TRC
Environmental Solutions through Technology

TRC Environmental Corporation
Boott Mills South, Foot of John Street
Lowell, MA 01852
☎ (508) 970-5600

8 Jan 93

January 5, 1993

Ms. Margaret Leshen, Chief
Contracts Management Section
U. S. Environmental Protection Agency
JFK Federal Building
Boston, MA 02203-2211

Reference: Contract No. 68-W9-0003 TES-6
Work Assignment No. C01124
Shpack Landfill
RI/FS Compliance Oversight

Subject: Deliverable: Data Validation Report
Case #: 18944, SDG: ADW15
CLP Lab: IEA
Volatiles: 1 water/1 soil
Semivolatiles: 1 water/1 soil
Pesticide: 1 water/1 soil

Dear Ms. Leshen:

In accordance with the reporting requirements of the referenced Work Assignment, enclosed is the Data Validation Report for case #18944, which was generated by VIAR & Co., TRC's Data Validation Subcontractor for this Work Assignment. The validation was performed on analytical data from low level soil and water samples collected by TRC Environmental Corporation at the Shpack Landfill site on October 20, 1992 and October 21, 1992 and analyzed by IEA.

If you have any questions, please feel free to contact Cynthia Fortin, TRC's Data Validation Coordinator, at (508) 970-5757 extension 5265.

Sincerely yours,

William J. Farino

William J. Farino
Regional Manager

WJF/efg
Enclosures

cc: Deborah Szaro/Moira Lataille/EPA Region I CLP TPO
Mary Grealish/EPA Regional Project Officer (letter only)
David Lederer/EPA Work Assignment Manager (letter only)
Daniel Fenno/TRC Project Manager
Edward MacKinnon/TRC Lead Chemist
Laboratory Regional CLP TPO

Viar & company

Management Services Division
300 N. Lee Street • Suite 200
Alexandria, Virginia 22314
(703) 684-5678

December 15, 1992

Ms. Cynthia Fortin
TRC Environmental Corporation
Boott Mills South
Foot of John Street
Lowell, Massachusetts 01852

Contract/Work Assignment No. 68-W9-0003/C01124
Case No. 18944, SDG No. ADW15
Lab Name: IEA
Site Name: Shpack Landfill
Volatiles: 1 Water/ 1 Soil
Semivolatiles: 1 Water/ 1 Soil
Pesticide/PCB: 1 Water/ 1 Soil

Dear Ms. Fortin:

A validation was performed on the organic analytical data from Case No. 18944 for two VOA, semivolatile and pesticide low level samples under SDG No. ADW15, which were collected by TRC Environmental Corporation and submitted to IEA laboratory for organic analysis. Although the data were submitted under the Organic Statement of Work (SOW) 3/90, the data were evaluated based on the following parameters according to the Region I Laboratory Data Functional Guidelines for Evaluation Organic Analyses, November 1, 1988.

* - Data Completeness
* - Holding Times
* - GC/MS Tuning
- Calibration
- Blanks
* - Surrogate Recoveries
- Matrix Spike/Matrix Spike Duplicate
- Field Duplicate
* - Internal Standard Performance
* - Pesticide Instrument Performance
* - Compound Identification
* - Compound Quantitation

* All criteria were met for these parameters.

Table I summarizes the validation recommendations which were based on the following criteria:

Summary

Overall the quality of data is satisfactory. However, estimate (J) positive result for Acetone and estimate (UJ) the non-detected sample result for 2-Hexanone in sample ADW16 due to %RSD>30 and %D>50 respectively. Qualify U positive result for Acetone in sample ADW16 due to blank contamination.

This data validation performed by Viar & Company as requested by TRC Environmental Corporation is not complete until it has been reviewed and approved by TRC Environmental Corporation. TRC may request Viar & Company to make changes to this data validation package to meet required technical and quality assurance criteria.

Sincerely

Shadan Shirkhodai
Organic Data Validator Group Leader

Michael Johnson
Data Validation Task Manager

The signature below indicates that this data validation package has been reviewed and approved by TRC and that TRC accepts responsibility for this data validation package.

Cynthia S. Fortin
Data Validation Coordinator

cc: Michael Johnson, Viar & Company
Cindy Bunting, Viar & Company

Calibration

VOA:

Instrument ID: MSD5

Compound	IC DATE 10-08-92	CC DATE 10-26-92	CC DATE 10-29-92
Acetone	x	x	
Chloromethane		x	
2-Butanone		x	
4-Methyl-2-Pentanone			x
2-Hexanone			xx

Associated Samples:

	ADW16,ADW16MS, ADW16MSD,VBLK5U, VBLK5Y	ADW16MS, ADW16MSD, VBLK5U	ADW16,VBLK5Y

x : %RSD>30,<50; %D>25,<50 - Estimate (J) all positive results.
xx : %D>50 - Estimate (J) all positive results and estimate (UJ) all non-detected results.

Estimate (J) positive result for Acetone in sample ADW16 due to %RSD>30. Estimate (UJ) the non-detected sample result for 2-Hexanone in sample ADW16 due to %D>50. No further action is required.

Instrument ID: MSD10

Compound	IC DATE 10-29-92	CC DATE 11-01-92
Chloromethane	x	
Acetone	x	x
2-Butanone	x	
2-Hexanone	x	
Chloroethane		x

Associated Samples:

	ADW15,VBLKJ3	ADW15,VBLKJ3

x : %RSD>30,<50; %D>25,<50 - Estimate (J) all positive results.

There were no positive results for above compounds in sample ADW15, therefore no action is required.

Semivolatile:

Instrument ID: MSD8

Compound	CC DATE 11-03-92
4-Nitrophenol	x
Di-n-Octylphthalate	x

Associated Samples:

SBLK96

x : %RSD>30,<50; %D>25,<50 - Estimate (J) all positive results.

There were no positive results for above blank, therefore no action is required.

Blanks

VOA:

The volatile laboratory blanks are summarized in the following table:

Compound	Maximum Concentration (Units)	Action Level (Units)
Acetone	7 (ug/Kg)	70 (ug/Kg)
Bromoform	1 (ug/L)	5 (ug/L)
Toluene	3 (ug/L)	30 (ug/L)
Xylene (Total)	2 (ug/L)	10 (ug/L)

The concentration of Acetone in sample ADW16 was greater than the CRQL but less than the action level; therefore report the concentration found with a U qualifier. No further action is required.

Semivolatile:

The semivolatile laboratory blank is summarized in the following table:

Compound	Maximum Concentration (ug/L)	Action Level (ug/L)
Di-n-butylphthalate	1	10

There were no positive result for Di-n-butyphthalate in sample ADW16, therefore no action is required.

Blank Actions:

- Value < CRQL; remove the reported value from the analytical table and report the CRQL on the quantitation limit table.
- Value > CRQL and < action level; remove the value from the analytical table and report the value on the quantitation limit table.
- Value > CRQL and > action level; report the value unqualified on the analytical table.

The action level values were compared to sample values after application of sample dilution factors.

Matrix Spike/Matrix Spike Duplicate

Semivolatile:

B: Unspiked Compounds

ADW16MS, ADW16MSD

Compound	%RSD
Diethylphthalate	173
bis(2-Ethylhexyl)phthalate	173

Diethylphthalate and bis(2-Ethylhexyl)phthalate have already been estimated (J) on Form I in sample ADW16, therefore no further action is required.

Pesticide/PCB:

B : Unspiked Compounds

ADW16MS, ADW16MSD

Compound	%RSD
Methoxychlor	88

Methoxychlor has already been estimated (J) on Form I in sample ADW16, therefore no further action is required.

Field Duplicate

No field duplicate was submitted for Case 18944, SDG ADW15.

CASE NO. 18944, SDG NO. ADW15
TABLE I
RECOMMENDATION SUMMARY

TR#s	VOA	Base/Neutral	Acid	Pesticide/PCB
ADW15	A	A	A	A
ADW16	A^1,A^2	A	A	A

A - Accept all data.

A^1 - Accept data, but estimate (J) positive result for Acetone and estimate (UJ) the non-detected sample result for 2-Hexanone in the respective sample due to calibration being out of control.

A^2 - Accept data, but qualify U positive result for Acetone in the respective sample due to blank contamination.

December 15, 1992

CASE NO. 18944, SDG NO. ADW15
TABLE II
TENTATIVELY IDENTIFIED COMPOUND (TIC) SUMMARY

Compound	ADW15	ADW16
Hexadecanoic Acid		x
Unknown Phthalate		x
Unknown Siloxane		x
Unknown	x	x

x : Compound Detected.

FIGURE 8

REGION I
Data Review Worksheets

Site Name Shpack Landfill
Reference Number

REGION I REVIEW OF ORGANIC CONTRACT LABORATORY DATA PACKAGE

The hardcopied (laboratory name) TEA data package received at Region I has been reviewed and the quality assurance and performance data summarized. The data review included:

Case No. 18944 SAS No. —
SDG No. ADW15 Matrix water/soil
No. of Samples 2

Sampling Date(s) 10-20-92 ; 10-21-92
Shipping Date(s) 10-21-92
Date Rec'd by Lab 10-22-92

Traffic Report Nos: ADW16 , ADW15
Trip Blank No.: —
Equipment Blank No.: ADW15
Field Dup Nos: —

SOW No. 3/90 requires that specific analytical work be done and that associated reports be provided by the laboratory to the Regions, EMSL-LV, and SMO. The general criteria used to determine the performance were based on an examination of:

- -Data Completeness
- -Holding Times
- -GC/MS Tuning
- -Calibrations
- -Blanks
- -Surrogate Recoveries
- -Matrix Spike/Matrix Spike Dup
- -Field Duplicates
- -Internal Standard Performance
- -Pesticide Inst. Performance
- -Compound Identification
- -Compound Quantitation

Overall comments The quality of data is satisfactory.

Definitions and Qualifiers:

A - Acceptable data.
J - Approximate data due to quality control criteria.
R - Reject data due to quality control criteria.
U - Compound not detected.

Reviewer: Shadan Shirkhodaei Date: 12/15/92

REGION I
Data Review Worksheets

I. DATA COMPLETENESS all criteria were met.

MISSING INFORMATION	DATE LAB CONTACTED	DATE REC'D

FIGURE 9

Region 1

ORGANIC REGIONAL DATA ASSESSMENT

CASE NO. 18944 SITE Shpack landfill

LABORATORY IEA NO. OF SAMPLES/ MATRIX 1 Aqueous & 1 Soil

SDG # ADW15 REVIEWER (IF NOT ESD) Viar & Company

SOW# 3/90 REVIEWER'S NAME Shadan ShirKhodai

DPO: ACTION . FYI COMPLETION DATE 12-15-92

DATA ASSESSMENT SUMMARY

		VOA	BNA	PEST	OTHER
1.	HOLDING TIMES	O	O	O	
2.	GC/MS TUNE/INSTR. PERFORM.	O	O	NA	
3.	CALIBRATIONS	M'	O	O	
4.	BLANKS	O	O	O	
5.	SURROGATES	O	O	O	
6.	MATRIX SPIKE/DUP	O	X'	X²	
7.	OTHER QC	O	O	O	
8.	INTERNAL STANDARDS	O	O	NA	
9.	COMPOUND IDENTIFICATION	O	O	O	
10.	SYSTEM PERFORMANCE	O	O	O	
11.	OVERALL ASSESSMENT	O	O	O	

O = Data had no problems/or qualified due to minor problems.
M = Data qualified due to major problems.
Z = Data unacceptable.
X = Problems, but do not affect data.

ACTION ITEMS: M': Estimate (J) positive result for acetone & (UJ) the non-detected sample result for 2-Hexanone in sample ADW16 due to calibration being out of control.

X': %RSD>30 For bis(2-Ethylhexyl)phthalate & Diethylphthalate, however, they have already been estimated (J) on Form I, therefore no further action was necessary.

AREAS OF CONCERN: X²: Methoxychlor has already been estimated (J) on Form I in ADW16 ⇒ no action is required

NOTABLE PERFORMANCE:

REGION I
Data Review Worksheets All criteria were met.

II. HOLDING TIMES Complete table for all samples and circle the fractions which are not within criteria.

SAMPLE ID	DATE SAMPLED	VOA DATE ANAL	BNA DATE EXTR	BNA DATE ANAL	PEST DATE EXTR	PEST DATE ANAL
ADW15	10-21-92	11 11-1-92	5 10-26-92	4 10-30-92	5 10-26-92	11 11-06-92
ADW16	10-20-92	10 10-30-92	7 10-27-92	8 11-04-92	6 10-26-92	11 11-06-92
ADW16MS	10-20-92	6 10-26-92	7 10-27-92	8 11-04-92	6 10-26-92	11 11-06-92
ADW16MSD	10-20-92	6 10-26-92	7 10-27-92	8 11-04-92	6 10-26-92	11 11-06-92

VOA - Unpreserved: Aromatic within 7 days, non-aromatic within 14 days of sample collection.
Preserved : Both within 14 days of sample collection.
Soils : Both within 14 days of sample collection.

BNA & PEST - Extracted within 7 days, analyzed within 40 days, soils and water.

ACTION:

1. If holding times are exceeded all positive results are estimate (J) and non-detects are estimated (UJ).
2. If holding times are grossly exceeded, the reviewer may determine that non-detects are unusable(*)

REGION I
Data Review Worksheets

III. GC/MS TUNING all criteria were met.

✓ The DFTPP performance results were reviewed and found to be within the specified criteria.

If no,
Samples affected: _____

✓ The BFB performance results were reviewed and found to be within the specified criteria.

If no,
Samples affected: _____

If mass calibration is in error refer to the Region guidelines for expanded criteria. If necessary, all associated data as unusable (R).

- Estimate (J) positive result for Acetone in sample ADW16 due to %RSD > 30.
- Estimate (UJ) the non-detected sample result for 2-Hexanone in sample ADW16 due to %D > 50.

REGION I
Data Review Worksheets

IV A. VOLATILE CALIBRATION VERIFICATION

Date of Initial Calibration : 10-8-92
Dates of Continuing Calibrations: 10-26-92, 10-29-92
Instrument ID : MSD5
Matrix/Level : Soil/low

DATE	CRITERIA OUT RF, %RSD, RF, %D	COMPOUND (VALUE)
10-08-92	%RSD	Acetone 33.8
	Samples Affected:	VBLK5U, ADW16MS, ADW16MSD, ADW16, VBLK5Y
10-26-92	%D	Chloromethane 28.0
	Samples Affected:	VBLK5U, ADW16MS, ADW16MSD
	%D	Acetone 30.1
	Samples Affected:	
	%D	2-Butanone 25.7
	Samples Affected:	
10-29-92	%D	4-Methyl-2-Pentanone -40.7
	Samples Affected:	ADW16, VBLK5Y
	%D	2-Hexanone -53.8
	Samples Affected:	
	Samples Affected:	
	Samples Affected:	
	Samples Affected:	
	Samples Affected:	

1. All $\overline{RF}$'s, and RF's must be >0.05
2. All %RSD's must be<30%
3. All %D's must be <25%

ACTION:
1. If any compound has an initial $\overline{RF}$ or a continuing RF of <0.05:
   a. Flag positive results for that compound as estimated (J).
   b. Flag non-detects for that compound as unusable (R).

2. If any compound has a %RSD >30% or a %D >25%:
   a. Flag positive results for that compound as estimated (J).
   b. Flag non-detects for that compound as estimated (UJ) if the %RSD or %D is >50%.

There were no positive results for these compounds in sample ADW15, therefore no action is required.

REGION I
Data Review Worksheets

IV A. VOLATILE CALIBRATION VERIFICATION

Date of Initial Calibration : 10-29-92
Dates of Continuing Calibrations: 11-01-92
Instrument ID : MSD10
Matrix/Level : Aqueous/Low

DATE	CRITERIA OUT RF, %RSD, RF, %D	COMPOUND (VALUE)
10-29-92	%RSD	Chloromethane 37.6
	Samples Affected:	ADW15, VBLK13
	%RSD	Acetone 41.5
	Samples Affected:	"
	%RSD	2-Butanone 47.7
	Samples Affected:	"
	%RSD	2-Hexanone 34.2
	Samples Affected:	"
11-01-92	%D	Chloroethane -27.6
	Samples Affected:	"
	%D	Acetone 26.2
	Samples Affected:	"
	Samples Affected:	
	Samples Affected:	
	Samples Affected:	
	Samples Affected:	

1. All $\overline{RF}$'s, and RF's must be >0.05
2. All %RSD's must be<30%
3. All %D's must be <25%

ACTION:
1. If any compound has an initial $\overline{RF}$ or a continuing RF of <0.05:
   a. Flag positive results for that compound as estimated (J).
   b. Flag non-detects for that compound as unusable (R).

2. If any compound has a %RSD >30% or a %D >25%:
   a. Flag positive results for that compound as estimated (J).
   b. Flag non-detects for that compound as estimated (UJ) if the %RSD or %D is >50%.

All criteria were met for initial calibrations.
There were no positive result for these compounds in SBLK96 => no action is required.

REGION I
Data Review Worksheets

IV B. SEMIVOLATILE CALIBRATION VERIFICATION

Date of Initial Calibration : 10-29-92; 10-31-92; 11-10-9
Dates of Continuing Calibrations: 10-29-92; 11-3-92; 11-4-92; 11-1
Instrument ID : MSD8

DATE	CRITERIA OUT RF, %RSD, RF, %D	COMPOUND
11-3-92	%D	4-Nitrophenol -28.7
	Samples Affected: SBLK96	
↓	%D	Di-n-octylphthalate -26.1
	Samples Affected: SBLK96	
	Samples Affected:	
	Samples Affected:	
	Samples Affected:	
	Samples Affected:	
	Samples Affected:	
	Samples Affected:	
	Samples Affected:	
	Samples Affected:	
	Samples Affected:	
	Samples Affected:	
	Samples Affected:	
	Samples Affected:	

See worksheet IV-A for criteria and actions.

REGION I
Data Review Worksheet

All criteria were met for pesticide/PCB fraction.

V A. BLANK ANALYSIS RESULTS (Sections 1 & 2)

List the contamination in the blanks below.

1. Laboratory Blanks

Level: Low

DATE	LAB ID	FRACTION/ MATRIX	COMPOUND	CONCENTRATION/ UNITS
10-26-92	VBLK50	VOA/Soil	Acetone	7 ug/kg
10-29-92	VBLK5Y	VOA/Soil	Acetone	5 ug/kg
11-01-92	VBLKJ3	VOA/Aqueous	Bromoform	1 ug/L
↓	↓	↓	Toluene	3 ug/L
			Xylene (total)	2 ug/L
11-17-92	SBLK01	BNA/Aqueous	Di-n-butylphthalate	1 ug/L

2. Equipment and Trip Blanks

DATE	TR #	FRACTION/ MATRIX	COMPOUND	CONCENTRATION/ UNITS

A separate worksheet should be used for low and medium level blanks.

REGION I
Data Review Worksheets

V B. BLANK ANALYSIS RESULTS (Section 3)

3. Blank Actions

Action levels should be based upon the highest concentration of contaminant determined in any blank. The action level for samples which have been concentrated or diluted should be multiplied by the concentration/dilution factor. No positive sample result should be reported unless the concentration of the compound in the sample exceeds the action level of 10 x's the amount in the blank for the common contaminants, or 5 x's the amount for any other compound. Specific actions are as follows:

1. The concentration is less than the CRQL, report the CRQL.

2. The concentration is greater than the CRQL, but less than the action level, report the concentration found U.

3. The concentration is greater than the action level, report the concentration unqualified.

For examples refer to the Regional Guidelines.

Common contaminants = methylene chloride, acetone, 2-butanone, toluene, and phthalates.

LEVEL: low

COMPOUND	MAX. CONC./ UNITS	ACTION LEVEL/ UNITS	CRQL
Acetone	7 ug/kg	70 ug/kg	10
Bromoform	1 ug/L	5 ug/L	
Toluene	3 ug/L	30 ug/L	
Xylene (total)	2 ug/L	10 ug/L	
Di-n-butylphthalate	1 ug/L	10 ug/L	10

A separate worksheet should be used for low and medium level blanks.

All criteria were met for VOA, BNA & Pesticide/PCB fractions.

REGION I
Data Review Worksheets

VI. SURROGATE SPIKE RECOVERIES

List the percent recoveries which do not meet the criteria for surrogate recovery.

Matrix: Aqueous

	VOA			B/N			A			PEST*
TR #'S	TOL	BFB	DCF	NBZ	FBP	TPH	PHL	2FP	TBP	DBC
QC Limits										
	to	to	to	to	to	to	to	to	to	to

Surrogate Actions: *-Advisory only

	PERCENT RECOVERY		
	<10%	10%-CRR	>CRR
Positive sample results	J	J	J
Non-detected results	R	UJ	A

CRR = Contract Required Recovery Range.
Surrogate action should be applied:

1. If at least two surrogates in a B/N or A fraction or one surrogate in the VOA fraction are out of specification, but have recoveries of >10%.
2. If any one surrogate in a fraction shows <10% recovery.

REGION I
Data Review Worksheets

All criteria were met for VOA/BNA & Pesticide/PCB fractions

VI. SURROGATE SPIKE RECOVERIES

List the percent recoveries which do not meet the criteria for surrogate recovery.

Matrix: Soil

	VOA			B/N			A			PEST*
TR #'S	TOL	BFB	DCF	NBZ	FBP	TPH	PHL	2FP	TBP	DBC
QC Limits										
	to	to	to	to	to	to	to	to	to	to

Surrogate Actions:

*-Advisory only

	PERCENT RECOVERY		
	<10%	10%-CRR	>CRR
Positive sample results	J	J	J
Non-detected results	R	UJ	A

CRR = Contract Required Recovery Range.
Surrogate action should be applied:

1. If at least two surrogates in a B/N or A fraction or one surrogate in the VOA fraction are out of specification, but have recoveries of >10%.
2. If any one surrogate in a fraction shows <10% recovery.

REGION I
Data Review Worksheets

all criteria were met for VOA, BNA & Pesticide/PCB fractions.

VII A. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

1. Matrix Spike/Matrix Spike Duplicate Recoveries and Precision

TR Nos. ADW16MS , ADW16MSD Level: low Matrix: Soil

List the percent recoveries and RPD's of compounds which do not meet the criteria stated on Form 3.

FRACTION/ MS OR MSD	COMPOUND	%REC/ RPD	QC LIMITS

QUALIFICATION IS LIMITED TO THE UNSPIKED SAMPLE ONLY.

1. If any compound does not meet the Contract Required Recovery range (CRR) follow the actions stated below:

	PERCENT RECOVERY		
	<10%	10% - CRR	>CRR
Positive Sample Results	J	J	J
Non-detected Results	R	A	A

2. If any compound does not meet the RPD criteria, flag positive results for that compound as estimated (J).

A separate worksheet should be used for each MS/MSD pair.

* No action was necessary as acetone was considered to be non-detect in sample ADW16 due to blank contamination.

** Diethylphthalate & bis(2-Ethylhexyl) phthalate have already been estimated (J) on Form I in sample ADW16, therefore no further action is required.

*** Methoxychlor has already been estimated (J) on Form I, therefore no further action is required.

VII B. MATRIX SPIKE/MATRIX SPIKE DUPLICATE (Section 2)

3. Matrix Spike Duplicate - Unspiked Compounds

TR Nos. ADW16MS , ADW16MSD

List the concentrations of the unspiked compounds and determine the percent RSD's of the unspiked sample, matrix spike, and matrix spike duplicate. No limits have been developed for the RSD values of the unspiked compounds. .

FRACTION	COMPOUND	SAMPLE	MS	MSD	%RSD
VOA	Acetone	45	100	64	40*
BNA	Diethylphthalate	80	0	0	173**
↓	bis(2-Ethylhexyl)phthalate	160	0	0	173**
Pesticide/PCB	Methoxychlor	1.8	2.2	0	88***

The reviewer must use professional judgement to determine if there is a need to qualify any of the unspiked compounds in the sample.

REGION I
Data Review Worksheets

NA

VIII. FIELD DUPLICATE PRECISION

TR Nos._____ , _____ Matrix:_____

List the concentrations of the compounds which do not meet the followinc RPD criteria:

1. An RPD of <30% for water duplicates.
2. An RPD of <50% for soil duplicates.

FRACTION	COMPOUND	SAMPLE CONC	DUP SAMPLE CONC	RPD

ACTIONS:

1. If the results for any componds do not meet the RPD criteria, flag the positive results for that compound as estimated.

2. If one value is non-detected, and one is above the CRQL:
   a. Flag the positive result as estimated (J).
   b. Flag the non-detected result as estimated (UJ).

NOTE: Professional judgement may be utilized to apply duplicate action to all samples of a similar matrix.

A separate worksheet should be filled out for each field duplicate pair

REGION I
Data Review Worksheets All criteria were met.

IX. INTERNAL STANDARD PERFORMANCE

List the internal standard areas of samples which do not meet the criteria of +100% or -50% of the internal standard area in the associated continuing calibration standard.

SAMPLE ID	DATE	IS OUT	IS AREA/ RT	ACCEPTABLE RANGE	ACTION

ACTION:

1. If an IS area count is outside the criteria -50% or +100% of the associated standard:

   a. Positive results for compounds quantitated using that IS are flagged as estimated (J) for that sample fraction.
   b. Non-detects for compounds quantitated using that IS are flagged as estimated (UJ) for that sample fraction.
   c. If extremely low area counts are reported, or if performance exhibits a major drop-off, then a severe loss of sensitivity is indicated. Non-detects should then be flagged as unusable (R).

2. If an IS retention time varies more than 30 seconds, the chromatographic profile for that sample must be examined to determine if any false positives or negatives exist. For shifts of a large magnitude, the reviewer may consider partial or total rejection of the data for that sample fraction.

REGION I
Data Review Worksheets

All criteria were met.

X A. PESTICIDE INSTRUMENT PERFORMANCE (Section 1)

1. DDT Retention Time

List the DDT standards which have a retention time (RT) of less than 12 minutes on the packed column (except OV-1 or OV-101).

STANDARD ID	DATE/ TIME	RT	SAMPLES AFFECTED	ACTIONS

ACTION:

If the RT is less than 12 minutes, examine the chromatography to evaluate the separation. If adequate separation is not achieved, flag all affected compound data as unusable (R).

REGION 1
Data Review Worksheets

X B. PESTICIDE INSTRUMENT PERFORMANCE (Section 2)

2. Retention Time Windows all criteria were met.

List the compounds which are not within the established windows.

COMPOUND	DATE (TIME)	RT	RT WINDOW	SAMPLES AFFECTED

Check the sample chromatograms of the samples analyzed after the last ... control standard for peaks within an expanded window. If no peaks are present, there is usually no effect on the data. Refer to Regional guidelines for information on qualifying data if peaks are present. If peaks are present, discuss actions below:

REGION I
Data Review Worksheets

All criteria were met.

X C. PESTICIDE INSTRUMENT PERFORMANCE (Section 5)

3. DDT and Endrin Degradation

List the standards which have a DDT or Endrin breakdown of greater than 20%.

STANDARD ID	DDT OR ENDRIN	PERCENT BREAKDOWN	SAMPLES AFFECTED	DDD, DDE OR ENDRIN KETONE PRESENT

If the percent breakdown for DDT is greater than 20%:

1. Flag all positive results for DDT as estimated (J) for all samples following the last in control standard. If no DDT was present, but DDD and/or DDE are positive, then flag the quantitation limit for DDT as unusable (R).

2. Flag all positive results for DDD +/or DDE as estimated (J).

If the percent breakdown for Endrin is greater than 20%:

1. Flag all positive results for endrin as estimated (J) for all samples following the last in-control standard. If no endrin was detected, but endrin aldehyde and/or endrin ketone are positive, flag the quantitation limit for endrin as unusable (R).

2. Flag all positive results for endrin ketone as estimated (J).

REGION I
Data Review Worksheets

X D. PESTICIDE INSTRUMENT PERFORMANCE (Section 4)

4. DBC Retention Time Check NA

List the percent difference for the DBC shift greater than 2% for packed columns, greater than 1.5% for wide-bore capillary columns, or greater than 0.3% for narrow-bore capillary columns.

TR #'S	DBC %DIFFERENCE	ACTIONS

If the DBC does not meet the retention time criteria, the analysis may be flagged as unusable (R) for the affected samples, but qualification of the data is left up to the professional judgement of the reviewer. Discuss any qualification of the data below:

REGION I
Data Review worksheets

XI A. PESTICIDE CALIBRATION (Sections 1 and 2)

1. Initial Calibration

all criteria were met.

List the compounds which did not meet the Relative Standard Deviation (RSD) criteria of less than 10% for the initial calibration on the quantitation column.

DATE	COMPOUND	%RSD	COLUMN	SAMPLES AFFECTED

Flag all associated positive results as estimated (J) for samples which did not meet the %RSD criteria.

2. Analytical Sequence

~~Did~~ the laboratory follow the correct 72 hour sequence described in the SOW? (Yes) or No

3/90

If no,

The data may be affected. The data reviewer must use professional judgement to determine the severity of the effect and qualify the data accordingly. Discuss any actions below:

_____

_____

_____

_____

REGION I
Data Review Worksheets

XI B. PESTICIDE CALIBRATION (Section 3)

3. Continuing Calibration NA

List the compounds which did not meet the percent difference (%D) criteria of <15% on the quantitation column or <20% on the confirmation for the continuing calibration.

DATE	COMPOUND	%D	COLUMN	SAMPLES AFFECTED

If the %D criteria is not met, flag all associated positive results as estimated (J).

All criteria were not for pesticide analytical sequence
[All criteria were met for TCX & DCB retention times).

All criteria were met for "Pesticide analyte resolution summary."
All criteria were met for "Pesticide calibration verification summary."
All criteria were met for "Pesticide Florisil Cartridge Check."
All criteria were met for "Pesticide GPC Calibration".

REGION I
Data Review Worksheets

XII. SAMPLE QUANTITATION

In the space below, please show a minimum of one sample calculation per fraction:

VOA: Concentration of Acetone in sample ADW16

$$\text{Conc.} = \frac{27103}{87049} \times \frac{50.00 \text{ ug/kg}}{0.446} \times \frac{100}{100-23} = 45.33 \text{ ug/kg}$$

The reported value on form I is 45 ug/kg

BNA: Concentration of bis(2-Ethylhexyl)phthalate in sample ADW16

$$\text{Conc.} = \frac{16111}{99377} \times \frac{40.0}{0.896} \times \frac{500 \times 2}{30.1 \times 2} \times \frac{100}{77} = 156.135 \text{ ug/kg}$$

The reported value on Form I is 160 ug/kg

PEST/PCB: Concentration of Methoxychlor in sample ADW16

Column RTX-35

$$\text{Conc.} = \frac{(18817)(5000)(2)(100)}{(1)(4147835)(30.1)(77)} = 1.957 \text{ ug/kg}$$

Column DB-1701

$$\frac{7011}{1726660} \times \frac{5000 \times 2 \times 100}{30.1} \times \frac{1}{77} = 1.75 \text{ ug/kg}$$

The reported value on form (1) is 1.8 ug/kg which is the lowest value for the 2 columns.

TABLE 1 Page 1 of 1
SHPACK LANDFILL
10-20-92, 10-21-92
CLP VOLATILE ORGANIC ANALYSIS
CASE NO. 18944, SDG NO. ADW15
GROUNDWATER ANALYTICAL RESULTS (UG/L)

Sample Location		RINSATE										
Sample Number												
Traffic Report Number		ADW15										
Date Sampled		10-21-92										
Date Analyzed		11-01-92										
Dilution Factor		1.0										
Remarks		EQUIP BLK										
VOLATILE ORGANIC COMPOUND	CRQL											
Chloromethane	10											
Bromomethane	10											
Vinyl Chloride	10											
Chloroethane	10											
Methylene Chloride	10											
Acetone	10											
Carbon Disulfide	10											
1,1-Dichloroethene	10											
1,1-Dichloroethane	10											
1,2-Dichloroethene (Total)	10											
Chloroform	10											
1,2-Dichloroethane	10											
2-Butanone	10											
1,1,1-Trichloroethane	10											
Carbon Tetrachloride	10											
Vinyl Acetate	10											
Bromodichloromethane	10											
1,2-Dichloropropane	10											
cis-1,3-Dichloropropene	10											
Trichloroethene	10											
Dibromochloromethane	10											
1,1,2-Trichloroethane	10											
Benzene	10											
trans-1,3-Dichloropropene	10											
Bromoform	10											
4-Methyl-2-pentanone	10											
2-Hexanone	10											
Tetrachloroethene	10											
1,1,2,2-Tetrachloroethane	10											
Toluene	10											
Chlorobenzene	10											
Ethylbenzene	10											
Styrene	10											
Xylene (Total)	10											
Total VOC concentration (ug/L)												

NOTE: A blank space indicates the compound was not detected.
J Quantitation is approximate due to limitations identified during the quality control review.
R Value is rejected.
U Revised Quantitation Limit.
UJ Quantitation Limit is approximate due to limitations identified in the quality control review.
CRQL Contract Required Quantitation Limit.

TABLE 2 Page 1 of 1
SHPACK LANDFILL
10-20-92, 10-21-92
CLP VOLATILE ORGANIC ANALYSIS
CASE NO. 18944, SDG NO. ADW15
SOIL ANALYTICAL RESULTS (UG/KG)

Sample Location	ERM103 (8-10')									
Sample Number										
Traffic Report Number	ADW16									
Date Sampled	10-20-92									
Date Analyzed	10-30-92									
Percent Solids	77									
Dilution Factor	1.0									
Remarks										
VOLATILE ORGANIC COMPOUND										
Chloromethane										
Bromomethane										
Vinyl Chloride										
Chloroethane										
Methylene Chloride										
Acetone										
Carbon Disulfide										
1,1-Dichloroethene										
1,1-Dichloroethane										
1,2-Dichloroethene (Total)										
Chloroform										
1,2-Dichloroethane										
2-Butanone										
1,1,1-Trichloroethane										
Carbon Tetrachloride										
Vinyl Acetate										
Bromodichloromethane										
1,2-Dichloropropane										
cis-1,3-Dichloropropene										
Trichloroethene	2 J									
Dibromochloromethane										
1,1,2-Trichloroethane										
Benzene										
trans-1,3-Dichloropropene										
Bromoform										
4-Methyl-2-pentanone										
2-Hexanone										
Tetrachloroethene										
1,1,2,2-Tetrachloroethane										
Toluene										
Chlorobenzene										
Ethylbenzene										
Styrene										
Xylene (Total)										
Total VOC Concentration (ug/Kg)	2									

NOTE: A blank space indicates the compound was not detected.
Sample results are reported on dry weight basis.
J Quantitation is approximate due to limitations identified during the quality control review.
R Value is rejected.

TABLE 3 Page 1 of 1
SHPACK LANDFILL
10-20-92, 10-21-92
CLP VOLATILE ORGANIC ANALYSIS
CASE NO. 18944, SDG NO. ADW15
SOIL SAMPLE QUANTITATION LIMITS (UG/KG)

Sample Location	ERM103 (8-10')									
Sample Number										
Traffic Report Number	ADW16									
Date Sampled	10-20-92									
Date Analyzed	10-30-92									
Percent Solids	77									
Dilution Factor	1.0									
Remarks										
VOLATILE ORGANIC COMPOUND										
Chloromethane	13 U									
Bromomethane	13 U									
Vinyl Chloride	13 U									
Chloroethane	13 U									
Methylene Chloride	13 U									
Acetone	45 U									
Carbon Disulfide	13 U									
1,1-Dichloroethene	13 U									
1,1-Dichloroethane	13 U									
1,2-Dichloroethene (Total)	13 U									
Chloroform	13 U									
1,2-Dichloroethane	13 U									
2-Butanone	13 U									
1,1,1-Trichloroethane	13 U									
Carbon Tetrachloride	13 U									
Vinyl Acetate	13 U									
Bromodichloromethane	13 U									
1,2-Dichloropropane	13 U									
cis-1,3-Dichloropropene	13 U									
Trichloroethene	13 U									
Dibromochloromethane	13 U									
1,1,2-Trichloroethane	13 U									
Benzene	13 U									
trans-1,3-Dichloropropene	13 U									
Bromoform	13 U									
4-Methyl-2-pentanone	13 U									
2-Hexanone	13 UJ									
Tetrachloroethene	13 U									
1,1,2,2-Tetrachloroethane	13 U									
Toluene	13 U									
Chlorobenzene	13 U									
Ethylbenzene	13 U									
Styrene	13 U									
Xylene (Total)	13 U									

NOTE: Sample Quantitation Limits are reported on a dry weight basis.
UJ Sample Quantitation Limit is approximate due to limitations identified during the quality control review.
R Value is rejected.

TABLE 1 Page 1 of 2
SHPACK LANDFILL
10-20-92, 10-21-92
CLP EXTRACTABLE ORGANIC ANALYSIS
CASE NO. 18944, SDG NO. ADW15
GROUNDWATER ANALYTICAL RESULTS (UG/L)

Sample Location		RINSATE										
Sample Number												
Traffic Report Number		ADW15										
Date Sampled		10-21-92										
Date Extracted		10-26-92										
Date Analyzed		10-30-92										
Dilution Factor		1.0										
Remarks		EQUIP BLK										
SEMI-VOLATILE COMPOUND	CRQL											
Phenol	10											
bis (2-Chloroethyl) ether	10											
2-Chlorophenol	10											
1,3-Dichlorobenzene	10											
1,4-Dichlorobenzene	10											
1,2-Dichlorobenzene	10											
2-Methylphenol	10											
2,2'-Oxybis(1-Chloropropane)	10											
4-Methylphenol	10											
N-Nitroso-di-n-propylamine	10											
Hexachloroethane	10											
Nitrobenzene	10											
Isophorone	10											
2-Nitrophenol	10											
2,4-Dimethylphenol	10											
bis (2-Chloroethoxy) methane	10											
2,4-Dichlorophenol	10											
1,2,4-Trichlorobenzene	10											
Naphthalene	10											
4-Chloroaniline	10											
Hexachlorobutadiene	10											
4-Chloro-3-methylphenol	10											
2-Methylnaphthalene	10											
Hexachlorocyclopentadiene	10											
2,4,6-Trichlorophenol	10											
2,4,5-Trichlorophenol	25											
2-Chloronaphthalene	10											
2-Nitroaniline	25											
Dimethylphthalate	10											
Acenaphthylene	10											
2,6-Dinitrotoluene	10											

TABLE 1 Page 2 of 2
SHPACK LANDFILL
10-20-92, 10-21-92
CLP EXTRACTABLE ORGANIC ANALYSIS
CASE NO. 18944, SDG NO. ADW15
GROUNDWATER ANALYTICAL RESULTS (UG/L)

Sample Location		RINSATE
Sample Number		
Traffic Report Number		ADW15
Date Sampled		10-21-92
Date Extracted		10-26-92
Date Analyzed		10-30-92
Dilution Factor		1.0
Remarks		EQUIP BLK
SEMI-VOLATILE COMPOUND	CRQL	
3-Nitroaniline	25	
Acenaphthene	10	
2,4-Dinitrophenol	25	
4-Nitrophenol	25	
Dibenzofuran	10	
2,4-Dinitrotoluene	10	
Diethylphthalate	10	
4-Chlorophenyl-phenylether	10	
Fluorene	10	
4-Nitroaniline	25	
4,6-Dinitro-2-methylphenol	25	
N-Nitrosodiphenylamine	10	
4-Bromophenyl-phenylether	10	
Hexachlorobenzene	10	
Pentachlorophenol	25	
Phenanthrene	10	
Anthracene	10	
Carbazole	10	
Di-n-butylphthalate	10	
Fluoranthene	10	
Pyrene	10	
Butylbenzylphthalate	10	
3,3'-Dichlorobenzidine	10	
Benzo(a)anthracene	10	
Chrysene	10	
bis(2-Ethylhexyl)phthalate	10	
Di-n-octyl phthalate	10	
Benzo(b)fluoranthene	10	
Benzo(k)fluoranthene	10	
Benzo(a)pyrene	10	
Indeno (1,2,3-cd)pyrene	10	
Dibenz(a,h)anthracene	10	
Benzo(g,h,i)perylene	10	

NOTE:
A blank space indicates the compound was not detected.
J Quantitation is approximate due to limitations identified during the quality control review.
R Value is rejected
U Revised Quantitation Limit
UJ Quantitation Limit is approximate due to limitations identified during the quality control review.
CRQL Contract Required Quantitation Limit

TABLE 2 Page 1 of 2
SHPACK LANDFILL
10-20-92, 10-21-92
CLP EXTRACTABLE ORGANIC ANALYSIS
CASE NO. 18944, SDG NO. ADW15
SOIL ANALYTICAL RESULTS (UG/KG)

Sample Location	ERM103 (8-10')										
Sample Number											
Traffic Report Number	ADW16										
Date Sampled	10-20-92										
Date Extracted	10-27-92										
Date Analyzed	11-04-92										
Percent Solids	77										
Dilution Factor	1.0										
Remarks											
SEMI-VOLATILE COMPOUND											
Phenol											
bis (2-Chloroethyl) ether											
2-Chlorophenol											
1,3-Dichlorobenzene											
1,4-Dichlorobenzene											
1,2-Dichlorobenzene											
2-Methylphenol											
2,2'-oxybis(1-Chloropropane)											
4-Methylphenol											
N-Nitroso-di-n-propylamine											
Hexachloroethane											
Nitrobenzene											
Isophorone											
2-Nitrophenol											
2,4-Dimethylphenol											
bis (2-Chloroethoxy) methane											
2,4-Dichlorophenol											
1,2,4-Trichlorobenzene											
Naphthalene											
4-Chloroaniline											
Hexachlorobutadiene											
4-Chloro-3-methylphenol											
2-Methylnaphthalene											
Hexachlorocyclopentadiene											
2,4,6-Trichlorophenol											
2,4,5-Trichlorophenol											
2-Chloronaphthalene											
2-Nitroaniline											
Dimethylphthalate											
Acenaphthylene											
2,6-Dinitrotoluene											

TABLE 2 Page 2 of 2
SHPACK LANDFILL
10-20-92, 10-21-92
CLP EXTRACTABLE ORGANIC ANALYSIS
CASE NO. 18944, SDG. NO. ADW15
SOIL ANALYTICAL RESULTS (UG/KG)

Sample Location	ERM103 (8-10')									
Sample Number										
Traffic Report Number	ADW16									
Date Sampled	10-20-92									
Date Extracted	10-27-92									
Date Analyzed	11-04-92									
Percent Solids	77									
Dilution Factor	1.0									
Remarks										
SEMI-VOLATILE COMPOUND										
3-Nitroaniline										
Acenaphthene										
2,4-Dinitrophenol										
4-Nitrophenol										
Dibenzofuran										
2,4-Dinitrotoluene										
Diethylphthalate	80 J									
4-Chlorophenyl-phenylether										
Fluorene										
4-Nitroaniline										
4,6-Dinitro-2-methylphenol										
N-Nitrosodiphenylamine										
4-Bromophenyl-phenylether										
Hexachlorobenzene										
Pentachlorophenol										
Phenanthrene										
Anthracene										
Carbazole										
Di-n-butylphthalate										
Fluoranthene										
Pyrene										
Butylbenzylphthalate										
3,3'-Dichlorobenzidine										
Benzo(a)anthracene										
Chrysene										
bis(2-Ethylhexyl)phthalate	160 J									
Di-n-octyl phthalate										
Benzo(b)fluoranthene										
Benzo(k)fluoranthene										
Benzo(a)pyrene										
Indeno (1,2,3-cd)pyrene										
Dibenz(a,h)anthracene										
Benzo(g,h,i)perylene										

NOTE:
A blank space indicates the compound was not detected.
Sample results are reported on a dry weight basis.
J Quantitation is approximate due to limitations identified during the quality control review.
R Value is rejected.
Sample Quantitation Limits for the compounds listed above are reported in Attachment Table .

TABLE 3 Page 1 of 2
SHPACK LANDFILL
10-20-92, 10-21-92
CLP EXTRACTABLE ORGANIC ANALYSIS
CASE NO. 18944, SDG NO. ADW15
SOIL SAMPLE QUANTITATION LIMITS (UG/KG)

Sample Location	ERM103 (8-10')									
Sample Number										
Traffic Report Number	ADW16									
Date Sampled	10-20-92									
Date Extracted	10-27-92									
Date Analyzed	11-04-92									
Percent Solids	77									
Dilution Factor	1.0									
Remarks										
SEMI-VOLATILE COMPOUND										
Phenol	430 U									
bis (2-Chloroethyl) ether	430 U									
2-Chlorophenol	430 U									
1,3-Dichlorobenzene	430 U									
1,4-Dichlorobenzene	430 U									
1,2-Dichlorobenzene	430 U									
2-Methylphenol	430 U									
2,2'-oxybis(1-Chloropropane)	430 U									
4-Methylphenol	430 U									
N-Nitroso-di-n-propylamine	430 U									
Hexachloroethane	430 U									
Nitrobenzene	430 U									
Isophorone	430 U									
2-Nitrophenol	430 U									
2,4-Dimethylphenol	430 U									
bis (2-Chloroethoxy) methane	430 U									
2,4-Dichlorophenol	430 U									
1,2,4-Trichlorobenzene	430 U									
Naphthalene	430 U									
4-Chloroaniline	430 U									
Hexachlorobutadiene	430 U									
4-Chloro-3-methylphenol	430 U									
2-Methylnaphthalene	430 U									
Hexachlorocyclopentadiene	430 U									
2,4,6-Trichlorophenol	430 U									
2,4,5-Trichlorophenol	1000 U									
2-Chloronaphthalene	430 U									
2-Nitroaniline	1000 U									
Dimethylphthalate	430 U									
Acenaphthylene	430 U									
2,6-Dinitrotoluene	430 U									

TABLE 3 Page 2 of 2
SHPACK LANDFILL
10-20-92, 10-21-92
CLP EXTRACTABLE ORGANIC ANALYSIS
CASE NO. 18944, SDG NO. ADW15
SOIL SAMPLE QUANTITATION LIMITS (UG/KG)

Sample Location	ERM103 (8-10')									
Sample Number										
Traffic Report Number	ADW16									
Date Sampled	10-20-92									
Date Extracted	10-27-92									
Date Analyzed	11-04-92									
Percent Solids	77									
Dilution Factor	1.0									
Remarks										
SEMI-VOLATILE COMPOUND										
3-Nitroaniline	1000 U									
Acenaphthene	430 U									
2,4-Dinitrophenol	1000 U									
4-Nitrophenol	1000 U									
Dibenzofuran	430 U									
2,4-Dinitrotoluene	430 U									
Diethylphthalate	430 U									
4-Chlorophenyl-phenylether	430 U									
Fluorene	430 U									
4-Nitroaniline	1000 U									
4,6-Dinitro-2-methylphenol	1000 U									
N-Nitrosodiphenylamine	430 U									
4-Bromophenyl-phenylether	430 U									
Hexachlorobenzene	430 U									
Pentachlorophenol	1000 U									
Phenanthrene	430 U									
Anthracene	430 U									
Carbazole	430 U									
Di-n-butylphthalate	430 U									
Fluoranthene	430 U									
Pyrene	430 U									
Butylbenzylphthalate	430 U									
3,3'-Dichlorobenzidine	430 U									
Benzo(a)anthracene	430 U									
Chrysene	430 U									
bis(2-Ethylhexyl)phthalate	430 U									
Di-n-octyl phthalate	430 U									
Benzo(b)fluoranthene	430 U									
Benzo(k)fluoranthene	430 U									
Benzo(a)pyrene	430 U									
Indeno (1,2,3-cd)pyrene	430 U									
Dibenz(a,h)anthracene	430 U									
Benzo(g,h,i)perylene	430 U									

NOTE: Sample Quantitation Limits are reported on dry weight basis.
UJ Quantitation Limits are approximate due to limitations identified during the quality control review.
R Value is rejected

TABLE 1 Page 1 of 1
SHPACK LANDFILL
10-20-92, 10-21-92
CLP EXTRACTABLE ORGANIC ANALYSIS
CASE NO. 18944, SDG NO. ADW15
GROUNDWATER ANALYTICAL RESULTS (UG/L)

Sample Location		RINSATE
Sample Number		
Traffic Report Number		ADW15
Date Sampled		10-21-92
Date Extracted		10-26-92
Date Analyzed		11-06-92
Dilution Factor		1.0
Remarks		EQUIP BLK
PESTICIDE/PCB COMPOUND	CRQL	
alpha-BHC	0.05	
beta-BHC	0.05	
delta-BHC	0.05	
gamma-BHC (Lindane)	0.05	
Heptachlor	0.05	
Aldrin	0.05	
Heptachlor epoxide	0.05	
Endosulfan I	0.05	
Dieldrin	0.10	
4,4'-DDE	0.10	
Endrin	0.10	
Endosulfan II	0.10	
4,4'-DDD	0.10	
Endosulfan sulfate	0.10	
4,4'-DDT	0.10	
Methoxychlor	0.50	
Endrin ketone	0.10	
Endrin aldehyde	0.10	
alpha-Chlordane	0.05	
gamma-Chlordane	0.05	
Toxaphene	5.0	
Aroclor-1016	1.0	
Aroclor-1221	2.0	
Aroclor-1232	1.0	
Aroclor-1242	1.0	
Aroclor-1248	1.0	
Aroclor-1254	1.0	
Aroclor-1260	1.0	

NOTE: A blank space indicates the compound was not detected.
J Quantitation is approximate due to limitations identified during the quality control review.
R Value is rejected
U Revised Quantitation Limit
UJ Quantitation Limit is approximate due to limitations identified during the quality control review.
CRQL Contract Required Quantitation Limit

TABLE 2 Page 1 of 1
SHPACK LANDFILL
10-20-92, 10-21-92
CLP EXTRACTABLE ORGANIC ANALYSIS
CASE NO. 18944, SDG NO. ADW15
SOIL ANALYTICAL RESULTS (UG/KG)

Sample Location	ERM103 (8-10')									
Sample Number										
Traffic Report Number	ADW16									
Date Sampled	10-20-92									
Date Extracted	10-26-92									
Date Analyzed	11-06-92									
Percent Solids	77									
Dilution Factor	1.0									
Remarks										
PESTICIDE/PCB COMPOUND										
alpha-BHC										
beta-BHC										
delta-BHC										
gamma-BHC (Lindane)										
Heptachlor										
Aldrin										
Heptachlor epoxide										
Endosulfan I										
Dieldrin										
4,4'-DDE										
Endrin										
Endosulfan II										
4,4'-DDD										
Endosulfan sulfate										
4,4'-DDT										
Methoxychlor	1.8 J									
Endrin ketone										
Endrin aldehyde										
alpha-Chlordane										
gamma-Chlordane										
Toxaphene										
Aroclor-1016										
Aroclor-1221										
Aroclor-1232										
Aroclor-1242										
Aroclor-1248										
Aroclor-1254										
Aroclor-1260										

NOTE:
A blank space indicates the compound was not detected.
Sample results are reported on dry weight basis.
J Quantitation is approximate due to limitations identified during the quality control review.
R Value is rejected.
Sample Quantitation Limits for the compounds listed above are reported in Attachment Table .

TABLE 3 Page 1 of 1
SHPACK LANDFILL
10-20-92, 10-21-92
CLP EXTRACTABLE ORGANIC ANALYSIS
CASE NO. 18944, SDG NO. ADW15
SOIL SAMPLE QUANTITATION LIMITS (UG/KG)

Sample Location	ERM103 (8-10')									
Sample Number										
Traffic Report Number	ADW16									
Date Sampled	10-20-92									
Date Extracted	10-26-92									
Date Analyzed	11-06-92									
Percent Solids	77									
Dilution Factor	1.0									
Remarks										
PESTICIDE/PCB COMPOUND										
alpha-BHC	2.2 U									
beta-BHC	2.2 U									
delta-BHC	2.2 U									
gamma-BHC (Lindane)	2.2 U									
Heptachlor	2.2 U									
Aldrin	2.2 U									
Heptachlor epoxide	2.2 U									
Endosulfan I	2.2 U									
Dieldrin	4.3 U									
4,4'-DDE	4.3 U									
Endrin	4.3 U									
Endosulfan II	4.3 U									
4,4'-DDD	4.3 U									
Endosulfan sulfate	4.3 U									
4,4'-DDT	4.3 U									
Methoxychlor	22 U									
Endrin ketone	4.3 U									
Endrin aldehyde	4.3 U									
alpha-Chlordane	2.2 U									
gamma-Chlordane	2.2 U									
Toxaphene	220 U									
Aroclor-1016	43 U									
Aroclor-1221	87 U									
Aroclor-1232	43 U									
Aroclor-1242	43 U									
Aroclor-1248	43 U									
Aroclor-1254	43 U									
Aroclor-1260	43 U									

NOTE: Sample Quantitation Limits are reported on a dry weight basis.
UJ Quantitation Limits are approximate due to limitations identified during the quality control review.
R Value is rejected