Methylphenol	V. 4-Chloro-3-methylphenol**	KK. 2,4-Dinitrotoluene	ZZ. Pyrene	OOO. N-Nitrosodimethylamine
H. 2,2'-Oxybis(1-chloropropane)	W. 2-Methylnaphthalene	LL. Diethylphthalate	AAA. Butylbenzylphthalate	PPP. Benzoic Acid
I. 4-Methylphenol	X. Hexachlorocyclopentadiene*	MM. 4-Chlorophenyl-phenyl ether	BBB. 3,3'-Dichlorobenzidine	QQQ. Benzyl alcohol
J. N-Nitroso-di-n-propylamine*	Y. 2,4,6-Trichlorophenol**	NN. Fluorene	CCC. Benzo(a)anthracene	RRR. Pyridine
K. Hexachloroethane	Z. 2,4,5-Trichlorophenol	OO. 4-Nitroaniline	DDD. Chrysene	SSS. Benzidine
L. Nitrobenzene	AA. 2-Chloronaphthalene	PP. 4,6-Dinitro-2-methylphenol	EEE. Bis(2-ethylhexyl)phthalate	TTT.
M. Isophorone	BB. 2-Nitroaniline	QQ. N-Nitrosodiphenylamine (1)**	FFF. Di-n-octylphthalate**	UUU.
N. 2-Nitrophenol**	CC. Dimethylphthalate	RR. 4-Bromophenyl-phenylether	GGG. Benzo(b)fluoranthene	VVV.
O. 2,4-Dimethylphenol	DD. Acenaphthylene	SS. Hexachlorobenzene	HHH. Benzo(k)fluoranthene	WWW.

LDC #: 13204B2b

SDG #: HPT0

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

VALIDATION FINDINGS WORKSHEET

Initial Calibration

Page: 1 of 1

Reviewer: 9

2nd Reviewer: ✓

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

- (Y) N N/A — Did the laboratory conduct an acceptable 5 point calibration prior to sample analysis?
- (Y) N N/A — Were percent relative standard deviations (%RSD) and relative response factors (RRF) within method criteria for all CCC's and SPCC's?
- Y (N) N/A — Was a curve fit used for evaluation? If yes, what was the acceptance criteria used for evaluation?__________
- Y N (N/A) — Did the initial calibration meet the acceptance criteria?
- Y (N) N/A — Were all %RSDs and RRFs within the validation criteria of ≤30 %RSD and ≥0.05 RRF ?

#	Date	Standard ID	Compound	Finding %RSD (Limit: ≤30.0%)	Finding RRF (Limit: ≥0.05)	Associated Samples	Qualifications
	1/29/05	ICAL	PPP	39.2		All + B~~k~~	J/UJ/A

INICAL.2S

LDC #: 13204B26
SDG #: HPTO

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

Page: 1 of 1
Reviewer: 9
2nd Reviewer: 9

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Was a continuing calibration standard analyzed at least once every 12 hours of sample analysis for each instrument?
(Y) N N/A Were percent differences (%D) and relative response factors (RRF) within method criteria for all CCC's and SPCC's ?
Y (N) N/A Were all %D and RRFs within the validation criteria of ≤25 %D and ≥0.05 RRF ?

#	Date	Standard ID	Compound	Finding %D (Limit: ≤25.0%)	Finding RRF (Limit: ≥0.05)	Associated Samples	Qualifications
	1/31/05	CC0131	PPP	39.3		1-5.T.	J/UJ/A
	2/3/05	CC0203	PPP	79.3		6	J/UJ/A

CONCAL2S

LDC #: 13204B2b
SDG #: HP70

VALIDATION FINDINGS WORKSHEET
Overall Assessment of Data

Page: 1 of 1
Reviewer: 9
2nd Reviewer: ac

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

All available information pertaining to the data were reviewed using professional judgement to compliment the determination of the overall quality of the data.

(Y) N N/A Was the overall quality and usability of the data acceptable?

#	Date	Sample ID	Finding	Associated Samples	Qualifications
		5	VVV	5	R/A
		6	M/except VVV	6	R/A

Comments: _____

OVR.2S

DC#:13204A2b
SDG#: HP70

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: Q
2nd Reviewer: DK

METHOD: GC/MS BNA (EPA SW 846 Method 8270-SIM)

Y N NA Were field duplicate pairs identified in this SDG?
Y N NA Were target analytes detected in the field duplicate pairs?

Compound	Concentration (ug/Kg)		RPD ≤ 50	
	3	4		
CCC	310	150	70	
GGG	400	270	39	
III	290	220	27	
JJJ	150	180	18	
AAA	42	17	85	

LDC #: 13204 P2b
SDG #: HP70

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: x

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

The Relative Response Factor (RRF), average RRF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

$RRF = (A_x)(C_{is})/(A_{is})(C_x)$
average RRF = sum of the RRFs/number of standards
$\%RSD = 100 * (S/X)$

A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard
S = Standard deviation of the RRFs, X = Mean of the RRFs

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Reported RRF (2.5 std)	Recalculated RRF (2.5 std)	Reported Average RRF (Initial)	Recalculated Average RRF (Initial)	Reported %RSD	Recalculated %RSD
1	ICAL	1/29/05	~~Phenol~~ (1st internal standard) E	1.429	1.429	1.397	1.397	2.5	2.5
			~~Naphthalene~~ (2nd internal standard) K	0.302	0.302	0.303	0.303	2.0	2.0
			~~Fluorene~~ (3rd internal standard) LL	1.114	1.114	1.162	1.162	5.9	5.9
			Pentachlorophenol (4th internal standard)	0.142	0.142	0.129	0.129	18.5	18.5
			~~Bis(2-ethylhexyl)phthalate~~ (5th internal standard) CC C	1.241	1.241	1.225	1.225	2.0	2.0
			Benzo(a)pyrene (6th internal standard)	1.058	1.058	1.061	1.061	3.7	3.7
2			Phenol (1st internal standard)						
			Naphthalene (2nd internal standard)						
			Fluorene (3rd internal standard)						
			Pentachlorophenol (4th internal standard)						
			Bis(2-ethylhexyl)phthalate (5th internal standard)						
			Benzo(a)pyrene (6th internal standard)						
3			Phenol (1st internal standard)						
			Naphthalene (2nd internal standard)						
			Fluorene (3rd nternal standard)						
			Pentachlorophenol (4th internal standard)						
			Bis(2-ethylhexyl)phthalate (5th internal standard)						
			Benzo(a)pyrere (6th internal standard)						

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204B20
SDG #: HP270

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Reviewer: 9
2nd Reviewer: JC

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
RRF = $(A_x)(C_{is})/(A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Average RRF (Initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported %D	Recalculated %D
1	CCP203	2/3/04	~~Phenol~~ (1st internal standard) E	1.397	1.452	1.452	3.9	3.9
			~~Naphthalene~~ (2nd internal standard) F	0.303	0.303	0.303	0.0	0.0
			~~Fluorene~~ (3rd internal standard) LL	1.162	1.155	1.155	0.6	0.6
			Pentachlorophenol (4th internal standard)	0.129	0.138	0.138	7.0	6.8
			~~Bis(2-ethylhexyl)phthalate~~ (5th internal standard) CC	1.225	1.259	1.259	2.8	2.8
			Benzo(a)pyrene (6th internal standard)	1.061	1.066	1.066	0.5	0.5
2			Phenol (1st internal standard)					
			Naphthalene (2nd internal standard)					
			Fluorene (3rd internal standard)					
			Pentachlorophenol (4th internal standard)					
			Bis(2-ethylhexy)phthalate (5th internal standard)					
			Benzo(a)pyrene (6th internal standard)					
3			Phenol (1st internal standard)					
			Naphthalene (2nd internal standard)					
			Fluorene (3rd internal standard)					
			Pentachlorophenol (4th internal standard)					
			Bis(2-ethylhexyl)phthalate (5th internal standard)					
			Benzo(a)pyrene (6th internal standard)					

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204B2b
SDG #: HP270

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Reviewer: 9
2nd Reviewer: 9

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
RRF = $(A_x)(C_{is})/(A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Average RRF (Initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported %D	Recalculated %D
1	CC0129A	1/29/05	Phenol (1st internal standard)					
			Naphthalene (2nd internal standard)					
			Fluorene (3rd internal standard)		see 1C			
			Pentachlorophenol (4th internal standard)					
			Bis(2-ethylhexyl)phthalate (5th internal standard)					
			Benzo(a)pyrene (6th internal standard)					
2	CC0131	1/31/05	~~Phenol~~ (1st internal standard) E	1.397	1.379	1.379	1.3	1.3
			~~Naphthalene~~ (2nd internal standard) R	0.303	0.300	0.300	1.0	1.0
			~~Fluorene~~ (3rd internal standard) LL	1.162	1.128	1.128	2.9	2.9
			Pentachlorophenol (4th internal standard)	0.129	0.134	0.134	3.9	3.5
			Bis(2-ethylhexyl)phthalate (5th internal standard) CCC	1.225	1.226	1.226	0.1	0.1
			Benzo(a)pyrene (6th internal standard)	1.061	1.056	1.056	0.5	0.5
3	CC0201	2/1/05	~~Phenol~~ (1st internal standard) E	1.397	1.380	1.380	1.2	1.2
			~~Naphthalene~~ (2nd internal standard) R	0.303	0.305	0.305	0.7	0.7
			~~Fluorene~~ (3rd internal standard) LL	1.162	1.108	1.108	4.6	4.6
			Pentachlorophenol (4th internal standard)	0.129	0.139	0.139	7.8	7.7
			~~Bis(2-ethylhexyl)phthalate~~ (5th internal standard) CCC	1.225	1.272	1.272	3.8	3.8
			Benzo(a)pyrene (6th internal standard)	1.061	1.058	1.058	0.3	0.3

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204B26
SDG #. HP70

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Page: 1 of 1
Reviewer: 9
2nd reviewer: V

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270)

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: 1

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5	2.5	1.55397	62.0	62.2	0.2
2-Fluorobiphenyl	↓	1.67477	66.8	67.0	0.2
Terphenyl-d14	↓	2.04564	82.0	81.8	0.2
Phenol-d5	3.75	2.71727	72.5	72.5	0
2-Fluorophenol	↓	2.47093	65.9	65.9	↓
2.4.6-Tribromophenol	↓	3.12983	83.5	83.5	↓
2-Chlorophenol-d4	↓	2.46356	65.6	65.6	↓
1,2-Dichlorobenzene-d4	2.5	1.37572	55.2	55.0	0.2

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

LDC #: 13024B2b
SDG #: JHP70

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

Page: 1 of 1
Reviewer: SK
2nd Reviewer: MC

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SC/SA Where: SSC = Spike concentration; SA = Spike added

RPD = | LCS - LCSD | * 2/(LCS + LCSD) LCS = Laboratory control sample percent recovery LCSD = Laboratory control sample duplicate percent recovery

LCS/LCSD samples: LCS-012605

Compound	Spike Added (ug/kg)		Spike Concentration (ug/kg)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
Phenol										
2-Chlorophenol										
1,4-Dichlorobenzene	167	NA	107	NA	64.1	64.1				
N-Nitroso-di-n-propylamine	↓	↓	111	↓	66.5	66.5				
1,2,4-Trichlorobenzene	↓	↓	111	↓	66.5	66.5				
4-Chloro-3-methylphenol										
Acenaphthene										
4-Nitrophenol										
2,4-Dinitrotoluene										
Pentachlorophenol	250	NA	161	NA	64.4	64.4				
Pyrene										

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204B76
SDG #: HPTO

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: 9
2nd reviewer: R

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

$$\text{Concentration} = \frac{(A_x)(I_s)(V_t)(DF)(2.0)}{(A_{is})(RRF)(V_o)(V_i)(\%S)}$$

A_x	=	Area of the characteristic ion (EICP) for the compound to be measured
A_{is}	=	Area of the characteristic ion (EICP) for the specific internal standard
I_s	=	Amount of internal standard added in nanograms (ng)
V_o	=	Volume or weight of sample extract in milliliters (ml) or grams (g).
V_i	=	Volume of extract injected in microliters (ul)
V_t	=	Volume of the concentrated extract in microliters (ul)
Df	=	Dilution Factor.
%S	=	Percent solids, applicable to soil and solid matrices only.
2.0	=	Factor of 2 to account for GPC cleanup

Example:

Sample I.D. 1, 11:

Conc. = $\frac{(1)(9003)(2)(500)(1)(\quad)}{(988713)(1.061)(5.84)(1)(\quad)}$

= 29.2 µg/g

#	Sample ID	Compound	Reported Concentration ( )	Calculated Concentration ( )	Qualification

LDC #: 13204C2b **VALIDATION COMPLETENESS WORKSHEET** Date: 3/9/05

SDG #: HP90 ~~& HQ69~~ Level II Page: 1 of 1

Laboratory: Analytical Resources, Inc. Reviewer: 9

2nd Reviewer: 7

METHOD: GC/MS ~~Polynuclear Aromatic Hydrocarbons~~ SVOA (EPA SW 846 Method 8270C) ~~-~~ SIM

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/19/05
II.	GC/MS Instrument performance check	N	
III.	Initial calibration	N	
IV.	Continuing calibration	N	
V.	Blanks	A	
VI.	Surrogate spikes	SW	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples	A	LCS, SRM
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	N	
XI.	Target compound identification	N	
XII.	Compound quantitation/CRQLs	N	
XIII.	Tentitatively identified compounds (TICs)	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	
XVI.	Field duplicates	SW	D=5+6
XVII.	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples

MI sed's

1	LDW-SS-119-010	11	MB-01=805	21		31	
2	LDW-SS-120-010	12		22		32	
3	LDW-SS-60-010	13		23		33	
4	LDW-SS-99-010	14		24		34	
5	LDW-SS-89-010	15		25		35	
6	LDW-SS-201-010	16		26		36	
7	LDW-SS-201-010MS	17		27		37	
8	LDW-SS-201-01MSD	18		28		38	
9		19		29		39	
10		20		30		40	

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

A. Phenol**	P. Bis(2-chloroethoxy)methane	EE. 2,6-Dinitrotoluene	TT. Pentachlorophenol**	III. Benzo(a)pyrene**
B. Bis (2-chloroethyl) ether	Q. 2,4-Dichlorophenol**	FF. 3-Nitroaniline	UU. Phenanthrene	JJJ. Indeno(1,2,3-cd)pyrene
C. 2-Chlorophenol	R. 1,2,4-Trichlorobenzene	GG. Acenaphthene**	VV. Anthracene	KKK. Dibenz(a,h)anthracene
D. 1,3-Dichlorobenzene	S. Naphthalene	HH. 2,4-Dinitrophenol*	WW. Carbazole	LLL. Benzo(g,h,i)perylene
E. 1,4-Dichlorobenzene**	T. 4-Chloroaniline	II. 4-Nitrophenol*	XX. Di-n-butylphthalate	MMM. Bis(2-Chloroisopropyl)ether
F. 1,2-Dichlorobenzene	U. Hexachlorobutadiene**	JJ. Dibenzofuran	YY. Fluoranthene**	NNN. Aniline
G. 2-Methylphenol	V. 4-Chloro-3-methylphenol**	KK. 2,4-Dinitrotoluene	ZZ. Pyrene	OOO. N-Nitrosodimethylamine
H. 2,2'-Oxybis(1-chloropropane)	W. 2-Methylnaphthalene	LL. Diethylphthalate	AAA. Butylbenzylphthalate	PPP. Benzoic Acid
I. 4-Methylphenol	X. Hexachlorocyclopentadiene*	MM. 4-Chlorophenyl-phenyl ether	BBB. 3,3'-Dichlorobenzidine	QQQ. Benzyl alcohol
J. N-Nitroso-di-n-propylamine*	Y. 2,4,6-Trichlorophenol**	NN. Fluorene	CCC. Benzo(a)anthracene	RRR. Pyridine
K. Hexachloroethane	Z. 2,4,5-Trichlorophenol	OO. 4-Nitroaniline	DDD. Chrysene	SSS. Benzidine
L. Nitrobenzene	AA. 2-Chloronaphthalene	PP. 4,6-Dinitro-2-methylphenol	EEE. Bis(2-ethylhexyl)phthalate	TTT.
M. Isophorone	BB. 2-Nitroaniline	QQ. N-Nitrosodiphenylamine (1)**	FFF. Di-n-octylphthalate**	UUU.
N. 2-Nitrophenol**	CC. Dimethylphthalate	RR. 4-Bromophenyl-phenylether	GGG. Benzo(b)fluoranthene	VVV.
O. 2,4-Dimethylphenol	DD. Acenaphthylene	SS. Hexachlorobenzene	HHH. Benzo(k)fluoranthene	WWW.

SDG #: HP908 & HP869

VALIDATION FINDINGS WORKSHEET
Surrogate Recovery

Page: 1 of 1
Reviewer: a
2nd Reviewer: a

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Please see qualification below for all questions answered "N". Not applicable questions are identified as "N/A".

Y (N) N/A Were percent recoveries (%R) for surrogates within QC limits?

Y (N) N/A If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?

Y N (N/A) If any %R was less than 10 percent, was a reanalysis performed to confirm %R?

#	Date	Sample ID	Surrogate	%R (Limits)	Qualifications
		4	2FP	35.7 (40-130)	J/UJ/R
			PHL	39.5 ( )	
			2CP	39.2 ( )	
			DCB	32.1 ( )	
			NBZ	36.8 ( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	

* QC limits are advisory	QC Limits (Soil)	QC Limits (Water)
S1 (NBZ) = Nitrobenzene-d5	23-120	35-114
S2 (FBP) = 2-Fluorobiphenyl	30-115	43-116
S3 (TPH) = Terphenyl-d14	18-137	33-141
S4 (PHL) = Phenol-d5	24-113	10-94

	QC Limits (Soil)	QC Limts (Water)
S5 (2FP)= 2-Fluorophenol	25-121	21-100
S6 (TBP) = 2,4,6-Tribromophenol	19-122	10-123
S7 (2CP) = 2-Chlorophenol-d4	20-130*	33-110*
S8 (DCB) = 1,2-Dichlorobenzene-d4	20-130*	16-110*

DC#: 13204C2b
SDG#: HP90&HQ69

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer:
2nd Reviewer: SL

METHOD: GC/MS BNA (EPA SW 846 Method 8270) SIM

Y N NA Were field duplicate pairs identified in this SDG?
Y N NA Were target analytes detected in the field duplicate pairs?

Compound	Concentration (ug/Kg)		RPD	
	~~5~~	~~6~~		
CCC	48	20	82	
GGG	38	24	45	
III	31	20	43	
JJJ	11	11	0	

LDC #: 13204D2b **VALIDATION COMPLETENESS WORKSHEET** Date: 3/9/05

SDG #: HQ17 & HQ04 Level II Page: 1 of 1

Laboratory: Analytical Resources, Inc. Reviewer: 9

2nd Reviewer: 02

METHOD: GC/MS ~~Polynuclear Aromatic Hydrocarbons~~ SVOA (EPA SW 846 Method 8270C) SIM

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 8/27/04 - 1/20/05
II.	GC/MS Instrument performance check	N	
III.	Initial calibration	N	
IV.	Continuing calibration	N	
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A	LDW-SS-201-010
VIII.	Laboratory control samples	A	LCS, SRM
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	N	
XI.	Target compound identification	N	
XII.	Compound quantitation/CRQLs	N	
XIII.	Tentitatively identified compounds (TICs)	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	
XVI.	Field duplicates	N	
XVII.	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples

1	LDW-SS117-010	11	MB-012805	21		31	
2	LDW-SS13B-010	12		22		32	
3	LDW-SS125-010	13		23		33	
4	LDW-SS126-010	14		24		34	
5	LDW-SS129-010	15		25		35	
6	LDW-B9a-S	16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

LDC #: 13234A2b **VALIDATION COMPLETENESS WORKSHEET** Date: 3/9/05
SDG #: HQ48 Level II Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: 9
2nd Reviewer: W

METHOD: GC/MS ~~Polynuclear Aromatic Hydrocarbons~~ SVOA (EPA SW 846 Method 8270C) SIM

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/24/05
II.	GC/MS Instrument performance check	N	
III.	Initial calibration	N	
IV.	Continuing calibration	N	
V.	Blanks	A	
VI	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples	A	LCS, SRM
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	N	
XI.	Target compound identification	N	
XII.	Compound quantitation/CRQLs	N	
XIII.	Tentitatively identified compounds (TICs)	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	
XVI.	Field duplicates	SW	D = 1+4, 7+8
XVII.	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples
11 soils

1	LDW-SS50-010	11	LDW-SS56-010	21		31	
2	LDW-SS72-010	12	LDW-SS28-010	22		32	
3	LDW-SS79-010	13	LDW-SS102-010MS	23		33	
4	LDW-SS202-010	14	LDW-SS102-010MSD	24		34	
5	LDW-SS102-010	15		25		35	
6	LDW-SS142-010	16		26		36	
7	LDW-SS123-010	17		27		37	
8	LDW-SS203-010	18		28		38	
9	LDW-SS64-010	19		29		39	
10	LDW-SS83-010	20		30		40	

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS 3NA (EPA SW 846 Method 8270)

A. Phenol**	P. Bis(2-chloroethoxy)methane	EE. 2,6-Dinitrotoluene	TT. Pentachlorophenol**	III. Benzo(a)pyrene**
B. Bis (2-chloroethyl) ether	Q. 2,4-Dichlorophenol**	FF. 3-Nitroaniline	UU. Phenanthrene	JJJ. Indeno(1,2,3-cd)pyrene
C. 2-Chlorophenol	R. 1,2,4-Trichlorobenzene	GG. Acenaphthene**	VV. Anthracene	KKK. Dibenz(a,h)anthracene
D. 1,3-Dichlorobenzene	S. Naphthalene	HH. 2,4-Dinitrophenol*	WW. Carbazole	LLL. Benzo(g,h,i)perylene
E. 1,4-Dichlorobenzene**	T. 4-Chloroaniline	II. 4-Nitrophenol*	XX. Di-n-butylphthalate	MMM. Bis(2-Chloroisopropyl)ether
F. 1,2-Dichlorobenzene	U. Hexachlorobutadiene**	JJ. Dibenzofuran	YY. Fluoranthene**	NNN. Aniline
G. 2-Methylphenol	V. 4-Chloro-3-methylphenol**	KK. 2,4-Dinitrotoluene	ZZ. Pyrene	OOO. N-Nitrosodimethylamine
H. 2,2'-Oxybis(1-chloropropane)	W. 2-Methylnaphthalene	LL. Diethylphthalate	AAA. Butylbenzylphthalate	PPP. Benzoic Acid
I. 4-Methylphenol	X. Hexachlorocyclopentadiene*	MM. 4-Chlorophenyl-phenyl ether	BBB. 3,3'-Dichlorobenzidine	QQQ. Benzyl alcohol
J. N-Nitroso-di-n-propylamine*	Y. 2,4,6-Trichlorophenol**	NN. Fluorene	CCC. Benzo(a)anthracene	RRR. Pyridine
K. Hexachloroethane	Z. 2,4,5-Trichlorophenol	OO. 4-Nitroaniline	DDD. Chrysene	SSS. Benzidine
L. Nitrobenzene	AA. 2-Chloronaphthalene	PP. 4,6-Dinitro-2-methylphenol	EEE. Bis(2-ethylhexyl)phthalate	TTT.
M. Isophorone	BB. 2-Nitroaniline	QQ. N-Nitrosodiphenylamine (1)**	FFF. Di-n-octylphthalate**	UUU.
N. 2-Nitrophenol**	CC. Dimethylphthalate	RR. 4-Bromophenyl-phenylether	GGG. Benzo(b)fluoranthene	VVV.
O. 2,4-Dimethylphenol	DD. Acenaphthylene	SS. Hexachlorobenzene	HHH. Benzo(k)fluoranthene	WWW.

DC#:13234A2b
SDG#:HQ48

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: CC
2nd Reviewer: SC

METHOD: GC/MS BNA (EPA SW 846 Method 8270-SIM)

Y N NA Were field duplicate pairs identified in this SDG?
Y N NA Were target analytes detected in the field duplicate pairs?

Compound	Concentration (ug/Kg)		RPD ≤ 50	
	1	4		
CCC	23	280	170	
GGG	25	420	178	
III	21	300	174	
JJJ	10	140	173	

Compound	Concentration (ug/Kg)		RPD ≤ 50	
	7	8		
CCC	15	9.6	44	
GGG	16	12	29	
III	11	9.6	14	
JJJ	11	6.4U	~~200~~ NC	
CC	18	6.4U	~~200~~ NC	
AAA	7.6	6.4U	~~200~~ NC	

LDC #: 13234B2b **VALIDATION COMPLETENESS WORKSHEET** Date: 3/9/05

SDG #: HQ27 & HQ28 Level II Page: 1 of 1

Laboratory: Analytical Resources, Inc. Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: GC/MS ~~Polynuclear Aromatic Hydrocarbons~~ SVOA (EPA SW 846 Method 8270C) ~~SIM~~

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/21/05
II.	GC/MS Instrument performance check	N	
III.	Initial calibration	N	
IV.	Continuing calibration	N	
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A	LDW-SS-201-010
VIII.	Laboratory control samples	A	LCS, SRM
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	N	
XI.	Target compound identification	N	
XII.	Compound quantitation/CRQLs	N	
XIII.	Tentitatively identified compounds (TICs)	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	
XVI.	Field duplicates	N	
XVII.	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples

1	LDW-SS43-010 sed	11	MB-012805	21		31	
2	LDW-SS97-010 |	12		22		32	
3	LDW-SS63-010 V	13		23		33	
4		14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

LDC #: 13234C2b **VALIDATION COMPLETENESS WORKSHEET** Date: 3/9/05
SDG #: HR48 Level II Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: 9
2nd Reviewer: R

METHOD: GC/MS ~~Polynuclear Aromatic Hydrocarbons~~ SVOA (EPA SW 846 Method 8270C) SIM

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 2/1/05
II.	GC/MS Instrument performance check	N	
III.	Initial calibration	N	
IV.	Continuing calibration	N	
V.	Blanks	SW	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples	A	LCS. SRM
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	N	
XI.	Target compound identification	N	
XII.	Compound quantitation/CRQLs	N	
XIII.	Tentitatively identified compounds (TICs)	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	
XVI.	Field duplicates	N	
XVII.	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples

1	LDW-SS18-010 sed	11	MB-020905	21		31	
2	LDW-SS18-010MS	12		22		32	
3	LDW-SS18-010MSD	13		23		33	
4		14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

A. Phenol**	P. Bis(2-chloroethoxy)methane	EE. 2,6-Dinitrotoluene	TT. Pentachlorophenol**	III. Benzo(a)pyrene**
B. Bis (2-chloroethyl) ether	Q. 2,4-Dichlorophenol**	FF. 3-Nitroaniline	UU. Phenanthrene	JJJ. Indeno(1,2,3-cd)pyrene
C. 2-Chlorophenol	R. 1,2,4-Trichlorobenzene	GG. Acenaphthene**	VV. Anthracene	KKK. Dibenz(a,h)anthracene
D. 1,3-Dichlorobenzene	S. Naphthalene	HH. 2,4-Dinitrophenol*	WW. Carbazole	LLL. Benzo(g,h,i)perylene
E. 1,4-Dichlorobenzene**	T. 4-Chloroaniline	II. 4-Nitrophenol*	XX. Di-n-butylphthalate	MMM. Bis(2-Chloroisopropyl)ether
F. 1,2-Dichlorobenzene	U. Hexachlorobutadiene**	JJ. Dibenzofuran	YY. Fluoranthene**	NNN. Aniline
G. 2-Methylphenol	V. 4-Chloro-3-methylphenol**	KK. 2,4-Dinitrotoluene	ZZ. Pyrene	OOO. N-Nitrosodimethylamine
H. 2,2'-Oxybis(1-chloropropane)	W. 2-Methylnaphthalene	LL. Diethylphthalate	AAA. Butylbenzylphthalate	PPP. Benzoic Acid
I. 4-Methylphenol	X. Hexachlorocyclopentadiene*	MM. 4-Chlorophenyl-phenyl ether	BBB. 3,3'-Dichlorobenzidine	QQQ. Benzyl alcohol
J. N-Nitroso-di-n-propylamine*	Y. 2,4,6-Trichlorophenol**	NN. Fluorene	CCC. Benzo(a)anthracene	RRR. Pyridine
K. Hexachloroethane	Z. 2,4,5-Trichlorophenol	OO. 4-Nitroaniline	DDD. Chrysene	SSS. Benzidine
L. Nitrobenzene	AA. 2-Chloronaphthalene	PP. 4,6-Dinitro-2-methylphenol	EEE. Bis(2-ethylhexyl)phthalate	TTT.
M. Isophorone	BB. 2-Nitroaniline	QQ. N-Nitrosodiphenylamine (1)**	FFF. Di-n-octylphthalate**	UUU.
N. 2-Nitrophenol**	CC. Dimethylphthalate	RR. 4-Bromophenyl-phenylether	GGG. Benzo(b)fluoranthene	VVV.
O. 2,4-Dimethylphenol	DD. Acenaphthylene	SS. Hexachlorobenzene	HHH. Benzo(k)fluoranthene	WWW.

LDC #: 13234c2b
SDG #: HR48

VALIDATION FINDINGS WORKSHEET
Blanks

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a method blank analyzed for each matrix?
Y N N/A Was a method blank analyzed for each concentration preparation level?
Y N N/A Was a method blank associated with every sample?
Y N N/A Was the blank contaminated? If yes, please see qualification below.

Blank extraction date: 2/9/05 **Blank analysis date:** 2/10/05
Conc. units: ug/kg Associated Samples: MB

Compound	Blank ID	Sample Identification								
MB	MB-020905									
LL	13									

Blank extraction date: _____ **Blank analysis date:** _____
Conc. units: _____ Associated Samples: _____

Compound	Blank ID	Sample Identification								

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Common contaminants such as the phthalates and TICs noted above that were detected in samples within ten times the associated method blank concentration were qualified as not detected, "U". Other contaminants within five times the method blank concentration were also qualified as not detected, "U".

LDC #: 13234E2b **VALIDATION COMPLETENESS WORKSHEET** Date: 2/9/05

SDG #: HQ56 & HQ57 Level II Page: 1 of 1

Laboratory: Analytical Resources, Inc. Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: GC/MS ~~Polynuclear Aromatic Hydrocarbons~~ SVOA (EPA SW 846 Method 8270C) SIM

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/25 - 26/05
II.	GC/MS Instrument performance check	N	
III.	Initial calibration	N	
IV.	Continuing calibration	N	
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	N	No MS/MSD ~~not provided~~
VIII.	Laboratory control samples	A	LCS / SRM
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	N	
XI.	Target compound identification	N	
XII.	Compound quantitation/CRQLs	N	
XIII.	Tentatively identified compounds (TICs)	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	
XVI.	Field duplicates	N	
XVII.	Field blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples

1	LDW-SS92-010 sed	11	MB020105	21		31	
2	LDW-SS104-010	12		22		32	
3	LDW-SS110-010	13		23		33	
4	LDW-SS88-010	14		24		34	
5	LDW-SS143-010	15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

LDC #: 13298B2b **VALIDATION COMPLETENESS WORKSHEET** Date: 3/24/05
SDG #: HT37 Level II Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: [illegible]
2nd Reviewer:

METHOD: GC/MS Polynuclear Aromatic Hydrocarbons (EPA SW 846 Method 8270C SIM)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/20/05 - 1/24/05
II.	GC/MS Instrument performance check	N	
III.	Initial calibration	N	
IV.	Continuing calibration	N	
V.	Blanks	A	
VI.	Surrogate spikes	SW	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples	A	LCS
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	N	
XI.	Target compound identification	N	
XII.	Compound quantitation/CRQLs	N	
XIII.	Tentitatively identified compounds (TICs)	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	
XVI.	Field duplicates	N	
XVII.	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples

1	LDW-SS118-010	11	MB-022105	21		31	
2	LDW-SS101-010	12		22		32	
3	LDW-SS55-010	13		23		33	
4	LDW-SS36-010	14		24		34	
5	LDW-SS55-010MS	15		25		35	
6	LDW-SS55-010MSD	16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

LDC #: [illegible]

SDG #: HT3T

VALIDATION FINDINGS WORKSHEET
Surrogate Recovery

Page: 1 of 1

Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Please see qualification below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were percent recoveries (%R) for surrogates within QC limits?

Y N N/A If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?

Y N N/A If any %R was less than 10 percent, was a reanalysis performed to confirm %R?

#	Date	Sample ID	Surrogate	%R (Limits)	Qualifications
		3	NB2	30.8 (40-130)	No qual
				( )	
		4	NB2	30.4 ( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
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				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	

* QC limits are advisory	QC Limits (Soil)	QC Limits (Water)		QC Limits (Soil)	QC Limits (Water)
S1 (NBZ) = Nitrobenzene-d5	23-120	35-114	S5 (2FP)= 2-Fluorophenol	25-121	21-100
S2 (FBP) = 2-Fluorobiphenyl	30-115	43-116	S6 (TBP) = 2,4,6-Tribromophenol	19-122	10-123
S3 (TPH) = Terphenyl-d14	18-137	33-141	S7 (2CP) = 2-Chlorophenol-d4	20-130*	33-110*
S4 (PHL) = Phenol-d5	24-113	10-94	S8 (DCB) = 1,2-Dichlorobenzene-d4	20-130*	16-110*

LDC #: 13298C2b **VALIDATION COMPLETENESS WORKSHEET** Date: 3/24/05

SDG #: HU13 Level II Page: 1 of 1

Laboratory: Analytical Resources, Inc. Reviewer: 9

2nd Reviewer: AC

METHOD: GC/MS ~~Polynuclear Aromatic Hydrocarbons~~ SVOA (EPA SW 846 Method 8270C~~+SIM~~)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/17-26/05
II.	GC/MS Instrument performance check	N	
III.	Initial calibration	N	
IV.	Continuing calibration	N	
V.	Blanks	SW	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples	SW	LCS
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	N	
XI.	Target compound identification	N	
XII.	Compound quantitation/CRQLs	N	
XIII.	Tentitatively identified compounds (TICs)	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	
XVI.	Field duplicates	N	
XVII.	Field blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples

MS and MSD

1	LDW-SS1-010	11	LDW-SS96-010	21	MB-030305	31	
2	LDW-SS5-010	12	LDW-SS67-010	22		32	
3	LDW-SS12-010	13	LDW-SS54-010	23		33	
4	LDW-SS13-010	14	LDW-SS42-010	24		34	
5	LDW-SS51-010	15	LDW-SS128-010	25		35	
6	LDW-SS116-010	16	LDW-SS52-010	26		36	
7	LDW-SS76-010	17	LDW-SS33-010	27		37	
8	LDW-SS44-010	18	LDW-SS1-010MS	28		38	
9	LDW-SS87-010	19	LDW-SS1-010MSD	29		39	
10	LDW-SS94-010	20		30		40	

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

A. Phenol**	P. Bis(2-chloroethoxy)methane	EE. 2,6-Dinitrotoluene	TT. Pentachlorophenol**	III. Benzo(a)pyrene**
B. Bis (2-chloroethyl) ether	Q. 2,4-Dichlorophenol**	FF. 3-Nitroaniline	UU. Phenanthrene	JJJ. Indeno(1,2,3-cd)pyrene
C. 2-Chlorophenol	R. 1,2,4-Trichlorobenzene	GG. Acenaphthene**	VV. Anthracene	KKK. Dibenz(a,h)anthracene
D. 1,3-Dichlorobenzene	S. Naphthalene	HH. 2,4-Dinitrophenol*	WW. Carbazole	LLL. Benzo(g,h,i)perylene
E. 1,4-Dichlorobenzene**	T. 4-Chloroaniline	II. 4-Nitrophenol*	XX. Di-n-butylphthalate	MMM. Bis(2-Chloroisopropyl)ether
F. 1,2-Dichlorobenzene	U. Hexachlorobutadiene**	JJ. Dibenzofuran	YY. Fluoranthene**	NNN. Aniline
G. 2-Methylphenol	V. 4-Chloro-3-methylphenol**	KK. 2,4-Dinitrotoluene	ZZ. Pyrene	OOO. N-Nitrosodimethylamine
H. 2,2'-Oxybis(1-chloropropane)	W. 2-Methylnaphthalene	LL. Diethylphthalate	AAA. Butylbenzylphthalate	PPP. Benzoic Acid
I. 4-Methylphenol	X. Hexachlorocyclopentadiene*	MM. 4-Chlorophenyl-phenyl ether	BBB. 3,3'-Dichlorobenzidine	QQQ. Benzyl alcohol
J. N-Nitroso-di-n-propylamine*	Y. 2,4,6-Trichlorophenol**	NN. Fluorene	CCC. Benzo(a)anthracene	RRR. Pyridine
K. Hexachloroethane	Z. 2,4,5-Trichlorophenol	OO. 4-Nitroaniline	DDD. Chrysene	SSS. Benzidine
L. Nitrobenzene	AA. 2-Chloronaphthalene	PP. 4,6-Dinitro-2-methylphenol	EEE. Bis(2-ethylhexyl)phthalate	TTT.
M. Isophorone	BB. 2-Nitroaniline	QQ. N-Nitrosodiphenylamine (1)**	FFF. Di-n-octylphthalate**	UUU.
N. 2-Nitrophenol**	CC. Dimethylphthalate	RR. 4-Bromophenyl-phenylether	GGG. Benzo(b)fluoranthene	VVV.
O. 2,4-Dimethylphenol	DD. Acenaphthylene	SS. Hexachlorobenzene	HHH. Benzo(k)fluoranthene	WWW.

LDC #: 13298c4b
SDG #: HU13

VALIDATION FINDINGS WORKSHEET
Blanks

Page: 1 of 1
Reviewer: 9
2nd Reviewer: DK

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a method blank analyzed for each matrix?
Y N N/A Was a method blank analyzed for each concentration preparation level?
Y N N/A Was a method blank associated with every sample?
Y N N/A Was the blank contaminated? If yes, please see qualification below.

Blank extraction date: 3/3/05 **Blank analysis date:** 3/4/05
Conc. units: ug/Kg Associated Samples: All

Compound	Blank ID	Sample Identification								
MB-030305		1	2	3	4	5	6	7	8	9
LL	16	17/U	14/U	14/U	13/U	6.6/U	7.3/U	14/U	11/U	9.2/U

Blank extraction date: _____ **Blank analysis date:** _____
Conc. units: ug/L Associated Samples: All

Compound	Blank ID	Sample Identification								
MB-030305		10	11	12	13	14	15	16	17	
LL	16	14/U	12/U	12/U	15/U	14/U	14/U	7.8/U	36/U	

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Common contaminants such as the phthalates and TICs noted above that were detected in samples within ten times the associated method blank concentration were qualified as not detected, "U". Other contamirants within five times the method blank concentration were also qualified as not detected, "U".

LDC #: 13298C2b
SDG #: HU13

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

Page: 1 of 1
Reviewer: 9
2nd Reviewer: X

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

[✓ Y] N N/A Was a LCS required?

Y [✓ N] N/A Were the LCS/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		LCS-030305	TT	28.8 (40-130)	( )	( )	All + Blk	J/UJ/P
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
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				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

LDC #: 13204A3a **VALIDATION COMPLETENESS WORKSHEET** Date: 3/8/05

SDG #: HP67 Level IV Page: 1 of 1

Laboratory: Analytical Resources, Inc. Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: GC Chlorinated Pesticides (EPA SW 846 Method 8081A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/17/05
II.	GC/ECD Instrument Performance Check	A	
III.	Initial calibration	A	
IV.	Continuing calibration	A	
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples /SRM	SW	LCS
IX.	Regional quality assurance and quality control	N	
Xa.	Florisil cartridge check	N	
Xb.	GPC Calibration	N	Sulfur clean up performed
XI.	Target compound identification	~~N~~ A	
XII.	Compound quantitation and reported CRQLs	~~SW~~ A	
XIII.	Overall assessment of data	A	
XIV.	Field duplicates	N	
XV.	Field blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples:

sediment

1	LDW-SS13-010	11	MB - 12405	21		31	
2	LDW-SS13-010MS	12		22		32	
3	LDW-SS13-010MSD	13		23		33	
4		14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

note: Per case narrative: Lab extracted sample batch for in-house levels. client was notified.

VALIDATION FINDINGS WORKSHEET

METHOD: Pesticide/PCBs (EPASW 846 Method 8081/8082)

A. alpha-BHC	I. Dieldrin	Q. Endrin ketone	Y. Arcclor-1242	GG.
B. beta-BHC	J. 4,4'-DDE	R. Endrin aldehyde	Z. Arcclor-1248	HH.
C. delta-BHC	K. Endrin	S. alpha-Chlordane	AA. Aroclor-1254	II.
D. gamma-BHC	L. Endosulfan II	T. gamma-Chlordane	BB. Aroclor-1260	JJ.
E. Heptachlor	M. 4,4'-DDD	U. Toxaphene	CC. DB 608	KK.
F. Aldrin	N. Endosulfan sulfate	V. Aroclor-1016	DD. DB 1701	LL.
G. Heptachlor epoxide	O. 4,4'-DDT	W. Aroclor-1221	EE. Hexachlorobutadiene	MM.
H. Endosulfan I	P. Methoxychlor	X. Aroclor-1232	FF.	NN.

Notes: _____

LDC #: 13204 A3a
SDG #: HP67

VALIDATION FINDINGS CHECKLIST

Page: 1 of 2
Reviewer:
2nd Reviewer:

Method: Pesticides/PCBs (EPA SW 846 Method 8081/8082)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. GC/ECD Instrument performance check				
Was the instrument performance found to be acceptable?	✓			
III. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Was a linear fit used for evaluation? If yes, were all percent relative standard deviations (%RSD) ≤ 20%?	✓			
Was a curve fit used for evaluation? If Yes, what was the acceptance criteria used?		✓		
Did the initial calibration meet the curve fit acceptance criteria?			✓	
Were the RT windows properly established?	✓			
Were the required standard concentrations analyzed in the initial calibration?	✓			
IV. Continuing calibration				
What type of continuing calibration calculation was performed? ___%D or ___%R	✓			
Were Evaluation mix standards analyzed prior to the initial calibration and sample analysis?	✓			
Were endrin and 4,4'-DDT breakdowns ≤ 15%.0 for individual breakdown in the Evaluation mix standards?	✓			
Was a continuing calibration analyzed daily?	✓			
Were all percent differences (%D) ≤ 15%.0 or percent recovieries 85-115%?	✓			
Were all the retention times within the acceptance windows?	✓			
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed for each matrix and concentration?	✓			
Were extract cleanup blanks analyzed with every batch requiring clean-up?	✓			
Was there contamination in the method blanks or clean-up blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Surrogate spikes				
Were all surrogate %R within the QC limits?	✓			
If the percent recovery (%R) of one or more surrogates was outside QC limits, was a reanalysis performed to confirm %R?			✓	
If any %R was less than 10 percent, was a reanalysis performed to confirm %R?			✓	

LDC #: 13204A3a
SDG #: HP67

VALIDATION FINDINGS CHECKLIST

Reviewer: EJ
2nd Reviewer: AK

Validation Area	Yes	No	NA	Findings/Comments
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.	✓			
Was a MS/MSD analyzed every 20 samples of each matrix?	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	✓			
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?		✓		
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?			✓	
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
X. Target compound identification				
Were the retention times of reported detects within the RT windows?			✓	
XI. Compound quantitation/CRQLs				
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions, dry weight factors, and clean-up activities applicable to level IV validation?	✓			
XII. System performance				
System performance was found to be acceptable.	✓			
XIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XIV. Field duplicates				
Field duplicate pairs were identified in this SDG.		✓		
Target compounds were detected in the field duplicates.			✓	
XV. Field blanks				
Field blanks were identified in this SDG.		✓		
Target compounds were detected in the field blanks.			✓	

LDC #: 13204A3a
SDG #: HP67

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

Page: 1 of 1
Reviewer: B
2nd Reviewer: R

METHOD: ✓ GC __ HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

[✓ Y] N N/A Were a laboratory control samples (LCS) and laboratory control sample duplicate (LCSD) analyzed for each matrix in this SDG?

Y [✓ N] N/A Were the LCS percent recoveries (%R) and relative percent differences (RPD) within the QC limits?

Level IV/D Only

[✓ Y] N N/A Was an LCS analyzed every 20 samples for each matrix or whenever a sample extraction was performed?

#	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	LCS-012405	D	46 (30-150)	( )	( )	All + BlK	J/UJ/P
		R	19.4 (↓)	( )	( )	↓	↓
		EE	48.4 ( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
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			( )	( )	( )		

LDC #: 13204A3a
SDG #: HP67

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer:
2nd Reviewer:

METHOD: GC ✓ HPLC ____

The calibration Factor (CF), average CF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

CF = A/C
average CF = sum of the CF/number of standards
%RSD = 100 * (S/X)

A = Area of compound,
C = Concentration of compound,
S = Standard deviation of the CF
X = Mean of the CFs

#	Standard ID	Calibration Date	Compound	Reported CF (0.02std)	Recalculated CF (0.02std)	Reported Average CF (initial)	Recalculated Average CF (initial)	Reported %RSD	Recalculated %RSD
1	8081A STX-CLP1	1/21/05	endosulfan I	1.0319	1.0319	0.9623	0.9623	7.4	7.4
			methoxychlor	0.4182	0.4182	0.3868	0.3868	12.0	12.0
2	STX-CLP2	↓	↓	1.0393	1.0393	0.9641	0.9641	7.3	7.3
				0.4052	0.4052	0.3733	0.3733	12.6	12.6
3									
4									

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204A3a
SDG #: H867

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Reviewer: 5
2nd Reviewer: 4

METHOD: GC / HPLC_____

The percent difference (%D) of the initial calibration average Calibration Factors (CF) and the continuing calibration CF were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. CF - CF)/ave. CF
CF = A/C

Where: ave. CF = initial calibration average CF
CF = continuing calibration CF
A = Area of compound
C = Concentration of compound

#	Standard ID	Calibration Date	Compound	Average CF(Ical)/ CCV Conc.	Reported CF/Conc. CCV	Recalculated CF/Conc. CCV	Reported %D	Recalculated %D
1	CCV	1/24/05	endosulfan I	0.020	0.019	0.019	5	5
	1115		methoxychlor	0.20	0.18	0.18	10.0	10.0
	STX-CLPI							
2		↓	↓	↓	0.020	0.020	0	0
	STX-CLPII				0.17	0.17	15.0	15.0
3								
4								

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204A3a
SDG #: H P67

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Page: 1 of 1
Reviewer:
2nd reviewer:

METHOD: GC Pesticides/PCBs (EPA SW 846 Method 8081/8082)

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: #1

Surrogate	Column	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
Tetrachloro-m-xylene	STX CLP1					
Tetrachloro-m-xylene	→	0.04	0.0493	61.6	61.6 ~~123~~ F7	0
Decachlorobiphenyl	STX CLP2	↓	0.0583	72.9	72.9 ~~145.7~~	↓
Decachlorobiphenyl						

Sample ID:

Surrogate	Column	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
Tetrachloro-m-xylene						
Tetrachloro-m-xylene						
Decachlorobiphenyl						
Decachlorobiphenyl						

Sample ID:

Surrogate	Column	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
Tetrachloro-m-xylene						
Tetrachloro-m-xylene						
Decachlorobiphenyl						
Decachlorobiphenyl						

Sample ID:

Surrogate	Column	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
Tetrachloro-m-xylene						
Tetrachloro-m-xylene						
Decachlorobiphenyl						
Decachlorobiphenyl						

Notes:

LDC #: 13204A3a
SDG #: HP67

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Reviewer: JP
2nd Reviewer: AP

METHOD: GC Pesticides/PCBs (EPA SW 846 Method 8081/8082)

The percent recoveries (%R) and Relative Percent difference (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100* (SSC-SC)/SA

Where: SSC = Spiked sample concentration
SA = Spike added
SC = Concentration

RPD = | MS - MSD | * 2/(MS + MSD)

MS = Matrix spike percent recovery

MSD = Matrix spike duplicate percent recovery

MS/MSD samples: 2 + 3

Compound	Spike Added (ug/kg)		Sample Concentration (ug/kg)	Spiked Sample Concentration (ug/kg)		Matrix Spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	-	MS	MSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
gamma-BHC	30.9	30.9	NP	19.9	19.2	64.4	64.4	61.9	61.9	3.6	3.6
Heptachlor	↓	↓	↓	22.2	21.7	71.8	71.8	70.0	70.0	2.3	2.3
Aldrin	↓	↓	↓	23.5	23.3	76.1	76.1	75.2	75.2	0.9	0.9
Dieldrin	61.8	61.8	↓	48.8	47.1	79.0	79.0	76.1	76.1	3.5	3.5
Endrin	↓	↓	↓	55.3	52.9	89.5	89.5	85.5	85.5	4.4	4.4
4,4'-DDT	↓	↓	↓	50.1	47.7	81.1	81.1	77.1	77.1	4.9	4.9

Comments: Refer ot Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204A3a
SDG #: HP67

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample/Laboratory Control Sample Duplicate Results Verification

Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC Pesticides/PCBs (EPA SW 846 Method 8081/8082)

The percent recoveries (%R) and Relative Percent difference (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100* (SSC-SC)/SA

Where: SSC = Spiked sample concentration; SA = Spike added; SC = Concentration

RPD = | LCS - LCSD | * 2/(LCS + LCSD)

LCS = Laboratory control sample percent recovery; LCSD = Laboratory control sample duplicate percent recovery

LCS/LCSD samples: LCS-12405

Compound	Spike Added (ng/kg)		Sample Concentration (ng/kg)	Spiked Sample Concentration (ng/kg)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	-	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
Gamma-BHC	6.67	NA	0	3.07	NA	46	46				
Heptachlor	↓			5.40		81	81				
Aldrin	↓			5.62		84.3	84.3				
Dieldrin	13.3			10.2		76.7	76.7				
Endrin	↓			10.5		78.9	78.9				
4,4'-DDT	↓	↓	↓	10.8	↓	81.2	81.2	NA			

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicate findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204A3a
SDG #: HP67

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: [illegible]
2nd reviewer: [illegible]

METHOD: GC Pesticides/PCBs (EPA SW 846 Method 8081/8082)

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

Example:

Sample I.D. _____ _____:

Conc. = (_____)
( )

= all ND

#	Sample ID	Compound	Reported Concentration ( )	Calculated Concentration ( )	Qualification

Note: _____

C:\WPDOCS\WRK\PEST\RECALC.3S

LDC #: 13204B3a

VALIDATION COMPLETENESS WORKSHEET

Level IV

Date: 3/8/05

SDG #: HP70

Page: 1 of 1

Laboratory: Analytical Resources, Inc.

Reviewer: PJ

2nd Reviewer: JV

METHOD: GC Chlorinated Pesticides (EPA SW 846 Method 8081A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/18/05
II.	GC/ECD Instrument Performance Check	A	
III.	Initial calibration	A	
IV.	Continuing calibration	A	
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A	LDW - SS13 - 010
VIII.	Laboratory control samples /SRM	SW	LCS
IX.	Regional quality assurance and quality control	N	
Xa.	Florisil cartridge check	N	
Xb.	GPC Calibration	N	sulfur clean up performed
XI.	Target compound identification	~~N~~ A	
XII.	Compound quantitation and reported CRQLs	~~SW~~ A	
XIII.	Overall assessment of data	A	
XIV.	Field duplicates	ND	D = 1 + 2
XV.	Field blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: sediment

1	LDW-SS27-010 D	11	MB - 012405	21		31	
2	LDW-SS200-010 D	12		22		32	
3	LDW-SS32-010	13		23		33	
4		14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

note: Per narrative: samples mistakenly extracted using inhouse levels. Client was notified.

SRM same in 13204B.

LDC #: 13204B3a
SDG #: HP7D

VALIDATION FINDINGS CHECKLIST

Reviewer: [illegible]
2nd Reviewer: [illegible]

Method: Pesticides/PCBs (EPA SW 846 Method 8081/8082)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. GC/ECD Instrument performance check				
Was the instrument performance found to be acceptable?	✓			
III. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Was a linear fit used for evaluation? If yes, were all percent relative standard deviations (%RSD) ≤ 20%?	✓			
Was a curve fit used for evaluation? If Yes, what was the acceptance criteria used?		✓		
Did the initial calibration meet the curve fit acceptance criteria?			✓	
Were the RT windows properly established?	✓			
Were the required standard concentrations analyzed in the initial calibration?	✓			
IV. Continuing calibration				
What type of continuing calibration calculation was performed? ___%D or ___%R	✓			
Were Evaluation mix standards analyzed prior to the initial calibration and sample analysis?	✓			
Were endrin and 4,4'-DDT breakdowns ≤ 15%.0 for individual breakdown in the Evaluation mix standards?	✓			
Was a continuing calibration analyzed daily?	✓			
Were all percent differences (%D) ≤ 15%.0 or percent recovieries 85-115%?	✓			
Were all the retention times within the acceptance windows?	✓			
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed for each matrix and concentration?	✓			
Were extract cleanup blanks analyzed with every batch requiring clean-up?	✓			
Was there contamination in the method blanks or clean-up blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Surrogate spikes				
Were all surrogate %R within the QC limits?	✓			
If the percent recovery (%R) of one or more surrogates was outside QC limits, was a reanalysis performed to confirm %R?			✓	
If any %R was less than 10 percent, was a reanalysis performed to confirm %R?			✓	

LDC #: 13204B3a
SDG #: HP70

VALIDATION FINDINGS CHECKLIST

Reviewer: [illegible]
2nd Reviewer: [illegible]

Validation Area	Yes	No	NA	Findings/Comments
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.	✓			
Was a MS/MSD analyzed every 20 samples of each matrix?	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	✓			
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?		✓		
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?			✓	
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
X. Target compound identification				
Were the retention times of reported detects within the RT windows?			✓	
XI. Compound quantitation/CRQLs				
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions, dry weight factors, and clean-up activities applicable to level IV validation?	✓			
XII. System performance				
System performance was found to be acceptable.	✓			
XIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XIV. Field duplicates				
Field duplicate pairs were identified in this SDG.		✓		
Target compounds were detected in the field duplicates.			✓	
XV. Field blanks				
Field blanks were identified in this SDG.		✓		
Target compounds were detected in the field blanks.			✓	

VALIDATION FINDINGS WORKSHEET

METHOD: Pesticide/PCBs (EPASW 846 Method 8081/8082)

A. alpha-BHC	I. Dieldrin	Q. Endrin ketone	Y. Aroclor-1242	GG.
B. beta-BHC	J. 4,4'-DDE	R. Endrin aldehyde	Z. Aroclor-1248	HH.
C. delta-BHC	K. Endrin	S. alpha-Chlordane	AA. Aroclor-1254	II.
D. gamma-BHC	L. Endosulfan II	T. gamma-Chlordane	BB. Aroclor-1260	JJ.
E. Heptachlor	M. 4,4'-DDD	U. Toxaphene	CC. DB 608	KK.
F. Aldrin	N. Endosulfan sulfate	V. Aroclor-1016	DD. DB 1701	LL.
G. Heptachlor epoxide	O. 4,4'-DDT	W. Aroclor-1221	EE.	MM.
H. Endosulfan I	P. Methoxychlor	X. Aroclor-1232	FF.	NN.

Notes:_____

LDC #: 13204B3a
SDG #: HP70

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

Page: 1 of 1
Reviewer: B
2nd Reviewer: DC

METHOD: ✓ GC ___ HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

[✓ Y] N N/A Were a laboratory control samples (LCS) and laboratory control sample duplicate (LCSD) analyzed for each matrix in this SDG?

Y [✓ N] N/A Were the LCS percent recoveries (%R) and relative percent differences (RPD) within the QC limits?

Level IV/D Only

[✓ Y] N N/A Was an LCS analyzed every 20 samples for each matrix or whenever a sample extraction was performed?

#	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	LCS-12405	D	46 (50-150)	( )	( )	All + BIK	J/UJ/P
		R	19.4 (↓)	( )	( )	↓	↓
		EE	48.4 ( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
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			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		

LDC #: 13204B3a
SDG #: HP70

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer: PJ
2nd Reviewer: AC

METHOD: GC / HPLC

The calibration Factor (CF), average CF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

CF = A/C
average CF = sum of the CF/number of standards
%RSD = 100 * (S/X)

A = Area of compound,
C = Concentration of compound,
S = Standard deviation of the CF
X = Mean of the CFs

#	Standard ID	Calibration Date	Compound	Reported CF 0.2 (0.02 std)	Recalculated CF 0.2 (0.02 std)	Reported Average CF (initial)	Recalculated Average CF (initial)	Reported %RSD	Recalculated %RSD
1	8081A STX-CLP1	1/21/05	endosulfan I	1.0319	1.0319	0.9623	0.9623	7.4	7.4
			methoxychlor	0.4182	0.4182	0.3868	0.3868	12.0	12.0
2	STX-CLP2	↓	↓	1.0393	1.0393	0.9641	0.9641	7.3	7.3
				0.4052	0.4052	0.3733	0.3733	12.6	12.6
3									
4									

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204B3a
SDG #: HP70

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Page: 1 of 1
Reviewer: B
2nd Reviewer: A

METHOD: GC / HPLC_____

The percent difference (%D) of the initial calibration average Calibration Factors (CF) and the continuing calibration CF were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. CF - CF)/ave. CF
CF = A/C

Where: ave. CF = initial calibration average CF
CF = continuing calibration CF
A = Area of compound
C = Concentration of compound

#	Standard ID	Calibration Date	Compound	Average CF(Ical)/ CCV Conc.	Reported CF/Conc. CCV	Recalculated CF/Conc. CCV	Reported %D	Recalculated %D
1	CCV 1115	1/27/05	endosulfan I	0.020	0.019	0.019	5	5
	STX CUP I		methoxychlor	0.20	0.18	0.18	10.0	10.0
2	STX CUP II	↓	↓	↓	0.020	0.020	0	0
					0.17	0.17	15.0	15.0
3								
4								

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204B3a
SDG #: HP70

VALIDATION FINDINGS WORKSHEET

Surrogate Results Verification

Page: 1 of 1
Reviewer:
2nd reviewer:

METHOD: GC Pesticides/PCBs (EPA SW 846 Method 8081/8082)

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: #1

Surrogate	Column	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
Tetrachloro-m-xylene						
Tetrachloro-m-xylene	STX-CLP1	0.04	0.0477	59.6	~~119~~ 59.6	~~0~~ 0
Decachlorobiphenyl	STX-CLPII	↓	0.0544	68.0	~~136~~ 68	~~0~~ 0
Decachlorobiphenyl						

Sample ID:

Surrogate	Column	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
Tetrachloro-m-xylene						
Tetrachloro-m-xylene						
Decachlorobiphenyl						
Decachlorobiphenyl						

Sample ID:

Surrogate	Column	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
Tetrachloro-m-xylene						
Tetrachloro-m-xylene						
Decachlorobiphenyl						
Decachlorobiphenyl						

Sample ID:

Surrogate	Column	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
Tetrachloro-m-xylene						
Tetrachloro-m-xylene						
Decachlorobiphenyl						
Decachlorobiphenyl						

Notes:

LDC #: 13204B3a
SDG #: HP70

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC Pesticides/PCBs (EPA SW 846 Method 8081/8082)

The percent recoveries (%R) and Relative Percent difference (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100* (SSC-SC)/SA

Where: SSC = Spiked sample concentration; SA = Spike added; SC = Concentration

RPD = | MS - MSD | * 2/(MS + MSD)

MS = Matrix spike percent recovery; MSD = Matrix spike duplicate percent recovery

MS/MSD samples: HDW-5513-010

Compound	Spike Added (ug/kg)		Sample Concentration (ug/kg)	Spiked Sample Concentration (ug/kg)		Matrix Spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	-	MS	MSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
gamma-BHC	30.9	30.9	ND	19.9	19.2	64.4	64.4	61.9	61.9	3.6	3.6
Heptachlor	↓	↓	↓	22.2	21.7	71.8	71.8	70.0	70.0	2.3	2.3
Aldrin	↓	↓	↓	23.5	23.3	76.1	76.1	75.2	75.2	0.9	0.9
Dieldrin	61.8	61.8	↓	48.8	47.1	79.0	79.0	76.1	76.1	3.5	3.5
Endrin	↓	↓	↓	55.3	52.9	89.5	89.5	85.5	85.5	4.4	4.4
4,4'-DDT	↓	↓	↓	50.1	47.7	81.1	81.1	77.1	77.1	4.9	4.9

Comments: Refer ot Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204B3a
SDG #: HP70

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample/Laboratory Control Sample Duplicate Results Verification

Reviewer: EV
2nd Reviewer: AE

METHOD: GC Pesticides/PCBs (EPA SW 846 Method 8081/8082)

The percent recoveries (%R) and Relative Percent difference (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100* (SSC-SC)/SA

Where: SSC = Spiked sample concentration
SA = Spike added
SC = Concentration

RPD = | LCS - LCSD | * 2/(LCS + LCSD)

LCS = Laboratory control sample percent recovery
LCSD = Laboratory control sample duplicate percent recovery

LCS/LCSD samples: LCS - 12405

Compound	Spike Added (ng/kg)		Sample Concentration (ng/kg)	Spiked Sample Concentration (ng/kg)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	-	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
Gamma-BHC	6.67	UA	0	3.09	UA	46	46				
Heptachlor	↓	↓	↓	5.40	↓	81	81				
Aldrin	↓	↓	↓	5.62	↓	84.3	84.3				
Dieldrin	13.3	↓	↓	10.2	↓	76.7	76.7				
Endrin	↓	↓	↓	10.5	↓	78.9	78.9				
4,4'-DDT	↓	↓	↓	10.8	↓	81.2	81.2	NA			

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicate findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204B3a
SDG #: HP70

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: [illegible]
2nd reviewer: [illegible]

METHOD: GC Pesticides/PCBs (EPA SW 846 Method 8081/8082)

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

Example:

Sample I.D. _____ _____:

Conc. = (_____) / (_____)

=

all NP

#	Sample ID	Compound	Reported Concentration ( )	Calculated Concentration ( )	Qualification

Note: _____

LDC #: 13204C3a **VALIDATION COMPLETENESS WORKSHEET** Date: 3/7/07

SDG #: HP90 & ~~HQ69~~ ~~&~~ ~~#Q69~~ Level II Page: 1 of 1

Laboratory: Analytical Resources, Inc. Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: GC Chlorinated Pesticides (EPA SW 846 Method 8081A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 01/19/05
II.	GC/ECD Instrument Performance Check	N	
III.	Initial calibration	N	
IV.	Continuing calibration	N	
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples /SRM	SW	LCS
IX.	Regional quality assurance and quality control	N	
Xa.	Florisil cartridge check	N	
Xb.	GPC Calibration	N	Sulfur clean up performed
XI.	Target compound identification	N	
XII.	Compound quantitation and reported CRQLs	~~SW~~ N	
XIII.	Overall assessment of data	A	
XIV.	Field duplicates	N	
XV.	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples:

sediment

1	LDW-SS-99-010	11	MB-012805	21		31	
2	LDW-SS-99-010MS	12		22		32	
3	LDW-SS-99-010MSD	13		23		33	
4		14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

VALIDATION FINDINGS WORKSHEET

METHOD: Pesticide/PCBs (EPASW 846 Method 8081/8082)

A. alpha-BHC	I. Dieldrin	Q. Endrin ketone	Y. Aroclor-1242	GG.
B. beta-BHC	J. 4,4'-DDE	R. Endrin aldehyde	Z. Aroclor-1248	HH.
C. delta-BHC	K. Endrin	S. alpha-Chlordane	AA. Aroclor-1254	II.
D. gamma-BHC	L. Endosulfan II	T. gamma-Chlordane	BB. Aroclor-1260	JJ.
E. Heptachlor	M. 4,4'-DDD	U. Toxaphene	CC. DB 608	KK.
F. Aldrin	N. Endosulfan sulfate	V. Aroclor-1016	DD. DB 1701	LL.
G. Heptachlor epoxide	O. 4,4'-DDT	W. Aroclor-1221	EE.	MM.
H. Endosulfan I	P. Methoxychlor	X. Aroclor-1232	FF.	NN.

Notes:_____

LDC #: 13204c3a

SDG #: HP9U

VALIDATION FINDINGS WORKSHEET

Laboratory Control Samples

Page: 1 of 1

Reviewer:

2nd Reviewer:

METHOD: GC Pesticides/PCBs (EPA SW 846 Method 8081/8082)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

[✓ Y] N N/A Were a laboratory control samples (LCS) and laboratory control sample duplicate (LCSD) analyzed for each matrix in this SDG? ______

Y [✓ N] N/A Were the LCS percent recoveries (%R) and relative percent differences (RPD) within the QC limits?

Level IV/D Only

Y N N/A Was a LCS analyzed every 20 samples for each matrix or whenever a sample extraction was performed?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		LCS-012805	R	31.0 (50-150)	( )	( )	All + Blk	J/UJ/P
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
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LDC #: 13204D3a **VALIDATION COMPLETENESS WORKSHEET** Date: 3/7/05
SDG #: HQ17 & ~~HQ04~~ Level II Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC Chlorinated Pesticides (EPA SW 846 Method 8081A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/19 — 1/20/05
II.	GC/ECD Instrument Performance Check	N	
III.	Initial calibration	N	
IV.	Continuing calibration	N	
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A	LDW-SS-99-010, LDW-SS134-010
VIII.	Laboratory control samples / SRM	SW	
IX.	Regional quality assurance and quality control	N	
Xa.	Florisil cartridge check	N	
Xb.	GPC Calibration	N	sulfur clean-up performed
XI.	Target compound identification	N	
XII.	Compound quantitation and reported CRQLs	~~SW~~ N	
XIII.	Overall assessment of data	A	
XIV.	Field duplicates	N	
XV.	Field blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: sediments

1	LDW-SS13B-010	11	MB-012805	21		31	
2	LDW-SS125-010	12	MB-020105	22		32	
3	LDW-SS126-010	13		23		33	
4	LDW-SS116-010	14		24		34	
5	LDW-SS127-010	15		25		35	
6	LDW-SS129-010	16		26		36	
7	LDW-SS76-010 2/1/05	17		27		37	
8	LDW-SS84-010 SX	18		28		38	
9		19		29		39	
10		20		30		40	

SRM per batch # 1 in LDC # 13204C

VALIDATION FINDINGS WORKSHEET

METHOD: Pesticide/PCBs (EPASW 846 Method 8081/8082)

A. alpha-BHC	I. Dieldrin	Q. Endrin ketone	Y. Aroclor-1242	GG.
B. beta-BHC	J. 4,4'-DDE	R. Endrin aldehyde	Z. Aroclor-1248	HH.
C. delta-BHC	K. Endrin	S. alpha-Chlordane	AA. Aroclor-1254	II.
D. gamma-BHC	L. Endosulfan II	T. gamma-Chlordane	BB. Aroclor-1260	JJ.
E. Heptachlor	M. 4,4'-DDD	U. Toxaphene	CC. DB 608	KK.
F. Aldrin	N. Endosulfan sulfate	V. Aroclor-1016	DD. DB 1701	LL.
G. Heptachlor epoxide	O. 4,4'-DDT	W. Aroclor-1221	EE.	MM.
H. Endosulfan I	P. Methoxychlor	X. Aroclor-1232	FF.	NN.

Notes:_____

LDC #: 13204039
SDG #: HG17 ~~HG04~~

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: ~~GC~~ __ HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were a laboratory control samples (LCS) and laboratory control sample duplicate (LCSD) analyzed for each matrix in this SDG?

Y N N/A Were the LCS percent recoveries (%R) and relative percent differences (RPD) within the QC limits?

Level IV/D Only

Y N N/A Was an LCS analyzed every 20 samples for each matrix or whenever a sample extraction was performed?

#	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	LCS-020105	R	36.8 (50-150)	( )	( )	MB-020105, 7	J/UJ/P
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
	LCS-012805	R	31.0 (↓)	( )	( )	MB-012805, 1-6, 8	↓
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
	~~NO SRM~~	~~All~~	( )	( )	( )	~~MB-020105, 7~~	~~UJ/P~~
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
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			( )	( )	( )		

LDC #: 13234A3a

SDG #: HQ48

Laboratory: Analytical Resources, Inc.

VALIDATION COMPLETENESS WORKSHEET

Level II

Date: 3/10/05

Page: 1 of 1

Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: GC Chlorinated Pesticides (EPA SW 846 Method 8081A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/24/05
II.	GC/ECD Instrument Performance Check	N	
III.	Initial calibration	N	
IV.	Continuing calibration	N	
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	~~SW~~ A	
VIII.	Laboratory control samples / SRM	SW	LCS
IX.	Regional quality assurance and quality control	N	
Xa.	Florisil cartridge check	N	
Xb.	GPC Calibration	N	sulfur clean up performed
XI.	Target compound identification	N	
XII.	Compound quantitation and reported CRQLs	~~SW~~ N	
XIII.	Overall assessment of data	A	
XIV.	Field duplicates	~~MS SW~~	D = 1-6
XV.	Field blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: sediments

1	LDW-SS50-010 D	11	LDW-SS58-010	21	MB-020105	31	
2	LDW-SS55-010	12	LDW-SS28-010	22	MB-020405	32	
3	LDW-SS72-010	13	LDW-SS134-010	23		33	
4	LDW-SS79-010	14	LDW-SS134-010MS	24		34	
5	LDW-SS54-010	15	LDW-SS134-010MSD	25		35	
6	LDW-SS202-010 D	16		26		36	
72	LDW-SS42-010	17		27		37	
8	LDW-SS128-010	18		28		38	
9	LDW-SS64-010	19		29		39	
10	LDW-SS36-010	20		30		40	

VALIDATION FINDINGS WORKSHEET

METHOD: Pesticide/PCBs (EPASW 846 Method 8081/8082)

A. alpha-BHC	I. Dieldrin	Q. Endrin ketone	Y. Aroclor-1242	GG.
B. beta-BHC	J. 4,4'-DDE	R. Endrin aldehyde	Z. Aroclor-1248	HH.
C. delta-BHC	K. Endrin	S. alpha-Chlordane	AA. Aroclor-1254	II.
D. gamma-BHC	L. Endosulfan II	T. gamma-Chlordane	BB. Aroclor-1260	JJ.
E. Heptachlor	M. 4,4'-DDD	U. Toxaphene	CC. DB 608	KK.
F. Aldrin	N. Endosulfan sulfate	V. Aroclor-1016	DD. DB 1701	LL.
G. Heptachlor epoxide	O. 4,4'-DDT	W. Aroclor-1221	EE.	MM.
H. Endosulfan I	P. Methoxychlor	X. Aroclor-1232	FF.	NN.

Notes: _____

LDC # 13234A3a
SDG #: HQ4B

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

Page: 1 of 1
Reviewer:
2nd Reviewer:

METHOD: [✓ GC] ___ HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

[✓ Y] N N/A Were a laboratory control samples (LCS) and laboratory control sample duplicate (LCSD) analyzed for each matrix in this SDG?

Y [✓ N] N/A Were the LCS percent recoveries (%R) and relative percent differences (RPD) within the QC limits?

Level IV/D Only

Y N [✓ N/A] Was an LCS analyzed every 20 samples for each matrix or whenever a sample extraction was performed?

#	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	LCS-020105	R	36.8 (50-150)	( )	( )	MB-020105, All except #7	J/UJ/P
			( )	( )	( )		
			( )	( )	( )		
	LCS-020405	R	43.5 (↓)	( )	( )	MB-020405, 7	↓
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		

LDC #: 13234B3a

SDG #: HQ27 & ~~HQ28~~ * HQ28

Laboratory: Analytical Resources, Inc.

VALIDATION COMPLETENESS WORKSHEET

Level II

Date: 3/10/05

Page: 1 of 1

Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: GC Chlorinated Pesticides (EPA SW 846 Method 8081A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/21/05
II.	GC/ECD Instrument Performance Check	N	
III.	Initial calibration	N	
IV.	Continuing calibration	N	
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A	LDW-SS-99-010
VIII.	Laboratory control samples /SRM	SW	LCS
IX.	Regional quality assurance and quality control	N	
Xa.	Florisil cartridge check	N	
Xb.	GPC Calibration	N	
XI.	Target compound identification	N	
XII.	Compound quantitation and reported CRQLs	~~SW~~ N	
XIII.	Overall assessment of data	A	
XIV.	Field duplicates	N	
XV.	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples: sediment

1	LDW-SS87-010	11	MB-012805	21		31	
2	LDW-SS96-010	12		22		32	
3	LDW-SS63-010	13		23		33	
4	LDW-SS70-010	14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

VALIDATION FINDINGS WORKSHEET

METHOD: Pesticide/PCBs (EPASW 846 Method 8081/8082)

A. alpha-BHC	I. Dieldrin	Q. Endrin ketone	Y. Aroclor-1242	GG.
B. beta-BHC	J. 4,4'-DDE	R. Endrin aldehyde	Z. Aroclor-1248	HH.
C. delta-BHC	K. Endrin	S. alpha-Chlordane	AA. Aroclor-1254	II.
D. gamma-BHC	L. Endosulfan II	T. gamma-Chlordane	BB. Aroclor-1260	JJ.
E. Heptachlor	M. 4,4'-DDD	U. Toxaphene	CC. DB 608	KK.
F. Aldrin	N. Endosulfan sulfate	V. Aroclor-1016	DD. DB 1701	LL.
G. Heptachlor epoxide	O. 4,4'-DDT	W. Aroclor-1221	EE.	MM.
H. Endosulfan I	P. Methoxychlor	X. Aroclor-1232	FF.	NN.

Notes:_____

LDC #: 13234B3a
SDG #: 4Q27

VALIDATION FINDINGS WORKSHEET

Laboratory Control Samples (LCS)

Page: 1 of 1
Reviewer:
2nd Reviewer:

METHOD: ✓ GC __ HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

[✓ Y] N N/A Were a laboratory control samples (LCS) and laboratory control sample duplicate (LCSD) analyzed for each matrix in this SDG? ____________

Y [✓ N] N/A Were the LCS percent recoveries (%R) and relative percent differences (RPD) within the QC limits?

Level IV/D Only

Y N [✓ N/A] Was an LCS analyzed every 20 samples for each matrix or whenever a sample extraction was performed?

#	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	LCS-012805	R	31.0 (50-180)	( )	( )	All + Blk	J/UJ/P
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		

LDC #: 13234E3a **VALIDATION COMPLETENESS WORKSHEET** Date: 3/10/05

SDG #: HQ56 ~~& HQ57~~ Level II Page: 1 of 1

Laboratory: Analytical Resources, Inc. Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: GC Chlorinated Pesticides (EPA SW 846 Method 8081A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/25/05
II.	GC/ECD Instrument Performance Check	N	
III.	Initial calibration	N	
IV.	Continuing calibration	N	
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A	LDW-SS134-010
VIII.	Laboratory control samples /SRM	SW	
IX.	Regional quality assurance and quality control	N	
Xa.	Florisil cartridge check	N	
Xb.	GPC Calibration	N	
XI.	Target compound identification	N	
XII.	Compound quantitation and reported CRQLs	SW	
XIII.	Overall assessment of data	A	
XIV.	Field duplicates	N	
XV.	Field blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: Sediment

1	LDW-SS92-010	11	MB-020105	21		31	
2	LDW-SS104-010	12		22		32	
3	LDW-SS115-010	13		23		33	
4		14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

VALIDATION FINDINGS WORKSHEET

METHOD: Pesticide/PCBs (EPASW 846 Method 8081/8082)

A. alpha-BHC	I. Dieldrin	Q. Endrin ketone	Y. Aroclor-1242	GG.
B. beta-BHC	J. 4,4'-DDE	R. Endrin aldehyde	Z. Aroclor-1248	HH.
C. delta-BHC	K. Endrin	S. alpha-Chlordane	AA. Aroclor-1254	II.
D. gamma-BHC	L. Endosulfan II	T. gamma-Chlordane	BB. Aroclor-1260	JJ.
E. Heptachlor	M. 4,4'-DDD	U. Toxaphene	CC. DB 608	KK.
F. Aldrin	N. Endosulfan sulfate	V. Aroclor-1016	DD. DB 1701	LL.
G. Heptachlor epoxide	O. 4,4'-DDT	W. Aroclor-1221	EE.	MM.
H. Endosulfan I	P. Methoxychlor	X. Aroclor-1232	FF.	NN.

Notes:_____

LDC #: 13234539a
SDG #: HQ56

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

Page: 1 of 1
Reviewer: B
2nd Reviewer: R

METHOD: ✓ GC ___ HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

[✓ Y] N N/A Were a laboratory control samples (LCS) and laboratory control sample duplicate (LCSD) analyzed for each matrix in this SDG?

Y [✓ N] N/A Were the LCS percent recoveries (%R) and relative percent differences (RPD) within the QC limits?

Level IV/D Only

Y N [✓ N/A] Was an LCS analyzed every 20 samples for each matrix or whenever a sample extraction was performed?

#	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	LCS-020105	R	36.8 (50-150)	( )	( )	All + Blk	J/UJ/P
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		

LDC #: 13298C3a

VALIDATION COMPLETENESS WORKSHEET

Level II

Date: 3/25/05

SDG #: HU13

Page: 1 of 1

Laboratory: Analytical Resources, Inc.

Reviewer:

2nd Reviewer:

METHOD: GC Chlorinated Pesticides (EPA SW 846 Method 8081A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/17/05
II.	GC/ECD Instrument Performance Check	N	
III.	Initial calibration	N	
IV.	Continuing calibration	N	
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples /SRM	A	
IX.	Regional quality assurance and quality control	N	
Xa.	Florisil cartridge check	N	
Xb.	GPC Calibration	N	Silica gel clean up performed
XI.	Target compound identification	N	
XII.	Compound quantitation and reported CRQLs	N	
XIII.	Overall assessment of data	A	
XIV.	Field duplicates	N	
XV.	Field blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: sediment

1	LDW-SS130-010	11	MB-030305	21		31	
2	LDW-SS130-010MS	12		22		32	
3	LDW-SS130-010MSD	13		23		33	
4		14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

LDC #: 13298D3a

SDG #: HV08

Laboratory: Analytical Resources, Inc.

VALIDATION COMPLETENESS WORKSHEET

Level II

Date: 3/25/05

Page: 1 of 1

Reviewer: RJ

2nd Reviewer: SK

METHOD: GC Chlorinated Pesticides (EPA SW 846 Method 8081A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/17 - 1/21/05
II.	GC/ECD Instrument Performance Check	N	
III.	Initial calibration	N	
IV.	Continuing calibration	N	
V.	Blanks	A	
VI	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates / DUP	N / A	NO MS/MSD Test
VIII.	Laboratory control samples / SRM	SW / A	LCS
IX.	Regional quality assurance and quality control	N	
Xa.	Florisil cartridge check	N	
Xb.	GPC Calibration	N	Silica gel clean-up performed
XI.	Target compound identification	N	
XII.	Compound quantitation and reported CRQLs	N	
XIII.	Overall assessment of data	A	
XIV.	Field duplicates	N	D = 1 + 3
XV.	Field blanks	N	

Note. A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples: sediments

1	LDW-SS5-010	11	MB-031105	21		31	
2	LDW-SS67-010	12		22		32	
3	LDW-SS5-010DUP	13		23		33	
4		14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

VALIDATION FINDINGS WORKSHEET

METHOD: Pesticide/PCBs (EPASW 846 Method 8081/8082)

A. alpha-BHC	I. Dieldrin	Q. Endrin ketone	Y. Aroclor-1242	GG.
B. beta-BHC	J. 4,4'-DDE	R. Endrin aldehyde	Z. Aroclor-1248	HH.
C. delta-BHC	K. Endrin	S. alpha-Chlordane	AA. Aroclor-1254	II.
D. gamma-BHC	L. Endosulfan II	T. gamma-Chlordane	BB. Aroclor-1260	JJ.
E. Heptachlor	M. 4,4'-DDD	U. Toxaphene	CC. DB 608	KK.
F. Aldrin	N. Endosulfan sulfate	V. Aroclor-1016	DD. DB 1701	LL.
G. Heptachlor epoxide	O. 4,4'-DDT	W. Aroclor-1221	EE.	MM.
H. Endosulfan I	P. Methoxychlor	X. Aroclor-1232	FF.	NN.

Notes:_____

LDC #: 13298D3a
SDG #: HV08

Page: 1 of 1
Reviewer:
2nd Reviewer:

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

METHOD: ✓ GC ___ HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

[✓ Y] N N/A Were a laboratory control samples (LCS) and laboratory control sample duplicate (LCSD) analyzed for each matrix in this SDG?

Y [✓ N] N/A Were the LCS percent recoveries (%R) and relative percent differences (RPD) within the QC limits?

Level IV/D Only

Y N [✓ N/A] Was an LCS analyzed every 20 samples for each matrix or whenever a sample extraction was performed?

#	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	LCS-031105	R	36.5 (50-150)	( )	( )	All + BLK	J/UJ/P
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		

LDC #: 13204A3b

SDG #: HP67

Laboratory: Analytical Resources, Inc.

VALIDATION COMPLETENESS WORKSHEET

Level ~~II~~ IV

Date: 3/4/05

Page: 1 of 1

Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: GC Polychlorinated Biphenyls (EPA SW 846 Method 8082)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/17/05
II.	GC/ECD Instrument Performance Check	NA	
III.	Initial calibration	A	
IV.	Continuing calibration	A	
V.	Blanks	A	
VI.	Surrogate spikes /1S	SW	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples /SRM	A	LCS
IX.	Regional quality assurance and quality control	N	
Xa.	Florisil cartridge check	N	
Xb.	GPC Calibration	N	Acid + sulfur clean up performed
XI.	Target compound identification	A	
XII.	Compound quantitation and reported CRQLs	SW	
XIII.	Overall assessment of data	A	
XIV.	Field duplicates	N	
XV.	Field blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: sediment

1	LDW-SS1-010	11	LDW-SS5-010MSD	21		31	
2	LDW-SS4-010	12	MB-012405	22		32	
3	LDW-SS5-010	13		23		33	
4	LDW-SS10-010	14		24		34	
5	LDW-SS12-010	15		25		35	
6	LDW-SS14-010	16		26		36	
7	LDW-SS15-010	17		27		37	
8	LDW-SS22-010	18		28		38	
9	LDW-SS13-010	19		29		39	
10	LDW-SS5-010MS	20		30		40	

SRM/Aroclor 1254 = 120 ug/kg
(SRM SQ-1)

LDC #: 13204A36
SDG #: HP67

VALIDATION FINDINGS CHECKLIST

Reviewer: [illegible]
2nd Reviewer: [illegible]

Method: ✓ GC _____ HPLC

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Was a linear fit used for evaluation? If yes, were all percent relative standard deviations (%RSD) < 20%?	✓			
Was a curve fit used for evaluation? If Yes, what was the acceptance criteria used?		✓		
Did the initial calibration meet the curve fit acceptance criteria?			✓	
Were the RT windows properly established?	✓			
IV. Continuing calibration				
What type of continuing calibration calculation was performed? ____%D or %R	✓			
Was a continuing calibration analyzed daily?	✓			
Were all percent differences (%D) < 15%.0 or percent recoveries 85-115%?	✓			
Were all the retention times within the acceptance windows?	✓			
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Surrogate spikes				
Were all surrogate %R within the QC limits?	✓			
If the percent recovery (%R) of one or more surrogates was outside QC limits, was a reanalysis performed to confirm %R?		✓		
If any %R was less than 10 percent, was a reanalysis performed to confirm %R?			✓	
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.	✓			
Was a MS/MSD analyzed every 20 samples of each matrix?	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	✓			
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			

LDC #: 13204A36
SDG #: HP86-1

VALIDATION FINDINGS CHECKLIST

Reviewer: B
2nd Reviewer: K

Validation Area	Yes	No	NA	Findings/Comments
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?			✓	
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
X. Target compound identification				
Were the retention times of reported detects within the RT windows?	✓			
XI. Compound quantitation/CRQLs				
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XII. System performance				
System performance was found to be acceptable.	✓			
XIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XIV. Field duplicates				
Were field duplicate pairs identified in this SDG?		✓		
Were target compounds idetected in the field duplicates?			✓	
XV. Field blanks				
Were field blanks identified in this SDG?		✓		
Were target compounds detected in the field blanks?			✓	

VALIDATION FINDINGS WORKSHEET

METHOD: Pesticide/PCBs (EPASW 846 Method 8081/8082)

A. alpha-BHC	I. Dieldrin	Q. Endrin ketone	Y. Aroclor-1242	GG.
B. beta-BHC	J. 4,4'-DDE	R. Endrin aldehyde	Z. Aroclor-1248	HH.
C. delta-BHC	K. Endrin	S. alpha-Chlordane	AA. Aroclor-1254	II.
D. gamma-BHC	L. Endosulfan II	T. gamma-Chlordane	BB. Aroclor-1260	JJ.
E. Heptachlor	M. 4,4'-DDD	U. Toxaphene	CC. DB 608	KK.
F. Aldrin	N. Endosulfan sulfate	V. Aroclor-1016	DD. DB 1701	LL.
G. Heptachlor epoxide	O. 4,4'-DDT	W. Aroclor-1221	EE.	MM.
H. Endosulfan I	P. Methoxychlor	X. Aroclor-1232	FF.	NN.

Notes:_____

LDC #: 13204A36
SDG #: H867

VALIDATION FINDINDS WORKSHEET
Surrogate Recovery

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: __GC __HPLC
Are surrogates required by the method? Yes____ or No____.
Please see qualifications below for all questions answered "N". No: applicable questions are identified as "N/A".
Y N N/A Were surrogates spikec into all samples and blanks?
Y N N/A Did all surrogate recoveries (%R) meet the QC limits?

#	Sample ID	Detector/ Column	Surrogate Compound	%R (Limits)	Qualifications
	2	ZB5	DCB	234 (50-150)	J/P detect
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
	note: Lab thinks that they spiked it twice			( )	

	Surrogate Compound		Surrogate Compound		Surrogate Compound		Surrogate Compound
A	Chlorobenzene (CBZ)	G	Octacosane	M	Benzo(e)Pyrene	S	1-Chloro-3-Nitrobenzene
B	4-Bromofluorobenzene (BFB)	H	Ortho-Terphenyl	N	Terphenyl-D14	T	3,4-Dinitrotoluene
C	a,a,a-Trifluorotoluene	I	Fluorobenzene (FBZ)	O	Decafluorobiphenyl (DCB)	U	Tripentyltin
D	Bromochlorobenene	J	n-Triacontane	P	1-methylnaphthalere	V	Tri-n-propyltin
E	1,4-Dichlorobutane	K	Hexacosane	Q	Dichlorophenyl Acetic Acic (DCAA)	W	Tributyl Phosphate
F	1,4-Diflucrobenzene (DFB)	L	Bromobenzene	R	4-Nitrophenol	X	Triphenyl Phosphate

LDC #: 13204A36
SDG #: H867

VALIDATION FINDINDS WORKSHEET
Surrogate Recovery

Page: 1 of 1
Reviewer: B
2nd Reviewer: IK

METHOD: GC ___ HPLC

Are surrogates required by the method? Yes___ or No___.

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were surrogates spiked into all samples and blanks?

Y N N/A Did all surrogate recoveries (%R) meet the QC limits?

#	Sample ID	Detector/ Column	Surrogate Compound	%R (Limits)	Qualifications
	1	ZB5	Heptachlorobiphenyl	65555358 (66506087-26602438)	J/UJ/P Qual All except AA+BB
	2	↓	↓	55076972 (↓)	↓
	3	↓	↓	66177898 (↓)	J/NJ/A Qual All except AA+BB
	5	↓	↓	54440457 (↓)	J/NJ/P Qual All except AA+BB
	6	↓	↓	59559589 (↓)	
	7	↓	↓	57122450 (↓)	
	8	↓	↓	53377065 (↓)	
	9	↓	↓	54405003 (↓)	↓
				( )	
				( )	
				( )	

	Surrogate Compound		Surrogate Compound		Surrogate Compound		Surrogate Compound
A	Chlorobenzene (CBZ)	G	Octacosane	M	Benzo(e)Pyrene	S	1-Chloro-3-Nitrobenzene
B	4-Bromofluorobenzene (BFB)	H	Ortho-Terphenyl	N	Terphenyl-D14	T	3,4-Dinitrotoluene
C	a,a,a-Trifluorotoluene	I	Fluorobenzene (FBZ)	O	Decafluorobiphenyl (DCB)	U	Tripentyltin
D	Bromochlorobenene	J	n-Triacontane	P	1-methylnaphthalene	V	Tri-n-propyltin
E	1,4-Dichlorobutane	K	Hexacosane	Q	Dichlorophenyl Acetic Acid (DCAA)	W	Tributyl Phosphate
F	1,4-Difluorobenzene (DFB)	L	Bromobenzene	R	4-Nitrophenol	X	Triphenyl Phosphate

LDC #: 13204A36
SDG #: HP67

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported CRQLs

Page: 1 of 1
Reviewer: B
2nd Reviewer: K

METHOD: GC __ HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Level IV/D Only

Y N N/A Were CRQLs adjusted for sample dilutions, dry weight factors, etc.?
Y N N/A Did the reported results for detected target compounds agree within 10.0% of the recalculated results?
Y N N/A Did the percent difference of detected compounds between two columns./detectors ≤40%?
If no, please see findings bellow.

#	Compound Name	Sample ID	%D Between Two Columns/Detectors % RPD Limit (≤ 40%)	Qualifications
	BB	7	~~40.8~~ 41	J/A det
	Y	8	~~46.2~~ 46	↓

Comments: See sample calculation verification worksheet for recalculations

LDC #: 13204A36
SDG #: H867

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer: JB
2nd Reviewer: JC

METHOD: GC ✓ HPLC ____

The calibration Factor (CF), average CF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

CF = A/C
average CF = sum of the CF/number of standards
%RSD = 100 * (S/X)

A = Area of compound,
C = Concentration of compound,
S = Standard deviation of the CF
X = Mean of the CFs

#	Standard ID	Calibration Date	Compound	Reported CF (0.25 std)	Recalculated CF (0.25 std)	Reported Average CF (initial)	Recalculated Average CF (initial)	Reported %RSD	Recalculated %RSD
1	Aroclor 1016/1260 ICAV	1/28/05	Aroclor 1260-1 (ZB5)	0.0284	0.0284	0.0279	0.0279	8.3	8.3
2			↓ (ZB35)	0.0567	0.0567	0.0587	0.0587	7.0	7.0
3									
4									

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

INIC SB

LDC #: 13204A36
SDG #: HP67

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Page: 1 of 1
Reviewer: [illegible]
2nc Reviewer: [illegible]

METHOD: GC ✓ HPLC ____

The percent difference (%D) of the initial calibration average Calibration Factors (CF) and the continuing calibration CF were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. CF - CF)/ave. CF
CF = A/C

Where: ave. CF = initial calibration average CF
CF = continuing calibration CF
A = Area of compound
C = Concentration of compound

#	Standard ID	Calibration Date	Compound	Average CF(Ical)/ CCV Conc.	Reported CF/Conc. CCV	Recalculated CF/Conc. CCV	Reported %D	Recalculated %D
1	8082 CCV	1/28/05	Aroclor 1260 - 1	0.50	~~0.50~~	0.57	14.5	14.5
	ZB5	16:26			0.57			
2	ZB35	↓	↓	↓	0.52	0.52	4.5	4.5
3								
4								

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204A3b
SDG #: HP67

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Reviewer: [illegible]
2nd reviewer: [illegible]

METHOD: ___ GC ___ HPLC

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: #1

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
TCMX	ZB5	0.040	0.0370	92.6	92.5	0
DCB	↓	↓	0.0522	130.4	130.5	0

Sample ID:

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference

Sample ID:

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference

LDC #: 13204A36
SDG #: HP67

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Page: 1 of 1
Reviewer: P
2nd Reviewer: K

METHOD: ✓ GC __HPLC

The percent recoveries (%R) and relative percent differences (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

%Recovery = 100 * (SSC - SC)/SA Where SSC = Spiked sample concentration SC = Sample concentration
SA = Spike added
RPD =(({SSCMS - SSCMSD} * 2) / (SSCMS + SSCMSD))*100 MS = Matrix spike MSD = Matrix spike duplicate

MS/MSD samples: 10 + 11

Compound	Spike Added (ug/kg)		Sample Conc. (ug/kg)	Spike Sample Concentration (ug/kg)		Matrix spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	---	MS	MSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)											
Diesel (8015)											
Benzene (802' B)											
Methane (RSK-175)											
2,4-D (8151)											
Dinoseb (8151)											
Naphthalene (8310)											
Anthracene (8310)											
HMX (8330)											
2,4,6-Trinitrotoluene (8330)											
Aroclor 1260	100	100	ND	102	101	102	102	101	101	1	1

Comments: Refer to Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204A3b
SDG #: HP67

VALIDATION FINDINGS WORKSHEET

Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

METHOD: / GC __HPLC

The percent recoveries (%R) and relative percent differences (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

%Recovery = 100 * (SSC - SC)/SA

Where SSC = Spiked sample concentration
SA = Spike added
SC = Sample concentration

RPD =(({SSCLCS - SSCLCSD} * 2) / (SSCLCS + SSCLCSD))*100

LCS = Laboratory Control Sample
LCSD = Laboratory Control Sample duplicate

LCS/LCSD samples: LCS - 012405

Compound	Spike Added (ug/kg)		Sample Conc. (ug/kg)	Spike Sample Concentration (ug/kg)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	---	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)											
Diesel (8015)											
Benzene (8021B)											
Methane (RSK-175)											
2,4-D (8151)											
Dinoseb (8151)											
Naphthalene (8310)											
Anthracene (8310)											
HMX (8330)											
2,4,6-Trinitrotoluene (8330)											
Aroclor 1260	102	NA	0	102	NA	100	100	NA			

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicate findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204A3b
SDG #: HP67

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: / GC ___ HPLC

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds within 10% of the reported results?

Concentration= $\frac{(A)(Fv)(Df)}{(RF)(Vs \text{ or } Ws)(\%S/100)}$

A= Area or height of the compound to be measured
Fv= Final Volume of extract
Df= Dilution Factor
RF= Average response factor of the compound in the initial calibration
Vs= Initial volume of the sample
Ws= Initial weight of the sample
%S= Percent Solid

Example:

Sample ID. #1 Compound Name Aroclor 1260

Concentration = $\frac{0.259 \times 5 \times 000}{26}$

$= \frac{50\ ug}{kg}$

#	Sample ID	Compound	Reported Concentrations ( )	Recalculated Results Concentrations ( )	Qualifications
	Aroclor-2=	$\frac{2914031}{10076277} \times 0.05$			
		0.04596			
	=	0.315			
	Aroclor (2+3+4) =	$\frac{0.315 + 0.244 + .217}{3} = 0.259$			

Comments: _____

LDC #: 13204B3b

SDG #: HP70

Laboratory: Analytical Resources, Inc.

VALIDATION COMPLETENESS WORKSHEET

Level IV

Date: 3/4/05

Page: 1 of 1

Reviewer:

2nd Reviewer:

METHOD: GC Polychlorinated Biphenyls (EPA SW 846 Method 8082)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/18/05
II.	GC/ECD Instrument Performance Check	A	
III.	Initial calibration	A	
IV.	Continuing calibration	A	
V.	Blanks	A	
VI.	Surrogate spikes /1,5	SW	
VII.	Matrix spike/Matrix spike duplicates	A	LDW-SS5-010
VIII.	Laboratory control samples /SRM	A	LCS
IX.	Regional quality assurance and quality control	N	
Xa.	Florisil cartridge check	N	
Xb.	GPC Calibration	N	Acid + Sulfur clean up performed
XI.	Target compound identification	A	
XII.	Compound quantitation and reported CRQLs	SW	
XIII.	Overall assessment of data	A	
XIV.	Field duplicates	SW	D = 4 + 5
XV.	Field blanks	ND ~~NB~~	~~R = 1~~ RB = LDW-SS38-RB

Note: A = Acceptable; ND = No compounds detected; D = Duplicate; N = Not provided/applicable; R = Rinsate; TB = Trip blank; SW = See worksheet; FB = Field blank; EB = Equipment blank

Validated Samples: ~~Soil + Water~~ S

W	1 ~~LDW-SS38-RB~~	11	LDW-SS51-010 S	21		31		
S	2 LDW-SS23-010	12	MB-012405	22		32		
	3 LDW-SS26-010	13	MB-012205	23		33		
	4 LDW-SS27-010	14		24		34		
	5 LDW-SS200-010	15		25		35		
	6 LDW-SS32-010	16		26		36		
	7 LDW-SS37-010	17		27		37		
	8 LDW-SS38-010	18		28		38		
	9 LDW-SS40-010	19		29		39		
	10 LDW-SS48-010	20		30		40		

SRM SQ-1: 1254 = 120 ug/kg found in 13204A

VALIDATION FINDINGS WORKSHEET

METHOD: Pesticide/PCBs (EPASW 846 Method 8081/8082)

A. alpha-BHC	I. Dieldrin	Q. Endrin ketone	Y. Aroclor-1242	GG.
B. beta-BHC	J. 4,4'-DDE	R. Endrin aldehyde	Z. Aroclor-1248	HH.
C. delta-BHC	K. Endrin	S. alpha-Chlordane	AA. Aroclor-1254	II.
D. gamma-BHC	L. Endosulfan II	T. gamma-Chlordane	BB. Aroclor-1260	JJ.
E. Heptachlor	M. 4,4'-DDD	U. Toxaphene	CC. DB 608	KK.
F. Aldrin	N. Endosulfan sulfate	V. Aroclor-1016	DD. DB 1701	LL.
G. Heptachlor epoxide	O. 4,4'-DDT	W. Aroclor-1221	EE.	MM.
H. Endosulfan I	P. Methoxychlor	X. Aroclor-1232	FF.	NN.

Notes:_____

LDC #: 13204B3b
SDG #: HFH0

VALIDATION FINDINGS CHECKLIST

Page: 1 of 1
Reviewer: SB
2nd Reviewer: DC

Method: ✓ GC _____ HPLC

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Was a linear fit used for evaluation? If yes, were all percent relative standard deviations (%RSD) ≤ 20%?	✓			
Was a curve fit used for evaluation? If Yes, what was the acceptance criteria used?	✓			
Did the initial calibration meet the curve fit acceptance criteria?	✓			
Were the RT windows properly established?	✓			
IV. Continuing calibration				
What type of continuing calibration calculation was performed? ____%D or %R	✓			
Was a continuing calibration analyzed daily?	✓			
Were all percent differences (%D) ≤ 15%.0 or percent recoveries 85-115%?	✓			
Were all the retention times within the acceptance windows?	✓			
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.			✓	
VI. Surrogate spikes				
Were all surrogate %R within the QC limits?	✓			
If the percent recovery (%R) of one or more surrogates was outside QC limits, was a reanalysis performed to confirm %R?			✓	
If any %R was less than 10 percent, was a reanalysis performed to confirm %R?			✓	
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.	✓			
Was a MS/MSD analyzed every 20 samples of each matrix?	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	✓			
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			

LDC #: 13204B36
SDG #: HP70

VALIDATION FINDINGS CHECKLIST

Reviewer: R
2nd Reviewer: R

Validation Area	Yes	No	NA	Findings/Comments
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?			✓	
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
X. Target compound identification				
Were the retention times of reported detects within the RT windows?	✓			
XI. Compound quantitation/CRQLs				
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XII. System performance				
System performance was found to be acceptable.	✓			
XIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XIV. Field duplicates				
Were field duplicate pairs identified in this SDG?	✓			
Were target compounds idetected in the field duplicates?	✓			
XV. Field blanks				
Were field blanks identified in this SDG?	✓			
Were target compounds detected in the field blanks?			✓	

LDC #: 13204B36
SDG #: HR70

VALIDATION FINDINDS WORKSHEET
Surrogate Recovery

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: ✓ GC ___ HPLC

Are surrogates required by the method? Yes___ or No___.

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were ~~surrogates~~ IS spikec into all samples and blanks?

Y N N/A Did all ~~surrogate~~ IS recoveries (%R) meet the QC limits?

#	Sample ID	Detector/ Column	~~Surrogate~~ IS Compound	area ~~%R~~ (Limits)	Qualifications
	5	ZB5	Heptachlorobiphenyl	52977551 (55673917 - 72695668)	J/UJ/P QUAL: V, W, X, Y, Z
	6	↓	↓	52779345 (↓)	↓
	8 9	↓	↓	54738954 (↓)	↓
	10	↓	↓	47839147 (↓)	↓
	11	↓	↓	50253001 (↓)	↓
				( )	
				( )	
				( )	

	Surrogate Compound		Surrogate Compound		Surrogate Compound		Surrogate Compound
A	Chlorobenzene (CBZ)	G	Octacosane	M	Benzo(e)Pyrene	S	1-Chloro-3-Nitrobenzene
B	4-Bromofluorobenzene (BFB)	H	Ortho-Terphenyl	N	Terphenyl-D14	T	3,4-Dinitrotoluene
C	a,a,a-Trifluorotoluene	I	Fluorobenzene (FBZ)	O	Decafluorobiphenyl (DCB)	U	Tricentyltin
D	Bromochlorobenene	J	n-Triacontane	P	1-methylnaphthalene	V	Tri-n-propyltin
E	1,4-Dichlorobutane	K	Hexacosane	Q	Dichlorophenyl Acetic Acid (DCAA)	W	Tributyl Phosphate
F	1,4-Difluorobenzene (DFB)	L	Bromobenzene	R	4-Nitrophenol	X	Triphenyl Phosphate

LDC # 13204B36
SDG #: 14870

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported CRQLs

Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC ___ HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Level IV/D Only

Y N N/A Were CRQLs adjusted for sample dilutions, dry weight factors, etc.?
Y N N/A Did the reported results for detected target compounds agree within 10.0% of the recalculated results?
Y N N/A Did the percent difference of detected compounds between two columns./detectors ≤40%?
If no, please see findings bellow.

#	Compound Name	Sample ID	%RPD ~~%D~~ Between Two Columns/Detectors Limit (≤ 40%)	Qualifications
	Y	9	44	J/A det

Comments: See sample calculation verification worksheet for recalculations

LDC #: 13204B3b
SDG #: HP70

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: B
2nd reviewer: R

METHOD: GC ___ HPLC
Y N N/A Were field duplicate pairs identified in this SDG?
Y N N/A Were target compounds detected in the field duplicate pairs?

Compound	Concentration (ug/kg)		%RPD Limit 150	Qualification Parent only / All Samples
	4	5		
Y	21	23	9	
AA	32	37	14	
BB	20u	40	~~200~~ NC	

Compound	Concentration ( )		%RPD Limit _____	Qualification Parent only / All Samples

LDC #: 13204B3b
SDG #: HP70

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Reviewer: B
2nd Reviewer: K

METHOD: GC / HPLC_____

The calibration Factor (CF), average CF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

CF = A/C
average CF = sum of the CF/number of standards
%RSD = 100 * (S/X)

A = Area of compound,
C = Concentration of compound,
S = Standard deviation of the CF
X = Mean of the CFs

#	Standard ID	Calibration Date	Compound	Reported CF (0.25 std)	Recalculated CF (0.25 std)	Reported Average CF (initial)	Recalculated Average CF (initial)	Reported %RSD	Recalculated %RSD
1	82601CAL ZB5	1/24/05	1260-1	0.0278	0.0278	0.0278	0.0278	5.0	5.0
	ZB35		↓	0.0555	0.0555	0.0576	0.0576	8.6	8.6
2	ZB5	1/31/05	↓	0.0876	0.0876	0.0797	0.0797	7.5	7.5
	ZB35			0.0613	0.0613	0.0601	0.0601	7.3	7.3
3									
4									

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

INIC[illegible] SB

LDC #: 13204B3b
SDG #: HP70

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC ✓ HPLC ____

The percent difference (%D) of the initial calibration average Calibration Factors (CF) and the continuing calibration CF were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. CF - CF)/ave. CF
CF = A/C

Where: ave. CF = initial calibration average CF
CF = continuing calibration CF
A = Area of compound
C = Concentration of compound

#	Standard ID	Calibration Date	Compound	Average CF(Ical)/ CCV Conc.	Reported CF/Conc. CCV	Recalculated CF/Conc. CCV	Reported %D	Recalculated %D
1	8082 CCV	1/31/05 1427	1260-1 ZB5	~~0.49~~ 0.50	~~0.50~~ 0.49	0.49	1.2	1.2
			↓ ZB35	0.50	0.47	0.47	6.2	6.2
2								
3								
4								

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204B36
SDG #: HP70

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Page: 1 of 1
Reviewer: [illegible]
2nd reviewer: [illegible]

METHOD: ~~GC~~ / GC ___ HPLC

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: #1

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
2 DCB	DB-35	0.04	0.0499	125	125	
TCMX	↓	↓	0.0351	87.8	87.8	↓

Sample ID:

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference

Sample ID:

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference

LDC #: 13204B36
SDG #: HP70

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Page: 1 of 1
Reviewer: FT
2nd Reviewer: [illegible]

METHOD: ✓GC __HPLC

The percent recoveries (%R) and relative percent differences (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

%Recovery = 100 * (SSC - SC)/SA Where SSC = Spiked sample concentration SC = Sample concentration
SA = Spike added
RPD = ((SSCMS - SSCMSD) * 2) / (SSCMS + SSCMSD))*100 MS = Matrix spike MSD = Matrix spike duplicate

MS/MSD samples: LDW-555-010

Compound	Spike Added ( )		Sample Conc. ( )	Spike Sample Concentration ( )		Matrix spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	---	MS	MSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)											
Diesel (8015)											
Benzene (8021B)											
Methane (RSK-175)											
2,4-D (8151)											
Dinoseb (8151)											
Naphthalene (8310)											
Anthracene (8310)											
HMX (8330)											
2,4,6-Trinitrotoluene (8330)											

Comments: Refer to Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204B30
SDG #: HP70

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

Reviewer: JS
2nd Reviewer:

_____METHOD: ✓ GC __HPLC

The percent recoveries (%R) and relative percent differences (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

%Recovery = 100 * (SSC - SC)/SA

Where SSC = Spiked sample concentration; SA = Spike added; SC = Sample concentration; LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample duplicate

RPD =(({SSCLCS - SSCLCSD} * 2) / (SSCLCS + SSCLCSD))*100

LCS/LCSD samples:_____

Compound	Spike Added ( )		Sample Conc. ( )	Spike Sample Concentration ( )		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	---	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)											
Diesel (8015)											
Benzene (8021B)											
Methane (RSK-175)											
2,4-D (8151)											
Dinoseb (8151)											
Naphthalene (8310)											
Anthracene (8310)											
HMX (8330)											
2,4,6-Trinitrotoluene (8330)											

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicate findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204B3b
SDG #: HP10

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: ✓ GC ___ HPLC

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds within 10% of the reported results?

Concentration= $\frac{(A)(Fv)(Df)}{(RF)(Vs \text{ or } Ws)(\%S/100)}$

A= Area or height of the compound to be measured
Fv= Final Volume of extract
Df= Dilution Factor
RF= Average response factor of the compound in the initial calibration
Vs= Initial volume of the sample
Ws= Initial weight of the sample
%S= Percent Solid

Example:

Sample ID. #2 Compound Name 1260

Concentration = $\frac{0.157 \times 5 \times 1000}{26.2}$

= 30 ug/kg

#	Sample ID	Compound	Reported Concentrations ( )	Recalculated Results Concentrations ( )	Qualifications
	Aroclor 1260-2	= (1609390)(0.05) / (9452964)(0.0468)	=		
		= 0.182			
	1260-(2+3+4)/3	= 0.182 + 0.172 + 0.118 / 3	=	0.157	

Comments: _____

SAMPCALew.wpd

LDC #: 13204C3b

VALIDATION COMPLETENESS WORKSHEET

SDG #: HP90 ~~& HQ69~~ ~~& HQ69~~

Level II

Laboratory: Analytical Resources, Inc.

Date: 3/4/05

Page: 1 of 1

Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: GC Polychlorinated Biphenyls (EPA SW 846 Method 8082)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/19/05
II.	GC/ECD Instrument Performance Check	N	
III.	Initial calibration	N	
IV.	Continuing calibration	N	
V.	Blanks	A	
VI.	Surrogate spikes ~~/TS~~ A	~~SW~~	
VII.	Matrix spike/Matrix spike duplicates	SW	LDW-SS97-010
VIII.	Laboratory control samples /SRM	A	LCS
IX.	Regional quality assurance and quality control	N	
Xa.	Florisil cartridge check	N	
Xb.	GPC Calibration	N	
XI.	Target compound identification	N	
XII.	Compound quantitation and reported CRQLs	SW	
XIII.	Overall assessment of data	N	
XIV.	Field duplicates	SW	D = 7 + 8
XV.	Field blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: Sediment

1 2	LDW-SS-111-010 S	11	MB-012609	21		31	
2	LDW-SS-112-010	12 2	MB-02015	22		32	
3	LDW-SS-119-010	13		23		33	
4	LDW-SS-120-010	14		24		34	
5	LDW-SS-60-010	15		25		35	
6	LDW-SS-99-010	16		26		36	
7	LDW-SS-89-010 D	17		27		37	
8	LDW-SS-201-010 D	18		28		38	
9	LDW-SS-60-010MS	19		29		39	
10	LDW-SS-60-010MSD	20		30		40	

(Batch #1) SRM SQ-1 (1254 = 120 ug/kg)

~~No SRM Associated w/ batch #2~~

LDC #: 13204C36
SDG #: HP90

VALIDATION FINDINDS WORKSHEET
Surrogate Recovery

Page: 1 of 1
Reviewer: PJ
2nd Reviewer: PC

METHOD: ✓ GC __ HPLC

Are surrogates required by the method? Yes___ or No___.

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Were surrogates spiked into all samples and blanks?

Y (N) N/A Did all surrogate recoveries (%R) meet the QC limits?

#	Sample ID	Detector/ Column	Surrogate Compound	%R (Limits)		Qualifications
	7	ZB5	DCB	155	(50-150)	no qual 20X Dil
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	

	Surrogate Compound		Surrogate Compound		Surrogate Compound		Surrogate Compound
A	Chlorobenzene (CBZ)	G	Octacosane	M	Benzo(e)Pyrene	S	1-Chloro-3-Nitrobenzene
B	4-Bromofluorobenzene (BFB)	H	Ortho-Terphenyl	N	Terphenyl-D14	T	3,4-Dintrotoluene
C	a,a,a-Trifluorotoluene	I	Fluorobenzene (FBZ)	O	Decafluorobiphenyl (DCB)	U	Tripentyltin
D	Bromochlorobenene	J	n-Triacontane	P	1-methylnaphthalene	V	Tri-n-propyltin
E	1,4-Dichlorobutane	K	Hexacosane	Q	Dichlorophenyl Acetic Acid (DCAA)	W	Tributyl Phosphate
F	1,4-Difluorobenzene (DFB)	L	Bromobenzene	R	4-Nitrophenol	X	Tripheny Phosphate

LDC #: 1320Yc3b
SDG #: HP90

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Page: 1 of 1
Reviewer: FT
2nd Reviewer: K

METHOD: ✓ GC ___ HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

[✓ Y] N N/A Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG?
[✓ Y] N N/A Was an MS/MSD analyzed every 20 samples for each matrix or whenever a sample extraction was performed?
Y [✓ N] N/A Were the MS/MSD percent recoveries (%R) and relative percent differences (RPD) within QC limits?

#	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	9+10	BB	35.2 (50-150)	31.0 (50-150)	( )	✓ ~~2-8~~ 5	J/UJ/A
			( )	( )	( )		Qual AA,
			( )	( )	( )		BB + 7
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		

DC #: 13204C36
SDG #: HP90

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported CRQLs

Reviewer: B
2nd Reviewer: [illegible]

METHOD: ✓ GC ___ HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Level IV/D Only

Y N N/A Were CRQLs adjusted for sample dilutions, dry weight factors, etc.?

Y N N/A Did the reported results for detected target compounds agree within 10.0% of the recalculated results?

#	Compound Name	Sample ID ~~Finding~~	%RPD But column ≤ 40 Associated Samples	Qualifications
	BB	# 1	80	J/A det
	↓	3	44	↓
	↓	4	63	↓

Comments: See sample calculation verification worksheet for recalculations

LDC #: 13204c3b
SDG #: HP90

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: 5
2nd reviewer: DC

METHOD: ___ GC ___ HPLC
Y N N/A Were field duplicate pairs identified in this SDG?
Y N N/A Were target compounds detected in the field duplicate pairs?

Compound	Concentration (ug/kg)		%RPD Limit 150	Qualification Parent only / All Samples
	7	8		
AA	2300	46	192	
BB	1200	39	187	

Compound	Concentration ( )		%RPD Limit _____	Qualification Parent only / All Samples
note # 7 20x all				

LDC #: 13204D3b

VALIDATION COMPLETENESS WORKSHEET

Level II

Date: 3/4/05

SDG #: HQ17 & ~~HQ04~~

Page: 1 of 1

Laboratory: Analytical Resources, Inc.

Reviewer: R

2nd Reviewer: R

METHOD: GC Polychlorinated Biphenyls (EPA SW 846 Method 8082)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/20/05
II.	GC/ECD Instrument Performance Check	N	
III.	Initial calibration	N	
IV.	Continuing calibration	N	
V.	Blanks	A	
VI.	Surrogate spikes TCS A	~~SW~~	
VII.	Matrix spike/Matrix spike duplicates	ASW	
VIII.	Laboratory control samples SRM	A	
IX.	Regional quality assurance and quality control	N	
Xa.	Florisil cartridge check	N	
Xb.	GPC Calibration	N	Acid + Sulfur clean up performed
XI.	Target compound identification	N	
XII.	Compound quantitation and reported CRQLs	SW	
XIII.	Overall assessment of data	SW	
XIV.	Field duplicates	N	
XV.	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples: sediments

1	LDW-SS114-010	11	LDW-SS76-010	21		31	
2	LDW-SS117-010	12	LDW-SS84-010	22		32	
3	LDW-SS13B-010	13	LDW-SS84-010DL	23		33	
4	LDW-SS125-010	14	LDW-SS116-010MS	24		34	
5	LDW-SS126-010	15	LDW-SS116-010MSD	25		35	
6	LDW-SS116-010	16	MB-012905	26		36	
7	LDW-SS127-010	17		27		37	
8	LDW-SS130-010	18		28		38	
9	LDW-SS129-010	19		29		39	
10	LDW-SS118-010	20		30		40	

SRM 52-1 (1254 = 75ug/kg)

VALIDATION FINDINGS WORKSHEET

METHOD: Pesticide/PCBs (EPASW 846 Method 8081/8082)

A. alpha-BHC	I. Dieldrin	Q. Endrin ketone	Y. Aroclor-1242	GG.
B. beta-BHC	J. 4,4'-DDE	R. Endrin aldehyde	Z. Aroclor-1248	HH.
C. delta-BHC	K. Endrin	S. alpha-Chlordane	AA. Aroclor-1254	II.
D. gamma-BHC	L. Endosulfan II	T. gamma-Chlordane	BB. Aroclor-1260	JJ.
E. Heptachlor	M. 4,4'-DDD	U. Toxaphene	CC. DB 608	KK.
F. Aldrin	N. Endosulfan sulfate	V. Aroclor-1016	DD. DB 1701	LL.
G. Heptachlor epoxide	O. 4,4'-DDT	W. Aroclor-1221	EE.	MM.
H. Endosulfan I	P. Methoxychlor	X. Aroclor-1232	FF.	NN.

Notes:_____

LDC #: 13204D36
SDG #: HQ17~~+#Q04~~

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Page: 1 of 1
Reviewer: FT
2nd Reviewer:

METHOD: [✓ GC] __ HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

[✓ Y] N N/A Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG?
[✓ Y] N N/A Was an MS/MSD analyzed every 20 samples for each matrix or whenever a sample extraction was performed?
Y [✓ N] N/A Were the MS/MSD percent recoveries (%R) and relative percent differences (RPD) within QC limits?

#	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	14+15	BB	49.8 (50-150)	( )	( )	~~All~~ 6	J/UJ/A
			( )	( )	( )		QUAL AA, BB
			( )	( )	( )		+ Z
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
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			( )	( )	( )		
			( )	( )	( )		

LDC #: 13204D3b
SDG #: 11917 + 11904

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported CRQLs

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: ✓ GC __ HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Level IV/D Only

Y N N/A Were CRQLs adjusted for sample dilutions, dry weight factors, etc.?

Y N N/A Did the reported results for detected target compounds agree within 10.0% of the recalculated results?

#	Compound Name	~~Finding~~ sample ID	Associated Samples % RPD but 2 column ≤ 40	Qualifications
	BB	2	50	J/A det
	BB	6	41	✓

Comments: See sample calculation verification worksheet for recalculations

LDC #: 13204D3b
SDG #: H917 + H904

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported CRQLs

Page: 1 of 1
Reviewer:
2nd Reviewer:

METHOD: ✓ GC ___ HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Level IV/D Only

Y N N/A Were CRQLs adjusted for sample dilutions, dry weight factors, etc.?

Y N N/A Did the reported results for detected target compounds agree within 10.0% of the recalculated results?

#	~~Compound Name~~ sample ID	Finding	Associated Samples	Qualifications
	12	2 exceeded cal range		J/A det

Comments: See sample calculation verification worksheet for recalculations

LDC #: 13204D3b
SDG #: H917 + H604

VALIDATION FINDINGS WORKSHEET
Overall Assessment of Data

Page: 1 of 1
Reviewer: EJ
2nd Reviewer:

METHOD: ✓ GC __ HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

All available information pertaining to the data were reviewed using professional judgement to compliment the determination of the overall quality of the data.

Y N N/A Was the overal quality and usability of the data acceptable?

#	Compound Name	Finding	Associated Samples	Qualifications
	Z, AA, BB	Z, exceeded cal range	12	R/A
		AA + BB lomes result		
	All except Above	diluted	13	R/A

Comments:

LDC #: 13234A3b
SDG #: HQ48
Laboratory: Analytical Resources, Inc.

VALIDATION COMPLETENESS WORKSHEET
Level II

Date: 3/10/05
Page: 1 of 1
Reviewer:
2nd Reviewer:

METHOD: GC Polychlorinated Biphenyls (EPA SW 846 Method 8082)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/24/05
II.	GC/ECD Instrument Performance Check	N	
III.	Initial calibration	N	
IV.	Continuing calibration	N	
V.	Blanks	A	
VI.	Surrogate spikes	SW	
VII.	Matrix spike/Matrix spike duplicates	A	LDW-SS97-010
VIII.	Laboratory control samples	A	LCS
IX.	Regional quality assurance and quality control	N	
Xa.	Florisil cartridge check	N	
Xb.	GPC Calibration	N	Acid + Sulfur clean up performed
XI.	Target compound identification	A	
XII.	Compound quantitation and reported CRQLs	SW	
XIII.	Overall assessment of data	SW	
XIV.	Field duplicates	SW	D = 2 + 8 3 + 8
XV.	Field blanks	ND	RB = ~~15~~ LDW-SS64-RB

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples: Sediment

1 3	LDW-SS17-010	11 3	LDW-SS128-010	21 3	LDW-SS56-010	31	~~MB-012805~~
2 3	LDW-SS50-010 D	12 3	LDW-SS142-010	22 3	LDW-SS28-010	32 2	MB-020105 (2/1)
3 3	LDW-SS50-010DL	13 3	LDW-SS123-010	23 2	LDW-SS134-010	33 3	MB-020205
4 3	LDW-SS55-010	14 3	LDW-SS203-010	24 3	LDW-SS203-010MS	34	
5 3	LDW-SS72-010	15 1	~~LDW-SS64-RB~~ W	25 3	LDW-SS203-010MSD	35	
6 3	LDW-SS79-010	16 3	LDW-SS64-010	26		36	
7 3	LDW-SS54-010	17 3	LDW-SS83-010	27		37	
8 3	LDW-SS202-010 D	18 3	LDW-SS36-010	28		38	
9 3	LDW-SS42-010	19 3	LDW-SS58-010	29		39	
10 3	LDW-SS102-010	20 3	LDW-SS57-010	30		40	

SRM in 13234B = 125Y = 120 ug/kg for 020105

VALIDATION FINDINGS WORKSHEET

METHOD: Pesticide/PCBs (EPASW 846 Method 8081/8082)

A. alpha-BHC	I. Dieldrin	Q. Endrin ketone	Y. Aroclor-1242	GG.
B. beta-BHC	J. 4,4'-DDE	R. Endrin aldehyde	Z. Aroclor-1248	HH.
C. delta-BHC	K. Endrin	S. alpha-Chlordane	AA. Aroclor-1254	II.
D. gamma-BHC	L. Endosulfan II	T. gamma-Chlordane	BB. Aroclor-1260	JJ.
E. Heptachlor	M. 4,4'-DDD	U. Toxaphene	CC. DB 608	KK.
F. Aldrin	N. Endosulfan sulfate	V. Aroclor-1016	DD. DB 1701	LL.
G. Heptachlor epoxide	O. 4,4'-DDT	W. Aroclor-1221	EE.	MM.
H. Endosulfan I	P. Methoxychlor	X. Aroclor-1232	FF.	NN.

Notes: _____

LDC #: 13234A36
SDG #: 1tQ48

VALIDATION FINDINDS WORKSHEET
Surrogate Recovery

Page: 1 of 1
Reviewer: B
2nd Reviewer: R

METHOD: X GC __ HPLC

Are surrogates required by the method? Yes___ or No___.
Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were surrogates spiked into all samples and blanks?
Y N N/A Did all surrogate recoveries (%R) meet the QC limits?

#	Sample ID	Detector/ Column	Surrogate Compound	%R (Limits)	Qualifications
	21	not specified	DcB	151 (50 - 150)	J/P detect
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	

	Surrogate Compound		Surrogate Compound		Surrogate Compound		Surrogate Compound
A	Chlorobenzene (CBZ)	G	Octacosane	M	Benzo(e)Pyrene	S	1-Chloro-3-Nitrobenzene
B	4-Bromofluorobenzene (BFB)	H	Ortho-Terphenyl	N	Terphenyl-D14	T	3,4-Dinitrotoluene
C	a,a,a-Trifluorotoluere	I	Fluorobenzene (FBZ)	O	Decafluorobiphenyl (DCB)	U	Tripentyltin
D	Bromochlorobenene	J	n-Triacontane	P	1-methylnaphthalene	V	Tri-n-propyltin
E	1,4-Dichlorobutane	K	Hexacosane	Q	Dichlorophenyl Acetic Acid (DCAA)	W	Tributyl Phosphate
F	1,4-Difluorobenzene (DFB)	L	Bromobenzene	R	4-Nitrophenol	X	Triphenyl Phosphate

LDC #: 13234A3b
SDG #: HQ48

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported CRQLs

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: ✓ GC __ HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".
Level IV/D Only

Y N N/A Were CRQLs adjusted for sample dilutions, dry weight factors, etc.?
Y N N/A Did the reported results for detected target compounds agree within 10.0% of the recalculated results?

#	Compound Name	Finding	%RPD Between column ≤ 40 Associated Samples	Qualifications
	BB	12	42	J/A det
	BB	21	44	↓

Comments: See sample calculation verification worksheet for recalculations

DC #: 132234A3b
SDG #: HQ48

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported CRQLs

Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: / GC __ HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".
Level IV/D Only
Y N N/A Were CRQLs adjusted for sample dilutions, dry weight factors, etc.?
Y N N/A Did the reported results for detected target compounds agree within 10.0% of the recalculated results?

#	Compound Name	Finding	Associated Samples	Qualifications
	Z, AA	exceeded cal range	2	J/A dut

Comments: See sample calculation verification worksheet for recalculations

LDC #: 13234A3b
SDG #: H048

VALIDATION FINDINGS WORKSHEET
Overall Assessment of Data

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: ✓ GC ___ HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

All available information pertaining to the data were reviewed using professional judgement to compliment the determination of the overall quality of the data.

Y N N/A Was the overal quality and usability of the data acceptable?

#	Compound Name	Finding	Associated Samples	Qualifications
	Z, AA, BB	exceeded cal range (Z, AA)	2	R/A
		lower Result (BB)		
	All except Above	diluted	3	↓

Comments: _____

OVRNew.wpd

LDC #: 13234A3b
SDG #: HQ48

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Page: 1 of 1
Reviewer: [illegible]
2nd reviewer: [illegible]

METHOD: ✓ GC __ HPLC

Y N N/A Were field duplicate pairs identified in this SDG?
Y N N/A Were target compounds detected in the field duplicate pairs?

Compound	Concentration (ug/kg)		%RPD Limit 50	Qualification Parent only / All Samples
	2	8		
Z	300	160	61	
AA	280	150	60	
BB	110	59	60	

Compound	Concentration (ug/kg)		%RPD Limit 50	Qualification Parent only / All Samples
	3	8		
Z	330	160	69	
AA	320	150	72	
BB	140	59	81	

LDC #: 13234B3b

SDG #: HQ27 & ~~HQ28~~

Laboratory: Analytical Resources, Inc.

VALIDATION COMPLETENESS WORKSHEET

Level II

Date: 3/10/05

Page: 1 of 1

Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: GC Polychlorinated Biphenyls (EPA SW 846 Method 8082)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/20/05 - 1/21/05
II.	GC/ECD Instrument Performance Check	N	
III.	Initial calibration	N	
IV.	Continuing calibration	N	
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	~~SW~~ A	
VIII.	Laboratory control samples /SRM	A	LCS
IX.	Regional quality assurance and quality control	N	
Xa.	Florisil cartridge check	N	
Xb.	GPC Calibration	N	
XI.	Target compound identification	N	
XII.	Compound quantitation and reported CRQLs	N	
XIII.	Overall assessment of data	N	
XIV.	Field duplicates	N	
XV.	Field blanks	ND	~~LDW-SS43-RB = R~~ RB = LDW-SS43-RB

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet

ND = No compounds detected
R = Rinsate
FB = Field blank

D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples:

1	LDW-SS43-010	11	LDW-SS75-010	21	MB-020105	31	
2	LDW-SS44-010	12	~~LDW-SS43-RB~~	22	~~MB-012005~~	32	
3	LDW-SS87-010	13	LDW-SS97-010MS	23	MB-012005	33	
4	LDW-SS94-010	14	LDW-SS97-010MSD	24		34	
5	LDW-SS96-010	15	LDW-SS101-010	25		35	
6	LDW-SS97-010	16		26		36	
7	LDW-SS31-010	17		27		37	
8	LDW-SS67-010	18		28		38	
9	LDW-SS63-010	19		29		39	
10	LDW-SS70-010	20		30		40	

SRM SQ-1 = 1254 = 20ug/kg (020105)

LDC #: 13234E3b

VALIDATION COMPLETENESS WORKSHEET

SDG #: HQ56 & HQ57

Level II

Laboratory: Analytical Resources, Inc.

Date: 3/10/05

Page: 1 of 1

Reviewer:

2nd Reviewer:

METHOD: GC Polychlorinated Biphenyls (EPA SW 846 Method 8082)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/24/05 → 1/25/05
II.	GC/ECD Instrument Performance Check	N	
III.	Initial calibration	N	
IV.	Continuing calibration	N	
V.	Blanks	N	
VI.	Surrogate spikes	SW	LDW
VII.	Matrix spike/Matrix spike duplicates	SW	-SS97 - 010
VIII.	Laboratory control samples /SRM	A	LCS
IX.	Regional quality assurance and quality control	N	
Xa.	Florisil cartridge check	N	
Xb.	GPC Calibration	N	
XI.	Target compound identification	N	
XII.	Compound quantitation and reported CRQLs	SW	
XIII.	Overall assessment of data	SW	
XIV.	Field duplicates	N	
XV.	Field blanks	~~ND~~	~~R = 1~~ RB = LDW-SS10-RB

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: Sediment

1	~~LDW-SS110-RB~~	11 1	LDW-SS121-010	21 1	MB-020205	31	
2 1	LDW SS52 010	12 1	LDW SS121-010DL	22 2	MB-020105	32	
3 1	LDW-SS92-010	13 1	LDW-SS88-010	23		33	
4 1	LDW-SS92-010DL	14 1	LDW-SS88-010DL	24		34	
5 1	LDW-SS104-010	15 2	LDW-SS33-010	25		35	
6 1	LDW-SS110-010	16 2	LDW-SS49-010	26		36	
7 1	LDW-SS110-010DL	17 2	LDW-SS143-010	27		37	
8 1	LDW-SS109-010	18 2	LDW-SS143-010DL	28		38	
9 1	LDW-SS109-010DL	19 1	LDW-SS92-010MS	29		39	
10 1	LDW-SS115-010	20 1	LDW-SS92-010MSD	30		40	

SRM for 020105 = 1754 = 120ug/k in 13234B

VALIDATION FINDINGS WORKSHEET

METHOD: Pesticide/PCBs (EPASW 846 Method 8081/8082)

A. alpha-BHC	I. Dieldrin	Q. Endrin ketone	Y. Aroclor-1242	GG.
B. beta-BHC	J. 4,4'-DDE	R. Endrin aldehyde	Z. Aroclor-1248	HH.
C. delta-BHC	K. Endrin	S. alpha-Chlordane	AA. Aroclor-1254	II.
D. gamma-BHC	L. Endosulfan II	T. gamma-Chlordane	BB. Aroclor-1260	JJ.
E. Heptachlor	M. 4,4'-DDD	U. Toxaphene	CC. DB 608	KK.
F. Aldrin	N. Endosulfan sulfate	V. Aroclor-1016	DD. DB 1701	LL.
G. Heptachlor epoxide	O. 4,4'-DDT	W. Aroclor-1221	EE.	MM.
H. Endosulfan I	P. Methoxychlor	X. Aroclor-1232	FF.	NN.

Notes: _____

LDC #: 13234E36
SDG #: HQ56 + HQ57

VALIDATION FINDINDS WORKSHEET
Surrogate Recovery

Page: 1 of 1
Reviewer: B
2nd Reviewer: K

METHOD: X GC ___ HPLC

Are surrogates required by the method? Yes___ or No____.

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were surrogates spiked into all samples and blanks?

Y N N/A Did all surrogate recoveries (%R) meet the QC limits?

#	Sample ID	Detector/ Column	Surrogate Compound	%R (Limits)	Qualifications
	18	not specified	DCB	D (50 - 150)	MC QUAL 50X D/L
			TCMX	D (↓)	↓
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	

	Surrogate Compound		Surrogate Compound		Surrogate Compound		Surrogate Compound
A	Chlorobenzene (CBZ)	G	Octacosane	M	Benzo(e)Pyrene	S	1-Chloro-3-Nitrobenzene
B	4-Bromofluorobenzene (BFB)	H	Ortho-Terphenyl	N	Terphenyl-D14	T	3,4-Dinitrotoluene
C	a,a,a-Trifluorotoluene	I	Fluorobenzene (FBZ)	O	Decafluorobiphenyl (DCB)	U	Tripentyltin
D	Bromochlorobenene	J	n-Triacontane	P	1-methylnaphthalene	V	Tri-n-propyltin
E	1,4-Dichlorobutane	K	Hexacosane	Q	Dichlorophenyl Acetic Acid (DCAA)	W	Tributyl Phosphate
F	1,4-Difluorobenzene (DFB)	L	Bromobenzene	R	4-Nitrophenol	X	Tripheny Phosphate

LDC #: 13234E36
SDG #: HQ56 + HQ57

VALIDATION FINDINGS WORKSHEET

Matrix Spike/Matrix Spike Duplicates

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: ✓ GC __ HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

[✓ Y] N N/A Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG?
[✓ Y] N N/A Was an MS/MSD analyzed every 20 samples for each matrix or whenever a sample extraction was performed?
Y [✓ N] N/A Were the MS/MSD percent recoveries (%R) and relative percent differences (RPD) within QC limits?

#	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	19+20	BB	% recovery	not reported	( )		NO QUAL
			( )	( )	( )		parent 72x
			Result exceeded	cal	range ( )		Spike Amt
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		

LDC #: 13234E36
SDG #: HQ56 + HQ57

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported CRQLs

Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: ✓ GC __ HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Level V/D Only

Y N N/A Were CRQLs adjusted for sample dilutions, dry weight factors, etc.?

Y N N/A Did the reported results for detected target compounds agree within 10.0% of the recalculated results?

#	Compound Name	%R PD Between Columns >40 Finding	Associated Samples	Qualifications
	BB	44	12	J/A det

Comments: See sample calculation verification worksheet for recalculations

DC #: 13234E36
SDG #: H9556 + H9557

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported CRQLs

Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: ✓ GC ___ HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Level IV/D Only

Y N N/A Were CRQLs adjusted for sample dilutions, dry weight factors, etc.?

Y N N/A Did the reported results for detected target compounds agree within 10.0% of the recalculated results?

#	Compound Name	Finding	Associated Samples	Qualifications
	AA, BB	exceeded cal range	3, 11, 13	J/A det
	AA	↓	6, 8	↓
	Y	↓	17	↓

Comments: See sample calculation verification worksheet for recalculations

LDC #: 13234E36
SDG #: HQ56 & HQ57

VALIDATION FINDINGS WORKSHEET
Overall Assessment of Data

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: / GC __ HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

All available information pertaining to the data were reviewed using professional judgement to compliment the determination of the overall quality of the data.

Y N N/A Was the overall quality and usability of the data acceptable?

#	Compound Name	Finding	Associated Samples	Qualifications
	AA + BB	exceeded cal range	3, 11, 13	R/A
	all except AA + BB	diluted	4, 12, 14	
	AA	exceeded cal range	6, 8	
	All except AA	diluted	7, 9	
	Y	exceeded cal range	17	
	all except Y	diluted	18 L	

Comments: _____

OVRNew.wpd

LDC #: 13298A3b

SDG #: HQ93

Laboratory: Analytical Resources, Inc.

VALIDATION COMPLETENESS WORKSHEET

Level II

Date: 3/29/0

Page: 1 of 1

Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: GC Polychlorinated Biphenyls (EPA SW 846 Method 8082)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/28/05
II.	GC/ECD Instrument Performance Check	NA	
III.	Initial calibration	N	
IV.	Continuing calibration	N	
V.	Blanks	SW A	
VI.	Surrogate spikes	SW	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples /SRM	A	LCS
IX.	Regional quality assurance and quality control	N	
Xa.	Florisil cartridge check	N	
Xb.	GPC Calibration	N	
XI.	Target compound identification	N	
XII.	Compound quantitation and reported CRQLs	N	
XIII.	Overall assessment of data	N	
XIV.	Field duplicates	N	
XV.	Field blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: sediment

1	LDW-SSCR20-010	11		21		31	
2	LDW-SSCR23-010	12		22		32	
3	LDW-MSMP43-010	13		23		33	
4	LDW-MSMP43-010MS	14		24		34	
5	LDW-MSMP43-010MSD	15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

LDC #: 13298A3b
SDG #: 17893

VALIDATION FINDINDS WORKSHEET
Surrogate Recovery

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: ✓ GC __ HPLC

Are surrogates required by the method? Yes____ or No____.

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

[✓ Y] N N/A Were surrogates spiked into all samples and blanks?

Y [✓ N] N/A Did all surrogate recoveries (%R) meet the QC limits?

#	Sample ID	Detector/ Column	Surrogate Compound	%R (Limits)		Qualifications
	MB-020705	not specified	DCB	155	(50-150)	J/P det
			~~TCMX~~		( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	

	Surrogate Compound		Surrogate Compound		Surrogate Compound		Surrogate Compound
A	Chlorobenzene (CBZ)	G	Octacosane	M	Benzo(e)Pyrene	S	1-Chloro-3-Nitrobenzene
B	4-Bromofluorobenzene (BFB)	H	Ortho-Terphenyl	N	Terphenyl-D14	T	3,4-Dinitrotoluene
C	a,a,a-Trifluorotoluere	I	Fluorobenzene (FBZ)	O	Decafluorobiphenyl (DCB)	U	Tripentyltin
D	Bromochlorobenene	J	n-Triacontane	P	1-methylnaphthalene	V	Tri-n-propyltin
E	1,4-Dichlorobutane	K	Hexacosane	Q	Dichlorophenyl Acetic Acid (DCAA)	W	Tributyl Phosphate
F	1,4-Difluorobenzene (DFB)	L	Bromobenzene	R	4-Nitrophenol	X	Triphenyl Phosphate

LDC #: 13315A3b

SDG #: HS56

Laboratory: Analytical Resources, Inc.

VALIDATION COMPLETENESS WORKSHEET

Level II

Date: 3/29/05

Page: 1 of 1

Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: GC Polychlorinated Biphenyls (EPA SW 846 Method 8082)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 2/8 – 2/10/05
II.	GC/ECD Instrument Performance Check	N	
III.	Initial calibration	N	
IV.	Continuing calibration	N	
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples /SRM	A	LCS
IX.	Regional quality assurance and quality control	N	
Xa.	Florisil cartridge check	N	
Xb.	GPC Calibration	N	
XI.	Target compound identification	N	
XII.	Compound quantitation and reported CRQLs	SW	
XIII.	Overall assessment of data	N	
XIV.	Field duplicates	N	
XV.	Field blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: sediment

1	LDW-SS4-010	11	MB-021805	21		31	
2	LDW-SS5a-010	12		22		32	
3	LDW-SS5b-010	13		23		33	
4	~~SC-SS1b-010~~	14		24		34	
5	LDW-SS5a-010MS	15		25		35	
6	LDW-SS5a-010MSD	16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

LDC #: 13204A4

VALIDATION COMPLETENESS WORKSHEET

Level III

Date: 3/4/05

SDG #: HP67

Page: 1 of 1

Laboratory: Analytical Resources, Inc.

Reviewer: MH

2nd Reviewer: R

METHOD: Metals (EPA SW 846 Method 6010B/~~6020~~/200.8/7000)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/17/05
II.	Calibration	A ~~N~~	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	SW	
V.	Matrix Spike Analysis	SW	3 MS/dup LDW-SS23-010
VI.	Duplicate Sample Analysis	A	
VII.	Laboratory Control Samples (LCS)	A	LCS + SRM
VIII.	Internal Standard (ICP-MS)	A	
IX.	Furnace Atomic Absorption QC	N	Not utilized
X.	ICP Serial Dilution	N	Not required
XI.	Sample Result Verification	~~A~~ N SW	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	N	
XIV.	Field Blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: sediment

1	LDW-SS1-010	11		21		31	
2	LDW-SS4-010	12		22		32	
3	LDW-SS5-010	13		23		33	
4	LDW-SS10-010	14		24		34	
5	LDW-SS12-010	15		25		35	
6	LDW-SS14-010	16		26		36	
7	LDW-SS15-010	17		27		37	
8	LDW-SS22-010	18		28		38	
9	LDW-SS13-010	19		29		39	
10	PB	20		30		40	

Notes:

LDC #: 13204A4
SDG #: Hp67

VALIDATION FINDINGS CHECKLIST

Page: 1 of 1
Reviewer: MM
2nd Reviewer: DC

Method: Metals (EPA SW 846 Method 6010/7000/6020) 4

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. Calibration				
Were all instruments calibrated daily, each set-up time?	✓			
Were the proper number of standards used?	✓			
Were all initial and continuing calibration verification %Rs within the 90-110% (80-120% for mercury and 85-115% for cyanide) QC limits?	✓			
Were all initial calibration correlation coefficients ≥ 0.995?	✓			
Was a midrange cyanide standard distilled?			✓	
III. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
IV. ICP Interference Check Sample				
Were ICP interference check samples performed daily?	✓			
Were the AB solution percent recoveries (%R) with the 80-120% QC limits?	✓			
IV. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.		✓		
Were the MS/MSD or duplicate relative percent differences (RPD) ≤ 20% for waters and ≤ 35% for soil samples? A control limit of +/- RL(+/-2X RL for soil) was used for samples that were ≤ 5X the RL, including when only one of the duplicate sample values were ≤ 5X the RL.	✓			
V. Laboratory control samples				
Was an LCS anaylzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% QC limits for water samples and laboratory established QC limits for soils?	✓			
VI. Furnace Atomic Absorption QC				
If MSA was performed, was the correlation coefficients ≥ 0.995?			✓	
Do all applicable analysies have duplicate injections?			✓	

LDC #: 13204 A4
SDG #: 4p67

VALIDATION FINDINGS CHECKLIST

Page: 1 of 1
Reviewer: MR
2nd Reviewer: R

Validation Area	Yes	No	NA	Findings/Comments
For sample concentrations > RL, are applicable duplicate injection RSD values < 20%?			✓	
Were analytical spike recoveries within the 85-115% QC limits?			✓	
VII. ICP Serial Dilution				
Was an ICP serial dilution analyzed if analyte concentrations were > 50X the IDL?		✓		
Were all percent differences (%Ds) ≤ 10%?			✓	
Was there evidence of negative interference? If yes, professional judgement will be used to qualify the data.			✓	
VIII. Internal Standards (EPA SW 846 Method ~~6020~~ 200.8)				
Were all the percent recoveries (%R) within the ~~30-120%~~ 60-125 of the intensity of the internal standard in the associated initial calibration?	✓			
If the %Rs were outside the criteria, was a reanalysis performed?			✓	
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?			✓	
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
X. Sample Result Verification				
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XI. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XII. Field duplicates				
Field duplicate pairs were identified in this SDG.		✓		
Target analytes were detected in the field duplicates.			✓	
XIII. Field blanks				
Field blanks were identified in this SDG.		✓		
Target analytes were detected in the field blanks.			✓	

LDC #: 13304A4
SDG #: 14P67

VALIDATION FINDINGS WORKSHEET
Sample Specific Element Reference

Page: 1 of 1
Reviewer: MG
2nd reviewer:

All circled elements are applicable to each sample.

Sample ID	Matrix	Target Analyte List (TAL)
1-9	Sediment	Al, [✓ Sb], [✓ As], Ba, Be, [✓ Cd], Ca, [✓ Cr], [✓ Co], [✓ Cu], Fe, [✓ Pb], Mg, Mn, Hg, [✓ Ni], K, [✓ Se], [✓ Ag], Na, [✓ Tl], [✓ V], [✓ Zn], [✓ Mo], B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
Analysis Method		
ICP		Al, Sb, As, Ba, Be, [✓ Cd], Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
ICP Trace		Al, Sb, As, Ba, Be, [✓ Cd], Ca, [✓ Cr], [✓ Co], [✓ Cu], Fe, [✓ Pb], Mg, Mn, Hg, [✓ Ni], K, [✓ Se], [✓ Ag], Na, Tl, [✓ V], [✓ Zn], [✓ Mo], B, Si, CN^-, ___ ___
ICP-MS		Al, [✓ Sb], [✓ As], Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, [✓ Tl], V, Zn, Mo, B, Si, CN^-, ___ ___
GFAA		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-,

Comments: Mercury by CVAA if performed

LDC #: 13204A4
SDG #: H9067

VALIDATION FINDINGS WORKSHEET
ICP Interference Check Sample

Reviewer: ulz
2nd Reviewer: DC

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Were ICP interference check samples performed as required?

(Y) N N/A Were the AB solution percent recoveries (%R) within the control limits of 80-120% ?

LEVEL IV ONLY:

(Y) N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Date	ICS Identification	Analyte	Finding	Associated Samples	Qualifications
1	1/26/05	ICSA	Se	-69.2 ug/L	2, 6, 8. (Fe >90% in ICSA)	UJ/P
2	↓	↓	↓	↓	1, 3-5, 7, 9 (Al, Ca, Mg, Fe (90% in ICSA)	No qual.

Comments:

LDC #: 13204A4
SDG #: 4P67

VALIDATION FINDINGS WORKSHEET
Matrix Spike Analysis

Reviewer: MH
2nd Reviewer: a

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Was a matrix spike analyzed for each matrix in this SDG?

Y (N) N/A Were matrix spike percent recoveries (%R) within the control limits of ~~75-125?~~ 70-130 If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.

Y (N) N/A Was a post digestion spike analyzed for ICP elements that did not meet the required criteria for matrix spike recovery?

LEVEL IV ONLY:

(Y) N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Matrix Spike ID	Matrix	Analyte	%R	Associated Samples	Qualifications
1	LDW-SS-23-010	Sediment	Sb	3.7	All	J- (R/A UNJ/A (post spiked was not performed > 25%))

Comments:

LDC #: 13204 A4
SDG #: HP67

VALIDATION FINDINGS WORKSHEET
Sample Result Verification

Reviewer: MH
2nd Reviewer: [illegible]

METHOD: Trace metals (EPA SW-846 6010/7000)

#	Sample ID	Analyte	APP Result (units)	lab reported. RL (units)	Finding	Qualifications
1	All	Sb, As, Tl.	6020.	200.8	Lab method was different from APP method.	Text.

Comments:

LDC #: 13204A4
SDG #: H967

VALIDATION FINDINGS WORKSHEET
Initial and Continuing Calibration Calculation Verification

Reviewer: MG
2nd Reviewer: AK

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

An initial and continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

%R = Found / True x 100 Where, Found = concentration (in ug/L) of each analyte measured in the analysis of the ICV or CCV solution
True = concentration (in ug/L) of each analyte in the ICV or CCV source

Standard ID	Type of Analysis	Element	Found (ug/L)	True (ug/L)	Recalculated %R	Reported %R	Acceptable (Y/N)
ICV	ICP (Initial calibration)	Pb	1942	2000	97.1	97.1	Y
↓	~~GFAA~~ (Initial calibration) ICP/MS	As	50.757	50	101.5	101.5	
↓	CVAA (Initial calibration)	Hg	8.82	8.0	110.3	110.3	
CCV	ICP (Continuing calibration)	Co	999.9	1000	100.0	100.0	
↓	~~GFAA~~ (Continuing calibration) ICP/MS	Tl	50.672	50	101.3	101.3	
↓	CVAA (Continuing calibration)	Hg	4.35	4.0	108.8	108.8	↓
	Cyanide (Initial calibration)						
	Cyanide (Continuing calibation)						

Comments: Refer to Calibration Verification findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204B4
SDG #: 4p67

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

Page: 1 of 1
Reviewer: MM
2nd Reviewer: DC

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

Percent recoveries (%R) for an ICP interference check sample, a laboratory control sample and a matrix spike sample were recaluculated using the following formula:

$$\%R = \frac{Found}{True} \times 100$$

Where, Found = Concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation, Found = SSR (spiked sample result) - SR (sample result).
True = Concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

$$RPD = \frac{|S-D|}{(S+D)/2} \times 100$$

Where, S = Original sample concentration
D = Duplicate sample concentration

An ICP serial dilution percent difference (%D) was recalculated using the following formula:

$$\%D = \frac{|I-SDR|}{I} \times 100$$

Where, I = Initial Sample Result (mg/L)
SDR = Serial Dilution Result (mg/L) (Instrument Reading x 5)

Sample ID	Type of Analysis	Element	Found / S / I (units)	True / D / SDR (units)	Recalculated %R / RPD / %D	Reported %R / RPD / %D	Acceptable (Y/N)
ICSAB	ICP interference check	Zn	886.8	1000	88.7	88.7	Y
LCS	Laboratory control sample	Cd	50.7	50.0	101	~~99.5~~ 101	
LBW-5553-010	Matrix spike	Ag	(SSR-SR) 60.6	61.9	97.9	97.9	
↓	Duplicate	Ni	9.44	9.14	3.1	10.5	↓
↓ MB	ICP serial diluton						

Comments: Refer to appropriate worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204A4
SDG #: HP67

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: MV
2nd reviewer: [illegible]

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Have results been reported and calculated correctly?
(Y) N N/A Are results within the calibrated range of the instruments and within the linear range of the ICP?
(Y) N N/A Are all detection limits below the CRDL?

Detected analyte results for 1 were recalculated and verified using the following equation:

Concentration = $\frac{(RD)(FV)(Dil)}{(In.\ Vol.)(\%S)}$

RD = Raw data concentration
FV = Final volume (ml)
In Vol = Initial volume (ml) or weight (G)
Dil = Dilution factor
%S = Decimal percent solids

Recalculation:

$$As = \frac{4.764\ ug/L \times 0.05\ L \times 20}{1.056\ g \times 0.727} = 6.2\ ug/g$$

Sample ID	Analyte	Reported Concentration (mg/kg)	Calculated Concentration (mg/kg)	Acceptable (Y/N)
1	As	6.2	6.2	Y
	Cr	18.9	18.9	
	Co	4.9	4.9	
	Cu	32.3	32.3	
	Pb	24	24	
	Hg	0.09	0.09	
	Mo	1.1	1.1	
	Ni	10	10	
	V	42.3	42.3	
	Zn	60.3	60.3	

LDC #: 13204B4 **VALIDATION COMPLETENESS WORKSHEET** Date: 3/7/05

SDG #: HP70 Level ~~III~~ IV Page: 1 of 1

Laboratory: Analytical Resources, Inc. 200.8 Reviewer: MM

2nd Reviewer: DC

METHOD: Metals (EPA SW 846 Method 6010B/~~6020~~/7000)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/18/05
II.	Calibration	A N	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	SW	
V.	Matrix Spike Analysis	SW	
VI.	Duplicate Sample Analysis	A	
VII.	Laboratory Control Samples (LCS)	A	Lcs + SRM,
VIII.	Internal Standard (ICP-MS)	N	Not reviewed
IX.	Furnace Atomic Absorption QC	N	Not Utilized
X.	ICP Serial Dilution	N	Not required
XI.	Sample Result Verification	SW	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	SW	(4, 5)
XIV.	Field Blanks	ND	RB = LDW-SS38-RB

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples:

1	~~LDW-SS38-RB~~ AD	11	LDW-SS51-010 Sediment	21		31	
2	LDW-SS23-010 Sediment	12	LDW-SS23-010MS	22		32	
3	LDW-SS26-010	13	LDW-SS23-010DUP	23		33	
4	LDW-SS27-010	14	PR>	24		34	
5	LDW-SS200-010	15		25		35	
6	LDW-SS32-010	16		26		36	
7	LDW-SS37-010	17		27		37	
8	LDW-SS38-010	18		28		38	
9	LDW-SS40-010	19		29		39	
10	LDW-SS48-010	20		30		40	

Notes: _____

LDC #: 13204B4
SDG #: 42970

VALIDATION FINDINGS CHECKLIST

Reviewer: MM
2nd Reviewer: SC

Method: Metals (EPA SW 846 Method 6010/7000/6020) 4

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. Calibration				
Were all instruments calibrated daily, each set-up time?	✓			
Were the proper number of standards used?	✓			
Were all initial and continuing calibration verification %Rs within the 90-110% (80-120% for mercury and 85-115% for cyanide) QC limits?	✓			
Were all initial calibration correlation coefficients ≥ 0.995?	✓			
Was a midrange cyanide standard distilled?			✓	
III. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
IV. ICP Interference Check Sample				
Were ICP interference check samples performed daily?	✓			
Were the AB solution percent recoveries (%R) with the 80-120% QC limits?	✓			
IV. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.		✓		
Were the MS/MSD or duplicate relative percent differences (RPD) ≤ 20% for waters and ≤ 35% for soil samples? A control limit of +/- RL(+/-2X RL for soil) was used for samples that were ≤ 5X the RL, including when only one of the duplicate sample values were ≤ 5X the RL.	✓			
V. Laboratory control samples				
Was an LCS anaylzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% QC limits for water samples and laboratory established QC limits for soils?	✓			
VI. Furnace Atomic Absorption QC				
If MSA was performed, was the correlation coefficients ≥ 0.995?			✓	
Do all applicable analysies have duplicate injections?			✓	

LDC #: 13204B4
SDG #: 420070

VALIDATION FINDINGS CHECKLIST

Reviewer: MR
2nd Reviewer: JV

Validation Area	Yes	No	NA	Findings/Comments
For sample concentrations > RL, are applicable duplicate injection RSD values < 20%?			✓	
Were analytical spike recoveries within the 85-115% QC limits?			✓	
VII. ICP Serial Dilution				
Was an ICP serial dilution analyzed if analyte concentrations were > 50X the IDL?		✓		
Were all percent differences (%Ds) ≤ 10%?			✓	
Was there evidence of negative interference? If yes, professional judgement will be used to qualify the data.			✓	
VIII. Internal Standards (EPA SW 846 Method ~~6020~~ 6020A)				
Were all the percent recoveries (%R) within the ~~30-120%~~ 60-125 of the intensity of the internal standard in the associated initial calibration?				
If the %Rs were outside the criteria, was a reanalysis performed?				
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?			✓	
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
X. Sample Result Verification				
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XI. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XII. Field duplicates				
Field duplicate pairs were identified in this SDG.	✓			
Target analytes were detected in the field duplicates.	✓			
XIII. Field blanks				
Field blanks were identified in this SDG.	✓			
Target analytes were detected in the field blanks.		✓		

LDC #: 13204 B4
SDG #: 4P70

VALIDATION FINDINGS WORKSHEET

Sample Specific Element Reference

Page: 1 of 1
Reviewer: MH
2nd reviewer: [illegible]

All circled elements are applicable to each sample.

Sample ID	Matrix	Target Analyte List (TAL)
2-11	AA/Sediment	Al, [✓ Sb], [✓ As], Ba, Be, [✓ Cd], Ca, [✓ Cr, Co, Cu], Fe, [✓ Pb], Mg, Mn, [✓ Hg], [✓ Ni], K, [✓ Se], [✓ Ag], Na, [✓ Tl], [✓ V], [✓ Zn], [✓ Mo], B, Si, CN^-, ___ ___
m 12,13	Sediment	Al, [✓ Sb], [✓ As], Ba, Be, [✓ Cd], Ca, [✓ Cr, Co, Cu], Fe, [✓ Pb], Mg, Mn, [✓ Hg, Ni], K, [✓ Se, Ag], Na, [✓ Tl, V, Zn, Mo], B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
Analysis Method		
ICP		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
ICP Trace		Al, Sb, As, Ba, Be, [✓ Cd], Ca, [✓ Cr, Co, Cu], Fe, [✓ Pb], Mg, Mn, Hg, [✓ Ni], K, [✓ Se, Ag], Na, Tl, [✓ V, Zn, Mo], B, Si, CN^-, ___ ___
ICP-MS		Al, [✓ Sb], [✓ As], Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, [✓ Tl], V, Zn, Mo, B, Si, CN^-, ___ ___
GFAA		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-,

Comments: Mercury by CVAA if performed

LDC #: 13204B4
SDG #: HP70

VALIDATION FINDINGS WORKSHEET
ICP Interference Check Sample

Reviewer: WJ
2nd Reviewer: VC

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Were ICP interference check samples performed as required?
(Y) N N/A Were the AB solution percent recoveries (%R) within the control limits of 80-120% ?

LEVEL IV ONLY:

(Y) N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Date	ICS Identification	Analyte	Finding	Associated Samples	Qualifications
1	1/26/05	ICSA	Se	-62.2 ug/L	6,7,9,11 (Fe ≥ 90% in ICSA)	WJ/P
					1-5, 8,	No qual (Al, Ca, Mg, Fe < 90% in ICSA)
2	1/27/05	ICSA	Se	-76.2 ug/L	10	↓
			Mo	5.5 ↓	↓	

Comments:

LDC #: 13204B4
SDG #: H970

VALIDATION FINDINGS WORKSHEET
Matrix Spike Analysis

Reviewer: MY
2nd Reviewer: AC

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Was a matrix spike analyzed for each matrix in this SDG?

Y (N) N/A Were matrix spike percent recoveries (%R) within the control limits of 75-125? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.

Y (N) N/A Was a post digestion spike analyzed for ICP elements that did not meet the required criteria for matrix spike recovery?

LEVEL IV ONLY:

Y N (N/A) Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Matrix Spike ID	Matrix	Analyte	%R	Associated Samples	Qualifications
1	12	Sediment	Sb	3.17 (70-130)	All Sediment	~~J/R/A~~ ~~J/UJ/A~~ (post spiked was not performed) >5%

Comments:

LDC #: 13204B4
SDG #: 4470

VALIDATION FINDINGS WORKSHEET
Sample Result Verification

Reviewer: MH
2nd Reviewer: ak

METHOD: Trace metals (EPA SW-846 6010/7000)

#	Sample ID	Analyte	APP Result (units)	lab reported. RL (units)	Finding	Qualifications
1	All	Sb, As, Tl.	6020.	200.8	Lab method was different from APP method.	Text.

Comments:

LDC#: 13204 B6
SDG#: HP70

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Page: 1 of 1
Reviewer: MM
2nd Reviewer: A

METHOD: Metals (EPA Method 6010B/7000)

(Y) N NA Were field duplicate pairs identified in this SDG?
(Y) N NA Were target analytes detected in the field duplicate pairs?

Compound	Concentration (mg/kg)		(≤ 150) RPD	
	4	5		
Arsenic	13.7	10.6	26	
Chromium	24	22.9	5	
Cobalt	6.4	6.3	2	
Copper	52.5	52.3	0	
Lead	28	30	7	
Mercury	0.11	0.12	9	
Nickel	14	14	0	
Vanadium	49.8	49.7	0	
Zinc	87	88	1	
Molybdenum	3	2.7	11	

LDC #: 13204B4
SDG #: HP070

VALIDATION FINDINGS WORKSHEET
Initial and Continuing Calibration Calculation Verification

Reviewer: MD
2nd Reviewer: [illegible]

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

An initial and continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

$$\%R = \frac{\text{Found}}{\text{True}} \times 100$$

Where, Found = concentration (in ug/L) of each analyte measured in the analysis of the ICV or CCV solution
True = concentration (in ug/L) of each analyte in the ICV or CCV source

Standard ID	Type of Analysis	Element	Found (ug/L)	True (ug/L)	Recalculated %R	Reported %R	Acceptable (Y/N)
ICV	ICP (Initial calibration)	Pb	194.2	200	97.1	97.1	Y
↓	~~GFAA~~ (Initial calibration) ICP/MS	As	50.757	50	101.5	101.5	↓
↓	CVAA (Initial calibration)	Hg	8.82	8.0	110.3	110.3	↓
CCV	ICP (Continuing calibration)	Mo	993.9	1000	99.4	99.4	↓
↓	~~GFAA~~ (Continuing calibration) ICP/MS	Sb	50.95	50	101.9	101.9	↓
↓	CVAA (Continuing calibration)	Hg	4.35	4.0	108.8	108.8	↓
	Cyanide (Initial calibration)						
	Cyanide (Continuing calibation)						

Comments: Refer to Calibration Verification findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204B4
SDG #: 4p70

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

Page: 1 of 1
Reviewer: MM
2nd Reviewer: DC

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

Percent recoveries (%R) for an ICP interference check sample, a laboratory control sample and a matrix spike sample were recaluculated using the following formula:

$$\%R = \frac{Found}{True} \times 100$$

Where, Found = Concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation, Found = SSR (spiked sample result) - SR (sample result).
True = Concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

$$RPD = \frac{|S-D|}{(S+D)/2} \times 100$$

Where, S = Original sample concentration
D = Duplicate sample concentration

An ICP serial dilution percent difference (%D) was recalculated using the following formula:

$$\%D = \frac{|I-SDR|}{I} \times 100$$

Where, I = Initial Sample Result (mg/L)
SDR = Serial Dilution Result (mg/L) (Instrument Reading x 5)

Sample ID	Type of Analysis	Element	Found / S / I (units)	True / D / SDR (units)	Recalculated %R / RPD / %D	Reported %R / RPD / %D	Acceptable (Y/N)
ICSAB	ICP interference check	Zn	586.8	1000	88.7	88.7	Y
LCS	Laboratory control sample	Cd	50.7	50.0	101	101	|
12	Matrix spike	Ag	(SSR-SR) 60.6	61.9	97.9	97.9	|
13	Duplicate	Ni	9.44	9.74	3.1	10.5	U
MS	ICP serial dilution						

Comments: Refer to appropriate worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204B4
SDG #: 4p70

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: MW
2nd reviewer: [signature]

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Have results been reported and calculated correctly?
(Y) N N/A Are results within the calibrated range of the instruments and within the linear range of the ICP?
(Y) N N/A Are all detection limits below the CRDL?

Detected analyte results for 1 were recalculated and verified using the following equation:

Concentration = $\frac{(RD)(FV)(Dil)}{(In.\ Vol.)(\%S)}$

RD = Raw data concentration
FV = Final volume (ml)
In. Vol. = Initial volume (ml) or weight (G)
Dil = Dilution factor
%S = Decimal percent solids

Recalculation:

$$Cr = \frac{0.1299\ mg/L \times 0.05\ L \times 2 \times 1000\ g/kg}{1.02g \times 0.764} = 16.0\ mg/kg$$

Sample ID	Analyte	Reported Concentration (mg/kg)	Calculated Concentration (mg/kg)	Acceptable (Y/N)
1	As	4.5	4.5	Y
	Cr	16.0	16.0	
	Co	5.0	5.0	
	Cu	26.4	26.4	
	Pb	16	16	
	Hg	0.07	0.07	
	Mo	0.9	0.9	
	Ni	10	10	
	V	42.4	42.4	
	Zn	49.2	49.2	

LDC #: 13204C4 **VALIDATION COMPLETENESS WORKSHEET** Date: 3/7/05

SDG #: HP90 & HQ69 Level II Page: 1 of 1

Laboratory: Analytical Resources, Inc. Reviewer: MM

2nd Reviewer: [illegible]

METHOD: Metals (EPA SW 846 Method 6010B/~~6020~~ 200.8 /7000)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/19/05
II.	Calibration	N	
III.	Blanks	SW	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Matrix Spike Analysis	SW	
VI.	Duplicate Sample Analysis	A	
VII.	Laboratory Control Samples (LCS)	A	LCS + SRM
VIII.	Internal Standard (ICP-MS)	N	Not reviewed
IX.	Furnace Atomic Absorption QC	N	Not utilized
X.	ICP Serial Dilution	N	Not required
XI.	Sample Result Verification	SW	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	SW	(7,8)
XIV.	Field Blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: Sediment

1	LDW-SS-111-010	11	PB	21		31	
2	LDW-SS-112-010	12		22		32	
3	LDW-SS-119-010	13		23		33	
4	LDW-SS-120-010	14		24		34	
5	LDW-SS-60-010	15		25		35	
6	LDW-SS-99-010	16		26		36	
7	LDW-SS-89-010	17		27		37	
8	LDW-SS-201-010	18		28		38	
9	LDW-SS-119-010MS	19		29		39	
10	LDW-SS-119-010DUP	20		30		40	

Notes: _____

LDC #: 13204C4
SDG #: L4p90 + L4d69

VALIDATION FINDINGS WORKSHEET
Sample Specific Element Reference

Page: 1 of 1
Reviewer: MH
2nd reviewer: pc

All circled elements are applicable to each sample.

Sample ID	Matrix	Target Analyte List (TAL)
1-8	Cement	Al, [✓ Sb], [✓ As], Ba, Be, [✓ Cd], Ca, [✓ Cr, Co, Cu], Fe, [✓ Pb], Mg, Mn, [✓ Hg], [✓ Ni], K, [✓ Se], [✓ Ag], Na, [✓ Tl], [✓ V], [✓ Zn], [✓ Mo], B, Si, CN⁻, ___ ___
9,10	↓	Al, [✓ Sb], [✓ As], Ba, Be, [✓ Cd], Ca, [✓ Cr, Co, Cu], Fe, [✓ Pb], Mg, Mn, [✓ Hg], [✓ Ni], K, [✓ Se], [✓ Ag], Na, [✓ Tl], [✓ V], [✓ Zn], [✓ Mo], B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
Analysis Method		
ICP		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
ICP Trace		Al, Sb, As, Ba, Be, [✓ Cd], Ca, [✓ Cr, Co, Cu], Fe, [✓ Pb], Mg, Mn, Hg, [✓ Ni], K, [✓ Se, Ag], Na, Tl, [✓ V, Zn, Mo], B, Si, CN⁻, ___ ___
ICP-MS		Al, [✓ Sb], [✓ As], Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, [✓ Tl], V, Zn, Mo, B, Si, CN⁻, ___ ___
GFAA		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻,

Comments: Mercury by CVAA if performed

LDC #: 13204c4
SDG #: HPQ0+HP069

VALIDATION FINDINGS WORKSHEET
PB/ICB/CCB QUALIFIED SAMPLES

Page: 1 of 1
Reviewer: HH
2nd Reviewer: DC

METHOD: Trace Metals (EPA SW 846 Method 6010/7000) Soil preparation factor applied: _____
Sample Concentration units, unless otherwise noted: mg/kg Associated Samples: All (>10X)

					Sample Identification										
Analyte	Maximum PB[a] (mg/Kg)	Maximum FB[a] (ug/L)	Maximum ICB/CCB[a] (ug/L)	Blank Action Limit											
Al															Al
Sb							No	samples	qualified.						Sb
As															As
Ba															Ba
Be															Be
Cd															Cd
Ca															Ca
Cr															Cr
Co															Co
Cu	0.2														Cu
Fe															Fe
Pb															Pb
Mg															Mg
Mn															Mn
Hg															Hg
Ni															Ni
K															K
Se															Se
Ag															Ag
Na															Na
Tl															Tl
V															V
Zn															Zn
B															B
Mo															Mo
Sr															Sr

Samples with analyte concentrations within five times the associated ICB, CCB or PB concentration are listed above with the identifications from the Validation Completeness Worksheet. These sample results were qualified as not detected, "U".
Note : a - The listed analyte concentration is the highest ICB, CCB, or PB detected in the analysis of each element.

LDC #: 13204 cf
SDG #: HP90 + HP69

VALIDATION FINDINGS WORKSHEET
Matrix Spike Analysis

Page: 1 of 1
Reviewer: MW
2nd Reviewer: K

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Was a matrix spike analyzed for each matrix in this SDG?

(Y) N N/A Were matrix spike percent recoveries (%R) within the control limits of 75-125? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.

Y N (N/A) Was a post digestion spike analyzed for ICP elements that did not meet the required criteria for matrix spike recovery?

LEVEL IV ONLY:

Y N (N/A) Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Matrix Spike ID	Matrix	Analyte	%R	Associated Samples	Qualifications
1	9	Sediment	Sb	3.3 (70-130)	All	J- (R for all) UJ/A (Post spike > 4x S)

Comments:

LDC #: 13204C4
SDG #: HPQ1 + H069

VALIDATION FINDINGS WORKSHEET
Sample Result Verification

Reviewer: MH
2nd Reviewer: [illegible]

METHOD: Trace metals (EPA SW-846 6010/7000)

#	Sample ID	Analyte	APP Result (units)	lab reported. RL (units)	Finding	Qualifications
1	All	Sb, As, Tl.	6020.	200.8	Lab method was different from APP method.	Test.

Comments:

LDC#: 13204c4
SDG#: HP90 + HP89

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: MM
2nd Reviewer: [illegible]

METHOD: Metals (EPA Method 6010B/7000)

(Y) N NA Were field duplicate pairs identified in this SDG?
(Y) N NA Were target analytes detected in the field duplicate pairs?

Compound	Concentration (mg/kg)		RPD (≤ 50)	
	7	8		
Arsenic	4.2	4.2	0	
Chromium	14.8	14.0	6	
Cobalt	4.9	4.8	2	
Copper	18.6	18.5	1	
Lead	10	9	11	
Nickel	10	9	11	
Vanadium	43.9	43.3	1	
Zinc	38.4	39.7	3	
Molybdenum	0.7	0.7	0	

LDC #: 13204D4 **VALIDATION COMPLETENESS WORKSHEET** Date: 3/7/05

SDG #: HQ17 ~~& HQ04~~ Level II Page: 1 of 1

Laboratory: Analytical Resources, Inc. Reviewer: MM

2nd Reviewer: [illegible]

METHOD: Metals (EPA SW 846 Method 6010B/~~6020~~/7000) 200.8

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/19, 20, 05
II.	Calibration	N	
III.	Blanks	SW	
IV.	ICP Interference Check Sample (ICS) Analysis	A	
V.	Matrix Spike Analysis	SW	
VI.	Duplicate Sample Analysis	SW	
VII.	Laboratory Control Samples (LCS)	A	LCS + SRM
VIII.	Internal Standard (ICP-MS)	N	Not reviewed
IX.	Furnace Atomic Absorption QC	N	Not required
X.	ICP Serial Dilution	N	Not required
XI.	Sample Result Verification	SW	
XII.	Overall Assessment of Data	A	
XIII	Field Duplicates	N	
XIV.	Field Blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: sediment

1	LDW-SS114-010	11	LDW-SS76-010	21		31	
2	LDW-SS117-010	12	LDW-SS84-010	22		32	
3	LDW-SS13B-010	13	LDW-SS114-010MS	23		33	
4	LDW-SS125-010	14	LDW-SS114-010DUP	24		34	
5	LDW-SS126-010	15	PB	25		35	
6	LDW-SS116-010	16		26		36	
7	LDW-SS127-010	17		27		37	
8	LDW-SS130-010	18		28		38	
9	LDW-SS129-010	19		29		39	
10	LDW-SS118-010	20		30		40	

Notes: _____

LDC #: 13204 04
SDG #: 4217

VALIDATION FINDINGS WORKSHEET
Sample Specific Element Reference

Page: 1 of 1
Reviewer: MH
2nd reviewer:

All circled elements are applicable to each sample.

Sample ID	Matrix	Target Analyte List (TAL)
1-12	Sediment	Al, [✓ Sb], [✓ As], Ba, Be, [✓ Cd], Ca, [✓ Cr, Co, Cu], Fe, [✓ Pb], Mg, Mn, [✓ Hg], [✓ Ni], K, [✓ Se], [✓ Ag], Na, [✓ Tl], [✓ V], [✓ Zn], [✓ Mo], B, Si, CN^-, ___ ___
2,13,14	✓	Al, [✓ Sb], [✓ As], Ba, Be, [✓ Cd], Ca, [✓ Cr, Co, Cu], Fe, [✓ Pb], Mg, Mn, [✓ Hg, Ni], K, [✓ Se, Ag], Na, [✓ Tl, V, Zn, Mo], B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
Analysis Method		
ICP		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
ICP Trace		Al, Sb, As, Ba, Be, [✓ Cd], Ca, [✓ Cr, Co, Cu], Fe, [✓ Pb], Mg, Mn, Hg, [✓ Ni], K, [✓ Se, Ag], Na, Tl, [✓ V, Zn, Mo], B, Si, CN^-, ___ ___
ICP-MS		Al, [✓ Sb], [✓ As], Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, [✓ Tl], V, Zn, Mo, B, Si, CN^-, ___ ___
GFAA		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-,

Comments: Mercury by CVAA if performed

LDC #: 132040Y
SDG #: HQ17

VALIDATION FINDINGS WORKSHEET
PB/ICB/CCB QUALIFIED SAMPLES

Reviewer: HH
2nd Reviewer: AC

METHOD: Trace Metals (EPA SW 846 Method 6010/7000) Soil preparation factor applied: _____
Sample Concentration units, unless otherwise noted: mg/kg Associated Samples: All (>10X)

					Sample Identification										
Analyte	Maximum PB[a] (mg/Kg)	Maximum PB[a] (ug/L)	Maximum ICB/CCB[a] (ug/L)	Blank Action Limit											
Al															Al
Sb															Sb
As															As
Ba															Ba
Be															Be
Cd															Cd
Ca															Ca
Cr															Cr
Co															Co
Cu	0.2														Cu
Fe															Fe
Pb															Pb
Mg															Mg
Mn															Mn
Hg															Hg
Ni															Ni
K															K
Se															Se
Ag															Ag
Na															Na
Tl															Tl
V															V
Zn															Zn
B															B
Mo															Mo
Sr															Sr

Samples with analyte concentrations within five times the associated ICB, CCB or PB concentration are listed above with the identifications from the Validation Completeness Worksheet. These sample results were qualified as not detected, "U".
Note : a - The listed analyte concentration is the highest ICB, CCB, or PB detected in the analysis of each element.

LDC #: 132074
SDG #: 1A17

VALIDATION FINDINGS WORKSHEET
Matrix Spike Analysis

Reviewer: MY
2nd Reviewer: [illegible]

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y (N) N/A Was a matrix spike analyzed for each matrix in this SDG?

Y (N) N/A Were matrix spike percent recoveries (%R) within the control limits of 75-125? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.

Y N (N/A) Was a post digestion spike analyzed for ICP elements that did not meet the required criteria for matrix spike recovery?

LEVEL IV ONLY:

Y N (N/A) Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Matrix Spike ID	Matrix	Analyte	%R	Associated Samples	Qualifications
1	13	Solid	Sb	4.3 (70-130)	A1	~~J / P / A~~ J/UJ/A (Post Spike was not performed >2x) key

Comments:

LDC #: 132040 4
SDG #: H017

VALIDATION FINDINGS WORKSHEET
Duplicate Analysis

Reviewer: MH
2nd Reviewer: [signature]

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Was a duplicate sample analyzed for each matrix in this SDG?

Y (N) N/A Were all duplicate sample relative percent differences (RPD) ≤ 20% for water samples and ≤ 35% for soil samples? If no, see qualifications below. A control limit of ±R.L. (±2X R.L. for soil) was used for sample values that were <5X the R.L., including the case when only one of the duplicate sample values was <5X R.L.. If field blanks were used for laboratory duplicates, note in the Overall Assessment.

LEVEL IV ONLY:

Y N (N/A) Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Duplicate ID	Matrix	Analyte	RPD (Limits)	Difference (Limits)	Associated Samples	Qualifications
1	14	Sediment	cd		0.9 (≤0.6) mg/kg	All	J (all detects) / A
			cr	65.9 (≤30)		↓	↓

Comments:

LDC #: 132404
SDG #: 1017

VALIDATION FINDINGS WORKSHEET
Sample Result Verification

Reviewer: MP
2nd Reviewer: DC

METHOD: Trace metals (EPA SW-846 6010/7000)

#	Sample ID	Analyte	QAPP Result (units)	Lab reported. RL (units)	Finding	Qualifications
1	All	Sb, As, Tl.	6020.	200.8	Lab method was different from QAPP method.	Test.

Comments:

LDC #: 13234A4 **VALIDATION COMPLETENESS WORKSHEET** Date: 3/9/05

SDG #: HQ48 Level II Page: 1 of 1

Laboratory: Analytical Resources, Inc. Reviewer: lm

2nd Reviewer:

METHOD: Metals (EPA SW 846 Method 6010B/~~6020~~2008/7000)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/24/05
II.	Calibration	N	
III.	Blanks	SW	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Matrix Spike Analysis	SW	
VI.	Duplicate Sample Analysis	A	
VII.	Laboratory Control Samples (LCS)	A	LCS + SRM
VIII.	Internal Standard (ICP-MS)	N	Not reviewed
IX.	Furnace Atomic Absorption QC	N	Not utilized
X.	ICP Serial Dilution	N	Not required
XI.	Sample Result Verification	SW	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	SW	(2,7) (12,13)
XIV.	Field Blanks	SW	RB = ~~HA~~ LDW-SS64-RB

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: ~~All~~ Sediment ~~soil~~ ~~# 14 AS~~

1	LDW-SS17-010	11	LDW-SS142-010	21	LDW-SS28-010	31	
2	LDW-SS50-010	12	LDW-SS123-010	22	LDW-SS134-010	32	
3	LDW-SS55-010	13	LDW-SS203-010	23	LDW-SS17-010MS	33	
4	LDW-SS72-010	~~14~~	~~LDW-SS64-RB~~ ~~AS~~ mm	24	LDW-SS17-010DUP	34	
5	LDW-SS79-010	15	LDW-SS64-010	25	LDW-SS134-010MS	35	
6	LDW-SS54-010	16	LDW-SS83-010	26	LDW-SS134-010DUP	36	
7	LDW-SS202-010	17	LDW-SS36-010	27		37	
8	LDW-SS42-010	18	LDW-SS58-010	28		38	
9	LDW-SS102-010	19	LDW-SS57-010	29		39	
10	LDW-SS128-010	20	LDW-SS56-010	30		40	

Notes:

LDC #: 13234A4
SDG #: H2 4 8

VALIDATION FINDINGS WORKSHEET
Sample Specific Element Reference

Page: 1 of 1
Reviewer: MG
2nd reviewer:

All circled elements are applicable to each sample.

Sample ID	Matrix	Target Analyte List (TAL)
L13, 15-22	Sediment	Al, [✓ Sb], [✓ As], Ba, Be, [✓ Cd], Ca, [✓ Cr], [✓ Co], [✓ Cu], Fe, [✓ Pb], Mg, Mn, [✓ Hg], [✓ Ni], K, [✓ Se], [✓ Ag], Na, [✓ Tl], [✓ V], [✓ Zn], [✓ Mo], B, Si, CN^-, ___ ___
23, 24		Al, [✓ Sb], [✓ As], Ba, Be, [✓ Cd], Ca, [✓ Cr], [✓ Co], [✓ Cu], Fe, [✓ Pb], Mg, Mn, [✓ Hg], [✓ Ni], K, [✓ Se], [✓ Ag], Na, [✓ Tl], [✓ V], [✓ Zn], [✓ Mo], B, Si, CN^-, ___ ___
25, 26		Al, [✓ Sb], [✓ As], Ba, Be, [✓ Cd], Ca, [✓ Cr], [✓ Co], [✓ Cu], Fe, [✓ Pb], Mg, Mn, [✓ Hg], [✓ Ni], K, [✓ Se], [✓ Ag], Na, [✓ Tl], [✓ V], [✓ Zn], [✓ Mo], B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
Analysis Method		
ICP		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
ICP Trace		Al, Sb, As, Ba, Be, [✓ Cd], Ca, [✓ Cr], [✓ Co], [✓ Cu], Fe, [✓ Pb], Mg, Mn, Hg, [✓ Ni], K, [✓ Se], [✓ Ag], Na, Tl, [✓ V], [✓ Zn], [✓ Mo], B, Si, CN^-, ___ ___
ICP-MS		Al, [✓ Sb], [✓ As], Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, [✓ Tl], V, Zn, Mo, B, Si, CN^-, ___ ___
GFAA		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-,

Comments: [✓ Mercury by CVAA if performed]

ELEMENTS.4

LDC #: 13234A6
SDG #: H048

VALIDATION FINDINGS WORKSHEET
PB/ICB/CCB QUALIFIED SAMPLES

Page: 1 of 1
Reviewer: MH
2nd Reviewer: [illegible]

METHOD: Trace Metals (EPA SW 846 Method 6010/7000) Soil preparation factor applied: _____
Sample Concentration units, unless otherwise noted: mg/kg Associated Samples: 1-13, 15-21 (All > 10X PB)

Analyte	Maximum PB[a] (mg/Kg)	Maximum PB[a] (ug/L)	Maximum ICB/CCB[a] (ug/L)	Blank Action Limit	Sample Identification										
Al															Al
Sb							No	Samples	qualified						Sb
As															As
Ba															Ba
Be															Be
Cd															Cd
Ca															Ca
Cr															Cr
Co															Co
Cu															Cu
Fe															Fe
Pb															Pb
Mg															Mg
Mn															Mn
Hg															Hg
Ni															Ni
K															K
Se															Se
Ag															Ag
Na															Na
Tl															Tl
V															V
Zn	0.6														Zn
B															B
Mo															Mo
Sr															Sr

Samples with analyte concentrations within five times the associated ICB, CCB or PB concentration are listed above with the identifications from the Validation Completeness Worksheet. These sample results were qualified as not detected, "U".
Note : a - The listed analyte concentration is the highest ICB, CCB, or PB detected in the analysis of each element.

LDC #: 13234B4
SDG #: 1840

VALIDATION FINDINGS WORKSHEET
Field Blanks

Page: 1 of 1
Reviewer: MD
2nd Reviewer: [illegible]

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

(Y) N N/A Field blanks were identified in this SDG.

(Y) N N/A Were target analytes detected in the field blanks?

Blank units: mg/L Associated sample units: mg/kg 50X

Sampling date: 1/14/05 Soil factor applied _____

Field blank type: (circle one) Field Blank / Rinsate / Other: RB Associated Samples: 01

Analyte	Blank ID	Blank Action Level	Sample Identification									
	LDW-5564-RB											
Zn	0.006	1.5			No Samples qualified							

Blank units: _____ Associated sample units: _____

Sampling date: _____ Soil factor applied _____

Field blank type: (circle one) Field Blank / Rinsate / Other: _____ Associated Samples: _____

Analyte	Blank ID	Blank Action Level	Sample Identification									

ALL RESULTS WERE QUALIFIED BY THE FOLLOWING STATEMENT:

Samples with analyte concentrations within five times the associated field blank concentration are listed above, these sample results were qualified as not detected, "U".

LDC #: 13234A4
SDG #: H028

VALIDATION FINDINGS WORKSHEET
Matrix Spike Analysis

Page: 1 of 1
Reviewer: MH
2nd Reviewer: [illegible]

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y (N) N/A Was a matrix spike analyzed for each matrix in this SDG?

Y (N) N/A Were matrix spike percent recoveries (%R) within the control limits of 75-125? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken. (75 RPP limit)

Y (N) N/A Was a post digestion spike analyzed for ICP elements that did not meet the required criteria for matrix spike recovery?

LEVEL IV ONLY:

Y N (N/A) Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Matrix Spike ID	Matrix	Analyte	%R	Associated Samples	Qualifications
1	23	Solid	Sb	2.0 (70-130)	1-13, 15-21	~~J (L) (A)~~ J (all detects) UJ (all non-detects) (post spike was not performed)
2	25	↓	Sb	3.1 (70-130)	22	↓

Comments: _____

MS.4S2

LDC #: 132484
SDG #: 4248

VALIDATION FINDINGS WORKSHEET
Sample Result Verification

Page: 1 of 1
Reviewer: MH
2nd Reviewer: AC

METHOD: Trace metals (EPA SW-846 6010/7000)

#	Sample ID	Analyte	APP Result (units)	lab reported. RL (units)	Finding	Qualifications
1	All	Sb, As, Tl.	6020.	200.8	Lab method was different from APP method.	Text.

Comments:

LDC#: 13234A4
SDG#: 11048

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: MM
2nd Reviewer: [illegible]

METHOD: Metals (EPA Method 6010B/7000/200.8)

Y N NA Were field duplicate pairs identified in this SDG?
Y N NA Were target analytes detected in the field duplicate pairs?

Compound	Concentration (mg/kg)		RPD (≤ 50)	
	2	7		
Arsenic	16.8	15.8	6	
Cadmium	1.2	1.3	8	
Chromium	44	45.5	3	
Cobalt	8.7	9.2	6	
Copper	89.4	88.6	1	
Lead	87	92	6	
Mercury	0.41	0.40	2	
Nickel	26	26	0	
Silver	1.2	1.4	15	
Vanadium	68.3	69.6	2	
Zinc	181	179	1	
Molybdenum	3	3.3	10	

LDC#: 13234A4
SDG#: Ha48

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: MM
2nd Reviewer: AR

METHOD: Metals (EPA Method 6010B/7000/200.8)

(Y)N NA Were field duplicate pairs identified in this SDG?
(Y)N NA Were target analytes detected in the field duplicate pairs?

Compound	Concentration (mg/kg)		(≤150) RPD	
	12	13		
Arsenic	7.2	7.5	4	
Cadmium	0.3	0.3	0	
Chromium	20.9	18.8	11	
Cobalt	7.0	6.6	6	
Copper	28.0	27.6	1	
Lead	18	17	6	
Mercury	0.08	0.08	0	
Nickel	14	13	7	
Vanadium	55.6	54.5	2	
Zinc	60.9	58.7	4	
Molybdenum	1.4	1.3	7	

LDC #: 13234B4 **VALIDATION COMPLETENESS WORKSHEET** Date: 3/11/05

SDG #: HQ27 & HQ28 Level II Page: 1 of 1

Laboratory: Analytical Resources, Inc. Reviewer: MM

2nd Reviewer: [illegible]

METHOD: Metals (EPA SW 846 Method 6010B/~~6020~~/7000) 200.8

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/20, 21/05
II.	Calibration	N	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Matrix Spike Analysis	SW	
VI	Duplicate Sample Analysis	A	
VII.	Laboratory Control Samples (LCS)	A	LCS+SRM
VIII.	Internal Standard (ICP-MS)	N	Not required
IX.	Furnace Atomic Absorption QC	N	Not utilized
X.	ICP Serial Dilution	N	Not required.
XI.	Sample Result Verification	SW	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	N	
XIV.	Field Blanks	ND	RB = LDW-SS43-RB

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: Sediment

1	LDW-SS43-010	11	LDW-SS75-010	21		31	
2	LDW-SS44-010	12	~~LDW-SS43-RB~~	22		32	
3	LDW-SS87-010	13	LDW-SS101-010	23		33	
4	LDW-SS94-010	14	LDW-SS43-010MS	24		34	
5	LDW-SS96-010	15	LDW-SS43-010DUP	25		35	
6	LDW-SS97-010	16	RB	26		36	
7	LDW-SS31-010	17		27		37	
8	LDW-SS67-010	18		28		38	
9	LDW-SS63-010	19		29		39	
10	LDW-SS70-010	20		30		40	

Notes: _____

LDC #: 13234B4
SDG #: H227 + H228

VALIDATION FINDINGS WORKSHEET
Sample Specific Element Reference

Page: 1 of 1
Reviewer: MG
2nd reviewer: R

All circled elements are applicable to each sample.

Sample ID	Matrix	Target Analyte List (TAL)
-11,13	sdmt	Al, [✓ Sb], [✓ As], Ba, Be, [✓ Cd], Ca, [✓ Cr], [✓ Co], [✓ Cu], Fe, [✓ Pb], Mg, Mn, [✓ Hg], [✓ Ni], K, [✓ Se], [✓ Ag], Na, [✓ Tl], [✓ V], [✓ Zn], [✓ Mo], B, Si, CN⁻, ___ ___
-14,15	b	Al, [✓ Sb], [✓ As], Ba, Be, [✓ Cd], Ca, [✓ Cr], [✓ Co], [✓ Cu], Fe, [✓ Pb], Mg, Mn, [✓ Hg], [✓ Ni], K, [✓ Se], [✓ Ag], Na, [✓ Tl], [✓ V], [✓ Zn], [✓ Mo], B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
Analysis Method		
ICP		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
ICP Trace		Al, Sb, As, Ba, Be, [✓ Cd], Ca, [✓ Cr], [✓ Co], [✓ Cu], Fe, [✓ Pb], Mg, Mn, Hg, [✓ Ni], K, [✓ Se], [✓ Ag], Na, Tl, [✓ V], [✓ Zn], [✓ Mo], B, Si, CN⁻, ___ ___
ICP-MS		Al, [✓ Sb], [✓ As], Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, [✓ Tl], V, Zn, Mo, B, Si, CN⁻, ___ ___
GFAA		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻,

Comments: [✓ Mercury by CVAA if performed]

ELEMENTS.4

LDC #: 13234B4
SDG #: 1H27+1H28

VALIDATION FINDINGS WORKSHEET
Matrix Spike Analysis

Reviewer: MY
2nd Reviewer: AC

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Was a matrix spike analyzed for each matrix in this SDG?

Y (N) N/A Were matrix spike percent recoveries (%R) within the control limits of 75-125? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.

Y (N) N/A Was a post digestion spike analyzed for ICP elements that did not meet the required criteria for matrix spike recovery?

LEVEL IV ONLY:

Y N (N/A) Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Matrix Spike ID	Matrix	Analyte	%R	Associated Samples	Qualifications
1	14	Sediment	Sb	2,4 (70-130)	All	J (all detects) UJ (all non-detects) (post spiked was not performed >25%)

Comments:

LDC #: 13234B4
SDG #: 480717 + 480728

VALIDATION FINDINGS WORKSHEET
Sample Result Verification

Reviewer: MH
2nd Reviewer: AC

METHOD: Trace metals (EPA SW-346 6010/7000)

#	Sample ID	Analyte	APP Result (units)	Lab reported. RL (units)	Finding	Qualifications
1	All	Sb, As, Tl.	6020.	200.8	Lab method was different from APP method.	Test.

Comments:

LDC #: 13234E4 **VALIDATION COMPLETENESS WORKSHEET** Date: 3/14/05

SDG #: HQ56 & HQ57 Level II Page: 1 of 1

Laboratory: Analytical Resources, Inc. Reviewer: MM

2nd Reviewer: SL

METHOD: Metals (EPA SW 846 Method 6010B/~~6020~~/7000) 2000.8

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/25, 26/05
II.	Calibration	N	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Matrix Spike Analysis	SW	
VI.	Duplicate Sample Analysis	A	
VII.	Laboratory Control Samples (LCS)	A	LCS + SRM
VIII.	Internal Standard (ICP-MS)	N	Not reviewed
IX.	Furnace Atomic Absorption QC	N	Not utilized
X.	ICP Serial Dilution	N	Not required
XI.	Sample Result Verification	SW	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	N	
XIV.	Field Blanks	ND	RB = LDW-SS110-RB

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: Sediment.

1	~~LDW-SS110-RB~~	11	LDW-SS49-010	21		31	
2	LDW-SS52-010	12	LDW-SS143-010	22		32	
3	LDW-SS92-010	13	LDW-SS52-010MS	23		33	
4	LDW-SS104-010	14	LDW-SS52-010DUP	24		34	
5	LDW-SS110-010	15	PB	25		35	
6	LDW-SS109-010	16		26		36	
7	LDW-SS115-010	17		27		37	
8	LDW-SS121-010	18		28		38	
9	LDW-SS88-010	19		29		39	
10	LDW-SS33-010	20		30		40	

Notes:

LDC #: 13234E4
SDG #: H256 + H257

VALIDATION FINDINGS WORKSHEET
Sample Specific Element Reference

Page: 1 of 1
Reviewer: MG
2nd reviewer: K

All circled elements are applicable to each sample.

Sample ID	Matrix	Target Analyte List (TAL)
1-12	Sediment	Al, [✓ Sb], [✓ As], Ba, Be, [✓ Cd], Ca, [✓ Cr], [✓ Co], [✓ Cu], Fe, [✓ Pb], Mg, Mn, [✓ Hg], [✓ Ni], K, [✓ Se], [✓ Ag], Na, [✓ Tl], [✓ V], [✓ Zn], [✓ Mo], B, Si, CN^-, ___ ___
MS13,14	↓	Al, [✓ Sb], [✓ As], Ba, Be, [✓ Cd], Ca, [✓ Cr], [✓ Co], [✓ Cu], Fe, [✓ Pb], Mg, Mn, [✓ Hg], [✓ Ni], K, [✓ Se], [✓ Ag], Na, [✓ Tl], [✓ V], [✓ Zn], [✓ Mo], B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Analysis Method
ICP		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
ICP Trace		Al, Sb, As, Ba, Be, [✓ Cd], Ca, [✓ Cr], [✓ Co], [✓ Cu], Fe, [✓ Pb], Mg, Mn, Hg, [✓ Ni], K, [✓ Se], [✓ Ag], Na, Tl, [✓ V], [✓ Zn], [✓ Mo], B, Si, CN^-, ___ ___
ICP-MS		Al, [✓ Sb], [✓ As], Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, [✓ Tl], V, Zn, Mo, B, Si, CN^-, ___ ___
GFAA		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-,

Comments: Mercury by CVAA if performed

ELEMENTS.4

LDC #: 133424
SDG #: H056 + H057

VALIDATION FINDINGS WORKSHEET
Matrix Spike Analysis

Page: 1 of 1
Reviewer: MY
2nd Reviewer: [illegible]

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a matrix spike analyzed for each matrix in this SDG?

Y N N/A Were matrix spike percent recoveries (%R) within the control limits of 75-125? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.

Y N N/A Was a post digestion spike analyzed for ICP elements that did not meet the required criteria for matrix spike recovery?

LEVEL IV ONLY:

Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Matrix Spike ID	Matrix	Analyte	%R	Associated Samples	Qualifications
1	13	sediment	Sb	212 (70-130)	All	~~J~~ ~~UJ~~ ~~A~~ UJ/UJ/A (Post Spike was not ~~performed~~) >75%

Comments:

MS.4S2

LDC #: 13234Z4
SDG #: 4056 + 4057

VALIDATION FINDINGS WORKSHEET
Sample Result Verification

Reviewer: MH
2nd Reviewer: M

METHOD: Trace metals (EPA SW-846 6010/7000)

#	Sample ID	Analyte	QAPP Result (units)	lab reported. RL (units)	Finding	Qualifications
1	All	Sb, As, Tl.	6020.	200.8	Lab method was different from QAPP method.	Text.

Comments:

LDC #: 13298A4 **VALIDATION COMPLETENESS WORKSHEET** Date: 3/24/05
SDG #: HQ93 Level II Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: MH
2nd Reviewer: DL

METHOD: Metals (EPA SW 846 Method 6010B/~~6020~~200.8/7000)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/28/05
II.	Calibration	N	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Matrix Spike Analysis	SW	
VI.	Duplicate Sample Analysis	A	
VII.	Laboratory Control Samples (LCS)	A	LCS + SRM
VIII.	Internal Standard (ICP-MS)	N	Not reviewed.
IX.	Furnace Atomic Absorption QC	N	Not utilized
X.	ICP Serial Dilution	N	Not required
XI.	Sample Result Verification	SW	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	N	
XIV.	Field Blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples: sediment

1	LDW-SSCR20-010	11		21		31	
2	LDW-SSCR23-010	12		22		32	
3	LDW-MSMP43-010	13		23		33	
4	LDW-SSCR20-010MS	14		24		34	
5	LDW-SSCR20-010DUP	15		25		35	
6	PB	16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes:

LDC #: 13298A4
SDG #: A293

VALIDATION FINDINGS WORKSHEET
Sample Specific Element Reference

Page: 1 of 1
Reviewer: MH
2nd reviewer:

All circled elements are applicable to each sample.

Sample ID	Matrix	Target Analyte List (TAL)
1-3	Sediment	Al, [✓ Sb], [✓ As], Ba, Be, [✓ Cd], Ca, [✓ Cr], [✓ Co], [✓ Cu], Fe, [✓ Pb], Mg, Mn, [✓ Hg], [✓ Ni], K, [✓ Se], [✓ Ag], Na, [✓ Tl], [✓ V], [✓ Zn], [✓ Mo], B, Si, CN^-, ___ ___
& 4,5	↓	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
Analysis Method		
ICP		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
ICP Trace		Al, Sb, As, Ba, Be, [✓ Cd], Ca, [✓ Cr], [✓ Co], [✓ Cu], Fe, [✓ Pb], Mg, Mn, Hg, [✓ Ni], K, [✓ Se], [✓ Ag], Na, Tl, [✓ V], [✓ Zn], [✓ Mo], B, Si, CN^-, ___ ___
ICP-MS		Al, [✓ Sb], [✓ As], Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, [✓ Tl], ~~V~~, Zn, Mo, B, Si, CN^-, ___ ___
GFAA		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-,

Comments: Mercury by CVAA if performed

ELEMENTS.4

LDC #: 13298A4
SDG #: H893

VALIDATION FINDINGS WORKSHEET
Matrix Spike Analysis

Reviewer: MH
2nd Reviewer: [illegible]

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Was a matrix spike analyzed for each matrix in this SDG?

Y (N) N/A Were matrix spike percent recoveries (%R) within the control limits of 75-125? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken. (4APP limit)

Y N N/A Was a post digestion spike analyzed for ICP elements that did not meet the required criteria for matrix spike recovery?

LEVEL IV ONLY:

Y N (N/A) Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Matrix Spike ID	Matrix	Analyte	%R	Associated Samples	Qualifications
1	4	Solid	Sb	1.6 (70-130)	All	J/UJ / R/A (~~not~~ post spiked only)

Comments:

LDC #: 13398A4
SDG #: HA93

VALIDATION FINDINGS WORKSHEET
Sample Result Verification

Reviewer: MH
2nd Reviewer: DC

METHOD: Trace metals (EPA SW-846 6010/7000)

#	Sample ID	Analyte	Result (units)	RL (units)	Finding	Qualifications
1	All	Sb, As, Tl			Lab reported by 200.8. App. 6020.	Test.

Comments:

LDC #: 13315B4 **VALIDATION COMPLETENESS WORKSHEET** Date: 3/28/05
SDG #: HT56 Level IV II Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: WW
2nd Reviewer:

METHOD: Arsenic (EPA Method 200.8)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 2/1, 9/05
II.	Calibration	~~A~~ N	
III.	Blanks	~~A~~ A	
IV.	ICP Interference Check Sample (ICS) Analysis	N ~~N~~ A	
V.	Matrix Spike Analysis	A	
VI.	Duplicate Sample Analysis	A	
VII.	Laboratory Control Samples (LCS)	A	LCS + SRM
VIII.	Internal Standard (ICP-MS)	~~A~~ N	not reviewed
IX.	Furnace Atomic Absorption QC	N	Not required
X.	ICP Serial Dilution	N	Not required
XI.	Sample Result Verification	SW	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	N	
XIV.	Field Blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples: Solimit

1	DR-SS5-010	11	DR-SS5-010DUP	21		31	
2	DR-SS6-010	12	PB	22		32	
3	DR-SS7-010	13		23		33	
4	DR-SS9-010	14		24		34	
5	DR-SS10-010	15		25		35	
6	DR-SS11-010	16		26		36	
7	DR-SS13-010	17		27		37	
8	DR-SS14-010	18		28		38	
9	DR-SS15-010	19		29		39	
10	DR-SS5-010MS	20		30		40	

Notes:

LDC #: 13204A6

SDG #: HP67

Laboratory: Analytical Resources, Inc.

VALIDATION COMPLETENESS WORKSHEET

Level III/IV

Date: 3/4/05

Page: 1 of 1

Reviewer: MH

2nd Reviewer: [illegible]

METHOD: Ammonia-N (EPA Method 350.1), Grain Size (PSEP), Sulfide (EPA Method 376.2), Total Solids (EPA Method 160.3), TOC (Plumb),

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/17/05
IIa.	Initial calibration	A ~~N~~	
IIb.	Calibration verification	A ~~N~~	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	A	} MS/MSD
V	Duplicates	A	
VI.	Laboratory control samples	A	LCS + SRM. No SRM for S Test.
VII.	Sample result verification	A ~~N~~	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X	Field blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: Sediment

1	LDW-SS1-010	11	LDW SS1 010DUP	21	MB	31	
2	LDW-SS4-010	12	LDW-SS4-010DUP	22		32	
3	LDW-SS5-010	13	LDW-SS4-010TRP	23		33	
4	LDW-SS10-10	14	~~LDW-SS10-10MS~~	24		34	
5	LDW-SS12-010	15	~~LDW-SS10-10DUP~~	25		35	
6	LDW-SS14-010	16	LDW-SS13-010MS	26		36	
7	LDW-SS15-010	17	LDW-SS13-010DUP	27		37	
8	LDW-SS22-010	18	~~LDW-SS10-10TRP~~	28		38	
9	LDW-SS13-010	19	LDW-SS1-010TRP	29		39	
10	LDW-SS1-010MS	20	LDW-SS4-010MS	30		40	

Notes: _____

LDC #: 13204A6
SDG #: HP67

VALIDATION FINDINGS CHECKLIST

Reviewer: MM
2nd Reviewer: SK

Method: Inorganics (EPA Method See cover)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. Calibration				
Were all instruments calibrated daily, each set-up time?	✓			
Were the proper number of standards used?	✓			
Were all initial calibration correlation coefficients ≥ 0.995?	✓			
Were all initial and continuing calibration verification %Rs within the 90-110% QC limits?	✓			
Were titrant checks performed as required?			✓	
Were balance checks performed as required?				
Were all initial and continuing calibration verification %Rs within the 90-110% QC limits?	✓			
III. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
IV. Matrix spike/Matrix spike duplicates and Duplicates				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.	✓			
Were the MS/MSD or duplicate relative percent differences (RPD) ≤ 20% for waters and ≤ 35% for soil samples? A control limit of ≤ CRDL(≤ 2X CRDL for soil) was used for samples that were ≤ 5X the CRDL, including when only one of the duplicate sample values were ≤ 5X the CRDL.	✓			
V. Laboratory control samples				
Was an LCS anaylzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% (85-115% for Method 300.0) QC limits?	✓			
VI. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?			✓	
Were the performance evaluation (PE) samples within the acceptance limits?			✓	

LDC #: 13204A6
SDG #: Hp67

VALIDATION FINDINGS CHECKLIST

Reviewer: MM
2nd Reviewer: [illegible]

Validation Area	Yes	No	NA	Findings/Comments
VII. Sample Result Verification				
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
Were detection limits < RL?	✓			
VIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
IX. Field duplicates				
Field duplicate pairs were identified in this SDG.		✓		
Target analytes were detected in the field duplicates.			✓	
X. Field blanks				
Field blanks were identified in this SDG.		✓		
Target analytes were detected in the field blanks.			✓	

LDC #: 13204A6
SDG #: 14P67

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: MM
2nd reviewer: R

All circled methods are applicable to each sample.

Sample ID	Parameter				
1-9	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- [✓ NH_3] TKN [✓ TOC] CR^{6+}	[✓ S]	[✓ Grain size]	[✓ TS]	
AC 10	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- [✓ NH_3] TKN TOC CR^{6+}				
11	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- [✓ NH_3] TKN TOC CR^{6+}			[✓ TS]	
12	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN ~~TOC~~ CR^{6+}		[✓ Grain size]		
13	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN [✓ TOC] CR^{6+}		↓		
~~14~~	~~pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN~~ [✓ TOC] ~~CR^{6+}~~				
~~15~~	~~pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN~~ [✓ TOC] ~~CR^{6+}~~				
16	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}	[✓ S]			
17	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}	[✓ S]			
↓ ~~18~~	~~pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN~~ [✓ TOC] CR^{6+}				
↓ 19	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}			[✓ TS]	
↓ 20	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN [✓ TOC] CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}				

Comments:

LDC #: 13204A6
SDG #: 4P67

VALIDATION FINDINGS WORKSHEET
Initial and Continuing Calibration Calculation Verification

Reviewer: MM
2nd Reviewer: DB

METHOD: Inorganics, Method See cover

The correlation coefficient (r) for the calibration of NH_3-N was recalculated. Calibration date: 1/21/05

An initial or continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

$$\%R = \frac{Found}{True} \times 100$$

Where, Found = concentration of each analyte measured in the analysis of the ICV or CCV solution
True = concentration of each analyte in the ICV or CCV source

Type of Analysis	Analyte		conc. (mg/L) (units)	Area (units)	Recalculated r or %R	Reported r or %R	Acceptable (Y/N)
Initial calibration	NH_3-N	Blank	0	0.1216	r = 0.99998	r = 0.99998	Y
Calibration verification		Standard 1	0.01	0.8781			
		Standard 2	0.02	1.3529			
		Standard 3	0.05	2.6191			
		Standard 4	0.2	9.1622			
		Standard 5	0.5	22.5645			
		Standard 6	0.8	35.8826			
		Standard 7	1	44.6144			
Calibration verification ICV	NH_3-N	0.5	0.542		108.4	108.4	Y
Calibration verification CCV	TOC	5	4.822		96.4	96.4	Y
Calibration verification CCV	S	0.769	0.693		90	90	Y

Comments: Refer to Calibration Verification findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204A6
SDG #: HP67

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

Reviewer: MH
2nd Reviewer: DC

METHOD: Inorganics, Method See cover

Percent recoveries (%R) for a laboratory control sample and a matrix spike sample were recalculated using the following formula:

%R = Found / True x 100 Where, Found = concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation, Found = SSR (spiked sample result) - SR (sample result).
True = concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

RPD = |S-D| / (S+D)/2 x 100 Where, S = Original sample concentration
D = Duplicate sample concentration

Sample ID	Type of Analysis	Element	Found / S (units)	True / D (units)	Recalculated %R / RPD	Reported %R / RPD	Acceptable (Y/N)
LCS	Laboratory control sample	S	0.727	0.77	94.4	94	Y
10	Matrix spike sample	NH3-N	(SSR-SR) 113-5	124	91.8	91.1	
2/12/13	Duplicate sample	Tot	2.46 2.26	2.50	6.82	6.0 ~~4.3~~	

Comments: Refer to appropriate worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204A6
SDG #: 4pb67

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: MM
2nd reviewer: R

METHOD: Inorganics, Method see Cover

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Have results been reported and calculated correctly?
Y N N/A Are results within the calibrated range of the instruments?
Y N N/A Are all detection limits below the CRQL?

Compound (analyte) results for 1 reported with a positive detect were recalculated and verified using the following equation:

Concentration = S

Recalculation:

$S = \frac{(0.144-0.007)\ mg/L \times 0.10 \times 1000\ g/kg}{0.530 \times 2.4215\ g \times 0.719}$

$= 14.8\ mg/kg$

$Abs = 0.530 \times conc + 0.007$

#	Sample ID	Analyte	Reported Concentration (mg/kg)	Calculated Concentration (mg/kg)	Acceptable (Y/N)
1	1	TS (%)	70.8	70.8	Y
		NH3-N	3.58	3.58	|
		S	15	15	|
		TOC (%)	1.58	~~1.55~~ 1.58	↓
			% Retained		
		Grain 5.7ϕ Phi 5.8			
		<-1	0.6	0.64	Y
		-1 to 0	1.0	1.00	|
		0 to 1	10.9	10.9	|
		1 to 2	46.1	46.1	|
		2 to 3	26.7	26.7	|
		3 to 4	5.4	5.4	↓
		4 to 5	1.2	1.2	Y ✓
		5 to 6	1.3	1.3	Y
		6 to 7	1.6	1.6	|
		7 to 8	1.6	1.6	|
		8 to 9	1.1	1.1	|
		9 to 10	0.9	0.9	↓
		≥10	1.6	1.6	Y ✓ ✓

Note:

LDC #: 13204B6

VALIDATION COMPLETENESS WORKSHEET

Level ~~III~~ IV

Date: 3/1/05

SDG #: HP70

Page: 1 of 1

Laboratory: Analytical Resources, Inc.

Reviewer: hm

2nd Reviewer: R

METHOD: Ammonia-N (EPA Method 350.1), Grain Size (PSEP), Sulfide (EPA Method 376.2), Total Solids (EPA Method 160.3), TOC (Plumb),

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/18/05
IIa.	Initial calibration	A ~~N~~	
IIb.	Calibration verification	A N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	SW	
V	Duplicates	A	Triplicates.
VI	Laboratory control samples	A	LCS + SRM. No SRM for S. Test.
VII.	Sample result verification	A ~~SW~~ N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	SW	(3,4)
X	Field blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: Sediment.

1	LDW-SS23-010	11	LDW-SS48-010MS	21		31	
2	LDW-SS26-010	12	LDW-SS48-010DUP	22		32	
3	LDW-SS27-010	13	LDW-SS51-010MS	23		33	
4	LDW-SS200-010	14	LDW-SS51-010DUP	24		34	
5	LDW-SS32-010	15	MB	25		35	
6	LDW-SS37-010	16		26		36	
7	LDW-SS38-010	17		27		37	
8	LDW-SS40-010	18		28		38	
9	LDW-SS48-010	19		29		39	
10	LDW-SS51-010	20		30		40	

Notes:

LDC #: 13204
SDG #: ____

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: [illegible]
2nd reviewer: [illegible]

All circled methods are applicable to each sample.

Sample ID	Parameter
1-10	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ [✓ NH$_3$] TKN [✓ TOC] CR^{6+} [✓ Grain Size] ____ [✓ S] [✓ TS]
11,12	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ [✓ S] ____
13,14	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ [✓ NH$_3$] TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____

Comments: ____

LDC #: 13204 B6
SDG #: HP90

VALIDATION FINDINGS CHECKLIST

Reviewer: MH
2nd Reviewer: [illegible]

Method: Inorganics (EPA Method see comment

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. Calibration				
Were all instruments calibrated daily, each set-up time?	✓			
Were the proper number of standards used?	✓			
Were all initial calibration correlation coefficients ≥ 0.995?	✓			
Were all initial and continuing calibration verification %Rs within the 90-110% QC limits?	✓			
Were titrant checks performed as required?			✓	
Were balance checks performed as required?	✓			
Were all initial and continuing calibration verification %Rs within the 90-110% QC limits?	✓			
III. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
IV. Matrix spike/Matrix spike duplicates and Duplicates				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.		✓		
Were the MS/MSD or duplicate relative percent differences (RPD) ≤ 20% for waters and ≤ 35% for soil samples? A control limit of ≤ CRDL(≤ 2X CRDL for soil) was used for samples that were ≤ 5X the CRDL, including when only one of the duplicate sample values were ≤ 5X the CRDL.	✓			
V. Laboratory control samples				
Was an LCS anaylzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% (85-115% for Method 300.0) QC limits?	✓			
VI. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?			✓	
Were the performance evaluation (PE) samples within the acceptance limits?			✓	

LDC #: 13204 B6
SDG #: HP70

VALIDATION FINDINGS CHECKLIST

Reviewer: MH
2nd Reviewer: W

Validation Area	Yes	No	NA	Findings/Comments
VII. Sample Result Verification				
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
Were detection limits < RL?	✓			
VIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
IX. Field duplicates				
Field duplicate pairs were identified in this SDG.	✓	a		
Target analytes were detected in the field duplicates.	✓			
X. Field blanks				
Field blanks were identified in this SDG.		✓		
Target analytes were detected in the field blanks.			✓	

LDC #: 13204 B6
SDG #: VP70

VALIDATION FINDINGS WORKSHEET
Matrix Spike Analysis

Reviewer: MM
2nd Reviewer: [illegible]

METHOD: Inorganics, Method See cover

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Was a matrix spike analyzed for each matrix in this SDG?

Y (N) N/A Were matrix spike percent recoveries (%R) within the control limits of 75-125 (85-115% for Method 300.0)? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.

LEVEL IV ONLY:

Y N (N/A) Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Matrix Spike ID	Matrix	Analyte	%R	Associated Samples	Qualifications
1	11	Sediment	S	71.1 (75-125)	All	J- (4) J/A

Comments:

LDC #: 13204B6
SDG #: HP70

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Page: 1 of 2
Reviewer: MH
2nd reviewer: SL

METHOD: Inorganics, Method See cover

(Y) N N/A Were field duplicate pairs identified in this SDG?
(Y) N N/A Were target analytes detected in the field duplicate pairs?

Analyte	Concentration ( )		RPD (~~Limits~~) ≤50	Qualifier
	3	4		
TS (%)	47.30	48.50	3	
NH_3-N (mg/kg)	5.59	5.75	6	
S ↓	310	220	34	
TOC (%)	1.60	1.68	5	

Analyte	Concentration ( )		RPD (Limits)	Qualifier

Analyte	Concentration ( )		RPD (Limits)	Qualifier

Analyte	Concentration ( )		RPD (Limits)	Qualifier

LDC#: 13204B6
SDG#: HP70

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Page: 1 of 2
Reviewer: MM
2nd Reviewer: VL

Grain Size, Method PSEP

(Y) N NA Were field duplicate pairs identified in this SDG?
(Y) N NA Were target analytes detected in the field duplicate pairs?

Phi Size	% Finer (%)		(≤50) RPD	
	3	4		
-2	100.0	99.9	0	
-1	98.6	98.7	0	
0	96.9	96.6	0	
1	93.0	92.3	1	
2	81.1	80.3	1	
3	59.4	58.8	1	
4	37.8	36.8	3	
5	30.0	28.4	5	
6	20.1	19.2	5	
7	12.5	11.7	7	
8	9.0	8.5	6	
9	6.4	6.3	2	
10	4.8	4.7	2	

LDC #: 13204B6
SDG #: HP96

VALIDATION FINDINGS WORKSHEET
Initial and Continuing Calibration Calculation Verification

Reviewer: MM
2nd Reviewer: AC

METHOD: Inorganics, Method Soil conv

The correlation coefficient (r) for the calibration of S was recalculated. Calibration date: 1/24/05

An initial or continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

%R = Found x 100 / True

Where, Found = concentration of each analyte measured in the analysis of the ICV or CCV solution
True = concentration of each analyte in the ICV or CCV source

Type of Analysis	Analyte		conc. (mg/L) (units)	blank (units)	Recalculated r or %R	Reported r or %R	Acceptable (Y/N)
Initial calibration	S	Blank	0	0	r^2=0.9999	r^2=0.9999	Y
Calibration verification		Standard 1	0.05	0.027			
		Standard 2	0.125	0.066			
		Standard 3	0.250	0.122			
		Standard 4	~~1.00~~ 0.50	0.246			
		Standard 5	1.00	0.491			
		Standard 6					
		Standard 7					
Calibration verification CCV	NH3-N	0.5	0.5473		108.6	108.66	Y
Calibration verification CCV	TOC	5000	4997		99.94	99.93	↓
Calibration verification ICV	S	0.692	0.653		97	97	↓

Comments: Refer to Calibration Verification findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204B6
SDG #: HP70

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

Page: 1 of 1
Reviewer: MH
2nd Reviewer: DR

METHOD: Inorganics, Method See cover

Percent recoveries (%R) for a laboratory control sample and a matrix spike sample were recalculated using the following formula:

$\%R = \frac{Found}{True} \times 100$ Where, Found = concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation, Found = SSR (spiked sample result) - SR (sample result).
True = concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

$RPD = \frac{|S-D|}{(S+D)/2} \times 100$ Where, S = Original sample concentration
D = Duplicate sample concentration

Sample ID	Type of Analysis	Element	Found / S (units)	True / D (units)	Recalculated %R / RPD	Reported %R / RPD	Acceptable (Y/N)
LCS	Laboratory control sample	S	0.65	0.73	89.0	89.4	Y
LOW-SSIP-010	Matrix spike sample	TOC	(SSR-SR) 2.66	2.69	99	98.9 ~~123.2~~	
15	Duplicate sample	NH_3-N	8.04	8.06 ~~8.09~~	0.2	0.2	

Comments: Refer to appropriate worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204B6
SDG #: HP710

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: MM
2nd reviewer: ✓

METHOD: Inorganics, Method fee cover

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Have results been reported and calculated correctly?
(Y) N N/A Are results within the calibrated range of the instruments?
(Y) N N/A Are all detection limits below the CRQL?

Compound (analyte) results for 1 reported with a positive detect were recalculated and verified using the following equation:

Concentration =

$$T\text{-}C = T\text{-}C \times \frac{\%\ \text{Solid at } 70^\circ C}{\%\ \text{Solid at } 104^\circ C}$$

Recalculation:

$$T\text{-}C = 12079\ mg/kg \times \frac{79.36}{77.8}$$

$$= 12321\ mg/kg = 1.23\%$$

#	Sample ID	Analyte	Reported Concentration ( )	Calculated Concentration ( )	Acceptable (Y/N)
1	1	TS (%)	77.8	77.8	Y
		NH_3-N (mg/kg)	2.59	2.59	↓
		T-C (%)	1.23	1.23	↓
2		Phi Size	% Retained	% Retained	↓
		<-1 ~~int~~	0.8	0.8	↓
		-1 to 0	2.3	2.3	↓
		0 to 1	12.1	12.1	
		1 to 2	41.9	41.9	
		2 to 3	21.0	21.0	
		3 to 4	5.0	5.0	
		4 to 5	2.8	2.8	
		5 to 6	2.8 ~~4-6 M~~	2.8	
		6 to 7	3.1 ~~1.4~~	3.2	
		7 to 8	2.4	2.4	
		8 to 9	1.8	1.8	
		9 to 10	1.4	1.4	
		>10	7.6	7.6	↓

Note:

LDC #: 13204C6 **VALIDATION COMPLETENESS WORKSHEET** Date: 3/2/05

SDG #: HP90 & ~~HQ69~~ & HQ69 Level II Page: 1 of 1

Laboratory: Analytical Resources, Inc. Reviewer: MM

2nd Reviewer: SC

METHOD: Ammonia-N (EPA Method 350.1), Grain Size (PSEP), Sulfide (EPA Method 376.2), Total Solids (EPA Method 160.3), TOC (Plumb),

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	SW	Sampling dates: 1/19/05
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	SW	
V	Duplicates	A	Triplicates.
VI.	Laboratory control samples	A	LCS + SRM. No SRM for S Test.
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	SW	(7, 8)
X	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples: sediment

1	LDW-SS-111-010	11	LDW-SS-112-010MS	21		31	
2	LDW-SS-112-010	12	LDW-SS-112-010DUP	22		32	
3	LDW-SS-119-010	13	LDW-SS-119-010DUP	23		33	
4	LDW-SS-120-010	14	LDW-SS-119-010TRP	24		34	
5	LDW-SS-60-010	15	LDW-SS-111-010 TRP	25		35	
6	LDW-SS-99-010	16	MB	26		36	
7	LDW-SS-89-010	17		27		37	
8	LDW-SS-201-010	18		28		38	
9	LDW-SS-111-010MS	19		29		39	
10	LDW-SS-111-010DUP	20		30		40	

Notes:

LDC #: 13204C6
SDG #: ~~14P90-H069~~

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: MH
2nd reviewer: YC

All circled methods are applicable to each sample.

Sample ID	Parameter
1-8	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- [✓ NH_3] TKN [✓ TOC] CR^{6+} [✓ Grain Size] [✓ S] [✓ TS]
9, 10	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- [✓ NH_3] TKN [✓ TOC] CR^{6+} ___ ___ ___ ___
~~10~~, ~~11~~, 15	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN [✓ TOC] CR^{6+} ___ ___ ___ ___
11, 12	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- [✓ NH_3] TKN TOC CR^{6+} ___ ___ ___ ___
13, 14	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} [✓ Grain Size] ___ ___
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___ ___
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___ ___
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___ ___
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___ ___
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___ ___
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___ ___
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___ ___
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___ ___
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___ ___
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___ ___
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___ ___
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___ ___
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___ ___
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___ ___
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___ ___
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___ ___
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___ ___
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___ ___
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___ ___
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___ ___

Comments:

LDC #: 13204C6
SDG #: HP90

VALIDATION FINDINGS WORKSHEET
Technical Holding Times

Page: 1 of 1
Reviewer: MM
2nd reviewer: DC

All circled dates have exceeded the technical holding time.
(Y) N N/A Were all samples preserved as applicable to each method ?
(Y) N N/A Were all cooler temperatures within validation criteria?

Method:		376.2					
Parameters:		S					
Technical holding time:		7 days					
Sample ID	Sampling date	~~Analysis~~ prep date	Analysis date	Analysis date	Analysis date	Analysis date	Qualifier
1	1/19/05	1/28/05	(9 days)				J- K/P

HT.6

LDC #: 13204C6
SDG #: 14990

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Reviewer: MH
2nd Reviewer: DC

METHOD: Inorganics, EPA Method See cover

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a matrix spike analyzed for each matrix in this SDG?

Y (N) N/A Were matrix spike percent recoveries (%R) within the control limits of 75-125? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.

(Y) N N/A Were al duplicate sample relative percent differences (RPD) ≤ 20% for water samples and ≤35% for soil samples?

LEVEL IV ONLY:

Y N (N/A) Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	MS/MSD ID	Matrix	Analyte	MS %Recovery	MSD %Recovery	RPD (Limits)	Associated Samples	Qualifications
1	LDW-SS101-MS	Sediment	S	60.2	54.8		A1	J-/UJ/A

Comments:

LDC #: 13204C6
SDG #: HP90

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Page: 1 of 1
Reviewer: WH
2nd reviewer: C

METHOD: Inorganics, Method See cover

(Y) N N/A Were field duplicate pairs identified in this SDG?
(Y) N N/A Were target analytes detected in the field duplicate pairs?

Analyte	Concentration ( )		RPD (Limits) ≤ 5/50	Qualifier
	7	8		
TS (%)	71.70	69.30	3	
NH_3-N (mg/kg)	1.30	1.40	7	
TOC (%)	1.01	1.02	1	

Analyte	Concentration (% Finer)		RPD (Limits) ≤ 5/50	Qualifier
	7	8		
Phi Size -3	~~100~~	~~100~~	~~0~~	
-2	99.9	100	0	
-1	99.5	99.5	0	
0	97.8	97.7	0	
1	76.6	76.5	0	

Analyte	Concentration (% Finer)		RPD (Limits) ≤ 5/50	Qualifier
	7	8		
2	42.9	43.4	1	
3	31.0	31.1	0	
4	16.3	16.4	1	
5	10.9	10.8	1	
6	7.7	7.7	0	

Analyte	Concentration (% Finer)		RPD (Limits) ≤ 5/50	Qualifier
	7	8		
7	5.2	5.1	2	
8	3.4	3.5	3	
9	2.4	2.4	0	
10	1.6	1.7	6	

LDC #: 13204D6 **VALIDATION COMPLETENESS WORKSHEET** Date: 3/7/15

SDG #: HQ17 Level II Page: 1 of 1

Laboratory: Analytical Resources, Inc. Reviewer: JMM

2nd Reviewer: M

METHOD: Ammonia-N (EPA Method 350.1M), Grain Size (PSEP),Sulfide (EPA Method 376.2), Total Solids (EPA Method 160.3), TOC (Plumb),

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I	Technical holding times	A	Sampling dates: 1/19, 20/07
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	SW	
V	Duplicates	A	Triplicates.
VI.	Laboratory control samples	A	LCS +SRM, No SRM for S. Test.
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples: all but

1	LDW-SS114-010	11	LDW-SS76-010	21		31	
2	LDW-SS117-010	12	LDW-SS84-010	22		32	
3	LDW-SS13B-010	13	LDW-SS114-010MS	23		33	
4	LDW-SS125-010	14	LDW-SS114-010DUP	24		34	
5	LDW-SS126-010	15	LDW-SS114-010TRP	25		35	
6	LDW-SS116-010	16	LDW-SS76-010MS	26		36	
7	LDW-SS127-010	17	LDW-SS76-010MSD	27		37	
8	LDW-SS130-010	18	LDW-SS76-010DUP	28		38	
9	LDW-SS129-010	19	↓ TRP	29		39	
10	LDW-SS118-010	20	MB	30		40	

Notes:

LDC #: 13204C6
SDG #: HP90

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: MH
2nd reviewer: ✓

All circled methods are applicable to each sample.

Sample ID	Parameter
1-12	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ [✓ NH$_3$] TKN [✓ TOC] CR^{6+} [✓ S] [✓ Grain Size] [✓ TS] ____
or 13	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ [✓ NH$_3$] TKN [✓ TOC] CR^{6+} ____ ____ ____ ____
14	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN [✓ TOC] CR^{6+} ____ [✓ Grain Size] [✓ TS] ____
15	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN [✓ TOC] CR^{6+} ____ ____ [✓ TS] ____
16, 17	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} [✓ S] ____ ____ ____
18, 19	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} [✓ S] ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO$_3$ NO$_2$ SO$_4$ PO$_4$ ALK CN$^-$ NH$_3$ TKN TOC CR^{6+} ____ ____ ____ ____

Comments: ____________________

METHODS.6

LDC #: 1320406
SDG #: H217

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Reviewer: MH
2nd Reviewer: [illegible]

METHOD: Inorganics, EPA Method See cover

Please see qualifications below for all questions answered "N" Not applicable questions are identified as "N/A".

(Y) N N/A — Was a matrix spike analyzed for each matrix in this SDG?
Y (N) N/A — Were matrix spike percent recoveries (%R) within the control limits of 75-125? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.
(Y) N N/A — Were all duplicate sample relative percent differences (RPD) ≤ 20% for water samples and ≤35% for soil samples?

LEVEL IV ONLY:
Y N (N/A) — Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	MS/MSD ID	Matrix	Analyte	MS %Recovery	MSD %Recovery	RPD (Limits)	Associated Samples	Qualifications
1	16/17	Sediment	S	65.7	60.7		A1	J-/UJ/A

Comments:

LDC #: 13234A6 **VALIDATION COMPLETENESS WORKSHEET** Date: 3/11/05
SDG #: HQ48 Level II Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: MM
2nd Reviewer: SC

METHOD: Ammonia-N (EPA Method 350.1) IM, Grain Size (PSEP), Sulfide (EPA Method 376.2), Total Solids (EPA Method 160.3), TOC (Plumb),

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/24/05
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	SW	
IV	Matrix Spike/Matrix Spike Duplicates	A	
V	Duplicates	A	Triplicates
VI	Laboratory control samples	SW	LCS + SRM, No SRM for S. Test.
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	SW	(2,7), (12,13)
X	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples: All Sediments

1	LDW-SS17-010	11	LDW-SS142-010	21	LDW-SS134-010	31	LDW-SS134 010DUP
2	LDW-SS50-010	12	LDW-SS123-010	22	LDW-SS17-010MS	32	LDW-SS28-010 TRP
3	LDW-SS55-010	13	LDW-SS203-010	23	LDW-SS17-010DUP	33	LDW-SS134-010 TRP
4	LDW-SS72-010	14	LDW-SS64-010	24	LDW-SS17-010TRP	34	MB
5	LDW-SS79-010	15	LDW-SS83-010	25	LDW-SS79-010MS	35	
6	LDW-SS54-010	16	LDW-SS36-010	26	LDW-SS79-010MSD	36	
7	LDW-SS202-010	17	LDW-SS58-010	27	LDW-SS79-010DUP	37	
8	LDW-SS42-010	18	LDW-SS57-010	28	LDW-SS57-010DUP	38	
9	LDW-SS102-010	19	LDW-SS56-010	29	LDW-SS28-010MS	39	
10	LDW-SS120-010	20	LDW SS28 010	30	LDW-SS28-010DUP	40	

Notes:

LDC #: 13234A6
SDG #: H248

VALIDATION FINDINGS WORKSHEET

Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: KH
2nd reviewer: ✓

All circled methods are applicable to each sample.

Sample ID	Parameter
1-21	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- [✓ NH_3] TKN [✓ TOC] CR^{6+} [✓ S] [✓ TS] [✓ Grain size]
OV 22	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- [✓ NH_3] TKN [✓ TOC] CR^{6+}
23.24	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- [✓ NH_3] TKN [✓ TOC] CR^{6+} [✓ TS] [✓ Grain size]
24	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN [✓ TOC] CR^{6+} [✓ TS] ↓
25	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} [✓ S]
26	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} [✓ S]
27	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} [✓ S]
28	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} [✓ S]
29	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- [✓ NH_3] TKN [✓ TOC] CR^{6+}
30	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- ~~NH_3~~ TKN [✓ TOC] CR^{6+} [✓ TS]
31	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- [✓ NH_3] TKN TOC CR^{6+} [✓ Grain size]
32	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN [✓ TOC] CR^{6+} [✓ TS]
33	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} [✓ Grain size]
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments:

LDC #: 132346
SDG #: 1-1048

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer: MH
2nd Reviewer: [illegible]

Inorganics (SEB cover)
METHOD: ~~Trace metals~~ (~~EPA SW 846~~)

#	Blank ID	Analyte	Finding	Associated Samples	Qualifications
	MB	NH_3-N	21 samples were associated with an MB	All	Text

Comments:

LDC #: 13234A6
SDG #: H848

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

Reviewer: MH
2nd Reviewer: [illegible]

METHOD: Inorganics, Method See work

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a laboratory control sample (LCS) analyzed for each matrix in this SDG?

Y N N/A Were all LCS percent recoveries (%R) within the control limits of 80-120% (85-115% for Method 300.0)?

LEVEL IV ONLY:

Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	LCS ID	Matrix	Analyte	%R (limits)	Associated Samples	Qualifications
1	SRM	Sediment	Hg-W	21 samples were associated with a SRM	All	Target.

Comments:

LDC #: 13234A6
SDG #: H048

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: MH
2nd reviewer: M

METHOD: Inorganics, Method see cover

(Y) N N/A Were field duplicate pairs identified in this SDG?
(Y) N N/A Were target analytes detected in the field duplicate pairs?

Analyte	Concentration ( ) 2	Concentration ( ) 7	RPD (Limits) (≤/150)	Qualifier
TS (%)	50.90	51.50	1	
NH3-N (mg/kg)	8.22	8.03	2	
S ↓	110	770	150	
TOC (%)	1.94	1.90	2	

Analyte	Concentration ( ) 12	Concentration ( ) 13	RPD (Limits) ≤/150	Qualifier
TS (%)	69.00	68.90	0	
NH3-N (mg/kg)	3.49	5.05	37	
TOC (%)	1.77	1.81	2	

Analyte	Concentration ( )	Concentration ( )	RPD (Limits)	Qualifier

Analyte	Concentration ( )	Concentration ( )	RPD (Limits)	Qualifier

LDC#: 13234 A6
SDG#: 140485

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: MM
2nd Reviewer: DL

Grain Size, Method PSEP

Y N NA Were field duplicate pairs identified in this SDG?
Y N NA Were target analytes detected in the field duplicate pairs?

Phi Size	% Finer (%)		RPD (≤50)	
	2	7		
-2	100.0	99.8	0	
-1	99.8	99.3	1	
0	99.0	98.7	0	
1	92.4	95.0	3	
2	78.7	84.1	7	
3	73.6	76.1	3	
4	62.9	67.8	7	
5	49.5	52.7	6	
6	35.5	38.2	7	
7	23.7	19.8	18	
8	15.6	13.6	14	
9	11.2	10.0	11	
10	7.6	6.8	11	

LDC#: 13234 A6
SDG#: 4048

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: MM
2nd Reviewer: DV

Grain Size, Method PSEP

(Y) N NA Were field duplicate pairs identified in this SDG?
(Y) N NA Were target analytes detected in the field duplicate pairs?

Phi Size	% Finer (%)		(5/150) RPD	
	12	13		
-2	100.0	97.1	3	
-1	99.5	96.0	4	
0	95.2	92.0	3	
1	69.2	66.5	4	
2	37.2	34.6	7	
3	31.5	29.4	7	
4	27.0	25.0	8	
5	22.9	21.3	7	
6	16.1	15.7	3	
7	10.9	10.7	2	
8	7.5	7.2	4	
9	5.5	5.2	6	
10	3.8	3.7	3	

LDC #: 13234B6 **VALIDATION COMPLETENESS WORKSHEET** Date: 3/11/05

SDG #: HQ27 & HQ28 Level II Page: 1 of 1

Laboratory: Analytical Resources, Inc. Reviewer: MM

2nd Reviewer: JL

METHOD: Ammonia-N (EPA Method 350.1), Grain Size (PSEP), Sulfide (EPA Method 376.2), Total Solids (EPA Method 160.3), TOC (Plumb),

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/20, 21/05
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	SW	
V	Duplicates	SW	Triplicates
VI.	Laboratory control samples	A	LCS + SRM. No SRM for S. Test.
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X	Field blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: Sediment

1	LDW-SS43-010	11	LDW-SS75 010	21	LDW SS101-010MS	31	
2	LDW-SS44-010	12	LDW-SS101-010	22	LDW-SS101-010MSD	32	
3	LDW-SS87-010	13	LDW-SS43-010MS	23	LDW-SS101-010DUP	33	
4	LDW-SS94-010	14	LDW-SS43-010DUP	24	LDW-SS43-010 TRP	34	
5	LDW-SS96-010	15	LDW-SS87-010DUP	25	LDW-SS75-010TRP	35	
6	LDW-SS97-010	16	LDW-SS87-010TRP	26	LDW-SS101-010TRP	36	
7	LDW-SS31-010	17	~~LDW-SS67-010MS~~	27	MB	37	
8	LDW-SS67-010	18	~~LDW-SS67-010MSD~~	28		38	
9	LDW-SS63-010	19	LDW-SS75-010MS	29		39	
10	LDW-SS70-010	20	LDW-SS75-010DUP	30		40	

Notes:

LDC #: 13234B6
SDG #: H227 + H228

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: MH
2nd reviewer: SL

All circled methods are applicable to each sample.

Sample ID	Parameter
1-12	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- [✓ NH_3] TKN [✓ TOC] CR^{6+} [✓ S] [✓ TS] [✓ Grain size] ____
a-13	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- [✓ NH_3] TKN [✓ TOC] CR^{6+} ____ ____ ____ ____
14	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- [✓ NH_3] TKN [✓ TOC] CR^{6+} ____ [✓ TS] ____ ____
15	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ [✓ Grain size] ____
16	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ↓ ____
~~17~~	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
~~18~~	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
19	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} [✓ S] ____ ____ ____
20	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} [✓ S] ____ ____ ____
21	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} [✓ S] ____ ____ ____
22	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} [✓ S] ____ ____ ____
↓ 23	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} [✓ S] [✓ TS] ____ ____
↓ 24	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN [✓ TOC] CR^{6+} ____ [✓ TS] ____ ____
↓ 25	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} [✓ S] ____ ____ ____
↓ 26	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} [✓ S] [✓ TS] ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments: ____________________

METHODS.6

LDC #: 132486
SDG #: HQ27 + HQ28

VALIDATION FINDINGS WORKSHEET
Matrix Spike Analysis

Page: 1 of 1
Reviewer: MW
2nd Reviewer: [illegible]

METHOD: Inorganics, Method See cover

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Was a matrix spike analyzed for each matrix in this SDG?

Y (N) N/A Were matrix spike percent recoveries (%R) within the control limits of 75-125 (85-115% for Method 300.0)? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.

RPD limits

LEVEL IV ONLY:

Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Matrix Spike ID	Matrix	Analyte	%R	Associated Samples	Qualifications
1	19	Sediment	S	65.7	1-11	J- / UJ / A

Comments:

LDC #: 13234Bb
SDG #: 1H29 + 1H28

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Page: 1 of 1
Reviewer: MH
2nd Reviewer: K

METHOD: Inorganics, EPA Method See cover

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Was a matrix spike analyzed for each matrix in this SDG?

Y (N) N/A Were matrix spike percent recoveries (%R) within the control limits of (75-125)? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken. ØAPP Comply

Y N N/A Were all duplicate sample relative percent differences (RPD) ≤ 20% for water samples and ≤35% for soil samples?

LEVEL IV ONLY:

Y N (N/A) Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	MS/MSD ID	Matrix	Analyte	MS %Recovery	MSD %Recovery	RPD (Limits)	Associated Samples	Qualifications
1	21/22	Sediment	S	60.2	54.8		12	J-/UJ/A

Comments:

LDC #: 13234E6 **VALIDATION COMPLETENESS WORKSHEET** Date: 3/11/05

SDG #: HQ56 & HQ57 Level II Page: 1 of 1

Laboratory: Analytical Resources, Inc. Reviewer: MM

2nd Reviewer: JC

METHOD: Ammonia-N (EPA Method 350.1), Grain Size (PSEP), Sulfide (EPA Method 376.2), Total Solids (EPA Method 160.3), TOC (Plumb),

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A~~SW~~	Sampling dates: 1/25, 26/05
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	A	
V	Duplicates	A	Triplicates.
VI.	Laboratory control samples	A	LCS + SRM. No SRM for S. Treat.
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X	Field blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: Sediment

1	LDW-SS52-010	11	LDW-SS143-010	21	MB	31	
2	LDW-SS92-010	12	LDW-SS52-010MS	22		32	
3	LDW-SS104-010	13	LDW-SS52-010DUP	23		33	
4	LDW-SS110-010	14	LDW-SS109-010MS	24		34	
5	LDW-SS109-010	15	LDW-SS109-010DUP	25		35	
6	LDW-SS115-010	16	LDW-SS49-010MS	26		36	
7	LDW-SS121-010	17	LDW-SS49-010DUP	27		37	
8	LDW-SS88-010	18	LDW-SS52-010 TRP	28		38	
9	LDW-SS33-010	19	LDW-SS109-010 TRP	29		39	
10	LDW-SS49-010	20	LDW-SS49-010TRP	30		40	

Notes:

LDC #: 13234E6
SDG #: 42E6 A10-51

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: MH
2nd reviewer:

All circled methods are applicable to each sample.

Sample ID	Parameter
1-11	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- [✓ NH_3] TKN [✓ TOC] CR^{6+} [✓ S] [✓ TS] [✓ Grain size]
~~[illegible]~~	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
12	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- [✓ NH_3] TKN TOC CR^{6+} ____ ____ ____ ____
13	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- [✓ NH_3] TKN TOC CR^{6+} ____ [✓ TS] ____ ____
14	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} [✓ S] ____ ____ ____
15	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} [✓ S] ____ ____ ____
16	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN [✓ TOC] CR^{6+} ____ ____ ____ ____
17	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN [✓ TOC] CR^{6+} ____ ____ ____ ____
18	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ [✓ TS] ____ ____
19	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} [✓ S] ____ ____ ____
20	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN [✓ TOC] CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments:

LDC #: 13298A6 **VALIDATION COMPLETENESS WORKSHEET** Date: 3/24/05

SDG #: HQ93 Level II Page: 1 of 1

Laboratory: Analytical Resources, Inc. Reviewer: MM

2nd Reviewer: SC

METHOD: Ammonia-N (EPA Method 350.1), Grain Size (PSEP),Sulfide (EPA Method 376.2), Total Solids (EPA Method 160.3), TOC (Plumb),

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/28/05
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	A	
V	Duplicates	A	Triplicates
VI.	Laboratory control samples	A	LCS + SRM. No SRM for S, Test.
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples: Sediment

1	LDW-SSCR20 010	11		21		31	
2	LDW-SSCR23-010	12		22		32	
3	LDW-MSMP43-010	13		23		33	
4	LDW-SSCR20-010MS	14		24		34	
5	LDW-SSCR20-010DUP	15		25		35	
6	LDW-MSMP43-010MS	16		26		36	
7	LDW-MSMP43-010DUP	17		27		37	
8	LDW-SSCR20-010TRP	18		28		38	
9	LDW-MSMP43-010TRP	19		29		39	
10	[illegible]	20		30		40	

Notes:

LDC #: 13298A6
SDG #: H093

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: MH
2nd reviewer: DL

All circled methods are applicable to each sample.

Sample ID	Parameter
1-3	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- [✓ NH_3] TKN [✓ TOC] CR^{6+} [✓ TS] [✓ S] [✓ Grain Size] ____
4	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- [✓ NH_3] TKN [✓ TOC] CR^{6+} ____ ____ ____ ____
5	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- [✓ NH_3] TKN [✓ TOC] CR^{6+} [✓ TS] ____ ____ ____
6	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ [✓ S] ____ ____
7	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ [✓ S] ____ ____
8	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN [✓ TOC] CR^{6+} [✓ TS] ____ ____ ____
9	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ [✓ S] ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____

Comments:

LDC #: 13234B6
SDG #: HA27+HA28

VALIDATION FINDINGS WORKSHEET
Duplicate Analysis

Page: 1 of 1
Reviewer: MH
2nd Reviewer: [illegible]

METHOD: Inorganics, Method see cover

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a duplicate sample analyzed for each matrix in this SDG?

Y N N/A Were all duplicate sample relative percent differences (RPD) ≤ 20% for water and ≤ 35% for soil samples (≤ 10% for Method 300.0)? If no, see qualification below. A control limit of ±CRDL (±2X CRDL for soil) was used for samples that were ≤5X the CRDL, including when only one of the duplicate sample values were ≤5X the CRDL. If field blanks were used for laboratory duplicates, see overall assessment. ospor limits

LEVEL IV ONLY:

Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Duplicate ID	Matrix	Analyte	RSD ~~RPD~~ (Limits)	Associated Samples	Qualifications
1	11, 20, 25 (Triplicates)	Sediment	S	40.2 (≤ 20)	1-11	J+ UJ/R

Comments:

LDC #: 13315A6 **VALIDATION COMPLETENESS WORKSHEET** Date: 3/28/05
SDG #: HS56 Level II Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: MH
2nd Reviewer: SC

METHOD: Total Solids (EPA Method 160.3), TOC (Plumb),

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 2/8, 10/05
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	A	
V	Duplicates	A	Triplicates.
VI.	Laboratory control samples	A	LCS + SRM
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X	Field blanks	N	

Note. A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples: Sediment.

1	LDW-SS4-010	11		21		31	
2	LDW-SS5a-010	12		22		32	
3	LDW-SS5b-010	13		23		33	
4	SC-SS1b-010	14		24		34	
5	LDW-SS4-010MS	15		25		35	
6	LDW-SS4-010DUP	16		26		36	
7	LDW-SS4-010TRP	17		27		37	
8	MB	18		28		38	
9		19		29		39	
10		20		30		40	

Notes:

LDC #: 133156b
SDG #: H55b

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: MH
2nd reviewer:

All circled methods are applicable to each sample.

Sample ID	Parameter
1-4	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN [✓ TOC] CR^{6+} [✓ TS] ____ ____ ____
QC 5	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN [✓ TOC] CR^{6+} ____ ____ ____ ____
↓ 6, 7	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN [✓ TOC] CR^{6+} [✓ TS] ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments:

LDC #: 13315B6 **VALIDATION COMPLETENESS WORKSHEET** Date: 3/28/05
SDG #: HT56 Level II Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: MH
2nd Reviewer: [illegible]

METHOD: Grain Size (PSEP)Total Solids (EPA Method 160.3)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	SW	Sampling dates: 2/1, 9/05
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	N	Not required
V	Duplicates	A	Triplicates
VI.	Laboratory control samples	N	Not required
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples: Sediment.

1	DR-SS5-010	11	DR-SS5-010TRP	21		31	
2	DR SS6 010	12	FB	22		32	
3	DR-SS7-010	13		23		33	
4	DR-SS9-010	14		24		34	
5	DR-SS10-010	15		25		35	
6	DR-SS11-010	16		26		36	
7	DR-SS13-010	17		27		37	
8	DR-SS14-010	18		28		38	
9	DR-SS15-010	19		29		39	
10	DR-SS5-010DUP	20		30		40	

Notes: _____

LDC #: 13315B6
SDG #: H756

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: MH
2nd reviewer:

All circled methods are applicable to each sample.

Sample ID	Parameter
1-9	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} [✓ TS] [✓ Grain Size] ____ ____
oz 10, 11	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ✓ ✓ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments:

LDC #: 13215B6
SDG #: WT56

VALIDATION FINDINGS WORKSHEET
Technical Holding Times

Page: 1 of 1
Reviewer: WM
2nd reviewer: cgl

All circled dates have exceeded the technical holding time.
Y N ~~N/A~~ Were all samples preserved as applicable to each method ?
(Y) N N/A Were all cooler temperatures within validation criteria?

Method:		160.3					
Parameters:		TS					
Technical holding time:		7 days					
Sample ID	Sampling date	Analysis date	Analysis date	Analysis date	Analysis date	Analysis date	Qualifier
1-4, 10, 11	2/1/05	(2/28/05)	(29 days)				J-/R/P
5-9	2/9/05	↓	(19 days)				↓

LDC #: 13204A19 **VALIDATION COMPLETENESS WORKSHEET** Date: 3/9/05
SDG #: HP67 Level IV Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: CL
2nd Reviewer: KL

METHOD: GC/MS Tributyl Tin(EPA SW 846 Method 8270C-SIM)/ Krone)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/17/05
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	no SPCCs & CCCs
IV.	Continuing calibration	A	
V	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples	A KW	LCS. SRM
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	A	
XI.	Target compound identification	A	
XII.	Compound quantitation/CRQLs	A	
XIII.	Tentitatively identified compounds (TICs)	N	
XIV.	System performance	A	
XV.	Overall assessment of data	A	
XVI.	Field duplicates	N	
XVII.	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples

1	LDW-SS4-010 sed		MB-012205					
2	LDW-SS14-010							
3	LDW-SS15-010							
4	LDW-SS14-010MS							
5	LDW SS14-010MSD							
6								
7								
8								
9								
10								

LDC #: 13204019
SDG #: HD67

VALIDATION FINDINGS CHECKLIST

Page: 1 of 3
Reviewer: 9
2nd Reviewer: K

Method: Semivolatiles (EPA SW 846 Method 8270C)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. GC/MS Instrument performance check				
Were the DFTPP performance results reviewed and found to be within the specified criteria?	✓			
Were all samples analyzed within the 12 hour clock criteria?	✓			
III. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?			✓	
Was a curve fit used for evaluation? If Yes, what was the acceptance criteria used?		✓		
Did the initial calibration meet the curve fit acceptance criteria?			✓	
Were all percent relative standard deviations (%RSD) $\leq$ 30% and relative response factors (RRF) $\geq$ 0.05?	✓			
IV. Continuing calibration				
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?	✓			
Were all percent differences (%D) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?			✓	
Were all percent differences (%D) $\leq$ 25% and relative response factors (RRF) $\geq$ 0.05?	✓			
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Surrogate spikes				
Were all surrogate %R within QC limits?	✓			
If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?			✓	
If any %R was less than 10 percent, was a reanalysis performed to confirm %R?			✓	
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.	✓			
Was a MS/MSD analyzed every 20 samples of each matrix?	✓			

LDC #: 13204A19
SDG #: HP67

VALIDATION FINDINGS CHECKLIST

Reviewer: CL
2nd Reviewer: VC

Validation Area	Yes	No	NA	Findings/Comments
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	✓			
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
X. Internal standards				
Were internal standard area counts within -50% or +100% of the associated calibration standard?	✓			
Were retention times within ± 30 seconds from the associated calibration standard?	✓			
XI. Target compound identification				
Were relative retention times (RRT's) within ± 0.06 RRT units of the standard?	✓			
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	✓			
Were chromatogram peaks verified and accounted for?	✓			
XII. Compound quantitation/CRQLs				
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	✓			
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XIII. Tentatively identified compounds (TICs)				
Were the major ions (> 10 percent relative intensity) in the reference spectrum evaluated in sample spectrum?			✓	
Were relative intensities of the major ions within ± 20% between the sample and the reference spectra?			✓	
Did the raw data indicate that the laboratory performed a library search for all required peaks in the chromatograms (samples and blanks)?		✓		
XIV. System performance				
System performance was found to be acceptable.	✓			
XV. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			

Validation Area	Yes	No	NA	Findings/Comments
XVI. Field duplicates				
Field duplicate pairs were identified in this SDG.		/		
Target compounds were detected in the field duplicates.			/	
XVII. Field blanks				
Field blanks were identified in this SDG.		/	/	
Target compounds were detected in the field blanks.				

LDC #: 13204A19
SDG #: HP6T

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

Page: 1 of 1
Reviewer: Q
2nd Reviewer: n

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Please see qualifications belcw for all questions answered "N". Not applicable questions are identified as "N/A".

[✓ Y] N N/A Was a LCS required?
Y [✓ N] N/A Were the LCS/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		LCS-012205	A	3.4 (20-130)	( )	( )	All+Bk	J/R/P
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
		A = Butyl Tin & Trichloride			)	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

LDC #: 13204B19
SDG #: HP67

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer: Q
2nd Reviewer: K

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

The Relative Response Factor (RRF), average RRF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

RRF = $(A_x)(C_{is})/(A_{is})(C_x)$
average RRF = sum of the RRFs/number of standards
%RSD = 100 * (S/X)

A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard
S = Standard deviation of the RRFs, X = Mean of the RRFs

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Reported RRF (/ std)	Recalculated RRF (/ std)	Reported Average RRF (Initial)	Recalculated Average RRF (Initial)	Reported %RSD	Recalculated %RSD
1	ICAL	1/18/05	Phenol (1st internal standard) TBT	0.56 /	0.56 /	0.558	0.558	6.1	6.1
			Naphthalene (2nd internal standard)						
			Fluorene (3rd internal standard)						
			Pentachlorophenol (4th internal standard)						
			Bis(2-ethylhexyl)phthalate (5th internal standard)						
			Benzo(a)pyrene (6th internal standard)						
2			Phenol (1st internal standard)						
			Naphthalene (2nd internal standard)						
			Fluorene (3rd internal standard)						
			Pentachlorophenol (4th internal standard)						
			Bis(2-ethylhexyl)phthalate (5th internal standard)						
			Benzo(a)pyrene (6th internal standard)						
3			Phenol (1st internal standard)						
			Naphthalene (2nd internal standard)						
			Fluorene (3rd internal standard)						
			Pentachlorophenol (4th internal standard)						
			Bis(2-ethylhexyl)phthalate (5th internal standard)						
			Benzo(a)pyrene (6th internal standard)						

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204A19
SDG #: HP67

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Page: 1 of 1
Reviewer: SR
2nd Reviewer: AC

METHOD: GC/MS BNA (EPA SW 346 Method 8270)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF^2)/ave. RRF
RRF = $(A_x)(C_{is})/(A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Average RRF (Initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported %D	Recalculated %D
1	CC025	1/05/05	Phenol (1st internal standard) TBT	0.558	0.560	0.560	0.4	0.4
			Naphthalene (2nd internal standard)					
			Fluorene (3rd internal standard)					
			Pentachlorophenol (4th internal standard)					
			Bis(2-ethylhexyl)phthalate (5th internal standard)					
			Benzo(a)pyrene (6th internal standard)					
2			Phenol (1st internal standard)					
			Naphthalene (2nd internal standard)					
			Fluorene (3rd internal standard)					
			Pentachlorophenol (4th internal standard)					
			Bis(2-ethylhexyl)phthalate (5th internal standard)					
			Benzo(a)pyrene (6th internal standard)					
3			Phenol (1st internal standard)					
			Naphthalene (2nd internal standard)					
			Fluorene (3rd internal standard)					
			Pentachlorophenol (4th internal standard)					
			Bis(2-ethylhexyl)phthalate (5th internal standard)					
			Benzo(a)pyrene (6th internal standard)					

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204819
SDG #: HP67

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Page: 1 of 1
Reviewer: 9
2nd reviewer: VR

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270)

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: 1

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
~~Nitrobenzene-d5~~ Tripropyl tin	0.5	0.3585	71.7	71.7	0
2-Fluorobiphenyl Tributyl tin	✓	0.3457	69.0	69.0	0
Terphenyl-d14					
Phenol-d5					
~~2-Fluorophenol~~					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
~~1,2-Dichlorobenzene-d4~~					

Sample ID: _____

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

Sample ID: _____

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

LDC #: B204D19
SDG #: HP67

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: DK

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SSC - SC)/SA Where: SSC = Spiked sample concentration; SA = Spike added; SC = Sample concentation

RPD = | MS - MSD | * 2/(MS + MSD) MS = Matrix spike percent recovery; MSD = Matrix spike duplicate percent recovery

MS/MSD samples: 4/5

Compound	Spike Added (ug/L)		Sample Concentration (ug/L)	Spiked Sample Concentration (ug/L)		Matrix Spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	-----	MS	MSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
~~Phenol~~ TBT	47.3	47.4	ND	53.4	49.4	113	113	104	104	7.8	7.8
2-Chlorophenol											
1,4-Dichlorobenzene											
N-Nitroso-di-n-propylamine											
1,2,4-Trichlorobenzene											
4-Chloro-3-methylphenol											
Acenaphthene											
4-Nitrophenol											
2,4-Dinitrotoluene											
Pentachlorophenol											
~~Pyrene~~											

Comments: Refer to Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results

LDC #: 13004B19
SDG #: HP67

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

Page: 1 of 1
Reviewer:
2nd Reviewer:

METHOD: GC/MS BNA (EPA SW 346 Method 8270)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SC/SA Where: SSC = Spike concentration; SA = Spike added

RPD = | LCS - LCSD | * 2/(LCS + LCSD) LCS = Laboratory control sample percent recovery LCSD = Laboratory control sample duplicate percent recovery

LCS/LCSD samples: LCS-012205

Compound	Spike Added (ug/kg)		Spike Concentration (ug/kg)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
~~Phenol~~ TBT	50	NA	59	NA	118	118				
2-Chlorophenol										
1,4-Dichlorobenzene										
N-Nitroso-di-n-propylamine										
1,2,4-Trichlorobenzene										
4-Chloro-3-methylphenol										
Acenaphthene										
4-Nitrophenol										
2,4-Dinitrotoluene										
Pentachlorophenol										
~~Pyrene~~										

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204A19
SDG #: HP6T

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: Q
2nd reviewer: SL

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

Concentration = $\frac{(A_x)(I_s)(V_t)(DF)(2.0)}{(A_{is})(RRF)(V_o)(V_i)(\%S)}$

A_x	=	Area of the characteristic ion (EICP) for the compound to be measured
A_{is}	=	Area of the characteristic ion (EICP) for the specific internal standard
I_s	=	Amount of internal standard added in nanograms (ng)
V_o	=	Volume or weight of sample extract in milliliters (ml) or grams (g).
V_i	=	Volume of extract injected in microliters (ul)
V_t	=	Volume of the concentrated extract in microliters (ul)
Df	=	Dilution Factor.
%S	=	Percent solids, applicable to soil and solid matrices only.
2.0	=	Factor of 2 to account for GPC cleanup

Example:

Sample I.D. 1, TBT:

Conc. = $\frac{(11848)(2)(500)}{(\text{Hexyl})(166858)(0.558)(5.19)(1)(0.45)}$

= 24.52 µg/kg

Conc final (chloride) = 24.52 × 0.8675 = 21.27 µg/kg

#	Sample ID	Compound	Reported Concentration ( )	Calculated Concentration ( )	Qualification

LDC #: 13204B19 **VALIDATION COMPLETENESS WORKSHEET** Date: 3/9/05
SDG #: HP70 Level IV Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: 2
2nd Reviewer: 1

METHOD: GC/MS Tributyl Tin(EPA SW 846 Method 8270C-SIM)/K zone)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/18/05
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	no ccc & spccs
IV.	Continuing calibration	A	↓
V	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A	LDW-SS14-010
VIII.	Laboratory control samples	A MW	LCS. SRM
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	A	
XI.	Target compound identification	A	
XII.	Compound quantitation/CRQLs	A	
XIII.	Tentitatively identified compounds (TICs)	N	
XIV.	System performance	A	
XV.	Overall assessment of data	A	
XVI.	Field duplicates	SW	D=1+2
XVII.	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples

1	LDW-SS27-010 sed		MB-012205					
2	LDW-SS200-010							
3	LDW-SS32-010							
4	LDW-SS36-010							
5	LDW-SS51-010							
6								
7								
8								
9								
10								

LDC #: 13204B19
SDG #: 4070

VALIDATION FINDINGS CHECKLIST

Reviewer: 9
2nd Reviewer: 9

Method: Semivolatiles (EPA SW 846 Method 8270C)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met	✓			
Cooler temperature criteria was met.	✓			
II. GC/MS Instrument performance check				
Were the DFTPP performance results reviewed and found to be within the specified criteria?	✓			
Were all samples analyzed within the 12 hour clock criteria?	✓			
III. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?			✓	
Was a curve fit used for evaluation? If Yes, what was the acceptance criteria used?		✓		
Did the initial calibration meet the curve fit acceptance criteria?			✓	
Were all percent relative standard deviations (%RSD) $\leq$ 30% and relative response factors (RRF) $\geq$ 0.05?	✓			
IV. Continuing calibration				
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?	✓			
Were all percent differences (%D) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?			✓	
Were all percent differences (%D) $\leq$ 25% and relative response factors (RRF) $\geq$ 0.05?	✓			
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Surrogate spikes				
Were all surrogate %R within QC limits?	✓			
If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?			✓	
If any %R was less than 10 percent, was a reanalysis performed to confirm %R?			✓	
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.	✓			
Was a MS/MSD analyzed every 20 samples of each matrix?	✓			

LDC #: 13204B19
SDG #: HP70

VALIDATION FINDINGS CHECKLIST

Reviewer: 9
2nd Reviewer: VC

Validation Area	Yes	No	NA	Findings/Comments
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	✓			
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
X. Internal standards				
Were internal standard area counts within -50% or +100% of the associated calibration standard?	✓			
Were retention times within ± 30 seconds from the associated calibration standard?	✓			
XI. Target compound identification				
Were relative retention times (RRT's) within ± 0.06 RRT units of the standard?	✓			
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	✓			
Were chromatogram peaks verified and accounted for?	✓			
XII. Compound quantitation/CRQLs				
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	✓			
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XIII. Tentatively identified compounds (TICs)				
Were the major ions (> 10 percent relative intensity) in the reference spectrum evaluated in sample spectrum?			✓	
Were relative intensities of the major ions within ± 20% between the sample and the reference spectra?			✓	
Did the raw data indicate that the laboratory performed a library search for all required peaks in the chromatograms (samples and blanks)?		✓		
XIV. System performance				
System performance was found to be acceptable.	✓			
XV. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			

LDC #: 13204B19
SDG #: HP70

VALIDATION FINDINGS CHECKLIST

Reviewer: 9
2nd Reviewer: 9L

Validation Area	Yes	No	NA	Findings/Comments
XVI. Field duplicates				
Field duplicate pairs were identified in this SDG.	✓			
Target compounds were detected in the field duplicates.	✓			
XVII. Field blanks				
Field blanks were identified in this SDG.		✓		
Target compounds were detected in the field blanks.			✓	

LDC #: 13204B19
SDG #: HP70

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

Page: 1 of 1
Reviewer: 9
2nd Reviewer: n

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

[✓ Y] N N/A Was a LCS required?

Y [✓ N] N/A Were the LCS/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		LCS-012205	A	3.4 (20-130)	( )	( )	All + Bk	J/R/P
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
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				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

LDC #: 13204B19
SDG #: HP70

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Page: 1 of 1
Reviewer: [illegible]
2nd reviewer: [illegible]

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

(Y) N N/A Were field duplicate pairs identified in this SDG?
(Y) N N/A Were target compounds identified in the field duplicate pairs?

Compound	Concentration (ug/kg)		RPD (≤80)
	1	2	
Tributyltin chloride	~~4.3~~ 38	~~4.3~~ 24	~~20~~ 45
Dibutyltin dichloride	12	5.8U	~~200~~ NC

Compound	Concentration ( )		RPD

Compound	Concentration ( )		RPD

Compound	Concentration ( )		RPD

LDC #: 13204B19
SDG #: HP70

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: R

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

The Relative Response Factor (RRF), average RRF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

RRF = $(A_x)(C_{is})/(A_{is})(C_x)$
average RRF = sum of the RRFs/number of standards
%RSD = 100 * (S/X)

A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard
S = Standard deviation of the RRFs, X = Mean of the RRFs

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Reported RRF (| std)	Recalculated RRF (| std)	Reported Average RRF (Initial)	Recalculated Average RRF (Initial)	Reported %RSD	Recalculated %RSD
1	ICAL	1/18/05	Phenol (1st internal standard) TBT	0.561	0.561	0.558	0.558	6.1	6.1
			Naphthalene (2nd internal standard)						
			Fluorene (3rd internal standard)						
			Pentachlorophenol (4th internal standard)						
			Bis(2-ethylhexyl)phthalate (5th internal standard)						
			Benzo(a)pyrene (6th internal standard)						
2			Phenol (1st internal standard)						
			Naphthalene (2nd internal standard)						
			Fluorene (3rd internal standard)						
			Pentachlorophenol (4th internal standard)						
			Bis(2-ethylhexyl)phthalate (5th internal standard)						
			Benzo(a)pyrene (6th internal standard)						
3			Phenol (1st internal standard)						
			Naphthalene (2nd internal standard)						
			Fluorene (3rd internal standard)						
			Pentachlorophenol (4th internal standard)						
			Bis(2-ethylhexyl)phthalate (5th internal standard)						
			Benzo(a)pyrene (6th internal standard)						

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204B19
SDG #: HD70

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Reviewer: SR
2nd Reviewer: JK

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
RRF = $(A_x)(C_is)/(A_is)(C_x)$

Where: ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Average RRF (Initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported %D	Recalculated %D
1	CC025	1/25/05	Phenol (1st internal standard) TBT	0.558	0.560	0.560	0.4	0.4
			Naphthalene (2nd internal standard)					
			Fluorene (3rd internal standard)					
			Pentachlorophenol (4th internal standard)					
			Bis(2-ethylhexyl)phthalate (5th internal standard)					
			Benzo(a)pyrene (6th internal standard)					
2			Phenol (1st internal standard)					
			Naphthalene (2nd internal standard)					
			Fluorene (3rd internal standard)					
			Pentachlorophenol (4th internal standard)					
			Bis(2-ethylhexyl)phthalate (5th internal standard)					
			Benzo(a)pyrene (6th internal standard)					
3			Phenol (1st internal standard)					
			Naphthalene (2nd internal standard)					
			Fluorene (3rd internal standard)					
			Pentachlorophenol (4th internal standard)					
			Bis(2-ethylhexyl)phthalate (5th internal standard)					
			Benzo(a)pyrene (6th internal standard)					

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13244B19
SDG #: HP70

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Page: 1 of 1
Reviewer: 9
2nd reviewer: M

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270)

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: 1

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
~~Nitrobenzene-d5~~ Tripropyl Tin	0.5	0.3224	64.T	64.5	0.2
2-Fluorobiphenyl Tripentyl Tin	V	0.3390	66.9	67.8	0.9
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
~~1,2-Dichlorobenzene-d4~~					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

LDC #: 13204B19
SDG #: HP70

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

Reviewer:
2nd Reviewer: AK

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SC/SA Where: SSC = Spike concentration; SA = Spike added

RPD = | LCS - LCSD | * 2/(LCS + LCSD) LCS = Laboratory control sample percent recovery LCSD = Laboratory control sample duplicate percent recovery

LCS/LCSD samples: LCS-012205

Compound	Spike Added (ug/kg)		Spike Concentration (ug/kg)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
~~Phenol~~ TBT	50	NA	59	NA	118	118				
2-Chlorophenol										
1,4-Dichlorobenzene										
N-Nitroso-di-n-propylamine										
1,2,4-Trichlorobenzene										
4-Chloro-3-methylphenol										
Acenaphthene										
4-Nitrophenol										
2,4-Dinitrotoluene										
Pentachlorophenol										
~~Pyrene~~										

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13204B19
SDG #: HPTU

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: 9
2nd reviewer: DL

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

Concentration = $\frac{(A_x)(I_s)(V_t)(DF)(2.0)}{(A_{is})(RRF)(V_o)(V_i)(\%S)}$

A_x	=	Area of the characteristic ion (EICP) for the compound to be measured
A_{is}	=	Area of the characteristic ion (EICP) for the specific internal standard
I_s	=	Amount of internal standard added in nanograms (ng)
V_o	=	Volume or weight of sample extract in milliliters (ml) or grams (g).
V_i	=	Volume of extract injected in microliters (ul)
V_t	=	Volume of the concentrated extract in microliters (ul)
Df	=	Dilution Factor.
%S	=	Percent solids, applicable to soil and solid matrices only.
2.0	=	Factor of 2 to account for GPC cleanup

Example:

Sample I.D. 1, TBT:

Conc. = $\frac{(2557)(2)(500)(1)(\quad)}{(\text{Hexyl})(177699)(0.558)(5.15)(\quad)(\quad)}$

= 44.17 µg/kg

Conc chloride = 44.17 × 0.8675 = 38.3 µg/g

#	Sample ID	Compound	Reported Concentration ( )	Calculated Concentration ( )	Qualification

LDC #: 13234B19 **VALIDATION COMPLETENESS WORKSHEET** Date: 3/9/05
SDG #: HQ27 ~~& HQ28~~ Level II Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: Q
2nd Reviewer: W

METHOD: GC/MS Butyltins (Krone/EPA SW 846 Method 8270C-SIM) TBT only

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/21/05
II.	GC/MS Instrument performance check	N	
III.	Initial calibration	N	
IV.	Continuing calibration	N	
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A SW	
VIII.	Laboratory control samples	A SW	LCS, SRM
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	N	
XI.	Target compound identification	N	
XII.	Compound quantitation/CRQLs	N	
XIII.	Tentatively identified compounds (TICs)	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	
XVI.	Field duplicates	N	
XVII.	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples

1	LDW-SS43-010 sed		MB-012905			31	
2	LDW-SS31-010					32	
3	LDW-SS67-010					33	
4	LDW-SS67-010MS					34	
5	LDW-SS67-010MSD					35	
6						36	
7						37	
8						38	
9						39	
10						40	

LDC #: 13234B19
SDG #: H82T

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Reviewer: 8
2nd Reviewer: M

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.

Y N N/A Was a MS/MSD analyzed every 20 samples of each matrix?

Y N N/A Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		4/S	A	19.3 (20-130)	( )	82.3 (≤ 50)	3	Y/N/A
				( )	( )	( )		
				( )	( )	( )		
		A = Butyl Tin Trichloride		( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

	Compound	QC Limits (Soil)	RPD (Soil)	QC Limits (Water)	RPD (Water)		Compound	QC Limits (Soil)	RPD (Soil)	QC Limits (Water)	RPD (Water)
A.	Phenol	26-90%	≤ 35%	12-110%	≤ 42%	GG.	Acenaphthene	31-137%	≤ 19%	46-118%	≤ 31%
C.	2-Chlorophenol	25-102%	≤ 50%	27-123%	≤ 40%	II.	4-Nitrophenol	11-114%	≤ 50%	10-80%	≤ 50%
E.	1,4-Dichlorobenzene	28-104%	≤ 27%	36-97%	≤ 28%	KK.	2,4-Dinitrotoluene	28-89%	≤ 47%	24-96%	≤ 38%
J.	N-Nitroso-di-n-propylamine	41-126%	≤ 38%	41-116%	≤ 38%	TT.	Pentachlorophenol	17-109%	≤ 47%	9-103%	≤ 50%
R.	1,2,4-Trichlorobenzene	38-107%	≤ 23%	39-98%	≤ 28%	ZZ.	Pyrene	35-142%	≤ 36%	26-127%	≤ 31%
V.	4-Chloro-3-methylphenol	26-103%	≤ 33%	23-97%	≤ 42%						

LDC #: 13234B19
SDG #: HQ27

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Was a LCS required?

Y (N) N/A Were the LCS/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		LCS-012905	A	2.0 (20-130)	( )	( )	All + BK	J/R/P
				( )	( )	( )		
				( )	( )	( )		
		A = Butyl Tin Trichloride			( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
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LDC #: 13234A19 **VALIDATION COMPLETENESS WORKSHEET** Date: 3/9/05
SDG #: HQ48 Level II Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS Butyltins (Krone/EPA SW 846 Method 8270C-SIM) TBT only

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/24/05
II.	GC/MS Instrument performance check	N	
III.	Initial calibration	N	
IV.	Continuing calibration	N	
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	~~A~~ SW	LDW-SS6T-010 (H&T)
VIII.	Laboratory control samples	~~A~~ SW	LCS. SEM
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	N	
XI.	Target compound identification	N	
XII.	Compound quantitation/CRQLs	N	
XIII.	Tentitatively identified compounds (TICs)	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	
XVI.	Field duplicates	N	D
XVII.	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples

1	LDW-SS55-010 sed		MB-012905			31	
2	LDW-SS79-010					32	
3	LDW-SS58-010					33	
4	LDW-SS56-010					34	
5	LDW-SS28-010					35	
6						36	
7						37	
8						38	
9						39	
10						40	

LDC #: 13234019
SDG #: HR48

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Page: 1 of 1
Reviewer:
2nd Reviewer: RL

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.

Y N N/A Was a MS/MSD analyzed every 20 samples of each matrix?

Y N N/A Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		LDW-556T-010	A	19.3 (30-130)	( )	82.2 (≤30)	None	No Qual
				( )	( )	( )		
				( )	( )	( )		
		A = Butyl Tin Trichloride		( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

	Compound	QC Limits (Soil)	RPD (Soil)	QC Limits (Water)	RPD (Water)		Compound	QC Limits (Soil)	RPD (Soil)	QC Limits (Water)	RPD (Water)
A.	Phenol	26-90%	≤ 35%	12-110%	≤ 42%	GG.	Acenaphthene	31-137%	≤ 19%	46-118%	≤ 31%
C.	2-Chlorophenol	25-102%	≤ 50%	27-123%	≤ 40%	II.	4-Nitrophenol	11-114%	≤ 50%	10-80%	≤ 50%
E.	1,4-Dichlorobenzene	28-104%	≤ 27%	36-97%	≤ 28%	KK.	2,4-Dinitrotoluene	28-89%	≤ 47%	24-96%	≤ 38%
J.	N-Nitroso-di-n-propylamine	41-126%	≤ 38%	41-116%	≤ 38%	TT.	Pentachlorophenol	17-109%	≤ 47%	9-103%	≤ 50%
R.	1,2,4-Trichlorobenzene	38-107%	≤ 23%	39-98%	≤ 28%	ZZ.	Pyrene	35-142%	≤ 36%	26-127%	≤ 31%
V.	4-Chloro-3-methylphenol	26-103%	≤ 33%	23-97%	≤ 42%						

LDC #: 13234A19
SDG #: #248

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

Page: 1 of 1
Reviewer:
2nd Reviewer: R

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

[✓ Y] N N/A Was a LCS required?

Y [✓ N] N/A Were the LCS/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		LCS-012905	A	2.0 (20-130)	( )	( )	All + Bk	J/R/P
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
		A = Butyl	Tin	Trichloride	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

LDC #: 13234G19 **VALIDATION COMPLETENESS WORKSHEET** Date: 3/7/05
SDG #: ~~HQ56 & HQ57~~ Level II Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: QL
2nd Reviewer: [illegible]

METHOD: GC/MS Butyltins (Krone/EPA SW 846 Method 8270C-SIM) TBT only

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/26/05
II.	GC/MS Instrument performance check	N	
III.	Initial calibration	N	
IV.	Continuing calibration	N	
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	~~A~~ SW	LDW-SS6T-010
VIII.	Laboratory control samples	~~A~~ SW	LCS. SR-1
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	N	
XI.	Target compound identification	N	
XII.	Compound quantitation/CRQLs	N	
XIII.	Tentitatively identified compounds (TICs)	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	
XVI.	Field duplicates	N	
XVII.	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples

1	LDW-SS33-010 sed		MB-012905			31	
2	LDW-SS49-010 V					32	
3						33	
4						34	
5						35	
6						36	
7						37	
8						38	
9						39	
10						40	

LDC #: 13234G19
SDG #: H857

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Page: 1 of 1
Reviewer: 9
2nd Reviewer: K

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A'.

(Y) N N/A Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.

(Y) N N/A Was a MS/MSD analyzed every 20 samples of each matrix?

Y (N) N/A Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		4DW55GT-010	A	19.3 (20-130)	( )	82.2 (≤ 50)	None	Undetected
				( )	( )	( )		
				( )	( )	( )		
		A = Butyl Tin Trichloride		( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

	Compound	QC Limits (Soil)	RPD (Soil)	QC Limits (Water)	RPD (Water)		Compound	QC Limits (Soil)	RPD (Soil)	QC Limits (Water)	RPD (Water)
A.	Phenol	26-90%	≤ 35%	12-110%	≤ 42%	GG.	Acenaphthene	31-137%	≤ 19%	46-118%	≤ 31%
C.	2-Chlorophenol	25-102%	≤ 50%	27-123%	≤ 40%	II.	4-Nitrophenol	11-114%	≤ 50%	10-80%	≤ 50%
E.	1,4-Dichlorobenzene	28-104%	≤ 27%	36-97%	≤ 28%	KK.	2,4-Dinitrotoluene	28-89%	≤ 47%	24-96%	≤ 38%
J.	N-Nitroso-di-n-propylamine	41-126%	≤ 38%	41-116%	≤ 38%	TT.	Pentachlorophenol	17-109%	≤ 47%	9-103%	≤ 50%
R.	1,2,4-Trichlorobenzene	38-107%	≤ 23%	39-98%	≤ 28%	ZZ.	Pyrene	35-142%	≤ 36%	26-127%	≤ 31%
V.	4-Chloro-3-methylphenol	26-103%	≤ 33%	23-97%	≤ 42%						

LDC #: 13234C19
SDG #: HR57

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

Page: 1 of 1
Reviewer:
2nd Reviewer:

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

[✓ Y] N N/A Was a LCS required?

Y [✓ N] N/A Were the LCS/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		LCS-012905	A	20 (20-130)	( )	( )	All +Bk	J/R/P
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
		A = Tri Butyl Tin Trichloride			)	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
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				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

LDC #: 13234C19 **VALIDATION COMPLETENESS WORKSHEET** Date: 3/9/05
SDG #: HR48 Level II Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer:
2nd Reviewer:

METHOD: GC/MS Butyltins (Krone/EPA SW 846 Method 8270C-SIM) TBT only

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 2/2/05
II.	GC/MS Instrument performance check	N	
III.	Initial calibration	N	
IV.	Continuing calibration	N	
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples	A/SW	LCS . SEM
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	N	
XI.	Target compound identification	N	
XII.	Compound quantitation/CRQLs	N	
XIII	Tentatively identified compounds (TICs)	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	
XVI.	Field duplicates	N	
XVII.	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples

1	LDW-SS20-010		MB-020805			31	
2	LDW-SS20-010MS					32	
3	LDW-SS20-010MSD					33	
4						34	
5						35	
6						36	
7						37	
8						38	
9						39	
10						40	

LDC #: 13334C19
SDG #: HR48

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

Page: 1 of 1
Reviewer: 9
2nd Reviewer: [illegible]

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

[✓ Y] N N/A Was a LCS required?
Y [✓ N] N/A Were the LCS/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		LCS-020805	A	2.0 (20-130)	( )	( )	M+Blk	J/R/P
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
		A = Butyl Tin Trichloride			( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
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				( )	( )	( )		

LDC #: 14000A2a **VALIDATION COMPLETENESS WORKSHEET** Date: 9/8/05

SDG #: IL52 Level III Page: 1 of 1

Laboratory: Analytical Resources, Inc. Reviewer: R

2nd Reviewer: Q

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/20/05
II.	GC/MS Instrument performance check	N	
III.	Initial calibration	A	%RSD
IV.	Continuing calibration	A	%D
V.	Blanks	SW	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates MMP	N/SW	
VIII.	Laboratory control samples SRM	A	LCS
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	A	PRY-d12 low
XI.	Target compound identification	N	
XII.	Compound quantitation/CRQLs	N	
XIII.	Tentitatively identified compounds (TICs)	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	
XVI.	Field duplicates	N	
XVII.	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples

ecd

1	LDW-SS117-010	11		21		31	
2	LDW-SS117-010DUP	12		22		32	
3		13		23		33	
4		14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

A. Phenol**	P. Bis(2-chloroethoxy)methane	EE. 2,6-Dinitrotoluene	TT. Pentachlorophenol**	III. Benzo(a)pyrene**
B. Bis (2-chloroethyl) ether	Q. 2,4-Dichlorophenol**	FF. 3-Nitroaniline	UU. Phenanthrene	JJJ. Indeno(1,2,3-cd)pyrene
C. 2-Chlorophenol	R. 1,2,4-Trichlorobenzene	GG. Acenaphthene**	VV. Anthracene	KKK. Dibenz(a,h)anthracene
D. 1,3-Dichlorobenzene	S. Naphthalene	HH. 2,4-Dinitrophenol*	WW. Carbazole	LLL. Benzo(g,h,i)perylene
E. 1,4-Dichlorobenzene**	T. 4-Chloroaniline	II. 4-Nitrophenol*	XX. Di-n-butylphthalate	MMM. Bis(2-Chloroisopropyl)ether
F. 1,2-Dichlorobenzene	U. Hexachlorobutadiene**	JJ. Dibenzofuran	YY. Fluoranthene**	NNN. Aniline
G. 2-Methylphenol	V. 4-Chloro-3-methylphenol**	KK. 2,4-Dinitrotoluene	ZZ. Pyrene	OOO. N-Nitrosodimethylamine
H. 2,2'-Oxybis(1-chloropropane)	W. 2-Methylnaphthalene	LL. Diethylphthalate	AAA. Butylbenzylphthalate	PPP. Benzoic Acid
I. 4-Methylphenol	X. Hexachlorocyclopentadiene*	MM. 4-Chlorophenyl-phenyl ether	BBB. 3,3'-Dichlorobenzidine	QQQ. Benzyl alcohol
J. N-Nitroso-di-n-propylamine*	Y. 2,4,6-Trichlorophenol**	NN. Fluorene	CCC. Benzo(a)anthracene	RRR. Pyridine
K. Hexachloroethane	Z. 2,4,5-Trichlorophenol	OO. 4-Nitroaniline	DDD. Chrysene	SSS. Benzidine
L. Nitrobenzene	AA. 2-Chloronaphthalene	PP. 4,6-Dinitro-2-methylphenol	EEE. Bis(2-ethylhexyl)phthalate	TTT.
M. Isophorone	BB. 2-Nitroaniline	QQ. N-Nitrosodiphenylamine (1)**	FFF. Di-n-octylphthalate**	UUU.
N. 2-Nitrophenol**	CC. Dimethylphthalate	RR. 4-Bromophenyl-phenylether	GGG. Benzo(b)fluoranthene	VVV.
O. 2,4-Dimethylphenol	DD. Acenaphthylene	SS. Hexachlorobenzene	HHH. Benzo(k)fluoranthene	WWW.

LDC #: 14000A2A
SDG #: IL52

VALIDATION FINDINGS WORKSHEET
Blanks

Page: 1 of 1
Reviewer: AR
2nd Reviewer: 9

METHOD: GC/MS BNA (EPA SW 846 Method 8270)
Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Was a method blank analyzed for each matrix?
(Y) N N/A Was a method blank analyzed for each concentration preparation level?
(Y) N N/A Was a method blank associated with every sample?
(Y) N N/A Was the blank contaminated? If yes, please see qualification below.

Blank extraction date: 8/26/05 Blank analysis date: 8/30/05
Conc. units: ug/kg Associated Samples: 1

Compound	Blank ID	Sample Identification								
	MB082605	1								
Di-n-butylphthalate	72	26/4								
Butylbenzylphthalate										
Bis(2-ethylhexyl)phthalate	11	(120)								
Di-n-octylphthalate										
CRQL										
TICs:										
4-Hydroxy-4-methyl-2-pentanone										

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Common contaminants such as the phthalates and TICs noted above that were detected in samples within ten times the associated method blank concentration were qualified as not detected, "U". Other contaminants within five times the method blank concentration were also qualified as not detected, "U".

LDC #: 14000A20
SDG #: IL52

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Page: 1 of 1
Reviewer: AR
2nd Reviewer: 9

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water. DUP

(Y) N N/A Was a MS/MSD analyzed every 20 samples of each matrix? DUP

Y (N) N/A Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits? DUP

#	Date	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		2	XX	( )	( )	166 (≤50)	1	Jdet/A
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
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				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

	Compound	QC Limits (Soil)	RPD (Soil)	QC Limits (Water)	RPD (Water)		Compound	QC Limits (Soil)	RPD (Soil)	QC Limits (Water)	RPD (Water)
A.	Phenol	26-90%	≤ 35%	12-110%	≤ 42%	GG.	Acenaphthene	31-137%	≤ 19%	46-118%	≤ 31%
C.	2-Chlorophenol	25-102%	≤ 50%	27-123%	≤ 40%	II.	4-Nitrophenol	11-114%	≤ 50%	10-80%	≤ 50%
E.	1,4-Dichlorobenzene	28-104%	≤ 27%	36-97%	≤ 28%	KK.	2,4-Dinitrotoluene	28-89%	≤ 47%	24-96%	≤ 38%
J.	N-Nitroso-di-n-propylamine	41-126%	≤ 38%	41-116%	≤ 38%	TT.	Pentachlorophenol	17-109%	≤ 47%	9-103%	≤ 50%
R.	1,2,4-Trichlorobenzene	38-107%	≤ 23%	39-98%	≤ 28%	ZZ.	Pyrene	35-142%	≤ 36%	26-127%	≤ 31%
V.	4-Chloro-3-methylphenol	26-103%	≤ 33%	23-97%	≤ 42%						

LDC #: 14000A2b **VALIDATION COMPLETENESS WORKSHEET** Date: 9/8/05
SDG #: IL52 Level III Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: M
2nd Reviewer: C

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270C-SIM)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/20/05
II.	GC/MS Instrument performance check	N	
III.	Initial calibration	A	~~SPSD~~, %D
IV.	Continuing calibration	A	
V.	Blanks	SW	
VI.	Surrogate spikes	SW A CV	
VII.	Matrix spike/Matrix spike duplicates /DUP	N/A	
VIII.	Laboratory control samples	SW	LCS
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	A	
XI.	Target compound identification	N	
XII.	Compound quantitation/CRQLs	N	
XIII.	Tentitatively identified compounds (TICs)	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	
XVI.	Field duplicates	N	
XVII.	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples

all

1	LDW-SS117-010	11		21		31	
2	LDW-SS117-010DUP	12		22		32	
3		13		23		33	
4		14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

A. Phenol**	P. Bis(2-chloroethoxy)methane	EE. 2,6-Dinitrotoluene	TT. Pentachlorophenol**	III. Benzo(a)pyrene**
B. Bis (2-chloroethyl) ether	Q. 2,4-Dichlorophenol**	FF. 3-Nitroaniline	UU. Phenanthrene	JJJ. Indeno(1,2,3-cd)pyrene
C. 2-Chlorophenol	R. 1,2,4-Trichlorobenzene	GG. Acenaphthene**	VV. Anthracene	KKK. Dibenz(a,h)anthracene
D. 1,3-Dichlorobenzene	S. Naphthalene	HH. 2,4-Dinitrophenol*	WW. Carbazole	LLL. Benzo(g,h,i)perylene
E. 1,4-Dichlorobenzene**	T. 4-Chloroaniline	II. 4-Nitrophenol*	XX. Di-n-butylphthalate	MMM. Bis(2-Chloroisopropyl)ether
F. 1,2-Dichlorobenzene	U. Hexachlorobutadiene**	JJ. Dibenzofuran	YY. Fluoranthene**	NNN. Aniline
G. 2-Methylphenol	V. 4-Chloro-3-methylphenol**	KK. 2,4-Dinitrotoluene	ZZ. Pyrene	OOO. N-Nitrosodimethylamine
H. 2,2'-Oxybis(1-chloropropane)	W. 2-Methylnaphthalene	LL. Diethylphthalate	AAA. Butylbenzylphthalate	PPP. Benzoic Acid
I. 4-Methylphenol	X. Hexachlorocyclopentadiene*	MM. 4-Chlorophenyl-phenyl ether	BBB. 3,3'-Dichlorobenzidine	QQQ. Benzyl alcohol
J. N-Nitroso-di-n-propylamine*	Y. 2,4,6-Trichlorophenol**	NN. Fluorene	CCC. Benzo(a)anthracene	RRR. Pyridine
K. Hexachloroethane	Z. 2,4,5-Trichlorophenol	OO. 4-Nitroaniline	DDD. Chrysene	SSS. Benzidine
L. Nitrobenzene	AA. 2-Chloronaphthalene	PP. 4,6-Dinitro-2-methylphenol	EEE. Bis(2-ethylhexyl)phthalate	TTT.
M. Isophorone	BB. 2-Nitroaniline	QQ. N-Nitrosodiphenylamine (1)**	FFF. Di-n-octylphthalate**	UUU.
N. 2-Nitrophenol**	CC. Dimethylphthalate	RR. 4-Bromophenyl-phenylether	GGG. Benzo(b)fluoranthene	VVV.
O. 2,4-Dimethylphenol	DD. Acenaphthylene	SS. Hexachlorobenzene	HHH. Benzo(k)fluoranthene	WWW.

LDC #: 14080A26
SDG #: IL52

VALIDATION FINDINGS WORKSHEET
Blanks

Page: 1 of 1
Reviewer: AC
2nd Reviewer: CK

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a method blank analyzed for each matrix?
Y N N/A Was a method blank analyzed for each concentration preparation level?
Y N N/A Was a method blank associated with every sample?
Y N N/A Was the blank contaminated? If yes, please see qualification below.

Blank extraction date: 8/26/05 **Blank analysis date:** 8/31/05
Conc. units: ug/Kg Associated Samples: 1

Compound	Blank ID	Sample Identification								
	MB082605	1								
Di-n-butylphthalate										
Butylbenzylphthalate										
Bis(2-ethylhexyl)phthalate										
Di-n-octylphthalate										
Diethylphthalate	9.3	11/U								
CRQL										
TICs:										
4-Hydroxy-4-methyl-2-pentanone										

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Common contaminants such as the phthalates and TICs noted above that were detected in samples within ten times the associated method blank concentration were qualified as not detected, "U". Other contaminants within five times the method blank concentration were also qualified as not detected, "U".

LDC #: 14000A2a

SDG #: 1452

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Please see qualification below for all questions answered "N". Not applicable questions are identified as "N/A".

Y [✓ N] N/A Were percent recoveries (%R) for surrogates within QC limits?

Y N [✓ N/A] If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?

Y N [✓ N/A] If any %R was less than 10 percent, was a reanalysis performed to confirm %R?

VALIDATION FINDINGS WORKSHEET

Surrogate Recovery

Page: 1 of 1

Reviewer: X

2nd Reviewer:

#	Date	Sample ID	Surrogate	%R (Limits)	Qualifications
	1	1	DCB	36.0 (40-130)	no qual
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	

* QC limits are advisory	QC Limits (Soil)	QC Limits (Water)		QC Limits (Soil)	QC Limits (Water)
S1 (NBZ) = Nitrobenzene-d5	23-120	35-114	S5 (2FP)= 2-Fluorophenol	25-121	21-100
S2 (FBP) = 2-Fluorobiphenyl	30-115	43-116	S6 (TBP) = 2,4,6-Tribromophenol	19-122	10-123
S3 (TPH) = Terphenyl-d14	18-137	33-141	S7 (2CP) = 2-Chlorophenol-d4	20-130*	33-110*
S4 (PHL) = Phenol-d5	24-113	10-94	S8 (DCB) = 1,2-Dichlorobenzene-d4	20-130*	16-110*

LDC #: 14000A2b
SDG #: IL52

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

Page: 1 of 1
Reviewer:
2nd Reviewer:

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".
[✓ Y] N N/A Was a LCS required?
Y [✓ N] N/A Were the LCS/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		LCS082605	TT	28.0 (40-130)	( )	( )	All det	J/UJ/P
			J	18.0 (↓)	( )	( )		↓
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
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				( )	( )	( )		
				( )	( )	( )		