AR TARGET SHEET

The following document was too large to scan as one unit, therefore it has been broken down into sections.

DOCUMENT # B07PY8-TMA-384

EDMC # 0046235

SECTION 2 OF 2

ATTACHMENT 5

Data Review Supporting Documentation

VOLATILE ORGANIC DATA VALIDATION CHECKLIST - FORM A-1

PROJECT: White Bluffs Pickling Acid Cribs ERA	REVIEWER: AMK	DATE: 4/5/93
LABORATORY: TMA/ARLI	CASE: 12-018/-023	SDG:
SAMPLES/MATRIX: soils =		
✓ B07PZ1	B07PZ7	
✓ B07PZ2	B07Q01* ✓	
✓ B07PZ4	B07Q02* ✓	
B07PZ6* ✓	B07Q03* ✓	

all samples except that circled. AMK

Level 2 – (12-023)*
Level 4 – (12-018)

1. DATA PACKAGE COMPLETENESS

Review the data package for completeness and check off the items below. If any data review elements are missing contact the laboratory for submittal.

Data Package Item	Present?:	Yes	No	N/A
Case Narrative		✓		
Data Summary		✓		
Chain-of-Custody	(present in Gen Chem 12-018/-023)			✓
QC Summary				
Surrogate report		✓		
MS/MSD report		✓		
Blank summary report		✓		
GC/MS tuning report		✓		
Internal standard summary report		✓		
Sample Data				
Sample reports		✓		
TIC reports for each sample		✓		
RIC reports for all samples		✓		
Raw and corrected spectra for all detected results		✓		
Raw and corrected library search data for all reported TIC		✓		
Quantitation and calculation data for all TIC		✓		
Standards Data				
Initial calibration report		✓		
RIC and quantitation reports for initial calibration		✓		
Continuing calibration reports		✓		
RIC and quantitation reports for cont. calibrations		✓		
Internal standard summary report		✓		
Raw QC Data				
Tuning report, spectra and mass lists		✓		
Blank analysis reports		✓		
TIC reports for all blanks		✓		
RIC and quantitation reports for blanks		✓		
Raw and corrected spectra for all detected results in blanks		✓		
Raw and corrected library search data for all reported TIC		✓		

Data Package Item	Present?: Yes	No	N/A
Quantitation and calculation data for all TIC	✓		
MS/MSD report forms	✓		
RIC and quantitation reports for MS/MSD	✓		
Additional Data			
Moisture/% solids data sheets (See Gen Chem 12-018/-023)			✓
Reduction formulae			✓
Instrument time logs			✓
Chemist notebook pages			✓
Sample preparation sheets			✓

2. HOLDING TIMES

Complete the holding time summary form listing all samples and dates of collection and analysis.

Were all samples analyzed within holding time? (Yes) No N/A

ACTION: If any holding times were exceeded, but not by greater than a factor of two, qualify associated samples as estimated (J for detects or UJ for nondetects), otherwise reject all nondetects (R) and qualify all associated detects as estimated (J).

3. INSTRUMENT CALIBRATION, TUNING AND PERFORMANCE CHECKS

3.1 GC/MS TUNING AND PERFORMANCE CHECKS

Is a bromofluorobenzene tune report present for each applicable 12-h period? (Yes) No N/A

Do all tunes on all instruments meet the tuning criteria? (Yes) No N/A

Do all tunes on all instruments meet the expanded criteria? (Yes) No N/A

Has the laboratory made any calculation or transciption errors? Yes (No) N/A

Have the proper significant figures been reported? (Yes) No N/A

ACTION: If the mass calibration is out of specification but within the expanded criteria, qualify associated data as estimated (J for detects or UJ for nondetects). If all tuning criteria are missed, qualify all associated data as unusable (R).

3.2 INITIAL CALIBRATION

Is an initial calibration report provided for all instruments? (Yes) No N/A

Are all RSD values ≤30% (2/88 SOW)? Yes No (N/A)

Are all RRF values ≥0.05 (2/88 SOW)? Yes No (N/A)

Are all applicable RSD values ≤20.5% (3/90 SOW)?	Yes	No	N/A
Are all applicable RSD values ≤40% (3/90 SOW)?	Yes	No	N/A
Are all applicable RRF values within SOW limits (3/90 SOW)?	Yes	No	N/A
Are all erratic performance compound RRF values ≥0.01 (3/90 SOW)?	Yes	No	N/A

ACTION: With the exception of compounds that exhibit erratic performance and making allowances for up to two TCL compounds, if any RRF value is out of specification qualify all detected results for the particular compound as estimated (J) and all nondetects as unusable (R). Making allowances for up to two TCL compounds, if any RSD value is out of specification qualify all associated data as estimated (J for detects or UJ for nondetects).

3.3. CONTINUING CALIBRATION

Is a continuing calibration report present for all 12-h periods in which associated samples were analyzed?	Yes	No	N/A
Are all RRF values ≥0.05 (2/88 SOW)?	Yes	No	N/A
Are all %D values ≤25% (2/88 or 3/90 SOW)?	Yes	No	N/A
Are all %D values ≤40% (3/90 SOW)?	Yes	No	N/A
Are all RRF values within SOW limits (3/90 SOW)?	Yes	No	N/A
Are all erratic performance compound RRF values ≥0.01 (3/90 SOW)?	Yes	No	N/A

ACTION: With the exception of compounds that exhibit erratic performance and making allowances for up to two TCL compounds, if any RRF value is out of specification qualify all associated detected results as estimated and all nondetects as unusable (R). Making allowances for up to two TCL compounds, if any %D is out of specification, qualify all associated results as estimated (J for detects or UJ for nondetects).

4. BLANKS

4.1 LABORATORY BLANKS

Has the laboratory conducted a method blank analysis per matrix for every 12-h period in which samples were analyzed?	Yes	No	N/A
Are TCL compounds present in the laboratory blanks?	Yes	No	N/A

ACTION: Qualify all sample results ≤10 time the highest blank concentration for the common laboratory contaminants, as nondetects (U) or at the SQL if the result is <CRQL. Qualify all remaining sample results ≤5 times the blank concentration in similar fashion.

4.2. FIELD BLANKS

Are TCL compounds present in the field blanks? Yes No N/A

ACTION: Qualify all detected sample results ≤ 5 times the amount in any valid field blank as nondetects (U) and note the field blank results in the validation narrative.

5. ACCURACY

5.1 SURROGATE/SYSTEM MONITORING COMPOUND RECOVERY

Are any surrogate recoveries out of specification? Yes No N/A

Are any surrogate recoveries < 10%? Yes No N/A

Are any method blank surrogate recoveries out of specification? Yes No N/A

ACTION: Qualify all associated sample results as estimated (J for detects or UJ for nondetects) for surrogates out of specification but > 10%. Qualify all associated positive sample results as estimated (J) and all nondetect results as unusable (R) for all surrogates below 10%. If method blank surrogates are out of specification and the associated sample surrogates are acceptable no qualification is necessary, however, the laboratory should be contacted for an explanation.

5.2 MATRIX SPIKE RECOVERY

Has an MS/MSD analysis been conducted per matrix in the sample group? Yes No N/A

Are MS/MSD recoveries within specification? Yes No N/A

Are there any calculation errors? Yes No N/A

ACTION: If an MS/MSD analysis has not been conducted contact the laboratory for an explanation. Review the MS/MSD recoveries in conjunction with other QC data such as surrogate recoveries and note the results in the validation narrative. If MS/MSD recoveries are out of specification and sample concentration is > 5 times the spike concentration, no qualification is required, otherwise qualify results as follows: Qualify positive results for the specific class of compound (aromatics and non-aromatics) as estimated (J) in all samples if associated surrogates are also out of specification. The qualification shall only be done on samples of similar matrix as the MS/MSD samples. If it is determined from the review that only the spiked samples are affected by low recoveries, qualify only the results for the spiked sample as described above. If it is determined from the review that out of specification MS/MSD recoveries are indicative of systematic problems in the laboratory such as sample preparation or sample-specific matrix interferences this must be noted in the validation narrative along with the potential affect on the sample results.

5.3 PERFORMANCE AUDIT SAMPLES

Are the performance audit sample results within the acceptance limits? Yes No (N/A)

ACTION: Note the results of the performance audit sample in the validation narrative.

6. PRECISION

6.1 MATRIX SPIKE/MATRIX SPIKE DUPLICATES

Are RPD values within specification? (Yes) No N/A

Are there any calculation errors? Yes (No) N/A

ACTION: Review the MS/MSD results in conjunction with other QC data such as field duplicates and note the results in the validation narrative. If MS/MSD RPDs are out of specification and sample results are >5xCRQL qualify positive results for the specific class of compound (aromatics and non-aromatics) as estimated (J). If it is determined from the review that out of specification MS/MSD results are indicative of systematic problems in the laboratory such as sample preparation or sample-specific matrix interferences this must be noted in the validation narrative along with the potential affect on the sample results.

6.2 FIELD DUPLICATE SAMPLES

Are field duplicate RPD values acceptable? B07Q01 + B07Q02 (Yes) No N/A

ACTION: Note the results of the field duplicate samples in the validation narrative.

6.3 FIELD SPLIT SAMPLES

Are field split RPD values acceptable? Yes No (N/A)

ACTION: Note the results of the field split samples in the validation narrative.

7. SYSTEM PERFORMANCE

7.1 INTERNAL STANDARDS PERFORMANCE

Are any internal standard area counts outside the acceptance limits? Yes (No) N/A

Are retention times for any internal standard outside the ±30 second windows established by the most recent calibration check? Yes (No) N/A

ACTION: If the area counts are outside the acceptance limits qualify all associated results as estimated (J for detects or UJ for nondetects). If it is determined from the review that out of specification area counts and relative retention times are indicative of systematic problems within the laboratory the reviewer may consider rejection of all affected sample data (R).

8. COMPOUND IDENTIFICATION AND QUANTITATION

8.1 COMPOUND IDENTIFICATION

Are detected compounds within ±0.06 relative retention time units of the associated calibration standard?	Yes	No	N/A
Are all ions at a relative intensity of ≥10% in the standard spectra present in the sample spectra?	Yes	No	N/A
Do the relative intensities between the standard and sample spectra agree within 20%?	Yes	No	N/A
Have all ions > 10% in the sample spectra that are not present in the standard spectra been reviewed for possible background contamination?	Yes	No	N/A
Are molecular ions present in the reference specrum present in the sample spectrum?	Yes	No	N/A

ACTION: If compound identification is in error and retention time and mass spectral criteria are exceeded qualify all affected positive results as unusable (R). If cross-contamination between analyses is suspected, qualify affected data as unusable (R). Note the results in the validation narrative.

8.2 REPORTED RESULTS AND QUANTITATION LIMITS

Has the laboratory used the correct RRF values and internal standard(s) for quantitation?	Yes	No	N/A
Are results and quantitation limits calculated properly?	Yes	No	N/A
Has the laboratory reported the sample quantitation limits within 5xCRQL values?	Yes	No	N/A

ACTION: If the results and quantitation limits are in error contact the laboratory for clarification and note in the validation narrative.

8.3 TENTATIVELY IDENTIFIED COMPOUNDS (TIC)

Has the laboratory conducted a spectral library search on all candidate TIC peaks in accordance with the analytical SOW?	Yes	No	N/A
Has the laboratory properly identified and coded all TIC?	Yes	No	N/A

ACTION: If the laboratory has failed to search the minimum number of TIC peaks in the chromatogram contact the laboratory for submittal of the required data. Qualify as nondetects (U) all TIC compounds present in samples and blanks using the review criteria specified in the validation requirements. If TIC identification is in error sample results should be qualified as nondetects (U) or unusable (R). If TIC identifications are judged valid, qualify the results as presumptive and estimated (JN).

9. OVERALL ASSESSMENT AND SUMMARY

Has the laboratory conducted the analysis in accordance with the analytical SOW?	Yes	No	N/A
Were project specific data quality objectives met for this analysis?	Yes	No	N/A

ACTION: Summarize all the data qualifications recommended in the foregoing sections, and complete the data validation narrative according to the requirements of Section 10.0 of the data validation requirements.

COMMENTS (attach additional sheets as necessary):

① All compounds detected below the CRQL were qualified as estimates. These include:

methylene chloride B07Q01
B07Q02
B07Q03

HOLDING TIME SUMMARY - FORM B-1

A2-12-018 / A2-12-023

SDG:	REVIEWER: Clare Russell	DATE: 4/5/93	PAGE 1 OF 1
COMMENTS:			Level 4 Validation

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
soil B07PZ1	VOA	12/2/92		12/10/92		8	none
B07PZ2							
B07PZ4							
B07PZ6		12/3/92				7	
B07PZ7							
B07Q01							
B07Q02							
B07Q03							

CALIBRATION DATA SUMMARY - FORM B-2

A2-12-018/A2-12-023

SDG:	REVIEWER: Clem Russell	DATE: 4/7/93	PAGE 1 OF 1
COMMENTS:	Level 4 Validation	1990 SOW – heated purge + trap	
CALIB. TYPE:	INITIAL CONTINUING	INSTRUMENT: 4500 – packed	

CALIB. DATE	COMPOUND	RF	RSD/%D/%R	SAMPLES AFFECTED	QUALIFIER
Tunes 12/7/92	→ ICAL			meets 12 hr. clock – all acceptable	
12/10/92	→ CCAL, VBLK, B07PZ1, ms/msD, B07PZ2, B07PZ4, B07PZ6, B07PZ7, B07Q02, B07Q03, B07Q01				
ICAL 12/7/92	Using the 1990 guidelines, there are no ICAL calibration exceedences				none
	Clem				
CCAL 12/10/92	Using the 1990 guidelines, there are no CCAL calibration exceedences.				none
	Clem				

1

BLANK AND SAMPLE DATA SUMMARY - FORM B-3

A2-12-018/ A2-12-023

SDG:	REVIEWER: Clare Russell	DATE: April 7, 1993	PAGE 1 OF 1
COMMENTS:		(Level 4 Val)	

SAMPLE ID	COMPOUND	RESULT	Q	RT	UNITS	5X RESULT	10X RESULT	SAMPLES AFFECTED	QUALIFIER
VBLK1210R	acetone	12			µg/kg		120 µg/kg	B07PZ1	(U) at CRQL
								B07PZ2	(U) at CRQL
								B07PZ4	(U) at CRQL
								B07PZ6	(U) at CRQL
								B07PZ7	(U) at CRQL
There are no trip blanks indicated								B07Q01	(U) at CRQL
for these two data ~~pack~~ case numbers								B07Q02	(U) at CRQL
								B07Q03	(U) at CRQL

(1)

ACCURACY DATA SUMMARY - FORM B-4

A2-12-018/ A2-12-023

SDG:	REVIEWER: Clare Russell	DATE: 4/7/93	PAGE 1 OF 1	
COMMENTS:			Level 4 Validation	
SAMPLE ID	COMPOUND	% RECOVERY	SAMPLE(S) AFFECTED	QUALIFIER REQUIRED
surrogates →	all acceptable and range from	94–	110%, all	none
matrix spike → B07PZ1 MS/MSD	all acceptable and range from	104–114%	all	none
internal standards →	all acceptable		all	none

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PRECISION DATA SUMMARY - FORM B-5

A2-12-018/ A2-12-023

SDG:	REVIEWER Clare Russell	DATE: 4/7/93	PAGE 1 OF 1
COMMENTS:		(Level 4 Validation)	

COMPOUND	SAMPLE ID:	SAMPLE ID:	RPD	SAMPLES AFFECTED	QUALIFIER
matrix spike duplicate	B07PZ1 MS	B07PZ1 MSD		all	none
	all RPDS were acceptable and				
	range from 0 - 3% RPD.				
		CRR			
field duplicate	~~B07Q01~~				
methylene chloride	B07Q02 (3J)	B07Q01 (2J)	±CRQL		none
	All other compounds	are non-detect			
	for these two samples. Field				
	dup. precision could not be				
	evaluated.				
		CRR			

CALCULATION SUMMARY - FORM B-6

A2-12-018 / A2-12-023

SDG:	REVIEWER: CMRussell	DATE: 4/7/93	PAGE 1 OF 1

COMMENTS:

Please refer to the attached ~~lotus~~ spreadsheets. I verify that these spreadsheets are accurate and complete.

Clare Marie Russell
4/7/93

Volatile Organics - Tuning Calculations
Lotus Spreadsheet
Prepared by Clare Russell, Hart Crowser, Inc.
April 7, 1993

m/e	Inten.	% Relative Abundance (H)	Lower Control Limit (I)	Higher Control Limit (K)	@IF(H>=I,"ok","not ok")	@IF(H<=K,"ok","not ok")
50	3996 / 17184 * 100 =	23.3%	8.0% -	40.0%	ok	ok
75	7704 / 17184 * 100 =	44.8%	30.0% -	66.0%	ok	ok
95	17184 / 17184 * 100 =	100.0%	100.0% -	100.0%	ok	ok
96	1138 / 17184 * 100 =	6.6%	5.0% -	9.0%	ok	ok
173	0 / 12656 * 100 =	0.0%	0.0% -	2.0%	ok	ok
174	12656 / 17184 * 100 =	73.6%	50.0% -	120.0%	ok	ok
175	862 / 12656 * 100 =	6.8%	4.0% -	9.0%	ok	ok
176	12240 / 12656 * 100 =	96.7%	93.0% -	101.0%	ok	ok
177	758 / 12240 * 100 =	6.2%	5.0% -	9.0%	ok	ok

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Volatile Organics – Tuning Calculations
Lotus Spreadsheet
Prepared by Clare Russell, Hart Crowser, Inc.
April 7, 1993

m/e	Inten.	% Relative Abundance (H)	Lower Control Limit (I)	Higher Control Limit (K)	@IF(H>=I,"ok","not ok")	@IF(H<=K,"ok","not ok")
50	4136 / 16672 * 100 =	24.8%	8.0% -	40.0%	ok	ok
75	7672 / 16672 * 100 =	46.0%	30.0% -	66.0%	ok	ok
95	16672 / 16672 * 100 =	100.0%	100.0% -	100.0%	ok	ok
96	1136 / 16672 * 100 =	6.8%	5.0% -	9.0%	ok	ok
173	0 / 12416 * 100 =	0.0%	0.0% -	2.0%	ok	ok
174	12416 / 16672 * 100 =	74.5%	50.0% -	120.0%	ok	ok
175	843 / 12416 * 100 =	6.8%	4.0% -	9.0%	ok	ok
176	11920 / 12416 * 100 =	96.0%	93.0% -	101.0%	ok	ok
177	713 / 11920 * 100 =	6.0%	5.0% -	9.0%	ok	ok

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Volatile Organics – Initial Calibration Calculations
Lotus Spreadsheet
Prepared by Clare Russell, Hart Crowser
April 7, 1993

No.	Name	Std. Area		I.S. Area		Conc. I.S.		Conc. Std.		RRF10
1	bromodichloromethane	25111	/	25111	*	50	/	50	=	1.0000
2	1,4-difluorobenzene	83373	/	83373	*	50	/	50	=	1.0000
3	d5-chlorobenzene	75050	/	75050	*	50	/	50	=	1.0000
4	d4-1,2-dichloroethane	5295	/	25111	*	50	/	10	=	1.0543
5	d8-toluene	11131	/	75050	*	50	/	10	=	0.7416
6	bromofluorobenzene	7835	/	75050	*	50	/	10	=	0.5220
7	chloromethane	3605	/	25111	*	50	/	10	=	0.7178
8	bromomethane	3989	/	25111	*	50	/	10	=	0.7943
9	vinyl chloride	5007	/	25111	*	50	/	10	=	0.9970
10	chloroethane	2905	/	25111	*	50	/	10	=	0.5784
11	methylene chloride	7141	/	25111	*	50	/	10	=	1.4219
12	acetone	7683	/	25111	*	50	/	10	=	1.5298
13	acrolein	0	/	25111	*	50	/	0	=	
14	acrylonitrile	0	/	25111	*	50	/	0	=	
15	carbon disulfide	18176	/	25111	*	50	/	10	=	3.6191
16	1,1-dichloroethene	5777	/	25111	*	50	/	10	=	1.1503
17	1,1-dichloroethane	11826	/	25111	*	50	/	10	=	2.3547
18	1,2-dichloroethene (total)	14224	/	25111	*	50	/	20	=	1.4161
19	chloroform	13003	/	25111	*	50	/	10	=	2.5891
20	2-butanone	5796	/	25111	*	50	/	10	=	1.1541
21	1,2-dichloroethane	7741	/	25111	*	50	/	10	=	1.5414
22	1,1,1-trichloroethane	9338	/	83373	*	50	/	10	=	0.5600
23	carbon tetrachloride	8561	/	83373	*	50	/	10	=	0.5134
24	vinyl acetate	12752	/	83373	*	50	/	10	=	0.7648
25	bromodichloromethane	11319	/	83373	*	50	/	10	=	0.6788
26	1,2-dichloropropane	6111	/	83373	*	50	/	10	=	0.3665
27	cis-1,3-dichloropropene	9607	/	83373	*	50	/	12	=	0.4801
28	trichloroethene	6630	/	83373	*	50	/	10	=	0.3976
29	dibromochloromethane	9754	/	83373	*	50	/	10	=	0.5850
30	benzene	18223	/	83373	*	50	/	10	=	1.0929
31	1,1,2-tricloroethane	5780	/	83373	*	50	/	10	=	0.3466
32	trans-1,3-dichloropropene	6983	/	83373	*	50	/	8	=	0.5235
33	2-chloroethoxy ethene	3302	/	83373	*	50	/	10	=	0.1980
34	bromoform	7604	/	83373	*	50	/	10	=	0.4560
35	4-methyl-2-pentanone	10278	/	75050	*	50	/	10	=	0.6847
36	2-hexanone	8031	/	75050	*	50	/	10	=	0.5350
37	1,1,2,2-tetrachloroethane	14588	/	75050	*	50	/	10	=	0.9719
38	tetrachloroethene	5111	/	75050	*	50	/	10	=	0.3405
39	toluene	10337	/	75050	*	50	/	10	=	0.6887
40	chlorobenzene	13534	/	75050	*	50	/	10	=	0.9017
41	ethylbenzene	6150	/	75050	*	50	/	10	=	0.4097
42	styrene	13867	/	75050	*	50	/	10	=	0.9239
43	op-xylene	16704	/	75050	*	50	/	20	=	0.5564
44	m-xylene	8210	/	75050	*	50	/	10	=	0.5470
45	trichlorofluoromethane	0	/	75050	*	50	/	0	=	

Volatile Organics – Initial Calibration Calculations
Lotus Spreadsheet
Prepared by Clare Russell, Hart Crowser
April 7, 1993

No.	Name	Std. Area		I.S. Area		Conc. I.S.		Conc. Std.		RRF20
1	bromodichloromethane	25443	/	25443	*	50	/	50	=	1.0000
2	1,4-difluorobenzene	83723	/	83723	*	50	/	50	=	1.0000
3	d5-chlorobenzene	75719	/	75719	*	50	/	50	=	1.0000
4	d4-1,2-dichloroethane	12893	/	25443	*	50	/	20	=	1.2669
5	d8-toluene	26380	/	75719	*	50	/	20	=	0.8710
6	bromofluorobenzene	18301	/	75719	*	50	/	20	=	0.6042
7	chloromethane	11259	/	25443	*	50	/	20	=	1.1063
8	bromomethane	11721	/	25443	*	50	/	20	=	1.1517
9	vinyl chloride	15145	/	25443	*	50	/	20	=	1.4881
10	chloroethane	9255	/	25443	*	50	/	20	=	0.9094
11	methylene chloride	16077	/	25443	*	50	/	20	=	1.5797
12	acetone	12183	/	25443	*	50	/	20	=	1.1971
13	acrolein	0	/	25443	*	50	/	0	=	
14	acrylonitrile	0	/	25443	*	50	/	0	=	
15	carbon disulfide	39640	/	25443	*	50	/	20	=	3.8950
16	1,1-dichloroethene	13470	/	25443	*	50	/	20	=	1.3235
17	1,1-dichloroethane	27911	/	25443	*	50	/	20	=	2.7425
18	1,2-dichloroethene (total)	32275	/	25443	*	50	/	40	=	1.5857
19	chloroform	29964	/	25443	*	50	/	20	=	2.9442
20	2-butanone	12305	/	25443	*	50	/	20	=	1.2091
21	1,2-dichloroethane	18263	/	25443	*	50	/	20	=	1.7945
22	1,1,1-trichloroethane	21362	/	83723	*	50	/	20	=	0.6379
23	carbon tetrachloride	19856	/	83723	*	50	/	20	=	0.5929
24	vinyl acetate	31843	/	83723	*	50	/	20	=	0.9508
25	bromodichloromethane	27873	/	83723	*	50	/	20	=	0.8323
26	1,2-dichloropropane	14978	/	83723	*	50	/	20	=	0.4472
27	cis-1,3-dichloropropene	24044	/	83723	*	50	/	23	=	0.6243
28	trichloroethene	15933	/	83723	*	50	/	20	=	0.4758
29	dibromochloromethane	23716	/	83723	*	50	/	20	=	0.7082
30	benzene	42098	/	83723	*	50	/	20	=	1.2571
31	1,1,2-tricloroethane	13854	/	83723	*	50	/	20	=	0.4137
32	trans-1,3-dichloropropene	17205	/	83723	*	50	/	17	=	0.6044
33	2-chloroethoxy ethene	9125	/	83723	*	50	/	20	=	0.2725
34	bromoform	18139	/	83723	*	50	/	20	=	0.5416
35	4-methyl-2-pentanone	24212	/	75719	*	50	/	20	=	0.7994
36	2-hexanone	16454	/	75719	*	50	/	20	=	0.5433
37	1,1,2,2-tetrachloroethane	33553	/	75719	*	50	/	20	=	1.1078
38	tetrachloroethene	12007	/	75719	*	50	/	20	=	0.3964
39	toluene	23745	/	75719	*	50	/	20	=	0.7840
40	chlorobenzene	31330	/	75719	*	50	/	20	=	1.0344
41	ethylbenzene	14493	/	75719	*	50	/	20	=	0.4785
42	styrene	31661	/	75719	*	50	/	20	=	1.0453
43	op-xylene	37068	/	75719	*	50	/	40	=	0.6119
44	m-xylene	18855	/	75719	*	50	/	20	=	0.6225
45	trichlorofluoromethane	0	/	75719	*	50	/	0	=	

Volatile Organics – Initial Calibration Calculations
Lotus Spreadsheet
Prepared by Clare Russell, Hart Crowser
April 7, 1993

No.	Name	Std. Area		I.S. Area		Conc. I.S.		Conc. Std.		RRF50
1	bromodichloromethane	24911	/	24911	*	50	/	50	=	1.0000
2	1,4-difluorobenzene	78939	/	78939	*	50	/	50	=	1.0000
3	d5-chlorobenzene	70637	/	70637	*	50	/	50	=	1.0000
4	d4-1,2-dichloroethane	34094	/	24911	*	50	/	50	=	1.3686
5	d8-toluene	67197	/	70637	*	50	/	50	=	0.9513
6	bromofluorobenzene	44900	/	70637	*	50	/	50	=	0.6356
7	chloromethane	28462	/	24911	*	50	/	50	=	1.1425
8	bromomethane	28869	/	24911	*	50	/	50	=	1.1589
9	vinyl chloride	34285	/	24911	*	50	/	50	=	1.3763
10	chloroethane	22737	/	24911	*	50	/	50	=	0.9127
11	methylene chloride	36971	/	24911	*	50	/	50	=	1.4841
12	acetone	26636	/	24911	*	50	/	50	=	1.0692
13	acrolein	0	/	24911	*	50	/	0	=	
14	acrylonitrile	0	/	24911	*	50	/	0	=	
15	carbon disulfide	97323	/	24911	*	50	/	50	=	3.9068
16	1,1-dichloroethene	31318	/	24911	*	50	/	50	=	1.2572
17	1,1-dichloroethane	62109	/	24911	*	50	/	50	=	2.4932
18	1,2-dichloroethene (total)	74330	/	24911	*	50	/	100	=	1.4919
19	chloroform	66735	/	24911	*	50	/	50	=	2.6789
20	2-butanone	31586	/	24911	*	50	/	50	=	1.2680
21	1,2-dichloroethane	40352	/	24911	*	50	/	50	=	1.6198
22	1,1,1-trichloroethane	47472	/	78939	*	50	/	50	=	0.6014
23	carbon tetrachloride	44598	/	78939	*	50	/	50	=	0.5650
24	vinyl acetate	64880	/	78939	*	50	/	50	=	0.8219
25	bromodichloromethane	60365	/	78939	*	50	/	50	=	0.7647
26	1,2-dichloropropane	31588	/	78939	*	50	/	50	=	0.4002
27	cis-1,3-dichloropropene	50118	/	78939	*	50	/	58	=	0.5473
28	trichloroethene	34517	/	78939	*	50	/	50	=	0.4373
29	dibromochloromethane	51263	/	78939	*	50	/	50	=	0.6494
30	benzene	93405	/	78939	*	50	/	50	=	1.1833
31	1,1,2-tricloroethane	29191	/	78939	*	50	/	50	=	0.3698
32	trans-1,3-dichloropropene	36299	/	78939	*	50	/	42	=	0.5474
33	2-chloroethoxy ethene	18251	/	78939	*	50	/	50	=	0.2312
34	bromoform	41559	/	78939	*	50	/	50	=	0.5265
35	4-methyl-2-pentanone	59106	/	70637	*	50	/	50	=	0.8368
36	2-hexanone	42072	/	70637	*	50	/	50	=	0.5956
37	1,1,2,2-tetrachloroethane	75132	/	70637	*	50	/	50	=	1.0636
38	tetrachloroethene	26142	/	70637	*	50	/	50	=	0.3701
39	toluene	51117	/	70637	*	50	/	50	=	0.7237
40	chlorobenzene	69230	/	70637	*	50	/	50	=	0.9801
41	ethylbenzene	31285	/	70637	*	50	/	50	=	0.4429
42	styrene	65107	/	70637	*	50	/	50	=	0.9217
43	op-xylene	71800	/	70637	*	50	/	100	=	0.5082
44	m-xylene	38322	/	70637	*	50	/	50	=	0.5425
45	trichlorofluoromethane	0	/	70637	*	50	/	0	=	

Volatile Organics – Initial Calibration Calculations
Lotus Spreadsheet
Prepared by Clare Russell, Hart Crowser
April 7, 1993

No.	Name	Std. Area		I.S. Area		Conc. I.S.		Conc. Std.		RRF100
1	bromodichloromethane	25391	/	25391	*	50	/	50	=	1.0000
2	1,4-difluorobenzene	88505	/	88505	*	50	/	50	=	1.0000
3	d5-chlorobenzene	77521	/	77521	*	50	/	50	=	1.0000
4	d4-1,2-dichloroethane	74834	/	25391	*	50	/	100	=	1.4736
5	d8-toluene	155959	/	77521	*	50	/	100	=	1.0059
6	bromofluorobenzene	101026	/	77521	*	50	/	100	=	0.6516
7	chloromethane	63851	/	25391	*	50	/	100	=	1.2574
8	bromomethane	64146	/	25391	*	50	/	100	=	1.2632
9	vinyl chloride	68680	/	25391	*	50	/	100	=	1.3524
10	chloroethane	46704	/	25391	*	50	/	100	=	0.9197
11	methylene chloride	75103	/	25391	*	50	/	100	=	1.4789
12	acetone	40471	/	25391	*	50	/	100	=	0.7970
13	acrolein	0	/	25391	*	50	/	0	=	
14	acrylonitrile	0	/	25391	*	50	/	0	=	
15	carbon disulfide	202560	/	25391	*	50	/	100	=	3.9888
16	1,1-dichloroethene	65089	/	25391	*	50	/	100	=	1.2817
17	1,1-dichloroethane	127512	/	25391	*	50	/	100	=	2.5110
18	1,2-dichloroethene (total)	148030	/	25391	*	50	/	200	=	1.4575
19	chloroform	136789	/	25391	*	50	/	100	=	2.6937
20	2-butanone	57841	/	25391	*	50	/	100	=	1.1390
21	1,2-dichloroethane	83198	/	25391	*	50	/	100	=	1.6383
22	1,1,1-trichloroethane	97901	/	88505	*	50	/	100	=	0.5531
23	carbon tetrachloride	92294	/	88505	*	50	/	100	=	0.5214
24	vinyl acetate	142237	/	88505	*	50	/	100	=	0.8036
25	bromodichloromethane	127906	/	88505	*	50	/	100	=	0.7226
26	1,2-dichloropropane	69252	/	88505	*	50	/	100	=	0.3912
27	cis-1,3-dichloropropene	111541	/	88505	*	50	/	116	=	0.5432
28	trichloroethene	75670	/	88505	*	50	/	100	=	0.4275
29	dibromochloromethane	108810	/	88505	*	50	/	100	=	0.6147
30	benzene	198909	/	88505	*	50	/	100	=	1.1237
31	1,1,2-tricloroethane	61751	/	88505	*	50	/	100	=	0.3489
32	trans-1,3-dichloropropene	79655	/	88505	*	50	/	84	=	0.5357
33	2-chloroethoxy ethene	39971	/	88505	*	50	/	100	=	0.2258
34	bromoform	84732	/	88505	*	50	/	100	=	0.4787
35	4-methyl-2-pentanone	101122	/	77521	*	50	/	100	=	0.6522
36	2-hexanone	72173	/	77521	*	50	/	100	=	0.4655
37	1,1,2,2-tetrachloroethane	144252	/	77521	*	50	/	100	=	0.9304
38	tetrachloroethene	56691	/	77521	*	50	/	100	=	0.3656
39	toluene	108773	/	77521	*	50	/	100	=	0.7016
40	chlorobenzene	144596	/	77521	*	50	/	100	=	0.9326
41	ethylbenzene	66090	/	77521	*	50	/	100	=	0.4263
42	styrene	137215	/	77521	*	50	/	100	=	0.8850
43	op-xylene	156234	/	77521	*	50	/	200	=	0.5038
44	m-xylene	81051	/	77521	*	50	/	100	=	0.5228
45	trichlorofluoromethane	0	/	77521	*	50	/	0	=	

Volatile Organics – Initial Calibration Calculations
Lotus Spreadsheet
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April 7, 1993

No.	Name	Std. Area		I.S. Area		Conc. I.S.		Conc. Std.		RRF200
1	bromodichloromethane	23552	/	23552	*	50	/	50	=	1.0000
2	1,4-difluorobenzene	98692	/	98692	*	50	/	50	=	1.0000
3	d5-chlorobenzene	88195	/	88195	*	50	/	50	=	1.0000
4	d4-1,2-dichloroethane	128471	/	23552	*	50	/	200	=	1.3637
5	d8-toluene	335612	/	88195	*	50	/	200	=	0.9513
6	bromofluorobenzene	206430	/	88195	*	50	/	200	=	0.5852
7	chloromethane	125238	/	23552	*	50	/	200	=	1.3294
8	bromomethane	109261	/	23552	*	50	/	200	=	1.1598
9	vinyl chloride	122333	/	23552	*	50	/	200	=	1.2985
10	chloroethane	86416	/	23552	*	50	/	200	=	0.9173
11	methylene chloride	135883	/	23552	*	50	/	200	=	1.4424
12	acetone	47793	/	23552	*	50	/	200	=	0.5073
13	acrolein	0	/	23552	*	50	/	0	=	
14	acrylonitrile	0	/	23552	*	50	/	0	=	
15	carbon disulfide	390813	/	23552	*	50	/	200	=	4.1484
16	1,1-dichloroethene	122174	/	23552	*	50	/	200	=	1.2969
17	1,1-dichloroethane	243840	/	23552	*	50	/	200	=	2.5883
18	1,2-dichloroethene (total)	282288	/	23552	*	50	/	400	=	1.4982
19	chloroform	257781	/	23552	*	50	/	200	=	2.7363
20	2-butanone	87375	/	23552	*	50	/	200	=	0.9275
21	1,2-dichloroethane	149319	/	23552	*	50	/	200	=	1.5850
22	1,1,1-trichloroethane	203633	/	98692	*	50	/	200	=	0.5158
23	carbon tetrachloride	184495	/	98692	*	50	/	200	=	0.4674
24	vinyl acetate	254611	/	98692	*	50	/	200	=	0.6450
25	bromodichloromethane	249330	/	98692	*	50	/	200	=	0.6316
26	1,2-dichloropropane	149232	/	98692	*	50	/	200	=	0.3780
27	cis-1,3-dichloropropene	239025	/	98692	*	50	/	232	=	0.5220
28	trichloroethene	154758	/	98692	*	50	/	200	=	0.3920
29	dibromochloromethane	213655	/	98692	*	50	/	200	=	0.5412
30	benzene	392348	/	98692	*	50	/	200	=	0.9939
31	1,1,2-tricloroethane	125637	/	98692	*	50	/	200	=	0.3183
32	trans-1,3-dichloropropene	174747	/	98692	*	50	/	168	=	0.5270
33	2-chloroethoxy ethene	85447	/	98692	*	50	/	200	=	0.2164
34	bromoform	150123	/	98692	*	50	/	200	=	0.3803
35	4-methyl-2-pentanone	168026	/	88195	*	50	/	200	=	0.4763
36	2-hexanone	132868	/	88195	*	50	/	200	=	0.3766
37	1,1,2,2-tetrachloroethane	232562	/	88195	*	50	/	200	=	0.6592
38	tetrachloroethene	127613	/	88195	*	50	/	200	=	0.3617
39	toluene	248430	/	88195	*	50	/	200	=	0.7042
40	chlorobenzene	317543	/	88195	*	50	/	200	=	0.9001
41	ethylbenzene	150393	/	88195	*	50	/	200	=	0.4263
42	styrene	297950	/	88195	*	50	/	200	=	0.8446
43	op-xylene	329052	/	88195	*	50	/	400	=	0.4664
44	m-xylene	174159	/	88195	*	50	/	200	=	0.4937
45	trichlorofluoromethane	0	/	88195	*	50	/	0	=	

Volatile Organics – Initial Calibration Calculations
Lotus Spreadsheet
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April 7, 1993

No.	Name	@avg(RRF10,20, 50,100,200)	Unbiased Std.Dev.*	%RSD (Std.Dev./Avg.*100)
1	bromodichloromethane	1.0000	0.0000	0.0
2	1,4-difluorobenzene	1.0000	0.0000	0.0
3	d5-chlorobenzene	1.0000	0.0000	0.0
4	d4-1,2-dichloroethane	1.3054	0.1583	12.1
5	d8-toluene	0.9042	0.1029	11.4
6	bromofluorobenzene	0.5997	0.0506	8.4
7	chloromethane	1.1107	0.2370	21.3
8	bromomethane	1.1056	0.1800	16.3
9	vinyl chloride	1.3025	0.1842	14.1
10	chloroethane	0.8475	0.1505	17.8
11	methylene chloride	1.4814	0.0607	4.1
12	acetone	1.0201	0.3893	38.2
13	acrolein			
14	acrylonitrile			
15	carbon disulfide	3.9116	0.1923	4.9
16	1,1-dichloroethene	1.2619	0.0669	5.3
17	1,1-dichloroethane	2.5380	0.1420	5.6
18	1,2-dichloroethene (total)	1.4899	0.0627	4.2
19	chloroform	2.7284	0.1320	4.8
20	2-butanone	1.1395	0.1289	11.3
21	1,2-dichloroethane	1.6358	0.0961	5.9
22	1,1,1-trichloroethane	0.5736	0.0470	8.2
23	carbon tetrachloride	0.5320	0.0486	9.1
24	vinyl acetate	0.7972	0.1101	13.8
25	bromodichloromethane	0.7260	0.0774	10.7
26	1,2-dichloropropane	0.3966	0.0311	7.8
27	cis-1,3-dichloropropene	0.5434	0.0525	9.7
28	trichloroethene	0.4260	0.0338	7.9
29	dibromochloromethane	0.6197	0.0634	10.2
30	benzene	1.1302	0.0987	8.7
31	1,1,2-tricloroethane	0.3594	0.0354	9.9
32	trans-1,3-dichloropropene	0.5476	0.0331	6.0
33	2-chloroethoxy ethene	0.2288	0.0275	12.0
34	bromoform	0.4766	0.0641	13.4
35	4-methyl-2-pentanone	0.6899	0.1420	20.6
36	2-hexanone	0.5032	0.0846	16.8
37	1,1,2,2-tetrachloroethane	0.9466	0.1755	18.5
38	tetrachloroethene	0.3669	0.0200	5.5
39	toluene	0.7204	0.0377	5.2
40	chlorobenzene	0.9498	0.0574	6.0
41	ethylbenzene	0.4367	0.0261	6.0
42	styrene	0.9241	0.0751	8.1
43	op-xylene	0.5294	0.0562	10.6
44	m-xylene	0.5457	0.0478	8.8
45	trichlorofluoromethane			

* @SQRT(@VAR(RRF10,20,50,100,200)*(5/4))

Volatile Organics – Continuing Calibration Calculations
Lotus Spreadsheet
Prepared by Clare Russell, Hart Crowser
April 7, 1993

No.	Name	Avg.RRF	Std. Area		I.S. Area		Conc. I.S.		Conc. Std.		RRF50	%Difference (avg-rrf50)/ avg*100
1	bromodichloromethane	1.0000	25096	/	25096	*	50	/	50	=	1.0000	0.0
2	1,4-difluorobenzene	1.0000	77965	/	77965	*	50	/	50	=	1.0000	0.0
3	d5-chlorobenzene	1.0000	71163	/	71163	*	50	/	50	=	1.0000	0.0
4	d4-1,2-dichloroethane	1.3054	33893	/	25096	*	50	/	50	=	1.3505	-3.5
5	d8-toluene	0.9042	67221	/	71163	*	50	/	50	=	0.9446	-4.5
6	bromofluorobenzene	0.5997	44248	/	71163	*	50	/	50	=	0.6218	-3.7
7	chloromethane	1.1107	30070	/	25096	*	50	/	50	=	1.1982	-7.9
8	bromomethane	1.1056	28764	/	25096	*	50	/	50	=	1.1462	-3.7
9	vinyl chloride	1.3025	38370	/	25096	*	50	/	50	=	1.5289	-17.4
10	chloroethane	0.8475	23852	/	25096	*	50	/	50	=	0.9504	-12.1
11	methylene chloride	1.4814	36360	/	25096	*	50	/	50	=	1.4488	2.2
12	acetone	1.0201	17881	/	25096	*	50	/	50	=	0.7125	30.2
13	acrolein		0	/	25096	*	50	/	0	=		
14	acrylonitrile		0	/	25096	*	50	/	0	=		
15	carbon disulfide	3.9116	98734	/	25096	*	50	/	50	=	3.9343	-0.6
16	1,1-dichloroethene	1.2619	31501	/	25096	*	50	/	50	=	1.2552	0.5
17	1,1-dichloroethane	2.5380	62741	/	25096	*	50	/	50	=	2.5000	1.5
18	1,2-dichloroethene (total)	1.4899	74136	/	25096	*	50	/	100	=	1.4770	0.9
19	chloroform	2.7284	67501	/	25096	*	50	/	50	=	2.6897	1.4
20	2-butanone	1.1395	24051	/	25096	*	50	/	50	=	0.9584	15.9
21	1,2-dichloroethane	1.6358	38286	/	25096	*	50	/	50	=	1.5256	6.7
22	1,1,1-trichloroethane	0.5736	49788	/	77965	*	50	/	50	=	0.6386	-11.3
23	carbon tetrachloride	0.5320	45737	/	77965	*	50	/	50	=	0.5866	-10.3
24	vinyl acetate	0.7972	58624	/	77965	*	50	/	50	=	0.7519	5.7
25	bromodichloromethane	0.7260	58461	/	77965	*	50	/	50	=	0.7498	-3.3
26	1,2-dichloropropane	0.3966	31164	/	77965	*	50	/	50	=	0.3997	-0.8
27	cis-1,3-dichloropropene	0.5434	47898	/	77965	*	50	/	58	=	0.5296	2.5
28	trichloroethene	0.4260	34480	/	77965	*	50	/	50	=	0.4422	-3.8
29	dibromochloromethane	0.6197	47199	/	77965	*	50	/	50	=	0.6054	2.3
30	benzene	1.1302	91053	/	77965	*	50	/	50	=	1.1679	-3.3
31	1,1,2-tricloroethane	0.3594	25996	/	77965	*	50	/	50	=	0.3334	7.2
32	trans-1,3-dichloropropene	0.5476	33284	/	77965	*	50	/	42	=	0.5082	7.2
33	2-chloroethoxy ethene	0.2288	15021	/	77965	*	50	/	50	=	0.1927	15.8
34	bromoform	0.4766	36280	/	77965	*	50	/	50	=	0.4653	2.4
35	4-methyl-2-pentanone	0.6899	44393	/	71163	*	50	/	50	=	0.6238	9.6
36	2-hexanone	0.5032	26162	/	71163	*	50	/	50	=	0.3676	26.9
37	1,1,2,2-tetrachloroethane	0.9466	65507	/	71163	*	50	/	50	=	0.9205	2.8
38	tetrachloroethene	0.3669	25693	/	71163	*	50	/	50	=	0.3610	1.6
39	toluene	0.7204	48470	/	71163	*	50	/	50	=	0.6811	5.5
40	chlorobenzene	0.9498	65112	/	71163	*	50	/	50	=	0.9150	3.7
41	ethylbenzene	0.4367	30273	/	71163	*	50	/	50	=	0.4254	2.6
42	styrene	0.9241	58676	/	71163	*	50	/	50	=	0.8245	10.8
43	op-xylene	0.5294	68643	/	71163	*	50	/	100	=	0.4823	8.9
44	m-xylene	0.5457	35025	/	71163	*	50	/	50	=	0.4922	9.8
45	trichlorofluoromethane		0	/	71163	*	50	/	0	=		

*Minor differences are due to a variance in the number of significant figures used in the calculation

JOBS\297856\CONTCALC.wk1

Volatile Organics - Sample Calculations
Lotus Spreadsheet
Prepared by Clare Russell, Hart Crowser
April 7, 1993

No.	Name	VBLK Compound Area		I.S. Area		Conc. I.S.		Compound RRF50		Percent Solids		Sample Conc.		Surr. True Conc.		Surrogate %Recov. (Conc./True*100)
Internal Standards																
1	bromochloromethane	19645														
2	1,4-difluorobenzene	63361														
3	d5-chlorobenzene	54856														
Surrogate Standards																
4	d4-1,2-dichloroethane	27074	/	19645	*	50	/	1.3505			=	51.023	\	50	=	102.0
5	d8-toluene	53604	/	54856	*	50	/	0.9446			=	51.724	\	50	=	103.4
6	bromofluorobenzene	35921	/	54856	*	50	/	0.6218			=	52.657	\	50	=	105.3
Target Compounds																
7	acetone	3315	/	19645	*	50	/	0.7125	/	100.0%	=	11.842				
8	methylene chloride	0	/	19645	*	50	/	1.4488	/	100.0%	=	0.000				

*The calculation already factors in grams of sample by the adjustment in standard conc. reported

JOBS\297856\VBLK.wk1

Volatile Organics - Sample Calculations
Lotus Spreadsheet
Prepared by Clare Russell, Hart Crowser
April 7, 1993

No.	Name	B07PZ1 Compound Area	I.S. Area	Conc. I.S.	Compound RRF50	Percent Solids	Sample Conc.	Surr. True Conc.	Surrogate %Recov. (Conc./True*100)
Internal Standards									
1	bromochloromethane	20191							
2	1,4-difluorobenzene	62499							
3	d5-chlorobenzene	55758							
Surrogate Standards									
4	d4-1,2-dichloroethane	28135 /	20191 *	50 /	1.3505	=	51.589 \	50 =	103.2
5	d8-toluene	54138 /	55758 *	50 /	0.9446	=	51.394 \	50 =	102.8
6	bromofluorobenzene	36210 /	55758 *	50 /	0.6218	=	52.222 \	50 =	104.4
Target Compounds									
7	acetone	2188 /	20191 *	50 /	0.7125 /	95.0% =	8.005		
8	methylene chloride	0 /	20191 *	50 /	1.4488 /	95.0% =	0.000		

*The calculation already factors in grams of sample by the adjustment in standard conc. reported

JOBS\297856\B07PZ1.wk1

Volatile Organics - Sample Calculations
Lotus Spreadsheet
Prepared by Clare Russell, Hart Crowser
April 7, 1993

No.	Name	B07PZ2 Compound Area		I.S. Area		Conc. I.S.		Compound RRF50		Percent Solids		Sample Conc.		Surr. True Conc.		Surrogate %Recov. (Conc./True*100)
Internal Standards																
1	bromochloromethane	22056														
2	1,4-difluorobenzene	69998														
3	d5-chlorobenzene	60733														
Surrogate Standards																
4	d4-1,2-dichloroethane	30803	/	22056	*	50	/	1.3505			=	51.705	\	50	=	103.4
5	d8-toluene	60412	/	60733	*	50	/	0.9446			=	52.652	\	50	=	105.3
6	bromofluorobenzene	40521	/	60733	*	50	/	0.6218			=	53.652	\	50	=	107.3
Target Compounds																
7	acetone	2205	/	22056	*	50	/	0.7125	/	96.0%	=	7.308				
8	methylene chloride	0	/	22056	*	50	/	1.4488	/	96.0%	=	0.000				

*The calculation already factors in grams of sample by the adjustment in standard conc. reported

JOBS\297856\B07PZ2.wk1

Volatile Organics - Sample Calculations
Lotus Spreadsheet
Prepared by Clare Russell, Hart Crowser
April 7, 1993

No.	Name	B07PZ4 Compound Area		I.S. Area		Conc. I.S.		Compound RRF50		Percent Solids		Sample Conc.		Surr. True Conc.		Surrogate %Recov. (Conc./True*100)
Internal Standards																
1	bromochloromethane	21014														
2	1,4-difluorobenzene	64420														
3	d5-chlorobenzene	55181														
Surrogate Standards																
4	d4-1,2-dichloroethane	29591	/	21014	*	50	/	1.3505			=	52.133	\	50	=	104.3
5	d8-toluene	56711	/	55181	*	50	/	0.9446			=	54.400	\	50	=	108.8
6	bromofluorobenzene	37574	/	55181	*	50	/	0.6218			=	54.756	\	50	=	109.5
Target Compounds																
7	acetone	1984	/	21014	*	50	/	0.7125	/	94.0%	=	7.048				
8	methylene chloride	0	/	21014	*	50	/	1.4488	/	94.0%	=	0.000				

*The calculation already factors in grams of sample by the adjustment in standard conc. reported

JOBS\297856\B07PZ4.wk1

Volatile Organics - Sample Calculations
Lotus Spreadsheet
Prepared by Clare Russell, Hart Crowser
April 7, 1993

No.	Name	B07PZ6 Compound Area	I.S. Area	Conc. I.S.	Compound RRF50	Percent Solids	Sample Conc.	Surr. True Conc.	Surrogate %Recov. (Conc./True*100)
Internal Standards									
1	bromochloromethane	19645							
2	1,4-difluorobenzene	59854							
3	d5-chlorobenzene	52273							
Surrogate Standards									
4	d4-1,2-dichloroethane	27235 /	19645 *	50 /	1.3505	=	51.326 /	50 =	102.7
5	d8-toluene	51264 /	52273 *	50 /	0.9446	=	51.910 /	50 =	103.8
6	bromofluorobenzene	35638 /	52273 *	50 /	0.6218	=	54.823 /	50 =	109.6
Target Compounds									
7	acetone	1666 /	19645 *	50 /	0.7125 /	97.0% =	6.135		
8	methylene chloride	0 /	19645 *	50 /	1.4488 /	97.0% =	0.000		

*The calculation already factors in grams of sample by the adjustment in standard conc. reported

JOBS\297856\B07PZ6.wk1

Volatile Organics - Sample Calculations
Lotus Spreadsheet
Prepared by Clare Russell, Hart Crowser
April 7, 1993

No.	Name	B07PZ7 Compound Area		I.S. Area		Conc. I.S.		Compound RRF50		Percent Solids		Sample Conc.		Surr. True Conc.		Surrogate %Recov. (Conc./True*100)
Internal Standards																
1	bromochloromethane	17861														
2	1,4-difluorobenzene	58137														
3	d5-chlorobenzene	51770														
Surrogate Standards																
4	d4-1,2-dichloroethane	25099	/	17861	*	50	/	1.3505			=	52.025	/	50	=	104.1
5	d8-toluene	51983	/	51770	*	50	/	0.9446			=	53.150	/	50	=	106.3
6	bromofluorobenzene	34319	/	51770	*	50	/	0.6218			=	53.307	/	50	=	106.6
Target Compounds																
7	acetone	1423	/	17861	*	50	/	0.7125	/	97.0%	=	5.764				
8	methylene chloride	0	/	17861	*	50	/	1.4488	/	97.0%	=	0.000				

*The calculation already factors in grams of sample by the adjustment in standard conc. reported

JOBS\297856\B07PZ7.wk1

Volatile Organics - Sample Calculations
Lotus Spreadsheet
Prepared by Clare Russell, Hart Crowser
April 7, 1993

No.	Name	B07Q01 Compound Area		I.S. Area		Conc. I.S.		Compound RRF50		Percent Solids		Sample Conc.		Surr. True Conc.		Surrogate %Recov. (Conc./True*100)
Internal Standards																
1	bromochloromethane	20590														
2	1,4-difluorobenzene	64563														
3	d5-chlorobenzene	53962														
Surrogate Standards																
4	d4-1,2-dichloroethane	29928	/	20590	*	50	/	1.3505			=	53.813	/	50	=	107.6
5	d8-toluene	56120	/	53962	*	50	/	0.9446			=	55.049	/	50	=	110.1
6	bromofluorobenzene	36883	/	53962	*	50	/	0.6218			=	54.963	/	50	=	109.9
Target Compounds																
7	acetone	2479	/	20590	*	50	/	0.7125	/	91.0%	=	9.285				
8	methylene chloride	1015	/	20590	*	50	/	1.4488	/	91.0%	=	1.869				

*The calculation already factors in grams of sample by the adjustment in standard conc. reported

JOBS\297856\B07Q01.wk1

Volatile Organics – Sample Calculations
Lotus Spreadsheet
Prepared by Clare Russell, Hart Crowser
April 7, 1993

No.	Name	B07Q02 Compound Area		I.S. Area		Conc. I.S.		Compound RRF50		Percent Solids		Sample Conc.		Surr. True Conc.		Surrogate %Recov. (Conc./True*100)
Internal Standards																
1	bromochloromethane	19085														
2	1,4-difluorobenzene	75903														
3	d5-chlorobenzene	66817														
Surrogate Standards																
4	d4-1,2-dichloroethane	27965	/	19085	*	50	/	1.3505			=	54.248	/	50	=	108.5
5	d8-toluene	68266	/	66817	*	50	/	0.9446			=	54.080	/	50	=	108.2
6	bromofluorobenzene	39129	/	66817	*	50	/	0.6218			=	47.091	/	50	=	94.2
Target Compounds																
7	acetone	2062	/	19085	*	50	/	0.7125	/	91.0%	=	8.332				
8	methylene chloride	1324	/	19085	*	50	/	1.4488	/	91.0%	=	2.631				

*The calculation already factors in grams of sample by the adjustment in standard conc. reported

JOBS\297856\B07Q02.wk1

Volatile Organics - Sample Calculations
Lotus Spreadsheet
Prepared by Clare Russell, Hart Crowser
April 7, 1993

No.	Name	B07Q03 Compound Area		I.S. Area		Conc. I.S.		Compound RRF50		Percent Solids		Sample Conc.		Surr. True Conc.		Surrogate %Recov. (Conc./True*100)
Internal Standards																
1	bromochloromethane	20837														
2	1,4-difluorobenzene	64999														
3	d5-chlorobenzene	57073														
Surrogate Standards																
4	d4-1,2-dichloroethane	27519	/	20837	*	50	/	1.3505			=	48.895	/	50	=	97.8
5	d8-toluene	55221	/	57073	*	50	/	0.9446			=	51.214	/	50	=	102.4
6	bromofluorobenzene	35142	/	57073	*	50	/	0.6218			=	49.514	/	50	=	99.0
Target Compounds																
7	acetone	2552	/	20837	*	50	/	0.7125	/	96.0%	=	8.953				
8	methylene chloride	1180	/	20837	*	50	/	1.4488	/	96.0%	=	2.036				

*The calculation already factors in grams of sample by the adjustment in standard conc. reported

JOBS\297856\B07Q03.wk1

Volatile Organics - Sample Calculations
Lotus Spreadsheet
Prepared by Clare Russell, Hart Crowser
April 7, 1993

No.	Name	B07PZ1MS Compound Area		I.S. Area		Conc. I.S.		Compound RRF50		Percent Solids		Sample Conc.		MS or Surr. True Conc.		MS or Surrogate %Recov. (Conc./True*100)
Internal Standards																
1	bromochloromethane	19387														
2	1,4-difluorobenzene	61045														
3	d5-chlorobenzene	53098														
Surrogate Standards																
4	d4-1,2-dichloroethane	27952	/	19387	*	50	/	1.3505			=	53.379	/	50	=	106.8
5	d8-toluene	55347	/	53098	*	50	/	0.9446			=	55.174	/	50	=	110.3
6	bromofluorobenzene	35387	/	53098	*	50	/	0.6218			=	53.592	/	50	=	107.2
Matrix Spike and Target Compounds																
ERR	ERR	2395	/	19387	*	50	/	0.7125	/	95.0%	=	9.125				
16	1,1-dichloroethene	27673	/	19387	*	50	/	1.2552	/	95.0%	=	59.851	/	52.6	=	113.8
28	trichloroethene	29181	/	61045	*	50	/	0.4422	/	95.0%	=	56.889	/	52.6	=	108.2
30	benzene	80108	/	61045	*	50	/	1.1678	/	95.0%	=	59.139	/	52.6	=	112.4
39	toluene	41013	/	53098	*	50	/	0.6811	/	95.0%	=	59.686	/	52.6	=	113.5
40	chlorobenzene	50534	/	53098	*	50	/	0.9149	/	95.0%	=	54.745	/	52.6	=	104.1

*The calculation already factors in grams of sample by the adjustment in standard conc. reported

JOBS\297856\B07PZ1MS.wk1

Volatile Organics - Sample Calculations
Lotus Spreadsheet
Prepared by Clare Russell, Hart Crowser
April 7, 1993

No.	Name	B07PZ1MSD Compound Area		I.S. Area		Conc. I.S.		Compound RRF50		Percent Solids		Sample Conc.		MS or Surr. True Conc.		MS or Surrogate %Recov. (Conc./True*100)
Internal Standards																
1	bromochloromethane	19508														
2	1,4-difluorobenzene	63210														
3	d5-chlorobenzene	53945														
Surrogate Standards																
4	d4-1,2-dichloroethane	27958	/	19508	*	50	/	1.3505			=	53.059	/	50	=	106.1
5	d8-toluene	55614	/	53945	*	50	/	0.9446			=	54.570	/	50	=	109.1
6	bromofluorobenzene	36137	/	53945	*	50	/	0.6218			=	53.868	/	50	=	107.7
Matrix Spike and Target Compounds																
ERR	ERR	2470	/	19508	*	50	/	0.7125	/	95.0%	=	9.353				
16	1,1-dichloroethene	27361	/	19508	*	50	/	1.2552	/	95.0%	=	58.809	/	52.6	=	111.8
28	trichloroethene	29342	/	63210	*	50	/	0.4422	/	95.0%	=	55.244	/	52.6	=	105.0
30	benzene	80620	/	63210	*	50	/	1.1678	/	95.0%	=	57.479	/	52.6	=	109.3
39	toluene	41385	/	53945	*	50	/	0.6811	/	95.0%	=	59.282	/	52.6	=	112.7
40	chlorobenzene	51151	/	53945	*	50	/	0.9149	/	95.0%	=	54.543	/	52.6	=	103.7

*The calculation already factors in grams of sample by the adjustment in standard conc. reported

JOBS\297856\PZ1MSD.wk1

Volatile Organics – MS/MSD Precision
Lotus Spreadsheet
Prepared by Clare Russell, Hart Crowser
April 7, 1993

Name	MS %R	MSD %R	%RPD (MS-MSD)/@AVG(MS,MSD)*100
1,1-dichloroethene	113.8	111.8	2
trichloroethene	108.2	105.0	3
benzene	112.4	109.3	3
toluene	113.5	112.7	1
chlorobenzene	104.1	103.7	0

JOBS\297856\MSMSDRPD.wk1

HCRL-WHC/9316-T-93-022

E-93-16/2978-56

WESTINGHOUSE HANFORD COMPANY
PICKLING ACID CRIB ERA DATA VALIDATION
DISTRIBUTION FORM

Document Title Prelim. QA Rpts. Case # N2-12-069(Nitrate/Nit

Document Number: HCRL-WHC/9316-L-93-021 Date: 4/20/93

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Project Files (1=Administrative; 2=Correspondence; 3=Source Data; 4=Technical Data)

1.1	File Index		2.1	Incoming Correspondence		4.1	Task Plan
1.2	Distribution Lists		2.2	Outgoing Correspondence	X	4.2	Data Pkg. Completeness Verif. Checklist
1.3	Project Procedures		2.3	Internal Correspondence		4.3	Data Valid. Calcs./Annotated DP
1.4	Project Modifications					4.4	Prelim. QA Reports
1.5	Staff		3.1	Task Order		4.5	Data Valid. & Qual. Summary Rpts.
1.5.1	Staff Resumes		3.2	Sample Lists		4.5.1	Internal Drafts/Comments/Resol.
1.5.2	Staff Training		3.3	Data Validation Procedures		4.5.2	WHC Review Draft Comments/Resol.
1.5.3	Auth. Former Site Employee		3.4	Original Chemical Data		4.5.3	Final Report
1.6	QA		3.5	Original Radiochem. Data		4.6	Weekly Status Reports
1.6.1	QA Implement Procedures					4.7	Weekly Management Reports
1.6.2	QA Audits						
1.6.3	QA Training						
1.7	Budget						
1.7.1	Budget Status						
1.7.2	Invoices						
1.8	Requisitions						
1.9	Meeting Minutes						
1.10	Record of Telecon						
1.11	Progress Reports						
1.12	Subcontractor						

HARTCROWSER

Earth and Environmental Technologies

Hart Crowser, Inc.
1201 Jadwin Avenue, Suite 204
Richland, Washington 99352
FAX 509 946.4217
509 946 4133

J-2978-56

April 20, 1993

Ms. Jil Frain
Westinghouse Hanford Company
P.O. Box 1970 / MSIN H6-04
Richland, Washington 99352

Subject: WHC Order No. MLW-SSV-037106
Task Order No. E-93-16
Preliminary Quality Assurance Record
White Bluffs Pickling Acid Cribs ERA
TMA Case Number N2-12-069 - Nitrate/Nitrite

Dear Ms. Frain:

Ebasco and Hart Crowser are pleased to provide you with the attached results of our review and validation of the subject data from the White Bluffs Pickling Acid Cribs ERA. The attached results are provided to you in partial fulfillment of Subtask 03 of our task plan dated March 12, 1993. The subject data package consisted of twelve low level soil samples submitted for analysis for nitrate/nitrite. The sample data were fully validated. In addition, a 100 percent validation of the supporting quality control data was performed.

The samples were analyzed by TMA using the U.S. Environmental Protection Agency (EPA) Methods for Chemical Analysis of Water and Wastes (EPA-600/4-79-020), Method 353.2, modified for soil (leachate) analysis. All analytical results, together with the data qualifiers which we have assigned as a result of our review, are provided in Attachment 4. Table 1 is an annotated list of the attachments to this letter report.

DATA QUALITY OBJECTIVES SUMMARY

Data quality objectives for accuracy and precision (including holding times, instrument and method blanks, matrix spikes, duplicates, laboratory control samples, and initial and continuing calibrations), and quantitation limit requirements were met for this case with the exception of the following: the holding times were not met.

MAJOR DEFICIENCIES (REJECTED DATA)

Data for seven samples were rejected due to a gross exceedence of the holding time requirements. This qualification is explained in greater detail below.

MINOR DEFICIENCIES (OTHER QUALIFIED DATA)

The following general trends resulted in the qualification of data from multiple samples.

Data for seven samples were rejected due to a gross exceedence of the holding time requirements. The samples were leached only a few days outside the soil holding time. However, the leachates were analyzed 14 days later. The holding time for unpreserved aqueous samples is two days. As a result of the holding time exceedence, all positive nitrate/nitrite concentrations were qualified as estimates (J), and non-detects were rejected (R).

No other data qualifiers were assigned.

We trust that these preliminary results meet your needs. Our qualifier assignments will be finalized at the time the summary report is published. The final qualifiers may vary from those presented here, reflecting any trends in data quality or laboratory performance observed over the course of the White Bluffs Pickling Acid Cribs ERA data validation effort. Please contact me if you have any questions with regard to our activities.

Sincerely,

HART CROWSER, INC.

D. MARK GERBOTH, P.E.
Project Manager

HC#134:RL1761.DOC

Attachments

cc: Mark Gerboth (w/o attachments)
Jeff Grover (w/o attachments)
Westinghouse EDMC
Project File - HCRL-WHC/9316-L-93-021

Table 1 - Annotated List of Attachments

Attachment 1 - Glossary of Data Qualifiers

This attachment provides a glossary explaining all data qualifiers applied as a result of the validation.

Attachment 2 - As Received Laboratory Sample Concentration Reports

This attachment provides a copy of the as-received sample concentration reports. This may be a tabular summary similar to that provided in Attachment 4, or may be a copy of the laboratory reports (e.g., Form I).

Attachment 3 - Summary of Data Qualifications (Form B-7)

This attachment provides a complete summary of all qualifications applied as a result of the validation.

Attachment 4 - As Qualified Data Summary

This attachment provides a tabular data summary of all data qualified from the validation.

Attachment 5 - Data Review Supporting Documentation

This attachment provides copies of the data validation checklists, data summary forms, telephone contact memoranda and other documentation completed as a result of the data validation.

ATTACHMENT 1

Glossary of Data Qualifiers

Glossary of Data Qualifiers

U - Indicates the compound or analyte was analyzed for and not detected. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.

UJ - Indicates the compound or analyte was analyzed for and not detected. Due to quality control deficiencies identified during data validation the value reported may not accurately reflect the sample quantitation limit.

J - Indicates the compound or analyte was analyzed for and detected. The associated value is estimated but the data are useable for decision making processes.

R - Indicates the compound or analyte was analyzed for and due to an identified quality control deficiency the data are unusable.

NJ - Indicates the presumptive evidence of a compound at an estimated value.

N - Indicates presumptive evidence of a compound.

ATTACHMENT 2

As Received Laboratory Sample Concentration Reports

Received: 12/17/92

Results by Sample

SAMPLE ID B07012 SAMPLE # 01 FRACTIONS: A
Date & Time Collected 12/07/92 Category SOIL

NITR_S 3.52
mg N/kg

SAMPLE ID B07004 SAMPLE # 02 FRACTIONS: A
Date & Time Collected 12/04/92 Category SOIL

NITR_S <2.55
mg N/kg

SAMPLE ID B07005 SAMPLE # 03 FRACTIONS: A
Date & Time Collected 12/04/92 Category SOIL

NITR_S <2.52
mg N/kg

SAMPLE ID B07006 SAMPLE # 04 FRACTIONS: A
Date & Time Collected 12/04/92 Category SOIL

NITR_S <2.47
mg N/kg

SAMPLE ID B07007 SAMPLE # 05 FRACTIONS: A
Date & Time Collected 12/04/92 Category SOIL

NITR_S <2.51
mg N/kg

SAMPLE ID B07008 SAMPLE # 06 FRACTIONS: A
Date & Time Collected 12/04/92 Category SOIL

NITR_S <2.42
mg N/kg

SAMPLE ID B07009 SAMPLE # 07 FRACTIONS: A
Date & Time Collected 12/04/92 Category SOIL

NITR_S <2.50
mg N/kg

TMA
Thermo Analytical Inc.
This report is rendered upon all of the following conditions: Skinner & Sherman Laboratories, Inc. retains ownership of this report until associated submitted invoice is paid. Expert witness services shall be available in conjunction with this report only if prior notification of this potential requirement was made and accepted, before the analysis will be responsible for Skinner & Sherman costs and consulting fees if our services are required by subpoena or otherwise in legal proceedings. Total liability is limited to the amount. The results listed refer only to tested samples and applicable parameters. Product endorsement is neither inferred nor implied. Skinner & Sherman Laboratories, exercises due diligence but will not be responsible for lost or destroyed samples or evidence unless client makes appropriate insurance coverage arrangements. Samples are available thirty days following issuance of report. Samples will be stored at client's expense, if authorized in writing.

Skinner & Sherman Laboratories Inc. 300 Second Avenue, P.O. Box 521, Waltham, Massachusetts 02254-0521 (617) 890-72
1-800-4 LAB TEST FAX (617) 890-3883

Received: 12/17/92

Results by Sample

SAMPLE ID B07Q10 SAMPLE # 08 FRACTIONS: A
Date & Time Collected 12/07/92 Category SOIL

NITR_S 16.3
mg N/kg

SAMPLE ID B07Q11 SAMPLE # 09 FRACTIONS: A
Date & Time Collected 12/07/92 Category SOIL

NITR_S 3.70
mg N/kg

SAMPLE ID B07Q14 SAMPLE # 10 FRACTIONS: A
Date & Time Collected 12/07/92 Category SOIL

NITR_S 3.24
mg N/kg

SAMPLE ID B07Q15 SAMPLE # 11 FRACTIONS: A
Date & Time Collected 12/07/92 Category SOIL

NITR_S 5.81
mg N/kg

SAMPLE ID B07Q16 SAMPLE # 12 FRACTIONS: A
Date & Time Collected 12/07/92 Category SOIL

NITR_S <2.51
mg N/kg

SAMPLE ID B07Q16 DUPL SAMPLE # 12 FRACTIONS: B
Date & Time Collected 12/07/92 Category SOIL

NITR_S <2.58
mg N/kg

SAMPLE ID B07Q16 SPIKE SAMPLE # 12 FRACTIONS: C
Date & Time Collected 12/07/92 Category SOIL

NITR_S 17.7
mg N/kg

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thirty days following issuance of report. Samples will be stored at client's expense, if authorized in writing.

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ATTACHMENT 3

Summary of Data Qualifications

DATA QUALIFICATION SUMMARY - FORM B-7

SDG: N2-12-069	REVIEWER: CMK	DATE: 4/9/93	PAGE 1 OF 1
COMMENTS: Nitrate / Nitrite		(Level 4 Validation)	
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
~~These are no qualifiers assigned.~~			
	CMK		
NO_3/NO_2	B07Q04	R	missed H.T.
	B07Q05		
	B07Q06		
	B07Q07		
	B07Q08		
	B07Q09		
	B07Q10	J	
	B07Q11		
	B07Q12		
	B07Q14		
	B07Q15		
	B07Q16	R	

ATTACHMENT 4

As Qualified Data Summary

Received: 12/17/92 Results by Sample

Qua

SAMPLE ID B07912 SAMPLE # 01 FRACTIONS: A
Date & Time Collected 12/07/92 Category SOIL

NITR_S 3.52
mg N/kg

J

SAMPLE ID B07904 SAMPLE # 02 FRACTIONS: A
Date & Time Collected 12/04/92 Category SOIL

NITR_S <2.55
mg N/kg

SAMPLE ID B07905 SAMPLE # 03 FRACTIONS: A
Date & Time Collected 12/04/92 Category SOIL

NITR_S <2.52
mg N/kg

SAMPLE ID B07906 SAMPLE # 04 FRACTIONS: A
Date & Time Collected 12/04/92 Category SOIL

NITR_S <2.47
mg N/kg

SAMPLE ID B07907 SAMPLE # 05 FRACTIONS: A
Date & Time Collected 12/04/92 Category SOIL

NITR_S <2.51
mg N/kg

SAMPLE ID B07908 SAMPLE # 06 FRACTIONS: A
Date & Time Collected 12/04/92 Category SOIL

NITR_S <2.42
mg N/kg

SAMPLE ID B07909 SAMPLE # 07 FRACTIONS: A
Date & Time Collected 12/04/92 Category SOIL

NITR_S <2.50
mg N/kg

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will be responsible for Skinner & Sherman costs and consulting fees if our services are required by subpoena or otherwise in legal proceedings. Total liability is limited to
amount. The results listed refer only to tested samples and applicable parameters. Product endorsement is neither inferred nor implied. Skinner & Sherman Laboratori
exercise due diligence but will not be responsible for lost or destroyed samples or evidence unless client makes appropriate insurance coverage arrangements. Samples
days following issuance of report. Samples will be stored at client's expense, if authorized in writing.

TMA Thermo Analytical Inc.
Skinner & Sherman Laboratories Inc. 300 Second Avenue, P.O. Box 521, Waltham, Massachusetts 02254-0521 (617) 890-7
1-800-4 LAB TEST FAX (617) 890-3883

Received: 12/17/92

Results by Sample

SAMPLE ID B07010 SAMPLE # 08 FRACTIONS: A
Date & Time Collected 12/07/92 Category SOIL

NITR_S 16.3
mg N/kg

J

SAMPLE ID B07011 SAMPLE # 09 FRACTIONS: A
Date & Time Collected 12/07/92 Category SOIL

NITR_S 3.70
mg N/kg

J

SAMPLE ID B07014 SAMPLE # 10 FRACTIONS: A
Date & Time Collected 12/07/92 Category SOIL

NITR_S 3.24
mg N/kg

J

SAMPLE ID B07015 SAMPLE # 11 FRACTIONS: A
Date & Time Collected 12/07/92 Category SOIL

NITR_S 5.81
mg N/kg

J

SAMPLE ID B07016 SAMPLE # 12 FRACTIONS: A
Date & Time Collected 12/07/92 Category SOIL

NITR_S <2.51
mg N/kg

SAMPLE ID B07016 DUPL SAMPLE # 12 FRACTIONS: B
Date & Time Collected 12/07/92 Category SOIL

NITR_S <2.58
mg N/kg

SAMPLE ID B07016 SPIKE SAMPLE # 12 FRACTIONS: C
Date & Time Collected 12/07/92 Category SOIL

NITR_S 17.7
mg N/kg

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exercise due diligence but will not be responsible for lost or destroyed samples or evidence unless client makes appropriate insurance coverage arrangement. Samples
thirty days following issuance of report. Samples will be stored at client's expense, if authorized in writing.

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ATTACHMENT 5

Data Review Supporting Documentation

WET CHEMISTRY DATA VALIDATION CHECKLIST - FORM A-7

PROJECT: White Bluffs Pickling Acid Cribs ERA	REVIEWER: CMR	DATE: 4/5/93
LABORATORY: TMA/Skinner	CASE: N2-12-069	SDG:
SAMPLES/MATRIX:		
Soils: B07Q04	B07Q08	B07Q12
B07Q05	B07Q09	B07Q14
B07Q06	B07Q10	B07Q15
B07Q07	B07Q11	B07Q16

(Level 4 validation all samples. CMR)

1. DATA PACKAGE COMPLETENESS

Review the data package for completeness and check off the items below. If any data review elements are missing contact the laboratory for submittal of the omitted data.

Data Package Item	Present?:	Yes	No	N/A
Case Narrative				✓
Cover Page		✓		
Traffic Reports/Chain-of-Custody	(present in GenChem A2-12-049)			✓
Sample Analysis Data Report Forms		✓		
Standards Data			✓	
QC Summary				
Blanks Summary Report Forms	(prep blank chromatogram avail.)			✓
Spike Sample Recovery Report Forms		✓		
Duplicate Sample Analysis Report Forms		✓		
Laboratory Control Sample Report Forms		✓		
Raw Data				
~~Ion Chromatograph~~ Chromatograms	method 353.2	✓		
TOC and TOX Instrument Printouts				✓
Laboratory Bench Sheets				✓
Additional Data				
Laboratory Sample Preparation Logs		✓		
Instrument Run Logs		✓		
Internal Laboratory Chain-of-Custory		✓		
Percent Solids Analysis Records	(present in metals N2-12-069)			✓
Reduction Formulae				✓
Chemist Notebook Pages				✓

2. HOLDING TIMES

Were all samples analyzed within holding times? Yes (No) N/A

Action: If any holding times were exceeded qualify all affected results as estimated (J for detects and UJ for nondetects).

3. INITIAL CALIBRATIONS

Were all instruments calibrated daily, each set-up time and were the proper number of standards used?	Yes	No	N/A
Are the correlation coefficients ≥0.995?	Yes	No	N/A
Was a balance check conducted prior to the TDS analysis?	Yes	No	N/A
Was the titrant normality checked?	Yes	No	N/A

ACTION: Qualify all data as unusable (R) if reported from an analysis in which the above criteria were not met.

4. INITIAL AND CONTINUING CALIBRATION VERIFICATION

Have ICV and CCV been analyzed at the proper frequency?	Yes	No	N/A
Are ICV and CCV percent recoveries within control?	Yes	No	N/A
Are there calculation errors?	Yes	No	N/A

ACTION: Qualify all affected data in accordance with the validation requirements.

5. LABORATORY BLANKS

Are target analytes present in the laboratory blanks?	Yes	No	N/A

ACTION: Qualify all associated sample results for any analyte <5 times the amount in any laboratory blank as nondetected (U) and list the affected samples and analytes below.

6. FIELD BLANKS

Are target analytes present in the field blanks?	Yes	No	N/A

ACTION: Qualify all sample results for any analyte <5 times the amount in any valid field blank as nondetected (U).

7. MATRIX SPIKE SAMPLE ANALYSIS

Are spike recoveries within the acceptance limits?	Yes	No	N/A

ACTION: If the sample concentration exceeds the spike concentration by a factor of 4 or more, and spike recoveries are outside the acceptance limits, no qualification is necessary. If spike recovery is outside the control limits and the sample results are >CRQL, qualify the data as estimated (J). If the spike recovery is <30% and the sample results are less then the IDL qualify the data as unusable (R).

8. LABORATORY CONTROL SAMPLE

Are percent recoveries within the acceptance limits? Yes No N/A

Are there calculation errors? Yes No N/A

ACTION: Qualify the affected results according to the following requirements:

AQUEOUS LCS - Qualify as estimated (J), all sample results > IDL, for which the LCS %R falls within the range 50-79% or > 120%. Qualify as estimated (UJ), all sample results < IDL, for which the LCS falls within the range of 50-79%. Qualify as unusable (R) all sample results, for which the LCS %R < 50%.

SOLID LCS - Qualify as estimated (J), all sample results > IDL for which the LCS %R is outside the established control limits. Qualify as estimated (UJ), all sample results < IDL for which the LCS %R are lower than the established control limits.

9. PERFORMANCE AUDIT ANALYSES

Are the performance audit sample results within the acceptance limits? Yes No N/A

ACTION: Note the results of the performance audit samples in the validation narrative.

10. DUPLICATE SAMPLE ANALYSIS

Are RPD values within the acceptance limits? Yes No N/A

Action: Qualify the results for all associated samples of the same matrix as estimated (J) if the RPD falls outside the acceptance limits.

11. FIELD DUPLICATE SAMPLES

Do RPD values exceed the acceptance limits? Yes No N/A

ACTION: Note the results of the field duplicate samples in the validation narrative.

12. FIELD SPLIT SAMPLES

Do RPD values exceed the acceptance limits? Yes No N/A

ACTION: Note the results of the field split samples in the validation narrative.

13. ANALYTE QUANTITATION AND DETECTION LIMITS

Have results been reported and calculated correctly?	Yes	No	N/A
Are instrument detection limits below the CRDL?	Yes	No	N/A

Action: If analyte quantitation is in error, contact the laboratory for explanation. If errors or deficiencies can not be resolved with the laboratory, qualify associated data as unusable (R).

14. OVERALL ASSESSMENT AND SUMMARY

Has the laboratory conducted the analysis in accordance with the analytical SOW?	Yes	No	N/A
Were project specific data quality objectives met for this analysis?	Yes	No	N/A

ACTION: Summarize all the data qualifications and complete the data validation narrative as specified in Section 10.0 of the data validation requirements.

COMMENTS (attach additional sheets as necessary):

Data Packages Returned to Westinghouse Hanford
April 27, 1993

Sample Delivery Group Number	Case Numbers	Project	Work Completed		Data included with this transmittal:			
			Verified	Validated	ODP	VCL	PQAR	FQAR
B07P66-TMA-347	N2-11-141-7124, N2-11-142-7126	300-FF-5	X	X	X			
9209L910-WES-870	9209L910	300-FF-5	X	X	X			
CHMSUP-WES-033	9103L933	300-FF-5	*	*	X			
B07PY8-TMA-384	12-014, 12-018	100-IU-5	X	X	X			
9212L005-WES-971	9212L005	100-IU-5	X	X	X			
B07Q04-TMA-383	12-049	100-IU-5	X	X	X			

Notes:
* = Supplemental Data Package Only
ODP = Original Data Package
VCL = Verification Checklist
PQAR = Preliminary Quality Assurance Report
FQAR = Final Quality Assurance Record

HCRL-WHC/9316-T-93-012

E-93-16/2978-56

WESTINGHOUSE HANFORD COMPANY
PICKLING ACID CRIB ERA DATA VALIDATION
DISTRIBUTION FORM

Document Title Prelim. QA Rpts. Case # A2-12-049 (Anions)

Document Number: HCRL-WHC/9316-L-93-011 Date: 4/20/93

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J. Frain (WHC)	X	A. Shen (HCSEA)			

Project Files (1=Administrative; 2=Correspondence; 3=Source Data; 4=Technical Data)

1.1	File Index		2.1	Incoming Correspondence		4.1	Task Plan
1.2	Distribution Lists		2.2	Outgoing Correspondence	X	4.2	Data Pkg. Completeness Verif. Checklist
1.3	Project Procedures		2.3	Internal Correspondence		4.3	Data Valid. Calcs./Annotated DP
1.4	Project Modifications					4.4	Prelim. QA Reports
1.5	Staff		3.1	Task Order		4.5	Data Valid. & Qual. Summary Rpts.
1.5.1	Staff Resumes		3.2	Sample Lists		4.5.1	Internal Drafts/Comments/Resol.
1.5.2	Staff Training		3.3	Data Validation Procedures		4.5.2	WHC Review Draft Comments/Resol.
1.5.3	Auth. Former Site Employee		3.4	Original Chemical Data		4.5.3	Final Report
1.6	QA		3.5	Original Radiochem. Data		4.6	Weekly Status Reports
1.6.1	QA Implement Procedures					4.7	Weekly Management Reports
1.6.2	QA Audits						
1.6.3	QA Training						
1.7	Budget						
1.7.1	Budget Status						
1.7.2	Invoices						
1.8	Requisitions						
1.9	Meeting Minutes						
1.10	Record of Telecon						
1.11	Progress Reports						
1.12	Subcontractor						

HARTCROWSER

Earth and Environmental Technologies

J-2978-56

April 20, 1993

Ms. Jil Frain
Westinghouse Hanford Company
P.O. Box 1970 / MSIN H6-04
Richland, Washington 99352

Subject: WHC Order No. MLW-SSV-037106
Task Order No. E-93-16
Preliminary Quality Assurance Record
White Bluffs Pickling Acid Cribs ERA
TMA Case Number A2-12-049 - Anions

Dear Ms. Frain:

Ebasco and Hart Crowser are pleased to provide you with the attached results of our review and validation of the subject data from the White Bluffs Pickling Acid Cribs ERA. The attached results are provided to you in partial fulfillment of Subtask 03 of our task plan dated March 12, 1993. The subject data package consisted of twelve low level soil samples submitted for analysis for anions (chloride, fluoride, phosphate, and sulfate). The samples were fully validated. In addition, a 100 percent validation of the supporting quality control data was performed.

The samples were analyzed by TMA using the U.S. Environmental Protection Agency (EPA) Methods for Chemical Analysis of Water and Wastes (EPA-600/4-79-020), Method 300.0, modified for soil (leachate) analysis. All analytical results, together with the data qualifiers which we have assigned as a result of our review, are provided in Attachment 4. Table 1 is an annotated list of the attachments to this letter report.

DATA QUALITY OBJECTIVES SUMMARY

Data quality objectives for accuracy and precision (including holding times, instrument and method blanks, matrix spikes, duplicates, laboratory control samples, and initial and continuing calibrations), and quantitation limit requirements were met for this case with the exception of the following: an ion chromatograph initial calibration was not performed on the day of analysis; and the holding times were exceeded.

MAJOR DEFICIENCIES (REJECTED DATA)

No data were rejected.

MINOR DEFICIENCIES (OTHER QUALIFIED DATA)

The following general trends resulted in the qualification of data from multiple samples.

An ion chromatograph initial calibration (ICAL) was not performed on the day of analysis. The ICAL was performed 49 days prior to analysis. A mid-range continuing calibration check standard was analyzed on the day of analysis, but the linearity was not confirmed. Therefore, all anion data were qualified as estimates (J or UJ).

The samples were analyzed 18 to 21 days past the 28 day holding time. Therefore, all anion data were qualified as estimates (J or UJ).

No other data qualifiers were assigned.

We trust that these preliminary results meet your needs. Our qualifier assignments will be finalized at the time the summary report is published. The final qualifiers may vary from those presented here, reflecting any trends in data quality or laboratory performance observed over the course of the White Bluffs Pickling Acid Cribs ERA data validation effort. Please contact me if you have any questions with regard to our activities.

Sincerely,

HART CROWSER, INC.

D. MARK GERBOTH, P.E.
Project Manager

HC#134:RL1751.DOC

Attachments

cc: Mark Gerboth (w/o attachments)
Jeff Grover (w/o attachments)
Westinghouse EDMC
Project File - HCRL-WHC/9316-L-93-011

Table 1 - Annotated List of Attachments

Attachment 1 - Glossary of Data Qualifiers

This attachment provides a glossary explaining all data qualifiers applied as a result of the validation.

Attachment 2 - As Received Laboratory Sample Concentration Reports

This attachment provides a copy of the as-received sample concentration reports. This may be a tabular summary similar to that provided in Attachment 4, or may be a copy of the laboratory reports (e.g., Form I).

Attachment 3 - Summary of Data Qualifications (Form B-7)

This attachment provides a complete summary of all qualifications applied as a result of the validation.

Attachment 4 - As Qualified Data Summary

This attachment provides a tabular data summary of all data qualified from the validation.

Attachment 5 - Data Review Supporting Documentation

This attachment provides copies of the data validation checklists, data summary forms, telephone contact memoranda and other documentation completed as a result of the data validation.

ATTACHMENT 1

Glossary of Data Qualifiers

Glossary of Data Qualifiers

U - Indicates the compound or analyte was analyzed for and not detected. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.

UJ - Indicates the compound or analyte was analyzed for and not detected. Due to quality control deficiencies identified during data validation the value reported may not accurately reflect the sample quantitation limit.

J - Indicates the compound or analyte was analyzed for and detected. The associated value is estimated but the data are useable for decision making processes.

R - Indicates the compound or analyte was analyzed for and due to an identified quality control deficiency the data are unusable.

NJ - Indicates the presumptive evidence of a compound at an estimated value.

N - Indicates presumptive evidence of a compound.

ATTACHMENT 2

As Received Laboratory Sample Concentration Reports

TNA Inc. REPORT Work Order # 92-12-049 000011

Received: 12/11/92

Results by Sample

SAMPLE ID B07904 FRACTION B1F TEST CODE VCCLPS NAME Anions in Solids - VB232

Date & Time Collected 12/04/92 Category

ANIONS AND WET CHEMISTRY - SOLIDS

ANALYSIS	METHOD	RESULT	UNITS	LIMIT
Chloride	300.0	2.3	mg/Kg	0.4
Fluoride	300.0	1.0	mg/Kg	0.2
Phosphate	300.0	1	mg/Kg	0.8
pH	9045	9.1	pH	0.1
Sulfate	300.0	6	mg/Kg	2.0
Ammonia Nitrogen	350.3	0.3	mg/Kg	5.

FORM I

TRA Inc. REPORT Work Order # A2-12-849

Received: 12/11/92

Results by Sample

SAMPLE ID 807905 FRACTION 02C TEST CODE WCCLPS NAME Anions in Solids - WH232

Date & Time Collected 12/04/92 Category

ANIONS AND WET CHEMISTRY - SOLIDS

ANALYSIS	METHOD	RESULT	UNITS	LIMIT
Chloride	300.0	2.1	mg/Kg	0.4
Fluoride	300.0	0.5	mg/Kg	0.2
Phosphate	300.0	<0.8	mg/Kg	0.8
pH	9045	8.5	pH	0.1
Sulfate	300.0	5	mg/Kg	2.0
Ammonia Nitrogen	350.3	0.3	mg/Kg	5.

FORM I

TRA Inc. REPORT Work Order # A2-12-049

Received: 12/11/92

Results by Sample

SAMPLE ID B07906 FRACTION 03C TEST CODE VCCLPS NAME Anions in Solids - VM232

Date & Time Collected 12/04/92 Category

ANIONS AND WET CHEMISTRY - SOLIDS

ANALYSIS	METHOD	RESULT	UNITS	LIMIT
Chloride	300.0	12.0	mg/Kg	0.4
Fluoride	300.0	1.5	mg/Kg	0.2
Phosphate	300.0	<0.8	mg/Kg	0.8
pH	9045	9.0	pH	0.1
Sulfate	300.0	292	mg/Kg	10
Ammonia Nitrogen	350.3	0.4	mg/Kg	5.

FORM I

TRA Inc. REPORT Work Order # A2-12-049

Received: 12/11/92

Results by Sample

AMPLE ID B07907 FRACTION 04C TEST CODE WCCLPS NAME Anions in Solids - VM232

Date & Time Collected 12/04/92 Category

ANIONS AND WET CHEMISTRY - SOLIDS

ANALYSIS	METHOD	RESULT	UNITS	LIMIT
Chloride	300.0	181.0	mg/Kg	2.
Fluoride	300.0	2.5	mg/Kg	0.2
Phosphate	300.0	<0.8	mg/Kg	0.8
pH	9045	8.5	pH	0.1
Sulfate	300.0	329	mg/Kg	10
Ammonia Nitrogen	350.3	3.5	mg/Kg	5.

FORM I

TMA Inc. REPORT Work Order # A2-12-049 000019

Received: 12/11/92 Results by Sample

SAMPLE ID B07908 FRACTION OSC TEST CODE WCCLPS NAME Anions in Solids - VH232

Date & Time Collected 12/04/92 Category

ANIONS AND WET CHEMISTRY - SOLIDS				
ANALYSIS	METHOD	RESULT	UNITS	LIMIT
Chloride	300.0	7.8	mg/Kg	0.4
Fluoride	300.0	1.9	mg/Kg	0.2
Phosphate	300.0	2	mg/Kg	0.8
pH	9045	10.4	pH	0.1
Sulfate	300.0	44	mg/Kg	10
Ammonia Nitrogen	350.3	1.0	mg/Kg	5.

FORM I

TMA Inc. REPORT Work Order # A2-12-049

Received: 12/11/92 Results by Sample

SAMPLE ID B07909 FRACTION 06C TEST CODE WCCLPS NAME Anions in Solids - WN232

Date & Time Collected 12/04/92 Category

ANIONS AND WET CHEMISTRY - SOLIDS

ANALYSIS	METHOD	RESULT	UNITS	LIMIT
Chloride	300.0	2.3	mg/Kg	0.4
Fluoride	300.0	1.4	mg/Kg	0.2
Phosphate	300.0	1	mg/Kg	0.8
pH	9045	8.5	pH	0.1
Sulfate	300.0	4	mg/Kg	2.0
Ammonia Nitrogen	350.3	0.4	mg/Kg	5.

FORM I

TRA Inc. REPORT Work Order # A2-12-049

Received: 12/11/92

Results by Sample

SAMPLE ID 807910 FRACTION 07C TEST CODE VCCLPS NAME Anions in Solids - VR232

Date & Time Collected 12/07/92 Category

ANIONS AND WET CHEMISTRY - SOLIDS

ANALYSIS	METHOD	RESULT	UNITS	LIMIT
Chloride	300.0	5.1	mg/Kg	0.4
Fluoride	300.0	0.7	mg/Kg	0.2
Phosphate	300.0	2	mg/Kg	0.8
pH	9045	6.8	pH	0.1
Sulfate	300.0	95	mg/Kg	2.0
Ammonia Nitrogen	350.3	3.8	mg/Kg	5.

FORM I

TMA Inc. REPORT Work Order # A2-12-049

Received: 12/11/92

Results by Sample

SAMPLE ID 307011 FRACTION OSC TEST CODE WCCLPS NAME Anions in Solids - WB232

Date & Time Collected not specified Category

ANIONS AND WET CHEMISTRY - SOLIDS

ANALYSIS	METHOD	RESULT	UNITS	LIMIT
Chloride	300.0	3.4	mg/Kg	0.4
Fluoride	300.0	1.0	mg/Kg	0.2
Phosphate	300.0	2	mg/Kg	0.8
pH	9045	6.4	pH	0.1
Sulfate	300.0	42	mg/Kg	2.0
Ammonia Nitrogen	350.3	1.2	mg/Kg	5.

FORM I

TNA Inc. REPORT Work Order # A2-12-049

Received: 12/11/92

Results by Sample

SAMPLE ID B07914 FRACTION 09C TEST CODE WCCLPS NAME Anions in Solids - VN232

Date & Time Collected 12/07/92 Category

ANIONS AND WET CHEMISTRY - SOLIDS

ANALYSIS	METHOD	RESULT	UNITS	LIMIT
Chloride	300.0	2.3	mg/Kg	0.4
Fluoride	300.0	0.6	mg/Kg	0.2
Phosphate	300.0	2	mg/Kg	0.8
pH	9045	8.0	pH	0.1
Sulfate	300.0	4	mg/Kg	2.0
Ammonia Nitrogen	350.3	0.4	mg/Kg	5.

FORM I

TRA Inc. REPORT Work Order # A2-12-049

Received: 12/11/92 Results by Sample

SAMPLE ID B07915 FRACTION 10C TEST CODE WCCLPS NAME Anions in Solids - WB232

Date & Time Collected 12/07/92 Category

ANIONS AND WET CHEMISTRY - SOLIDS

ANALYSIS	METHOD	RESULT	UNITS	LIMIT
Chloride	300.0	3.0	mg/Kg	0.4
Fluoride	300.0	0.3	mg/Kg	0.2
Phosphate	300.0	2	mg/Kg	0.8
pH	9045	8.0	pH	0.1
Sulfate	300.0	54	mg/Kg	2.0
Ammonia Nitrogen	350.3	0.4	mg/Kg	5.
Hardness	130.2	13800	mg/Kg	50

FORM I

TRA Inc. REPORT Work Order # A2-12-049

Received: 12/11/92 Results by Sample

SAMPLE ID B07916 FRACTION 11C TEST CODE WCCLPS NAME Anions in Solids - VN232

Date & Time Collected 12/07/92 Category

ANIONS AND WET CHEMISTRY - SOLIDS

ANALYSIS	METHOD	RESULT	UNITS	LIMIT
Chloride	300.0	3.0	mg/Kg	0.4
Fluoride	300.0	0.7	mg/Kg	0.2
Phosphate	300.0	2	mg/Kg	0.8
pH	9045	8.0	pH	0.1
Sulfate	300.0	4	mg/Kg	2.0
Ammonia Nitrogen	350.3	0.4	mg/Kg	5.

FORM I

TNA Inc. REPORT Work Order # A2-12-849

Received: 12/11/92

Results by Sample

SAMPLE ID 807912 FRACTION 12B TEST CODE WCCLPS NAME Anions in Solids - VW232

Date & Time Collected 12/07/92 Category

ANIONS AND WET CHEMISTRY - SOLIDS

ANALYSIS	METHOD	RESULT	UNITS	LIMIT
Chloride	300.0	11.5	mg/Kg	0.4
Fluoride	300.0	1.4	mg/Kg	0.2
Phosphate	300.0	1	mg/Kg	0.8
pH	9045	7.1	pH	0.1
Sulfate	300.0	23	mg/Kg	2.0
Ammonia Nitrogen	350.3	4.3	mg/Kg	5.

FORM I

ATTACHMENT 3

Summary of Data Qualifications

DATA QUALIFICATION SUMMARY - FORM B-7

A2-12-049

SDG:	REVIEWER: CMR	DATE: 4/8/93	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
all anions	J or UJ	B07Q04	init. cal not performed on day of analysis
		B07Q05	
		B07Q06	
		B07Q07	
		B07Q08	
		B07Q09	
		B07Q10	
		B07Q11	
		B07Q12	
		B07Q14	
		B07Q15	
		B07Q16	

ATTACHMENT 4

As Qualified Data Summary

TMA Inc. REPORT Work Order # 92-12-049 000011

Received: 12/11/92

Results by Sample

SAMPLE ID B07904 FRACTION 01F TEST CODE WCCLPS NAME Anions in Solids - WB232

Date & Time Collected 12/04/92 Category

ANIONS AND WET CHEMISTRY - SOLIDS

ANALYSIS	METHOD	RESULT	UNITS	LIMIT	Qual
Chloride	300.0	2.3	mg/Kg	0.4	J
Fluoride	300.0	1.0	mg/Kg	0.2	J
Phosphate	300.0	1	mg/Kg	0.8	J
pH	9045	9.1	pH	0.1	NOT VAL.
Sulfate	300.0	6	mg/Kg	2.0	J
Ammonia Nitrogen	350.3	0.3	mg/Kg	5.	NOT VAL.

FORM I

✓ cmm 4/8/93

TRA Inc. REPORT Work Order # A2-12-049

Received: 12/11/92

Results by Sample

SAMPLE ID B07905 FRACTION 02C TEST CODE WCCLPS NAME Anions in Solids - VW232

Date & Time Collected 12/04/92 Category

ANIONS AND WET CHEMISTRY - SOLIDS

ANALYSIS	METHOD	RESULT	UNITS	LIMIT	Qual
Chloride	300.0	2.1	mg/Kg	0.4	J
Fluoride	300.0	0.5	mg/Kg	0.2	J
Phosphate	300.0	<0.8	mg/Kg	0.8	UJ
pH	9045	8.5	pH	0.1	not validated
Sulfate	300.0	5	mg/Kg	2.0	J
Ammonia Nitrogen	350.3	0.3	mg/Kg	5.	not validated

FORM I

✓ MR 4/8/93

TRA Inc. REPORT Work Order # A2-12-849

Received: 12/11/92

Results by Sample

SAMPLE ID B07906 FRACTION 03C TEST CODE WCCLPS NAME Anions in Solids - VR232

Date & Time Collected 12/04/92 Category

ANIONS AND WET CHEMISTRY - SOLIDS

ANALYSIS	METHOD	RESULT	UNITS	LIMIT	Qual
Chloride	300.0	12.0	mg/Kg	0.4	J
Fluoride	300.0	1.5	mg/Kg	0.2	J
Phosphate	300.0	<0.8	mg/Kg	0.8	UJ
pH	9045	9.0	pH	0.1	not validated
Sulfate	300.0	292	mg/Kg	10	J
Ammonia Nitrogen	350.3	0.4	mg/Kg	5.	not validated

FORM I

Jum 4/8/93

TRA Inc. REPORT Work Order # A2-12-049

Received: 12/11/92

Results by Sample

AMPLE ID B07907 FRACTION 04C TEST CODE WCCLPS NAME Anions in Solids - WH232

Date & Time Collected 12/04/92 Category

ANIONS AND WET CHEMISTRY - SOLIDS

ANALYSIS	METHOD	RESULT	UNITS	LIMIT	Qual.
Chloride	300.0	181.0	mg/Kg	2.	J
Fluoride	300.0	2.5	mg/Kg	0.2	J
Phosphate	300.0	<0.8	mg/Kg	0.8	UJ not validated
pH	9045	8.5	pH	0.1	
Sulfate	300.0	329	mg/Kg	10	J not validated
Ammonia Nitrogen	350.3	3.5	mg/Kg	5.	

FORM I

✓ 4/8/93

TMA Inc. REPORT Work Order # A2-12-049 000019

Received: 12/11/92

Results by Sample

AMPLE ID B07908 FRACTION 05C TEST CODE WCCLPS NAME Anions in Solids - VM232

Date & Time Collected 12/04/92 Category

ANIONS AND WET CHEMISTRY - SOLIDS

ANALYSIS	METHOD	RESULT	UNITS	LIMIT	Qual
Chloride	300.0	7.8	mg/Kg	0.4	J
Fluoride	300.0	1.9	mg/Kg	0.2	J
Phosphate	300.0	2	mg/Kg	0.8	J
pH	9045	10.4	pH	0.1	not validated
Sulfate	300.0	44	mg/Kg	10	J
Ammonia Nitrogen	350.3	1.0	mg/Kg	5.	not validated

FORM I

✓ WL 4/8/93

TRA Inc. REPORT Work Order # A2-12-049

Received: 12/11/92 Results by Sample

SAMPLE ID B07909 FRACTION 06C TEST CODE WCCLPS NAME Anions in Solids - WN232

Date & Time Collected 12/04/92 Category

ANIONS AND WET CHEMISTRY - SOLIDS

ANALYSIS	METHOD	RESULT	UNITS	LIMIT	Qual
Chloride	300.0	2.3	mg/Kg	0.4	J
Fluoride	300.0	1.4	mg/Kg	0.2	J
Phosphate	300.0	1	mg/Kg	0.8	J
pH	9045	8.5	pH	0.1	not validated
Sulfate	300.0	4	mg/Kg	2.0	J
Ammonia Nitrogen	350.3	0.4	mg/Kg	5.	not validated

FORM I

✓ um 4/8/93

TRA Inc. REPORT Work Order # A2-12-049

Received: 12/11/92

Results by Sample

SAMPLE ID B07910 FRACTION 87C TEST CODE WCCLPS NAME Anions in Solids - WN232

Date & Time Collected 12/07/92 Category

ANIONS AND WET CHEMISTRY - SOLIDS

ANALYSIS	METHOD	RESULT	UNITS	LIMIT	Qual
Chloride	300.0	5.1	mg/Kg	0.4	J
Fluoride	300.0	0.7	mg/Kg	0.2	J
Phosphate	300.0	2	mg/Kg	0.8	J
pH	9045	6.8	pH	0.1	not validated
Sulfate	300.0	95	mg/Kg	2.0	J
Ammonia Nitrogen	350.3	3.8	mg/Kg	5.	not validated

FORM I

✓ CMM 4/8/93

TMA Inc. REPORT Work Order # A2-12-049

Received: 12/11/92

Results by Sample

SAMPLE ID B07911 FRACTION 08C TEST CODE WCCLPS NAME Anions in Solids - WH232

Date & Time Collected not specified Category

ANIONS AND WET CHEMISTRY - SOLIDS

ANALYSIS	METHOD	RESULT	UNITS	LIMIT	Qual
Chloride	300.0	3.4	mg/Kg	0.4	J
Fluoride	300.0	1.0	mg/Kg	0.2	J
Phosphate	300.0	2	mg/Kg	0.8	J
pH	9045	6.4	pH	0.1	not validated
Sulfate	300.0	42	mg/Kg	2.0	J
Ammonia Nitrogen	350.3	1.2	mg/Kg	5.	not validated

FORM I

✓ um 4/8/93

TRA Inc. REPORT Work Order # A2-12-049

Received: 12/11/92

Results by Sample

SAMPLE ID B07914 FRACTION 09C TEST CODE WCCLPS NAME Anions in Solids - VN232

Date & Time Collected 12/07/92 Category

ANIONS AND WET CHEMISTRY - SOLIDS

ANALYSIS	METHOD	RESULT	UNITS	LIMIT	Qual
Chloride	300.0	2.3	mg/Kg	0.4	J
Fluoride	300.0	0.6	mg/Kg	0.2	J
Phosphate	300.0	2	mg/Kg	0.8	J
pH	9045	8.0	pH	0.1	not validated
Sulfate	300.0	4	mg/Kg	2.0	J
Ammonia Nitrogen	350.3	0.4	mg/Kg	5.	not validated

FORM I

✓ 4/8/93

TMA Inc. REPORT Work Order # A2-12-069

Received: 12/11/92

Results by Sample

SAMPLE ID B07915 FRACTION 10C TEST CODE WCCLPS NAME Anions in Solids - WB232

Date & Time Collected 12/07/92 Category

ANIONS AND WET CHEMISTRY - SOLIDS

ANALYSIS	METHOD	RESULT	UNITS	LIMIT	Qual
Chloride	300.0	3.0	mg/Kg	0.4	J
Fluoride	300.0	0.3	mg/Kg	0.2	J
Phosphate	300.0	2	mg/Kg	0.8	J
pH	9045	8.0	pH	0.1	not validated
Sulfate	300.0	54	mg/Kg	2.0	J
Ammonia Nitrogen	350.3	0.4	mg/Kg	5.	not validated
Hardness	130.2	13800	mg/Kg	50	not validated

FORM I

✓ um 4/8/93

TRA Inc. REPORT Work Order # A2-12-049

Received: 12/11/92

Results by Sample

SAMPLE ID B07916 FRACTION 11C TEST CODE WCCLPS NAME Anions in Solids - VR232

Date & Time Collected 12/07/92 Category

ANIONS AND WET CHEMISTRY - SOLIDS

ANALYSIS	METHOD	RESULT	UNITS	LIMIT	Qual
Chloride	300.0	3.0	mg/Kg	0.4	J
Fluoride	300.0	0.7	mg/Kg	0.2	J
Phosphate	300.0	2	mg/Kg	0.8	J
pH	9045	8.0	pH	0.1	not validated
Sulfate	300.0	4	mg/Kg	2.0	J
Ammonia Nitrogen	350.3	0.4	mg/Kg	5.	not validated

FORM I

✓ cum 4/6/93

TMA Inc. REPORT Work Order # A2-12-049

Received: 12/11/92

Results by Sample

SAMPLE ID 897912 FRACTION 12P TEST CODE WCCLPS NAME Anions in Solids - VW232

Date & Time Collected 12/07/92 Category

ANIONS AND WET CHEMISTRY - SOLIDS

ANALYSIS	METHOD	RESULT	UNITS	LIMIT	Qual
Chloride	300.0	11.5	mg/Kg	0.4	J
Fluoride	300.0	1.4	mg/Kg	0.2	J
Phosphate	300.0	1	mg/Kg	0.8	J
pH	9045	7.1	pH	0.1	not validated
Sulfate	300.0	23	mg/Kg	2.0	J
Ammonia Nitrogen	350.3	4.3	mg/Kg	5.	not validated

FORM I

✓ cm 4/8/93

ATTACHMENT 5

Data Review Supporting Documentation

WET CHEMISTRY DATA VALIDATION CHECKLIST - FORM A-7

PROJECT: White Bluffs Acidling Acid Cribs ERA	REVIEWER: CMK	DATE: 4/5/93
LABORATORY: TMA/ARLI	CASE: A2-12-049	SDG:
SAMPLES/MATRIX:		
soil B07Q04	B07Q05	B07Q06
B07Q07	B07Q08	B07Q09
B07Q10	B07Q11	B07Q12
B07Q14	B07Q15	B07Q16

All samples. Level 4 validation anions only.

1. DATA PACKAGE COMPLETENESS

Review the data package for completeness and check off the items below. If any data review elements are missing contact the laboratory for submittal of the omitted data.

Data Package Item	Present?:	Yes	No	N/A	
Case Narrative		✓			
Cover Page		✓			
Traffic Reports/Chain-of-Custody		✓			
Sample Analysis Data Report Forms		✓			
Standards Data		✓			
QC Summary					
Blanks Summary Report Forms		✓			
Spike Sample Recovery Report Forms		✓			
Duplicate Sample Analysis Report Forms		✓			
Laboratory Control Sample Report Forms			✓		didn't on any.
Raw Data	ICAL 12/4/92				
Ion Chromatograph Chromatograms	sample analysis 1/22/93	✓			
TOC and TOX Instrument Printouts				✓	
Laboratory Bench Sheets				✓	
Additional Data					
Laboratory Sample Preparation Logs			✓		
Instrument Run Logs				✓	
Internal Laboratory Chain-of-Custory		✓			
Percent Solids Analysis Records		✓			
Reduction Formulae				✓	
Chemist Notebook Pages				✓	

2. HOLDING TIMES

Were all samples analyzed within holding times? Yes (No) N/A

Action: If any holding times were exceeded qualify all affected results as estimated (J for detects and UJ for nondetects).

3. INITIAL CALIBRATIONS

Were all instruments calibrated daily, each set-up time and were the proper number of standards used?	Yes	No	N/A
Are the correlation coefficients ≥0.995?	Yes	No	N/A
Was a balance check conducted prior to the TDS analysis?	Yes	No	N/A
Was the titrant normality checked?	Yes	No	N/A

ACTION: Qualify all data as unusable (R) if reported from an analysis in which the above criteria were not met.

4. INITIAL AND CONTINUING CALIBRATION VERIFICATION

Have ICV and CCV been analyzed at the proper frequency?	Yes	No	N/A
Are ICV and CCV percent recoveries within control?	Yes	No	N/A
Are there calculation errors?	Yes	No	N/A

ACTION: Qualify all affected data in accordance with the validation requirements.

5. LABORATORY BLANKS

Are target analytes present in the laboratory blanks?	Yes	No	N/A

ACTION: Qualify all associated sample results for any analyte <5 times the amount in any laboratory blank as nondetected (U) and list the affected samples and analytes below.

6. FIELD BLANKS

Are target analytes present in the field blanks?	Yes	No	N/A

ACTION: Qualify all sample results for any analyte <5 times the amount in any valid field blank as nondetected (U).

7. MATRIX SPIKE SAMPLE ANALYSIS

Are spike recoveries within the acceptance limits?	Yes	No	N/A

ACTION: If the sample concentration exceeds the spike concentration by a factor of 4 or more, and spike recoveries are outside the acceptance limits, no qualification is necessary. If spike recovery is outside the control limits and the sample results are >CRQL, qualify the data as estimated (J). If the spike recovery is <30% and the sample results are less then the IDL qualify the data as unusable (R).

8. LABORATORY CONTROL SAMPLE

Are percent recoveries within the acceptance limits? Yes No N/A

Are there calculation errors? Yes No N/A

ACTION: Qualify the affected results according to the following requirements:

AQUEOUS LCS - Qualify as estimated (J), all sample results >IDL, for which the LCS %R falls within the range 50-79% or >120%. Qualify as estimated (UJ), all sample results <IDL, for which the LCS falls within the range of 50-79%. Qualify as unusable (R) all sample results, for which the LCS %R <50%.

SOLID LCS - Qualify as estimated (J), all sample results >IDL for which the LCS %R is outside the established control limits. Qualify as estimated (UJ), all sample results <IDL for which the LCS %R are lower than the established control limits.

9. PERFORMANCE AUDIT ANALYSES

Are the performance audit sample results within the acceptance limits? Yes No N/A

ACTION: Note the results of the performance audit samples in the validation narrative.

10. DUPLICATE SAMPLE ANALYSIS

Are RPD values within the acceptance limits? Yes No N/A

Action: Qualify the results for all associated samples of the same matrix as estimated (J) if the RPD falls outside the acceptance limits.

11. FIELD DUPLICATE SAMPLES

Do RPD values exceed the acceptance limits? Yes No N/A

ACTION: Note the results of the field duplicate samples in the validation narrative.

12. FIELD SPLIT SAMPLES

Do RPD values exceed the acceptance limits? Yes No N/A

ACTION: Note the results of the field split samples in the validation narrative.

13. ANALYTE QUANTITATION AND DETECTION LIMITS

Have results been reported and calculated correctly?	Yes	No	N/A
Are instrument detection limits below the CRDL?	Yes	No	N/A

Action: If analyte quantitation is in error, contact the laboratory for explanation. If errors or deficiencies can not be resolved with the laboratory, qualify associated data as unusable (R).

14. OVERALL ASSESSMENT AND SUMMARY

Has the laboratory conducted the analysis in accordance with the analytical SOW?	Yes	No	N/A
Were project specific data quality objectives met for this analysis?	Yes	No	N/A

ACTION: Summarize all the data qualifications and complete the data validation narrative as specified in Section 10.0 of the data validation requirements.

COMMENTS (attach additional sheets as necessary):

A2-12-049

HOLDING TIME SUMMARY - FORM B-1

SDG:	REVIEWER: Clare Russell	DATE: 4/5/93	PAGE 1 OF 1

COMMENTS:

	FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
soil	B07Q04	anions	12/4/92		1/22/93		49	J(+), UJ(-)
	B07Q07		12/4/92				49	
	B07Q10		12/7/92				46	
	B07Q14		12/7/92				46	
	B07Q05		12/4/92				49	
	B07Q08		12/4/92				49	
	B07Q11		12/7/92				46	
	B07Q15		12/7/92				46	
	B07Q06		12/4/92				49	
	B07Q09		12/4/92				49	
	B07Q12		12/7/92				46	
	~~B07~~ B07Q16		12/7/92				46	

A2-12-049

CALIBRATION DATA SUMMARY - FORM B-2

SDG:	REVIEWER: Clare Russell	DATE: 4/8/93	PAGE 1 OF 1
COMMENTS:			
CALIB. TYPE: INITIAL CONTINUING		INSTRUMENT:	

CALIB. DATE	COMPOUND	RF	RSD/%D/%R	SAMPLES AFFECTED	QUALIFIER
ICAL 12/4/92	all acceptable, but 49 days prior to analysis.			all	J or UJ
CCAL 1/22/93	all are acceptable				

BLANK AND SAMPLE DATA SUMMARY - FORM B-3

A2-12-049

SDG:	REVIEWER: Clare Russell	DATE: 4/8/93	PAGE 1 OF 1
COMMENTS:			

SAMPLE ID	COMPOUND	RESULT	Q	RT	UNITS	5X RESULT	10X RESULT	SAMPLES AFFECTED	QUALIFIER
M. Blank	ND all								None

ACCURACY DATA SUMMARY - FORM B-4

A2-12-049

SDG:	REVIEWER: Clare Russell	DATE: 4/8/93	PAGE 1 OF 1	
COMMENTS:				
SAMPLE ID	COMPOUND	% RECOVERY	SAMPLE(S) AFFECTED	QUALIFIER REQUIRED
matrix spike	(B07Q04) → all acceptable		all	none

PRECISION DATA SUMMARY - FORM B-5

A2-12-049

SDG:	REVIEWER Clare Russell	DATE: 4/8/93	PAGE 1 OF 1
COMMENTS:			

COMPOUND	SAMPLE ID:	SAMPLE ID:	RPD	SAMPLES AFFECTED	QUALIFIER
lab duplicate (B07Q06) → all acceptable				all	none
field duplicate → none in this package					none
field split → see case 9212L005.				all	none

HCRL-WHC/9316-T-93-020

E-93-16/2978-56

WESTINGHOUSE HANFORD COMPANY
PICKLING ACID CRIB ERA DATA VALIDATION
DISTRIBUTION FORM

Document Title Prelim. QA Rpts. Case # N2-12-069 (Metals)

Document Number: HCRL-WHC/9316-L-93-019 Date: 4/20/93

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Project Files (1=Administrative; 2=Correspondence; 3=Source Data; 4=Technical Data)

1.1	File Index		2.1	Incoming Correspondence		4.1	Task Plan
1.2	Distribution Lists		2.2	Outgoing Correspondence	X	4.2	Data Pkg. Completeness Verif. Checklist
1.3	Project Procedures		2.3	Internal Correspondence		4.3	Data Valid. Calcs./Annotated DP
1.4	Project Modifications					4.4	Prelim. QA Reports
1.5	Staff		3.1	Task Order		4.5	Data Valid. & Qual. Summary Rpts.
1.5.1	Staff Resumes		3.2	Sample Lists		4.5.1	Internal Drafts/Comments/Resol.
1.5.2	Staff Training		3.3	Data Validation Procedures		4.5.2	WHC Review Draft Comments/Resol.
1.5.3	Auth. Former Site Employee		3.4	Original Chemical Data		4.5.3	Final Report
1.6	QA		3.5	Original Radiochem. Data		4.6	Weekly Status Reports
1.6.1	QA Implement Procedures					4.7	Weekly Management Reports
1.6.2	QA Audits						
1.6.3	QA Training						
1.7	Budget						
1.7.1	Budget Status						
1.7.2	Invoices						
1.8	Requisitions						
1.9	Meeting Minutes						
1.10	Record of Telecon						
1.11	Progress Reports						
1.12	Subcontractor						

HARTCROWSER

Earth and Environmental Technologies

Hart Crowser, Inc.
1201 Jadwin Avenue, Suite 204
Richland, Washington 99352
FAX 509 946 4211
509 946 4344

J-2978-56

April 20, 1993

Ms. Jil Frain
Westinghouse Hanford Company
P.O. Box 1970 / MSIN H6-04
Richland, Washington 99352

Subject: WHC Order No. MLW-SSV-037106
Task Order No. E-93-16
Preliminary Quality Assurance Record
White Bluffs Pickling Acid Cribs ERA
TMA Case Number N2-12-069 - Metals

Dear Ms. Frain:

Ebasco and Hart Crowser are pleased to provide you with the attached results of our review and validation of the subject data from the White Bluffs Pickling Acid Cribs ERA. The attached results are provided to you in partial fulfillment of Subtask 03 of our task plan dated March 12, 1993. The subject data package consisted of twelve low level soil samples submitted for analysis for metals. The samples were fully validated. In addition, a 100 percent validation of the supporting quality control data was performed.

The samples were analyzed by TMA using the U.S. Environmental Protection Agency (EPA) Contract Laboratory Program (CLP) statement of work. All analytical results, together with the data qualifiers which we have assigned as a result of our review, are provided in Attachment 4. Table 1 is an annotated list of the attachments to this letter report.

DATA QUALITY OBJECTIVES SUMMARY

Data quality objectives for accuracy and precision (including holding times, instrument and method blanks, matrix spikes, duplicates, laboratory control samples, initial and continuing calibrations, and instrument-specific quality control measures), and quantitation limit requirements were met for this case with the exception of the following: the antimony matrix spike percent recovery was below the lower control limit; six selenium analytical spike percent recoveries were outside the control limits; there was minor copper blank contamination; and the potassium serial dilution percent difference exceeded the control limit.

MAJOR DEFICIENCIES (REJECTED DATA)

No data were rejected.

MINOR DEFICIENCIES (OTHER QUALIFIED DATA)

The following general trends resulted in the qualification of data from multiple samples. All qualified data are discussed in Attachments 3 and 5.

The antimony matrix spike percent recovery was below the 75 percent lower control limit. All associated antimony data were qualified as estimates (J or UJ).

Six selenium analytical spike percent recoveries were outside the 85 to 115 percent control limits. The associated selenium concentrations were qualified as estimates (J or UJ).

The potassium serial dilution percent difference exceeded the 10 percent control limit. All associated potassium concentrations were qualified as estimates (J).

There was minor copper blank contamination which resulted in the qualification of data. All associated copper concentrations which were less than 5 times the blank concentration were qualified as undetected (U).

No other data qualifiers were assigned.

We trust that these preliminary results meet your needs. Our qualifier assignments will be finalized at the time the summary report is published. The final qualifiers may vary from those presented here, reflecting any trends in data quality or laboratory performance observed over the course of the White Bluffs Pickling Acid Cribs ERA data validation effort. Please contact me if you have any questions with regard to our activities.

Sincerely,

HART CROWSER, INC.

D. MARK GERBOTH, P.E.
Project Manager

HC#134:RL1759.DOC

Attachments

cc: Mark Gerboth (w/o attachments)
Jeff Grover (w/o attachments)
Westinghouse EDMC
Project File - HCRL-WHC/9316-L-93-019

Table 1 - Annotated List of Attachments

Attachment 1 - Glossary of Data Qualifiers

This attachment provides a glossary explaining all data qualifiers applied as a result of the validation.

Attachment 2 - As Received Laboratory Sample Concentration Reports

This attachment provides a copy of the as-received sample concentration reports. This may be a tabular summary similar to that provided in Attachment 4, or may be a copy of the laboratory reports (e.g., Form I).

Attachment 3 - Summary of Data Qualifications (Form B-7)

This attachment provides a complete summary of all qualifications applied as a result of the validation.

Attachment 4 - As Qualified Data Summary

This attachment provides a tabular data summary of all data qualified from the validation.

Attachment 5 - Data Review Supporting Documentation

This attachment provides copies of the data validation checklists, data summary forms, telephone contact memoranda and other documentation completed as a result of the data validation.

ATTACHMENT 1

Glossary of Data Qualifiers

Glossary of Data Qualifiers

U - Indicates the compound or analyte was analyzed for and not detected. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.

UJ - Indicates the compound or analyte was analyzed for and not detected. Due to quality control deficiencies identified during data validation the value reported may not accurately reflect the sample quantitation limit.

J - Indicates the compound or analyte was analyzed for and detected. The associated value is estimated but the data are useable for decision making processes.

R - Indicates the compound or analyte was analyzed for and due to an identified quality control deficiency the data are unusable.

NJ - Indicates the presumptive evidence of a compound at an estimated value.

N - Indicates presumptive evidence of a compound.

ATTACHMENT 2

As Received Laboratory Sample Concentration Reports

WESTINGHOUSE/HANFORD
1

SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

807Q04

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-12-069SAS No.: SDG No.: 807Q04

Matrix (soil/water): SOIL Lab Sample ID: 12220-02S

Level (low/med): LOW Date Received: 12/15/92

% Solids: 88.2

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5930			P
7440-36-0	Antimony	3.9	U	N	P
7440-38-2	Arsenic	2.0	B		F
7440-39-3	Barium	67.0			P
7440-41-7	Beryllium	0.23	B		P
7440-43-9	Cadmium	0.34	U		P
7440-70-2	Calcium	9130			P
7440-47-3	Chromium	11.0			P
7440-48-4	Cobalt	7.1	B		P
7440-50-8	Copper	10.5			P
7439-89-6	Iron	16000			P
7439-92-1	Lead	3.4			F
7439-95-4	Magnesium	4920			P
7439-96-5	Manganese	212			P
7439-97-6	Mercury	0.05	U		CV
7440-02-0	Nickel	10.7			P
7440-09-7	Potassium	1230		E	P
7782-49-2	Selenium	0.63	U	S	F
7440-22-4	Silver	0.99	B		P
7440-23-5	Sodium	154	B		P
7440-28-0	Thallium	0.53	U		F
7440-62-2	Vanadium	34.1			P
7440-66-6	Zinc	38.2			P
	Cyanide				NR
7440-67-7	Zirconium	18.7	U	*	P

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

2

WESTINGHOUSE/HANFORD
1

SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

B07005

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-12-069SAS No.: SDG No.: B07004

Matrix (soil/water): SOIL Lab Sample ID: 12220-03S

Level (low/med): LOW Date Received: 12/15/92

% Solids: 82.8

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4170			P
7440-36-0	Antimony	4.4	U	N	P
7440-38-2	Arsenic	1.3	B		F
7440-39-3	Barium	39.7	B		P
7440-41-7	Beryllium	0.18	B		P
7440-43-9	Cadmium	0.38	U		P
7440-70-2	Calcium	4310			P
7440-47-3	Chromium	7.2			P
7440-48-4	Cobalt	7.2	B		P
7440-50-8	Copper	13.2			P
7439-89-6	Iron	15900			P
7439-92-1	Lead	2.5			F
7439-95-4	Magnesium	3470			P
7439-96-5	Manganese	218			P
7439-97-6	Mercury	0.05	U		CV
7440-02-0	Nickel	9.6			P
7440-09-7	Potassium	546	B	E	P
7782-49-2	Selenium	0.72	U	MW	F
7440-22-4	Silver	0.97	B		P
7440-23-5	Sodium	200	B		P
7440-28-0	Thallium	0.60	U		F
7440-62-2	Vanadium	39.7			P
7440-66-6	Zinc	33.6			P
	Cyanide				NR
7440-67-7	Zirconium	20.8	U	*	P

Color Before: GREY Clarity Before: Texture: COARSE

Color After: GREY Clarity After: Artifacts: YES

Comments:
STONES

3

WESTINGHOUSE/HANFORD
1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER:

807006

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-12-069SAS No.: SDG No.: 807004

Matrix (soil/water): SOIL Lab Sample ID: 12220-04S

Level (low/med): LOW Date Received: 12/15/92

% Solids: 95.8

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5730			P
7440-36-0	Antimony	3.6	U	N	P
7440-38-2	Arsenic	1.7	B		F
7440-39-3	Barium	55.6			P
7440-41-7	Beryllium	0.26	B		P
7440-43-9	Cadmium	0.32	U		P
7440-70-2	Calcium	6750			P
7440-47-3	Chromium	10.0			P
7440-48-4	Cobalt	6.9	B		P
7440-50-8	Copper	9.7			P
7439-89-6	Iron	17600			P
7439-92-1	Lead	2.9			F
7439-95-4	Magnesium	4390			P
7439-96-5	Manganese	240			P
7439-97-6	Mercury	0.05	U		CV
7440-02-0	Nickel	9.2			P
7440-09-7	Potassium	1260		E	P
7782-49-2	Selenium	0.58	U	W	F
7440-22-4	Silver	1.3	B		P
7440-23-5	Sodium	362	B		P
7440-28-0	Thallium	0.43	U		F
7440-62-2	Vanadium	35.9			P
7440-66-6	Zinc	35.0			F
	Cyanide				NR
7440-67-7	Zirconium	17.3	U	*	P

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

4

WESTINGHOUSE/HANFORD

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER:

807007

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-12-069SAS No.: SDG No.: 807004

Matrix (soil/water): SOIL Lab Sample ID: 12220-05S

Level (low/med): LOW Date Received: 12/15/92

% Solids: 80.6

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6010			P
7440-36-0	Antimony	4.4	U	N	P
7440-38-2	Arsenic	1.7	B	W	F
7440-39-3	Barium	58.1			P
7440-41-7	Beryllium	0.29	B		P
7440-43-9	Cadmium	0.39	U		P
7440-70-2	Calcium	5220			P
7440-47-3	Chromium	9.9			P
7440-48-4	Cobalt	7.6	B		P
7440-50-8	Copper	10.4			P
7439-89-6	Iron	19100			P
7439-92-1	Lead	3.6			F
7439-95-4	Magnesium	4410			P
7439-96-5	Manganese	257			P
7439-97-6	Mercury	0.06	U		CV
7440-02-0	Nickel	10.6			P
7440-09-7	Potassium	1140	B	E	P
7782-49-2	Selenium	0.74	U	W	F
7440-22-4	Silver	1.8	B		P
7440-23-5	Sodium	543	B		P
7440-28-0	Thallium	0.62	U		F
7440-62-2	Vanadium	40.9			P
7440-66-6	Zinc	1020			P
	Cyanide				NR
7440-67-7	Zirconium	25.9		*	P

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

5

WESTINGHOUSE/HANFORD

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: 807002

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0103

Lab Code: SKINER Case No.: N2-12-069SAS No.: SDG No.: 807004

Matrix (soil/water): SOIL Lab Sample ID: 12220-065

Level (low/med): LOW Date Received: 12/15/92

% Solids: 97.6

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4070			P
7440-36-0	Antimony	3.7	U	N	P
7440-38-2	Arsenic	1.6	B	W	F
7440-39-3	Barium	46.8			P
7440-41-7	Beryllium	0.19	B		P
7440-43-9	Cadmium	0.90	B		F
7440-70-2	Calcium	4230			P
7440-47-3	Chromium	6.5			P
7440-48-4	Cobalt	5.9	B		P
7440-50-8	Copper	6.6			F
7439-89-6	Iron	12900			P
7439-92-1	Lead	4.3			F
7439-95-4	Magnesium	3220			P
7439-96-5	Manganese	196			P
7439-97-6	Mercury	0.05	U		CV
7440-02-0	Nickel	7.4	B		P
7440-09-7	Potassium	366	B	E	P
7782-49-2	Selenium	0.61	U		F
7440-22-4	Silver	0.31	B		P
7440-23-5	Sodium	750	B		P
7440-28-0	Thallium	0.51	U		F
7440-62-2	Vanadium	30.1			P
7440-66-6	Zinc	1070			P
	Cyanide				NR
7440-67-7	Zirconium	17.9	U	*	P

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

6

WESTINGHOUSE/HANFORD
1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: 807009

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-12-069SAS No.: SDG No.: 807004

Matrix (soil/water): SOIL Lab Sample ID: 12220-07S

Level (low/med): LOW Date Received: 12/15/92

% Solids: 92.9

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5720			P
7440-36-0	Antimony	3.7	U	N	P
7440-38-2	Arsenic	1.2	B		F
7440-39-3	Barium	75.1			P
7440-41-7	Beryllium	0.31	B		P
7440-43-9	Cadmium	0.32	U		P
7440-70-2	Calcium	3900			P
7440-47-3	Chromium	7.9			P
7440-48-4	Cobalt	10.9			P
7440-50-8	Copper	10.7			P
7439-89-6	Iron	20800			P
7439-92-1	Lead	3.4			F
7439-95-4	Magnesium	4320			P
7439-96-5	Manganese	376			P
7439-97-6	Mercury	0.05	U		CV
7440-02-0	Nickel	11.3			P
7440-09-7	Potassium	1020		E	P
7782-49-2	Selenium	0.65	B	Ms	F
7440-22-4	Silver	1.3	B		P
7440-23-5	Sodium	178	B		P
7440-28-0	Thallium	0.52	U		F
7440-62-2	Vanadium	52.6			P
7440-66-6	Zinc	46.6			P
	Cyanide				NR
7440-67-7	Zirconium	17.7	U	*	P

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

7

WESTINGHOUSE/HANFORD
1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: 807Q10

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-12-069SAS No.: SDG No.: 807Q04

Matrix (soil/water): SOIL Lab Sample ID: 12220-08S

Level (low/med): LOW Date Received: 12/15/92

% Solids: 88.8

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5730			P
7440-36-0	Antimony	4.0	U	N	P
7440-38-2	Arsenic	0.87	B		F
7440-39-3	Barium	50.8			P
7440-41-7	Beryllium	0.19	B		P
7440-43-9	Cadmium	0.35	U		P
7440-70-2	Calcium	3400			P
7440-47-3	Chromium	10.2			P
7440-48-4	Cobalt	6.7	B		P
7440-50-8	Copper	18.7			P
7439-89-6	Iron	16300			P
7439-92-1	Lead	6.7			F
7439-95-4	Magnesium	3740			P
7439-96-5	Manganese	190			P
7439-97-6	Mercury	0.05	U		CV
7440-02-0	Nickel	9.2			P
7440-09-7	Potassium	1430		E	P
7782-49-2	Selenium	0.68	U		F
7440-22-4	Silver	1.0	B		P
7440-23-5	Sodium	136	B		P
7440-28-0	Thallium	0.57	U		F
7440-62-2	Vanadium	39.8			P
7440-66-6	Zinc	68.7			P
	Cyanide				NR
7440-67-7	Zirconium	19.2	U	*	P

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

8

WESTINGHOUSE/HANFORD
1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER:

B07911

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-12-069SAS No.: SDG No.: B07Q04

Matrix (soil/water): SOIL Lab Sample ID: 12220-09S

Level (low/med): LOW Date Received: 12/15/92

% Solids: 84.9

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	8060			P
7440-36-0	Antimony	4.1	B	N	P
7440-38-2	Arsenic	1.0	B		F
7440-39-3	Barium	64.7			P
7440-41-7	Beryllium	0.36	B		P
7440-43-9	Cadmium	0.35	U		P
7440-70-2	Calcium	4940			P
7440-47-3	Chromium	13.3			F
7440-48-4	Cobalt	10.0	B		P
7440-50-8	Copper	14.2			P
7439-89-6	Iron	23400			P
7439-92-1	Lead	5.1			F
7439-95-4	Magnesium	5210			P
7439-96-5	Manganese	263			P
7439-97-6	Mercury	0.05	U		CV
7440-02-0	Nickel	12.5			P
7440-09-7	Potassium	1980		E	P
7782-49-2	Selenium	0.70	U	W	F
7440-22-4	Silver	1.5	B		P
7440-23-5	Sodium	493	B		P
7440-28-0	Thallium	0.59	U		F
7440-62-2	Vanadium	55.9			P
7440-66-6	Zinc	554			P
	Cyanide				NR
7440-67-7	Zirconium	19.4	U	*	P

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

9

WESTINGHOUSE/HANFORD
1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER:

B07Q12

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0102

Lab Code: SKINER Case No.: N2-12-069SAS No.: SDG No.: B07Q04

Matrix (soil/water): SOIL Lab Sample ID: 12220-01S

Level (low/med): LOW Date Received: 12/15/92

% Solids: 93.2

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	7370			P
7440-36-0	Antimony	3.6	U	N	P
7440-38-2	Arsenic	3.6		S	F
7440-39-3	Barium	57.9			P
7440-41-7	Beryllium	0.30	B		P
7440-43-9	Cadmium	0.31	U		P
7440-70-2	Calcium	3460			P
7440-47-3	Chromium	43.1			P
7440-48-4	Cobalt	9.3	B		P
7440-50-8	Copper	11.4			P
7439-89-6	Iron	19200			P
7439-92-1	Lead	3.9			F
7439-95-4	Magnesium	4040			P
7439-96-5	Manganese	177			P
7439-97-6	Mercury	0.05	U		CV
7440-02-0	Nickel	27.3			P
7440-09-7	Potassium	1710		E	P
7782-49-2	Selenium	0.67	U		F
7440-22-4	Silver	0.93	B		P
7440-23-5	Sodium	165	B		P
7440-28-0	Thallium	0.56	U		F
7440-62-2	Vanadium	51.5			P
7440-66-6	Zinc	50.5			P
	Cyanide				NR
7440-67-7	Zirconium	17.2	U	*	P

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

10

WESTINGHOUSE/HANFORD
1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER:

807Q14

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-12-069SAS No.: SDG No.: 807Q04

Matrix (soil/water): SOIL Lab Sample ID: 12220-10S

Level (low/med): LOW Date Received: 12/15/92

% Solids: 93.5

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6090			P
7440-36-0	Antimony	3.5	U	N	F
7440-38-2	Arsenic	0.87	B		F
7440-39-3	Barium	72.8			P
7440-41-7	Beryllium	0.31	B		P
7440-43-9	Cadmium	0.31	U		P
7440-70-2	Calcium	3420			P
7440-47-3	Chromium	8.5			P
7440-48-4	Cobalt	9.7			P
7440-50-8	Copper	9.3			P
7439-89-6	Iron	20500			P
7439-92-1	Lead	3.5			F
7439-95-4	Magnesium	3850			P
7439-96-5	Manganese	347			P
7439-97-6	Mercury	0.05	U		CV
7440-02-0	Nickel	8.7			P
7440-09-7	Potassium	1490		E	P
7782-49-2	Selenium	0.60	U		F
7440-22-4	Silver	1.4	B		P
7440-23-5	Sodium	131	B		P
7440-28-0	Thallium	0.51	U		F
7440-62-2	Vanadium	43.5			P
7440-66-6	Zinc	46.6			P
	Cyanide				NR
7440-67-7	Zirconium	20.9		*	P

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

11

WESTINGHOUSE/HANFORD
1

SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

B07Q15

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0103

Lab Code: SKINER Case No.: N2-12-069SAS No.: SDG No.: B07Q04

Matrix (soil/water): SOIL Lab Sample ID: 12220-11S

Level (low/med): LOW Date Received: 12/15/92

% Solids: 83.6

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6090			P
7440-36-0	Antimony	4.3	U	N	P
7440-38-2	Arsenic	0.90	U		F
7440-39-3	Barium	62.2			P
7440-41-7	Beryllium	0.26	B		P
7440-43-9	Cadmium	0.37	U		P
7440-70-2	Calcium	3390			P
7440-47-3	Chromium	8.8			P
7440-48-4	Cobalt	5.4	B		P
7440-50-8	Copper	9.1			P
7439-89-6	Iron	17900			P
7439-92-1	Lead	3.1			F
7439-95-4	Magnesium	3680			P
7439-96-5	Manganese	317			P
7439-97-6	Mercury	0.06	U		CV
7440-02-0	Nickel	2.9	B		P
7440-09-7	Potassium	1710		E	P
7782-49-2	Selenium	0.71	U		F
7440-22-4	Silver	1.3	B		P
7440-23-5	Sodium	140	B		P
7440-28-0	Thallium	0.60	U		F
7440-62-2	Vanadium	42.7			P
7440-66-6	Zinc	43.3			P
	Cyanide				NR
7440-67-7	Zirconium	20.4	U	*	P

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

FORM I - IN ILM02.1

12

WESTINGHOUSE/HANFORD
1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER:

807Q16

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-12-069SAS No.: SDG No.: 807Q04

Matrix (soil/water): SOIL Lab Sample ID: 12220-12S

Level (low/med): LOW Date Received: 12/15/92

% Solids: 89.5

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	7220			P
7440-36-0	Antimony	4.8	B	N	P
7440-38-2	Arsenic	1.2	B		F
7440-39-3	Barium	79.6			P
7440-41-7	Beryllium	0.37	B		F
7440-43-9	Cadmium	0.35	U		P
7440-70-2	Calcium	3760			P
7440-47-3	Chromium	9.8			P
7440-48-4	Cobalt	11.0	B		P
7440-50-8	Copper	10.1			P
7439-89-6	Iron	23300			P
7439-92-1	Lead	3.5			F
7439-95-4	Magnesium	4180			P
7439-96-5	Manganese	372			P
7439-97-6	Mercury	0.05	U		CV
7440-02-0	Nickel	9.9			P
7440-09-7	Potassium	1620		E	P
7782-49-2	Selenium	0.67	U	W	F
7440-22-4	Silver	2.1	B		P
7440-23-5	Sodium	176	B		P
7440-28-0	Thallium	0.56	U		F
7440-62-2	Vanadium	58.8			P
7440-66-6	Zinc	49.4			P
	Cyanide				NR
7440-67-7	Zirconium	30.7		*	P

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

No page 1/22/6 1

ATTACHMENT 3

Summary of Data Qualifications

DATA QUALIFICATION SUMMARY - FORM B-7

N2-12-069

SDG:	REVIEWER: Ame	DATE: 4/11/93	PAGE 1 OF 1
COMMENTS: Metals			Level 4 Val'n.
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
copper	U	B07Q08	blank contam
		B07Q14	
		B07Q15	
antimony	UJ	B07Q04	matrix spike (56%)
	UJ	B07Q05	
	UJ	B07Q06	
	UJ	B07Q07	
	UJ	B07Q08	
	UJ	B07Q09	
	UJ	B07Q10	
	J	B07Q11	
	UJ	B07Q12	
	UJ	B07Q14	
	UJ	B07Q15	
	J	B07Q16	
selenium	UJ	B07Q06	anal. spike (81%)
	UJ	B07Q07	(81%)
	UJ	B07Q11	(79%)
	UJ	B07Q05	(82%)
	J	B07Q09	(40%)
	UJ	B07Q16	(83%)
potassium	J	all (listed for antimony above)	exceeded serial dilution

✓ ame

ATTACHMENT 4

As Qualified Data Summary

WESTINGHOUSE/HANFORD
1

SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

807Q04

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-12-069SAS No.: SDG No.: 807Q04

Matrix (soil/water): SOIL Lab Sample ID: 12220-02S

Level (low/med): LOW Date Received: 12/15/92

% Solids: 88.8

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	Qual
7429-90-5	Aluminum	5930			P	
7440-36-0	Antimony	3.9	U	N	P	uJ
7440-38-2	Arsenic	2.0	B		F	
7440-39-3	Barium	67.0			P	
7440-41-7	Beryllium	0.23	B		P	
7440-43-9	Cadmium	0.34	U		P	u
7440-70-2	Calcium	9130			P	
7440-47-3	Chromium	11.0			P	
7440-48-4	Cobalt	7.1	B		P	
7440-50-8	Copper	10.5			P	
7439-89-6	Iron	16000			P	
7439-92-1	Lead	3.4			F	
7439-95-4	Magnesium	4920			P	
7439-96-5	Manganese	212			P	
7439-97-6	Mercury	0.05	U		CV	u
7440-02-0	Nickel	10.7			P	
7440-09-7	Potassium	1230		E	P	J
7782-49-2	Selenium	0.63	U	S	F	u
7440-22-4	Silver	0.99	B		P	
7440-23-5	Sodium	154	B		P	
7440-28-0	Thallium	0.53	U		F	u
7440-62-2	Vanadium	34.1			P	
7440-66-6	Zinc	38.2			P	
	Cyanide				NR	
7440-67-7	Zirconium	18.7	U	*	P	u

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

✓ CMK 4/11/93

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FORM I - IN ILM02.1

WESTINGHOUSE/HANFORD

1

SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

B07Q05

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0102

Lab Code: SKINER Case No.: N2-12-069SAS No.: SDG No.: B07Q04

Matrix (soil/water): SOIL Lab Sample ID: 12220-03S

Level (low/med): LOW Date Received: 12/15/92

% Solids: 82.8

Concentration Units (ug/L or mg/Kg dry weight): MG/KG Qual

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	4170			P	
7440-36-0	Antimony	4.4	U	N	P	UJ
7440-38-2	Arsenic	1.3	B		F	
7440-39-3	Barium	39.7	B		P	
7440-41-7	Beryllium	0.12	B		P	
7440-43-9	Cadmium	0.38	U		P	U
7440-70-2	Calcium	4310			P	
7440-47-3	Chromium	7.2			P	
7440-48-4	Cobalt	7.2	B		P	
7440-50-8	Copper	13.2			P	
7439-89-6	Iron	15900			P	
7439-92-1	Lead	2.5			F	
7439-95-4	Magnesium	3470			P	
7439-96-5	Manganese	218			P	
7439-97-6	Mercury	0.05	U		CV	U
7440-02-0	Nickel	9.6			P	
7440-09-7	Potassium	546	B	E	P	J
7782-49-2	Selenium	0.72	U	MW	F	UJ
7440-22-4	Silver	0.97	B		P	
7440-23-5	Sodium	200	B		P	
7440-28-0	Thallium	0.60	U		F	U
7440-62-2	Vanadium	39.7			P	
7440-66-6	Zinc	33.6			P	
	Cyanide				NR	
7440-67-7	Zirconium	20.8	U	*	P	U

Color Before: GREY Clarity Before: Texture: COARSE

Color After: GREY Clarity After: Artifacts: YES

Comments:
STONES

✓ CMM 4/11/93

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WESTINGHOUSE/HANFORD
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INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: B07Q06

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-12-069SAS No.: SDG No.: B07Q04

Matrix (soil/water): SOIL Lab Sample ID: 12220-04S

Level (low/med): LOW Date Received: 12/15/92

% Solids: 95.8

Concentration Units (ug/L or mg/Kg dry weight): MG/KG Qual

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	5730			P	
7440-36-0	Antimony	3.6	U	N	P	UJ
7440-38-2	Arsenic	1.7	B		F	
7440-39-3	Barium	55.6			P	
7440-41-7	Beryllium	0.26	B		P	
7440-43-9	Cadmium	0.32	U		P	U
7440-70-2	Calcium	6750			P	
7440-47-3	Chromium	10.0			P	
7440-48-4	Cobalt	6.9	B		P	
7440-50-8	Copper	9.7			P	
7439-89-6	Iron	17600			P	
7439-92-1	Lead	2.9			F	
7439-95-4	Magnesium	4390			P	
7439-96-5	Manganese	240			P	
7439-97-6	Mercury	0.05	U		CV	U
7440-02-0	Nickel	9.2			F	
7440-09-7	Potassium	1260		E	P	J
7782-49-2	Selenium	0.58	U	W	F	UJ
7440-22-4	Silver	1.3	B		P	
7440-23-5	Sodium	362	B		P	
7440-28-0	Thallium	0.48	U		F	U
7440-62-2	Vanadium	35.9			P	
7440-66-6	Zinc	35.0			P	
	Cyanide				NR	
7440-67-7	Zirconium	17.3	U	*	P	U

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments: Vanc 4/11/93

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FORM I - IN ILM02.1

WESTINGHOUSE/HANFORD
1

SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

807Q07

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-12-069SAS No.: SDG No.: 807Q04

Matrix (soil/water): SOIL Lab Sample ID: 12220-05S

Level (low/med): LOW Date Received: 12/15/92

% Solids: 80.6

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	Qual
7429-90-5	Aluminum	6010			P	
7440-36-0	Antimony	4.4	U	N	P	UJ
7440-38-2	Arsenic	1.7	B	W	F	
7440-39-3	Barium	58.1			P	
7440-41-7	Beryllium	0.29	B		P	
7440-43-9	Cadmium	0.39	U		P	U
7440-70-2	Calcium	5220			P	
7440-47-3	Chromium	9.9			P	
7440-48-4	Cobalt	7.6	B		P	
7440-50-8	Copper	10.4			P	
7439-89-6	Iron	19100			P	
7439-92-1	Lead	3.6			F	
7439-95-4	Magnesium	4410			P	
7439-96-5	Manganese	257			P	
7439-97-6	Mercury	0.06	U		CV	U
7440-02-0	Nickel	10.6			P	
7440-09-7	Potassium	1140	B	E	P	J
7782-49-2	Selenium	0.74	U	W	F	UJ
7440-22-4	Silver	1.8	B		P	
7440-23-5	Sodium	543	B		P	
7440-28-0	Thallium	0.62	U		F	U
7440-62-2	Vanadium	40.9			P	
7440-66-6	Zinc	1020			P	
	Cyanide				NR	
7440-67-7	Zirconium	25.9		*	P	

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

✓ cwc 4/11/93

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WESTINGHOUSE/HANFORD

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INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER:

B07Q02

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0103

Lab Code: SKINER Case No.: N2-12-069SAS No.: SDG No.: B07Q04

Matrix (soil/water): SOIL Lab Sample ID: 12220-06S

Level (low/med): LOW Date Received: 12/15/92

% Solids: 97.6

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	Qual
7429-90-5	Aluminum	4070			P	
7440-36-0	Antimony	3.7	U	N	P	UJ
7440-38-2	Arsenic	1.6	B	W	F	
7440-39-3	Barium	46.8			P	
7440-41-7	Beryllium	0.19	B		P	
7440-43-9	Cadmium	0.90	B		P	
7440-70-2	Calcium	4230			P	
7440-47-3	Chromium	6.5			P	
7440-48-4	Cobalt	5.9	B		P	
7440-50-8	Copper	6.6			F	U
7439-89-6	Iron	12900			P	
7439-92-1	Lead	4.3			F	
7439-95-4	Magnesium	3220			P	
7439-96-5	Manganese	196			P	
7439-97-6	Mercury	0.05	U		CV	U
7440-02-0	Nickel	7.4	B		P	
7440-09-7	Potassium	866	B	E	P	J
7782-49-2	Selenium	0.61	U		F	U
7440-22-4	Silver	0.81	B		P	
7440-23-5	Sodium	750	B		P	
7440-28-0	Thallium	0.51	U		F	U
7440-62-2	Vanadium	30.1			P	
7440-66-6	Zinc	1070			P	
	Cyanide				NR	
7440-67-7	Zirconium	17.9	U	*	P	U

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

✓ cm 4/11/93

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WESTINGHOUSE/HANFORD
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SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

807009

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-12-069SAS No.: SDG No.: 807Q04

Matrix (soil/water): SOIL Lab Sample ID: 12220-07S

Level (low/med): LOW Date Received: 12/15/92

% Solids: 92.9

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	Qual
7429-90-5	Aluminum	5720			P	
7440-36-0	Antimony	3.7	U	N	P	UJ
7440-38-2	Arsenic	1.2	B		F	
7440-39-3	Barium	75.1			P	
7440-41-7	Beryllium	0.31	B		P	
7440-43-9	Cadmium	0.32	U		F	U
7440-70-2	Calcium	3900			P	
7440-47-3	Chromium	7.9			P	
7440-48-4	Cobalt	10.9			P	
7440-50-8	Copper	10.7			P	
7439-89-6	Iron	20800			P	
7439-92-1	Lead	3.4			F	
7439-95-4	Magnesium	4320			P	
7439-96-5	Manganese	376			P	
7439-97-6	Mercury	0.05	U		CV	U
7440-02-0	Nickel	11.3			P	
7440-09-7	Potassium	1020		E	P	J
7782-49-2	Selenium	0.65	B	Ms	F	J
7440-22-4	Silver	1.3	B		P	
7440-23-5	Sodium	178	B		P	
7440-28-0	Thallium	0.52	U		F	U
7440-62-2	Vanadium	52.6			P	
7440-66-6	Zinc	46.6			P	
	Cyanide				NR	
7440-67-7	Zirconium	17.7	U	*	P	U

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

Vamc 4/11/93

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WESTINGHOUSE/HANFORD
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INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: B07010

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-12-069SAS No.: SDG No.: B07Q04

Matrix (soil/water): SOIL Lab Sample ID: 12220-08S

Level (low/med): LOW Date Received: 12/15/92

% Solids: 88.8

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	Qual
7429-90-5	Aluminum	5730			P	
7440-36-0	Antimony	4.0	U	N	F	UJ
7440-38-2	Arsenic	0.87	B		F	
7440-39-3	Barium	50.8			P	
7440-41-7	Beryllium	0.19	B		P	
7440-43-9	Cadmium	0.35	U		P	U
7440-70-2	Calcium	3400			P	
7440-47-3	Chromium	10.2			P	
7440-48-4	Cobalt	6.7	B		P	
7440-50-8	Copper	18.7			P	
7439-89-6	Iron	16300			P	
7439-92-1	Lead	6.7			F	
7439-95-4	Magnesium	3740			P	
7439-96-5	Manganese	190			P	
7439-97-6	Mercury	0.05	U		CV	U
7440-02-0	Nickel	9.2			P	
7440-09-7	Potassium	1430		E	P	J
7782-49-2	Selenium	0.68	U		F	U
7440-22-4	Silver	1.0	B		P	
7440-23-5	Sodium	136	B		P	
7440-28-0	Thallium	0.57	U		F	U
7440-62-2	Vanadium	39.8			P	
7440-66-6	Zinc	68.7			P	
	Cyanide				NR	
7440-67-7	Zirconium	19.2	U	*	F	U

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

✓ 4/11/93

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WESTINGHOUSE/HANFORD
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INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER:

B07Q11

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-12-069SAS No.: SDG No.: B07Q04

Matrix (soil/water): SOIL Lab Sample ID: 12220-09S

Level (low/med): LOW Date Received: 12/15/92

% Solids: 84.9

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	Qual
7429-90-5	Aluminum	3060			P	
7440-36-0	Antimony	4.1	B	N	P	J
7440-38-2	Arsenic	1.0	B		F	
7440-39-3	Barium	64.3			P	
7440-41-7	Beryllium	0.36	B		P	
7440-43-9	Cadmium	0.35	U		P	U
7440-70-2	Calcium	4940			P	
7440-47-3	Chromium	13.3			P	
7440-48-4	Cobalt	10.0	B		P	
7440-50-8	Copper	14.2			P	
7439-89-6	Iron	23400			P	
7439-92-1	Lead	5.1			F	
7439-95-4	Magnesium	3210			P	
7439-96-5	Manganese	263			P	
7439-97-6	Mercury	0.05	U		CV	U
7440-02-0	Nickel	12.5			P	
7440-09-7	Potassium	1980		E	P	J
7782-49-2	Selenium	0.70	U	W	F	UJ
7440-22-4	Silver	1.5	B		P	
7440-23-5	Sodium	493	B		P	
7440-28-0	Thallium	0.59	U		F	U
7440-62-2	Vanadium	55.9			P	
7440-66-6	Zinc	554			P	
	Cyanide				NR	
7440-67-7	Zirconium	19.4	U	*	P	U

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

✓ CMR 4/11/93

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WESTINGHOUSE/HANFORD

1

SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

B07Q12

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-12-069SAS No.: SDG No.: B07Q04

Matrix (soil/water): SOIL Lab Sample ID: 12220-01S

Level (low/med): LOW Date Received: 12/15/92

% Solids: 93.2

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	Qual
7429-90-5	Aluminum	7370			P	
7440-36-0	Antimony	3.6	U	N	P	UJ
7440-38-2	Arsenic	3.6		S	F	
7440-39-3	Barium	57.9			P	
7440-41-7	Beryllium	0.30	B		P	
7440-43-9	Cadmium	0.31	U		P	U
7440-70-2	Calcium	3460			P	
7440-47-3	Chromium	43.1			P	
7440-48-4	Cobalt	9.3	B		P	
7440-50-8	Copper	11.4			P	
7439-89-6	Iron	19200			P	
7439-92-1	Lead	3.9			F	
7439-95-4	Magnesium	4040			P	
7439-96-5	Manganese	177			P	
7439-97-6	Mercury	0.05	U		CV	U
7440-02-0	Nickel	27.3			P	
7440-09-7	Potassium	1710		E	P	J
7782-49-2	Selenium	0.67	U		F	U
7440-22-4	Silver	0.93	B		P	
7440-23-5	Sodium	165	B		P	
7440-28-0	Thallium	0.56	U		F	U
7440-62-2	Vanadium	51.5			P	
7440-66-6	Zinc	50.5			P	
	Cyanide				NR	
7440-67-7	Zirconium	17.2	U	*	P	U

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

✓ 4/11/93

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FORM I - IN ILM02.1

WESTINGHOUSE/HANFORD
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INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: B07Q14

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-12-069SAS No.: SDG No.: B07Q04

Matrix (soil/water): SOIL Lab Sample ID: 12220-10S

Level (low/med): LOW Date Received: 12/15/92

% Solids: 93.5

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	Qual
7429-90-5	Aluminum	6090			P	
7440-36-0	Antimony	3.5	U	N	P	UJ
7440-38-2	Arsenic	0.87	B		F	
7440-39-3	Barium	72.8			P	
7440-41-7	Beryllium	0.31	B		P	
7440-43-9	Cadmium	0.31	U		P	U
7440-70-2	Calcium	3420			P	
7440-47-3	Chromium	8.5			P	
7440-48-4	Cobalt	9.7			P	
7440-50-8	Copper	9.3			P	U
7439-89-6	Iron	20500			P	
7439-92-1	Lead	3.5			F	
7439-95-4	Magnesium	3850			P	
7439-96-5	Manganese	347			P	
7439-97-6	Mercury	0.05	U		CV	U
7440-02-0	Nickel	8.7			P	
7440-09-7	Potassium	1490		E	P	J
7782-49-2	Selenium	0.60	U		F	U
7440-22-4	Silver	1.4	B		P	
7440-23-5	Sodium	131	B		P	
7440-28-0	Thallium	0.51	U		F	U
7440-62-2	Vanadium	43.5			P	
7440-66-6	Zinc	46.6			P	
	Cyanide				NR	
7440-67-7	Zirconium	20.9		*	P	

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

✓ cm 4/11/93

11

WESTINGHOUSE/HANFORD
1

SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

807Q15

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-12-069SAS No.: SDG No.: 807Q04

Matrix (soil/water): SOIL Lab Sample ID: 12220-11S

Level (low/med): LOW Date Received: 12/15/92

% Solids: 83.6

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	Qual
7429-90-5	Aluminum	6090			P	
7440-36-0	Antimony	4.3	U	N	P	UJ
7440-38-2	Arsenic	0.90	U		F	U
7440-39-3	Barium	68.2			P	
7440-41-7	Beryllium	0.25	B		P	
7440-43-9	Cadmium	0.37	U		P	U
7440-70-2	Calcium	3390			P	
7440-47-3	Chromium	8.8			P	
7440-48-4	Cobalt	5.4	B		P	
7440-50-8	Copper	9.1			P	U
7439-89-6	Iron	17900			P	
7439-92-1	Lead	3.1			F	
7439-95-4	Magnesium	3680			P	
7439-96-5	Manganese	317			P	
7439-97-6	Mercury	0.06	U		CV	U
7440-02-0	Nickel	2.9	B		P	
7440-09-7	Potassium	1710		E	P	J
7782-49-2	Selenium	0.71	U		F	U
7440-22-4	Silver	1.3	B		P	
7440-23-5	Sodium	140	B		P	
7440-28-0	Thallium	0.60	U		F	U
7440-62-2	Vanadium	42.7			P	
7440-66-6	Zinc	43.3			P	
	Cyanide				NR	
7440-67-7	Zirconium	20.4	U	*	P	U

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

✓ CMM 4/11/93

FORM I - IN ILM02.1

12

WESTINGHOUSE/HANFORD
1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: 807016

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-12-069SAS No.: SDG No.: 807004

Matrix (soil/water): SOIL Lab Sample ID: 12220-12S

Level (low/med): LOW Date Received: 12/15/92

% Solids: 89.5

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	Qual
7429-90-5	Aluminum	7220			P	
7440-36-0	Antimony	4.3	B	N	P	J
7440-38-2	Arsenic	1.2	B		F	
7440-39-3	Barium	79.6			P	
7440-41-7	Beryllium	0.37	B		P	
7440-43-9	Cadmium	0.35	U		P	U
7440-70-2	Calcium	3760			P	
7440-47-3	Chromium	9.2			P	
7440-48-4	Cobalt	11.0	B		P	
7440-50-8	Copper	10.1			P	
7439-89-6	Iron	23300			P	
7439-92-1	Lead	3.5			F	
7439-95-4	Magnesium	4180			P	
7439-96-5	Manganese	372			P	
7439-97-6	Mercury	0.05	U		CV	U
7440-02-0	Nickel	9.9			P	
7440-09-7	Potassium	1620		E	P	J
7782-49-2	Selenium	0.67	U	W	F	UJ
7440-22-4	Silver	2.1	B		P	
7440-23-5	Sodium	176	B		P	
7440-28-0	Thallium	0.56	U		F	U
7440-62-2	Vanadium	58.8			P	
7440-66-6	Zinc	49.4			P	
	Cyanide				NR	
7440-67-7	Zirconium	30.7		*	P	

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

✓ mm 4/11/93

No page 1 (12/22/93)

15

ATTACHMENT 5

Data Review Supporting Documentation

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST - FORM A-6

PROJECT: White Bluffs Pickling Acid Cribs ERA		REVIEWER: CMR	DATE: 4/5/93
LABORATORY: TMA/Skinner		CASE: N2-12-069	SDG:
SAMPLES/MATRIX:			
Soils: B07Q04	B07Q08	B07Q12	
B07Q05	B07Q09	B07Q14	
B07Q06	B07Q10	B07Q15	
B07Q07	B07Q11	B07Q16	Level 4 Validation all samples

1. COMPLETENESS AND CONTRACT COMPLIANCE

Review the data package for completeness and check off the items below. If any data review elements are missing contact the laboratory for submittal of the omitted data.

Data Package Item	Present?: Yes	No	N/A
Case Narrative	✓		
Cover Page	✓		
Traffic Reports (present in Gen Chem A2-12-049)			✓
Sample Data			
Inorganic Analysis Data Sheets	✓		
Standards Data			
Initial and Continuing Calibration Verification	✓		
CRDL Standard for AA and ICP	✓		
QC Summary			
Blanks	✓		
ICP Interference Check Summary	✓		
Spike Sample Recovery	✓		
Post-Digestion Spike Sample Recovery	✓		
Duplicate	✓		
Laboratory Control Sample	✓		
Standard Addition Results	✓		
ICP Serial Dilutions	✓		
Instrument Detection Limits	✓		
ICP Interelement Correction Factors	✓		
ICP Linear Ranges	✓		
Preparation Log	✓		
Analysis Run Log	✓		
Raw Data			
ICP Raw Data	✓		
Furnace AA Raw Data	✓		
Mercury Raw Data	✓		
Cyanide Raw Data			✓
Additional Data			
Internal laboratory chain-of-custody	✓		
Laboratory Sample Preparation Records	✓		

Data Package Item	Present?: Yes	No	N/A
Percent Solids Analysis Records	✓		
Reduction Formulae			✓
Instrument Run Logs	✓		
Chemist Notebook Pages			✓

2. HOLDING TIMES

Have all samples been analyzed within holding times? Yes No N/A

ACTION: If any holding times have been exceeded qualify all affected results as estimated (J for detects and UJ for nondetects).

3. INITIAL CALIBRATIONS

Were all instruments calibrated daily, each set-up time and were the proper number of standards used? Yes No N/A

Are the correlation coefficients ≥0.995? Yes No N/A

Was a midrange cyanide standard distilled? Yes No N/A

ACTION: Qualify all data as unusable if reported from an analysis in which an instrument was not calibrated or was calibrated with less than the minimum number of standards. Qualify associated sample results > IDL as estimated (J) and results < IDL as estimated (UJ), if the correlation coefficient is <0.995 or the laboratory did not distill the midrange cyanide standard.

4. INITIAL AND CONTINUING CALIBRATION VERIFICATION

Are ICV and CCV percent recoveries within control? Yes No N/A

Are there calculation errors? Yes No N/A

ACTION: Qualify all affected data in accordance with Section 8.3 of the validation requirements. If calculation errors are noted, contact the laboratory for clarification.

5. ICP INTERFERENCE CHECK SAMPLE

Has an ICS sample been analyzed at the proper frequency? Yes No N/A

Are the AB solution %R values within control? Yes No N/A

Are there calculation errors? Yes No N/A

ACTION: Qualify all affected data in accordance with Section 8.3 of the validation requirements. If calculation errors are noted, contact the laboratory for clarification.

6. LABORATORY BLANKS

Are target analytes present in the laboratory blanks? Yes No N/A

ACTION: Qualify all associated sample results for any analyte <5 times the amount in any laboratory blank as nondetected (U). If analyte concentrations in the blank are >CRDL or below the negative CRDL, verify the laboratory has redigested and reanalyzed associated samples with analyte concentrations < 10 times the blank concentration. If the laboratory has not redigested and reanalyzed the samples, note in the validation narrative.

7. FIELD BLANKS

Are target analytes present in the field blanks? Yes No N/A

ACTION: Qualify all sample results for any analyte <5 times the amount in any valid field blank as nondetected (U).

8. MATRIX SPIKE SAMPLE ANALYSIS

Are spike recoveries within the control limits? Yes No N/A

ACTION: Qualify the affected sample data according to the following requirements:

If spike recovery is >125% and sample results are <IDL no qualification is required. If spike recovery is >125% or <75% qualify all positive results as estimated (J). If spike recovery is 30% to 74% qualify all nondetects as estimated (UJ). If spike recovery is <30%, reject all nondetects (R). If the field blank has been used for spike analysis, note in the validation narrative.

9. LABORATORY CONTROL SAMPLE

Are percent recoveries within the acceptance limits? Yes No N/A

Are there calculation errors? Yes No N/A

ACTION: Qualify the sample data according to the following requirements:

AQUEOUS LCS - Qualify as estimated (J), all sample results >IDL, for which the LCS %R falls within the range 50-79% or >120%. Qualify as estimated (UJ), all sample results <IDL, for which the LCS falls within the range of 50-79%. Qualify as unusable (R) all sample results, for which the LCS %R <50%.

SOLID LCS - Qualify as estimated (J), all sample results >IDL for which the LCS result is outside the established control limits. Qualify as estimated (UJ), all sample results <IDL for which the LCS %R are lower than the established control limits.

10. PERFORMANCE AUDIT ANALYSES

Are the performance audit sample results within the acceptance limits? Yes No N/A

ACTION: Note the results of the performance audit sample analyses in the data validation narrative.

11. DUPLICATE SAMPLE ANALYSIS

Are RPD values acceptable? Yes No N/A

ACTION: Qualify the results for all associated samples of the same matrix as estimated (J) if the RPD results fall outside the appropriate control limits. If field blanks were used for laboratory duplicates, note in the validation narrative.

12. ICP SERIAL DILUTION

Are the serial dilution results acceptable? Yes No N/A

Is there evidence of negative interference? Yes No N/A

ACTION: Qualify the associated data as estimated (J) for those analytes in which the %D is outside the control limits. If evidence of negative interference is found, use professional judgment to qualify the data.

13. FIELD DUPLICATE SAMPLES

Do the RPD values exceed the control limits? Yes No N/A

ACTION: Note the results of the field duplicate samples in the validation narrative.

14. FIELD SPLIT SAMPLES

Do the RPD values exceed the control limits? Yes No N/A

See case 9212L005

ACTION: Note the results of the field split samples in the validation narrative.

1516. FURNACE ATOMIC ABSORPTION QUALITY CONTROL

Do all applicable analyses have duplicate injections? Yes No N/A

Are applicable duplicate injection RSD values within control? Yes No N/A

If no, were samples rerun once as required? Yes No N/A

Does the RSD for the rerun fall within the control limits? Yes No N/A

Were analytical spike recoveries within the control limits? Yes No N/A

If no, were MSA analyses performed when required?	Yes	No	N/A
Are MSA correlation coefficients $\geq$0.995?	Yes	No	N/A
If no, was a second MSA analysis performed?	Yes	No	N/A

ACTION: If duplicate injections are outside the acceptance limits and the sample has not been reanalyzed or the reanalysis is outside the acceptance limits, qualify the associated data as estimated (J for detects and UJ for nondetects). If the analytical spike recovery is <40% qualify detects as estimated (J). If the analytical spike recovery is $\geq$10% but <40%, qualify all nondetects as estimated (UJ) and if the analytical spike recovery is <10%, reject all nondetects (R). If the sample absorbance is <50% of the analytical spike absorbance and the analytical spike recovery is <85% or >115%, qualify all results as estimated (J for detects and UJ for nondetects). If method of standard additions (MSA) was required but was not performed, the MSA samples were spiked incorrectly, or the MSA correllation coefficient was <0.995, qualify the associated detected results as estimated (J).

17. ANALYTE QUANTITATION AND DETECTION LIMITS

Have results been reported and calculated correctly?	Yes	No	N/A
Are results within the calibrated range of the instruments and within the linear range of the ICP?	Yes	No	N/A
Are all detection limits below the CRQL?	Yes	No	N/A

Action: If analyte quantitation is in error, contact the laboratory for explanation. If errors or deficiencies can not be resolved with the laboratory, qualify associated data as unusable (R).

18. OVERALL ASSESSMENT AND SUMMARY

Has the laboratory conducted the analysis in accordance with the analytical SOW?	Yes	No	N/A
Were project specific data quality objectives met for this analysis?	Yes	No	N/A

ACTION: Summarize all the data qualifications and complete the data validation narrative as specified in Section 10.0 of the data validation requirements.

COMMENTS (attach additional sheets as necessary):

HOLDING TIME SUMMARY - FORM B-1

N2-12-069

SDG:	REVIEWER: Clare Russell	DATE: 4/11/93	PAGE 1 OF 1
COMMENTS:	Metals		Level 4 Val'n

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B07Q04	Hg	12/4/92	12/21/92	12/22/92	17	1	None
B07Q05							
B07Q06							
B07Q07							
B07Q08							
B07Q09							
B07Q10		12/7/92			14		
B07Q11							
B07Q12							
B07Q14							
B07Q15							
B07Q16							

CALIBRATION DATA SUMMARY - FORM B-2

N2-12-069

SDG:	REVIEWER: CMRussell	DATE: 4/11/93		PAGE 1 OF 1	
COMMENTS:	metals			Level 4 Val'n	
CALIB. TYPE:	INITIAL CONTINUING	INSTRUMENT:			
CALIB. DATE	COMPOUND	RF	RSD/%D/%R	SAMPLES AFFECTED	QUALIFIER
GFAA Calib. Corr. Coeff					
	Hg				none
	As				
	Se				
	Tl				
	Pb				
ICV and CCV					
	all are acceptable.				none

BLANK AND SAMPLE DATA SUMMARY - FORM B-3

N2-12-069

SDG:	REVIEWER: CMRussell	DATE: 4/11/93	PAGE 1 OF 1
COMMENTS: Metals		Level 4 Val'n	

SAMPLE ID	COMPOUND	RESULT	Q	RT	UNITS	5X RESULT	10X RESULT	SAMPLES AFFECTED	QUALIFIER
Highest	Assoc. Conc.: ug/L								
PBS	Calcium	8.556			mg/kg	42.78		—	—
PBS	Chromium ~~Fam~~	0.802				4.01		—	—
ICB	Copper 9.6	1.92				9.6		(see below)	U
PBS	Iron	2.828				14.14		—	—
PBS	Potassium ~~208.7~~	36.266				181.33		—	—
CCB4	Silver 4.0	0.8				4.0	← at end of run only no qual.		—
CCB4	Sodium 123	24.6				123		—	—
CCB4	Vanadium 3.3	0.66				3.3		—	—
PBS	Zinc	2.966			↓	~~2.96~~ 14.83		—	—
	Samples affected:								
	Copper → B07Q08, B07Q14, B07Q15								

ACCURACY DATA SUMMARY - FORM B-4

N2-12-069 4/11/93

SDG:	REVIEWER: CMRussell	DATE: ~~4/5/93~~ ok	PAGE 1 OF 1	
COMMENTS: Metals			Level 4 Val'n	
SAMPLE ID	COMPOUND	% RECOVERY	SAMPLE(S) AFFECTED	QUALIFIER REQUIRED
~~B07Q~~ CRDL Stds	selenium	134%, 184%	all	none
	silver	147%	↓	↓
ICS → all acceptable				
Matrix Spike	antimony	56.3%	all	UJ or J (see B-7)
post dig. spike	antimony	82.6% ✓	—	~~none~~ —
LCS → all acceptable				none
MSA → all acceptable corr. coeff.				none
	Selenium B07Q06 (81%),	B07Q07 (81%),	B07Q11 (79%)	UJ, UJ, UJ
	B07Q05 (82%),	B07Q09 (40%),	B07Q16 (83%)	UJ, J, UJ
	Arsenic → all OK		—	none
	Lead → all OK		—	none
	Thallium → all OK		—	none

PRECISION DATA SUMMARY - FORM B-5

N2-12-069

SDG:	REVIEWER CMRussell	DATE: 4/11/93	PAGE 1 OF 1			
COMMENTS: Metals				Level 4 Val'n.		
COMPOUND	SAMPLE ID:	SAMPLE ID:	RPD	SAMPLES AFFECTED	QUALIFIER	
Anal. dup zirconium	B07Q16 (30.7)	B07Q16D (18.2 µg)	±2xCRQL ✓	all	none	
ICP serial Dil potassium	B07Q16	B07Q16L	12.1 %D	all	J	
Field Dup → none in this package					none	
Field split	B07Q12	B07Q13		all	none	
	See case 92121005 for field split RPD calculation					

HCRL-WHC/9316-T-93-013

E-93-16/2978-56

WESTINGHOUSE HANFORD COMPANY
PICKLING ACID CRIB ERA DATA VALIDATION
DISTRIBUTION FORM

Document Title Prelim. QA Rpts. Case # A2-12-049 (Semi Vol. Org.)

Document Number: HCRL-WHC/9316-L-93-012 Date: 4/20/93

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J. Frain (WHC)	X	A. Shen (HCSEA)			

Project Files (1=Administrative; 2=Correspondence; 3=Source Data; 4=Technical Data)

1.1	File Index		2.1	Incoming Correspondence		4.1	Task Plan	
1.2	Distribution Lists		2.2	Outgoing Correspondence	X	4.2	Data Pkg. Completeness Verif. Checklist	
1.3	Project Procedures		2.3	Internal Correspondence		4.3	Data Valid. Calcs./Annotated DP	
1.4	Project Modifications					4.4	Prelim. QA Reports	X
1.5	Staff		3.1	Task Order		4.5	Data Valid. & Qual. Summary Rpts.	
1.5.1	Staff Resumes		3.2	Sample Lists		4.5.1	Internal Drafts/Comments/Resol.	
1.5.2	Staff Training		3.3	Data Validation Procedures		4.5.2	WHC Review Draft Comments/Resol.	
1.5.3	Auth. Former Site Employee		3.4	Original Chemical Data		4.5.3	Final Report	
1.6	QA		3.5	Original Radiochem. Data		4.6	Weekly Status Reports	
1.6.1	QA Implement Procedures					4.7	Weekly Management Reports	
1.6.2	QA Audits							
1.6.3	QA Training							
1.7	Budget							
1.7.1	Budget Status							
1.7.2	Invoices							
1.8	Requisitions							
1.9	Meeting Minutes							
1.10	Record of Telecon							
1.11	Progress Reports							
1.12	Subcontractor							

HARTCROWSER

Earth and Environmental Technologies

Hart Crowser, Inc.
[illegible] Avenue [illegible]
Portland, OR 97[illegible]
Fax 503 [illegible]
503 [illegible]

J-2978-56

April 20, 1993

Ms. Jil Frain
Westinghouse Hanford Company
P.O. Box 1970 \ MSIN H6-04
Richland, Washington 99352

Subject: WHC Order No. MLW-SSV-037106
Task Order No. E-93-16
Preliminary Quality Assurance Record
White Bluffs Pickling Acid Cribs ERA
TMA Case Number A2-12-049 - Semivolatile Organics

Dear Ms. Frain:

Ebasco and Hart Crowser are pleased to provide you with the attached results of our review and validation of the subject data from the White Bluffs Pickling Acid Cribs ERA. The attached results are provided to you in partial fulfillment of Subtask 03 of our task plan dated March 12, 1993. The subject data package consisted of twelve low level soil samples submitted for analysis for semivolatile organics. The sample results were fully validated. In addition, all of the supporting quality control summaries were reviewed.

The samples were analyzed by TMA using the U.S. Environmental Protection Agency (EPA) Contract Laboratory Program (CLP) statement of work. All analytical results, together with the data qualifiers which we have assigned as a result of our review, are provided in Attachment 4. Table 1 is an annotated list of the attachments to this letter report.

DATA QUALITY OBJECTIVES SUMMARY

Data quality objectives for accuracy and precision (including GC/MS tuning, surrogates, matrix spike/matrix spike duplicates, continuing calibrations, compound identifications, and internal standards), and quantitation limit requirements were met for this case with the exception of the following: low concentrations of six tentatively identified compounds (TICs) were detected in the method blank, and diethyl phthalate was reported below the contract required quantitation limit (CRQL) in sample B07Q09.

MAJOR DEFICIENCIES (REJECTED DATA)

No data were rejected.

MINOR DEFICIENCIES (OTHER QUALIFIED DATA)

The following general trends resulted in the qualification of the sample data. All qualified data are discussed in Attachments 3 and 5.

Six low level TICs were detected in the method blank. Several of these TICs were also detected in each of the samples. TIC sample concentrations which were less than 5 times the blank concentration were qualified as undetected at estimated concentrations based on presumptive evidence (UJN).

The remaining TIC compounds which were not qualified as undetected were qualified as estimated concentrations based on presumptive evidence (JN).

A trace concentration of diethyl phthalate was detected in sample B07Q09. As the diethyl phthalate concentration was near the instrument detection limit and was below the CRQL, the concentration was qualified as an estimate (J).

No other data qualifiers were assigned.

We trust that these preliminary results meet your needs. Our qualifier assignments will be finalized at the time the summary report is published. The final qualifiers may vary from those presented here, reflecting any trends in data quality or laboratory performance observed over the course of the White Bluffs Pickling Acid Cribs ERA data validation effort. Please contact me if you have any questions with regard to our activities.

Sincerely,

HART CROWSER, INC.

D. MARK GERBOTH, P.E.
Project Manager
HC#134:RL1752.DOC

Attachments

cc: Mark Gerboth (w/o attachments)
Jeff Grover (w/o attachments)
Westinghouse EDMC
Project File - HCRL-WHC/9316-L-93-012

Table 1 - Annotated List of Attachments

Attachment 1 - Glossary of Data Qualifiers

This attachment provides a glossary explaining all data qualifiers applied as a result of the validation.

Attachment 2 - As Received Laboratory Sample Concentration Reports

This attachment provides a copy of the as-received sample concentration reports. This may be a tabular summary similar to that provided in Attachment 4, or may be a copy of the laboratory reports (e.g., Form I).

Attachment 3 - Summary of Data Qualifications (Form B-7)

This attachment provides a complete summary of all qualifications applied as a result of the validation.

Attachment 4 - As Qualified Data Summary

This attachment provides a tabular data summary of all data qualified from the validation.

Attachment 5 - Data Review Supporting Documentation

This attachment provides copies of the data validation checklists, data summary forms, telephone contact memoranda and other documentation completed as a result of the data validation.

ATTACHMENT 1

Glossary of Data Qualifiers

Glossary of Data Qualifiers

U - Indicates the compound or analyte was analyzed for and not detected. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.

UJ - Indicates the compound or analyte was analyzed for and not detected. Due to quality control deficiencies identified during data validation the value reported may not accurately reflect the sample quantitation limit.

J - Indicates the compound or analyte was analyzed for and detected. The associated value is estimated but the data are useable for decision making processes.

R - Indicates the compound or analyte was analyzed for and due to an identified quality control deficiency the data are unusable.

NJ - Indicates the presumptive evidence of a compound at an estimated value.

N - Indicates presumptive evidence of a compound.

ATTACHMENT 2

As Received Laboratory Sample Concentration Reports

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B07Q04

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 12049 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A212049-01A

Sample wt/vol: 30.2 (g/mL) G Lab File ID: 21229S09

Level: (low/med) LOW Date Received: 12/11/92

% Moisture: 8 decanted: (Y/N) N Date Extracted: 12/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 12/29/92

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 9.1

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	360	U
111-44-4	bis(2-Chloroethyl)Ether	360	U
95-57-8	2-Chlorophenol	360	U
541-73-1	1,3-Dichlorobenzene	360	U
106-46-7	1,4-Dichlorobenzene	360	U
95-50-1	1,2-Dichlorobenzene	360	U
95-48-7	2-Methylphenol	360	U
108-60-1	2,2'-oxybis(1-Chloropropane)	360	U
106-44-5	4-Methylphenol	360	U
621-64-7	N-Nitroso-Di-n-Propylamine	360	U
67-72-1	Hexachloroethane	360	U
98-95-3	Nitrobenzene	360	U
78-59-1	Isophorone	360	U
88-75-5	2-Nitrophenol	360	U
105-67-9	2,4-Dimethylphenol	360	U
111-91-1	bis(2-Chloroethoxy)Methane	360	U
120-83-2	2,4-Dichlorophenol	360	U
120-82-1	1,2,4-Trichlorobenzene	360	U
91-20-3	Naphthalene	360	U
106-47-8	4-Chloroaniline	360	U
87-68-3	Hexachlorobutadiene	360	U
59-50-7	4-Chloro-3-Methylphenol	360	U
91-57-6	2-Methylnaphthalene	360	U
77-47-4	Hexachlorocyclopentadiene	360	U
88-06-2	2,4,6-Trichlorophenol	360	U
95-95-4	2,4,5-Trichlorophenol	860	U
91-58-7	2-Chloronaphthalene	360	U
88-74-4	2-Nitroaniline	860	U
131-11-3	Dimethylphthalate	360	U
208-96-8	Acenaphthylene	360	U
99-09-2	3-Nitroaniline	860	U
83-32-9	Acenaphthene	360	U
51-28-5	2,4-Dinitrophenol	860	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B07Q04

Lab Name: TMA/ARLI Contract: MHC

Lab Code: TMALA Case No.: 12049 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A212049-01A

Sample wt/vol: 30.2 (g/mL) G Lab File ID: 21229S09

Level: (low/med) LOW Date Received: 12/11/92

% Moisture: 8 decanted: (Y/N) N Date Extracted: 12/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 12/29/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 9.1

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
100-02-7	4-Nitrophenol	860	U
132-64-9	Dibenzofuran	360	U
121-14-2	2,4-Dinitrotoluene	360	U
606-20-2	2,6-Dinitrotoluene	360	U
84-66-2	Diethylphthalate	360	U
7005-72-3	4-Chlorophenyl-phenylether	360	U
86-73-7	Fluorene	360	U
100-01-6	4-Nitroaniline	860	U
534-52-1	4,6-Dinitro-2-methylphenol	860	U
86-30-6	N-Nitrosodiphenylamine (1)	360	U
101-55-3	4-Bromophenyl-phenylether	360	U
118-74-1	Hexachlorobenzene	360	U
87-86-5	Pentachlorophenol	860	U
85-01-8	Phenanthrene	360	U
120-12-7	Anthracene	360	U
86-74-8	Carbazole	360	U
84-74-2	Di-n-Butylphthalate	360	U
206-44-0	Fluoranthene	360	U
129-00-0	Pyrene	360	U
85-68-7	Butylbenzylphthalate	360	U
91-94-1	3,3'-Dichlorobenzidine	360	U
56-55-3	Benzo(a)Anthracene	360	U
117-81-7	bis(2-Ethylhexyl)Phthalate	360	U
218-01-9	Chrysene	360	U
117-84-0	Di-n-Octyl Phthalate	360	U
205-99-2	Benzo(b)Fluoranthene	360	U
207-08-9	Benzo(k)Fluoranthene	360	U
50-32-8	Benzo(a)Pyrene	360	U
193-39-5	Indeno(1,2,3-cd)Pyrene	360	U
53-70-3	Dibenz(a,h)Anthracene	360	U
191-24-2	Benzo(g,h,i)Perylene	360	U

(1) - Cannot be separated from Diphenylamine

000006

EPA SAMPLE NO.

B07Q04

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 12049 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A212049-01A

Sample wt/vol: 30.2 (g/mL) G Lab File ID: 21229S09

Level: (low/med) LOW Date Received: 12/11/92

% Moisture: 8 decanted: (Y/N) N Date Extracted: 12/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 12/29/92

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 9.1

Number TICs found: 4

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN HYDROCARBON	6.68	140	BJ
2.	UNKNOWN HYDROCARBON	7.37	1500	BJ
3.	UNKNOWN ALCOHOL	8.72	220	BJ
4.	UNKNOWN ALCOHOL	9.03	72	BJ

EPA SAMPLE NO.

B07Q05

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 12049 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A212049-02A

Sample wt/vol: 30.1 (g/mL) G Lab File ID: 21229S12

Level: (low/med) LOW Date Received: 12/11/92

% Moisture: 3 decanted: (Y/N) N Date Extracted: 12/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 12/29/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.5

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	340	U
111-44-4	bis(2-Chloroethyl)Ether	340	U
95-57-8	2-Chlorophenol	340	U
541-73-1	1,3-Dichlorobenzene	340	U
106-46-7	1,4-Dichlorobenzene	340	U
95-50-1	1,2-Dichlorobenzene	340	U
95-48-7	2-Methylphenol	340	U
108-60-1	2,2'-oxybis(1-Chloropropane)	340	U
106-44-5	4-Methylphenol	340	U
621-64-7	N-Nitroso-Di-n-Propylamine	340	U
67-72-1	Hexachloroethane	340	U
98-95-3	Nitrobenzene	340	U
78-59-1	Isophorone	340	U
88-75-5	2-Nitrophenol	340	U
105-67-9	2,4-Dimethylphenol	340	U
111-91-1	bis(2-Chloroethoxy)Methane	340	U
120-83-2	2,4-Dichlorophenol	340	U
120-82-1	1,2,4-Trichlorobenzene	340	U
91-20-3	Naphthalene	340	U
106-47-8	4-Chloroaniline	340	U
87-68-3	Hexachlorobutadiene	340	U
59-50-7	4-Chloro-3-Methylphenol	340	U
91-57-6	2-Methylnaphthalene	340	U
77-47-4	Hexachlorocyclopentadiene	340	U
88-06-2	2,4,6-Trichlorophenol	340	U
95-95-4	2,4,5-Trichlorophenol	820	U
91-58-7	2-Chloronaphthalene	340	U
88-74-4	2-Nitroaniline	820	U
131-11-3	Dimethylphthalate	340	U
208-96-8	Acenaphthylene	340	U
99-09-2	3-Nitroaniline	820	U
83-32-9	Acenaphthene	340	U
51-28-5	2,4-Dinitrophenol	820	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO

B07Q05

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 12049 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A212049-02A

Sample wt/vol: 30.1 (g/mL) G Lab File ID: 21229S12

Level: (low/med) LOW Date Received: 12/11/92

% Moisture: 3 decanted: (Y/N) N Date Extracted: 12/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 12/29/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.5

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
100-02-7	4-Nitrophenol	820	U
132-64-9	Dibenzofuran	340	U
121-14-2	2,4-Dinitrotoluene	340	U
606-20-2	2,6-Dinitrotoluene	340	U
84-66-2	Diethylphthalate	340	U
7005-72-3	4-Chlorophenyl-phenylether	340	U
86-73-7	Fluorene	340	U
100-01-6	4-Nitroaniline	820	U
534-52-1	4,6-Dinitro-2-methylphenol	820	U
86-30-6	N-Nitrosodiphenylamine (1)	340	U
101-55-3	4-Bromophenyl-phenylether	340	U
118-74-1	Hexachlorobenzene	340	U
87-86-5	Pentachlorophenol	820	U
85-01-8	Phenanthrene	340	U
120-12-7	Anthracene	340	U
86-74-8	Carbazole	340	U
84-74-2	Di-n-Butylphthalate	340	U
206-44-0	Fluoranthene	340	U
129-00-0	Pyrene	340	U
85-68-7	Butylbenzylphthalate	340	U
91-94-1	3,3'-Dichlorobenzidine	340	U
56-55-3	Benzo(a)Anthracene	340	U
117-81-7	bis(2-Ethylhexyl)Phthalate	340	U
218-01-9	Chrysene	340	U
117-84-0	Di-n-Octyl Phthalate	340	U
205-99-2	Benzo(b)Fluoranthene	340	U
207-08-9	Benzo(k)Fluoranthene	340	U
50-32-8	Benzo(a)Pyrene	340	U
193-39-5	Indeno(1,2,3-cd)Pyrene	340	U
53-70-3	Dibenz(a,h)Anthracene	340	U
191-24-2	Benzo(g,h,i)Perylene	340	U

(1) - Cannot be separated from Diphenylamine

EPA SAMPLE NO.

B07Q05

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 12049 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A212049-02A

Sample wt/vol: 30.1 (g/mL) G Lab File ID: 21229S12

Level: (low/med) LOW Date Received: 12/11/92

% Moisture: 3 decanted: (Y/N) N Date Extracted: 12/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 12/29/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.5

Number TICs found: 4

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN HYDROCARBON	7.37	1500	BJ
2.	UNKNOWN ALCOHOL	8.72	210	BJ
3.	UNKNOWN ALCOHOL	9.03	68	BJ
4.	UNKNOWN CARBOXYLIC ACID ESTE	21.13	480	BJ

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B07Q06

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 12049 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A212049-03A

Sample wt/vol: 30.4 (g/mL) G Lab File ID: 21229S13

Level: (low/med) LOW Date Received: 12/11/92

% Moisture: 2 decanted: (Y/N) N Date Extracted: 12/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 12/29/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 9.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	330	U
111-44-4	bis(2-Chloroethyl)Ether	330	U
95-57-8	2-Chlorophenol	330	U
541-73-1	1,3-Dichlorobenzene	330	U
106-46-7	1,4-Dichlorobenzene	330	U
95-50-1	1,2-Dichlorobenzene	330	U
95-48-7	2-Methylphenol	330	U
108-60-1	2,2'-oxybis(1-Chloropropane)	330	U
106-44-5	4-Methylphenol	330	U
621-64-7	N-Nitroso-Di-n-Propylamine	330	U
67-72-1	Hexachloroethane	330	U
98-95-3	Nitrobenzene	330	U
78-59-1	Isophorone	330	U
88-75-5	2-Nitrophenol	330	U
105-67-9	2,4-Dimethylphenol	330	U
111-91-1	bis(2-Chloroethoxy)Methane	330	U
120-83-2	2,4-Dichlorophenol	330	U
120-82-1	1,2,4-Trichlorobenzene	330	U
91-20-3	Naphthalene	330	U
106-47-8	4-Chloroaniline	330	U
87-68-3	Hexachlorobutadiene	330	U
59-50-7	4-Chloro-3-Methylphenol	330	U
91-57-6	2-Methylnaphthalene	330	U
77-47-4	Hexachlorocyclopentadiene	330	U
88-06-2	2,4,6-Trichlorophenol	330	U
95-95-4	2,4,5-Trichlorophenol	810	U
91-58-7	2-Chloronaphthalene	330	U
88-74-4	2-Nitroaniline	810	U
131-11-3	Dimethylphthalate	330	U
208-96-8	Acenaphthylene	330	U
99-09-2	3-Nitroaniline	810	U
83-32-9	Acenaphthene	330	U
51-28-5	2,4-Dinitrophenol	810	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B07Q06

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 12049 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A212049-03A

Sample wt/vol: 30.4 (g/mL) G Lab File ID: 21229813

Level: (low/med) LOW Date Received: 12/11/92

% Moisture: 2 decanted: (Y/N) N Date Extracted: 12/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 12/29/92

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 9.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
100-02-7	4-Nitrophenol	810	U
132-64-9	Dibenzofuran	330	U
121-14-2	2,4-Dinitrotoluene	330	U
606-20-2	2,6-Dinitrotoluene	330	U
84-66-2	Diethylphthalate	330	U
7005-72-3	4-Chlorophenyl-phenylether	330	U
86-73-7	Fluorene	330	U
100-01-6	4-Nitroaniline	810	U
534-52-1	4,6-Dinitro-2-methylphenol	810	U
86-30-6	N-Nitrosodiphenylamine (1)	330	U
101-55-3	4-Bromophenyl-phenylether	330	U
118-74-1	Hexachlorobenzene	330	U
87-86-5	Pentachlorophenol	810	U
85-01-8	Phenanthrene	330	U
120-12-7	Anthracene	330	U
86-74-8	Carbazole	330	U
84-74-2	Di-n-Butylphthalate	330	U
206-44-0	Fluoranthene	330	U
129-00-0	Pyrene	330	U
85-68-7	Butylbenzylphthalate	330	U
91-94-1	3,3'-Dichlorobenzidine	330	U
56-55-3	Benzo(a)Anthracene	330	U
117-81-7	bis(2-Ethylhexyl)Phthalate	330	U
218-01-9	Chrysene	330	U
117-84-0	Di-n-Octyl Phthalate	330	U
205-99-2	Benzo(b)Fluoranthene	330	U
207-08-9	Benzo(k)Fluoranthene	330	U
50-32-8	Benzo(a)Pyrene	330	U
193-39-5	Indeno(1,2,3-cd)Pyrene	330	U
53-70-3	Dibenz(a,h)Anthracene	330	U
191-24-2	Benzo(g,h,i)Perylene	330	U

(1) - Cannot be separated from Diphenylamine

EPA SAMPLE NO.

B07Q06

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: TMA/ARLI Contract: NHC

Lab Code: TMALA Case No.: 12049 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A212049-03A

Sample wt/vol: 30.4 (g/mL) G Lab File ID: 21229S13

Level: (low/med) LOW Date Received: 12/11/92

% Moisture: 2 decanted: (Y/N) N Date Extracted: 12/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 12/29/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 9.0

Number TICs found: 5

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN HYDROCARBON	6.67	200	BJ
2.	UNKNOWN HYDROCARBON	7.35	2000	BJ
3.	UNKNOWN ALCOHOL	8.68	300	BJ
4.	UNKNOWN ALCOHOL	9.02	67	BJ
5.	UNKNOWN CARBOXYLIC ACID ESTE	21.10	470	BJ

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B07Q07

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 12049 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A212049-04A

Sample wt/vol: 30.7 (g/mL) G Lab File ID: 21229S14

Level: (low/med) LOW Date Received: 12/11/92

% Moisture: 2 decanted: (Y/N) N Date Extracted: 12/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 12/29/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.6

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	330	U
111-44-4	bis(2-Chloroethyl)Ether	330	U
95-57-8	2-Chlorophenol	330	U
541-73-1	1,3-Dichlorobenzene	330	U
106-46-7	1,4-Dichlorobenzene	330	U
95-50-1	1,2-Dichlorobenzene	330	U
95-48-7	2-Methylphenol	330	U
108-60-1	2,2'-oxybis(1-Chloropropane)	330	U
106-44-5	4-Methylphenol	330	U
621-64-7	N-Nitroso-Di-n-Propylamine	330	U
67-72-1	Hexachloroethane	330	U
98-95-3	Nitrobenzene	330	U
78-59-1	Isophorone	330	U
88-75-5	2-Nitrophenol	330	U
105-67-9	2,4-Dimethylphenol	330	U
111-91-1	bis(2-Chloroethoxy)Methane	330	U
120-83-2	2,4-Dichlorophenol	330	U
120-82-1	1,2,4-Trichlorobenzene	330	U
91-20-3	Naphthalene	330	U
106-47-8	4-Chloroaniline	330	U
87-68-3	Hexachlorobutadiene	330	U
59-50-7	4-Chloro-3-Methylphenol	330	U
91-57-6	2-Methylnaphthalene	330	U
77-47-4	Hexachlorocyclopentadiene	330	U
88-06-2	2,4,6-Trichlorophenol	330	U
95-95-4	2,4,5-Trichlorophenol	800	U
91-58-7	2-Chloronaphthalene	330	U
88-74-4	2-Nitroaniline	800	U
131-11-3	Dimethylphthalate	330	U
208-96-8	Acenaphthylene	330	U
99-09-2	3-Nitroaniline	800	U
83-32-9	Acenaphthene	330	U
51-28-5	2,4-Dinitrophenol	800	U

EPA SAMPLE NO.

B07Q07

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 12049 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A212049-04A

Sample wt/vol: 30.7 (g/mL) G Lab File ID: 21229S14

Level: (low/med) LOW Date Received: 12/11/92

% Moisture: 2 decanted: (Y/N) N Date Extracted: 12/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 12/29/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.6

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
100-02-7	4-Nitrophenol	800	U
132-64-9	Dibenzofuran	330	U
121-14-2	2,4-Dinitrotoluene	330	U
606-20-2	2,6-Dinitrotoluene	330	U
84-66-2	Diethylphthalate	330	U
7005-72-3	4-Chlorophenyl-phenylether	330	U
86-73-7	Fluorene	330	U
100-01-6	4-Nitroaniline	800	U
534-52-1	4,6-Dinitro-2-methylphenol	800	U
86-30-6	N-Nitrosodiphenylamine (1)	330	U
101-55-3	4-Bromophenyl-phenylether	330	U
118-74-1	Hexachlorobenzene	330	U
87-86-5	Pentachlorophenol	800	U
85-01-8	Phenanthrene	330	U
120-12-7	Anthracene	330	U
86-74-8	Carbazole	330	U
84-74-2	Di-n-Butylphthalate	330	U
206-44-0	Fluoranthene	330	U
129-00-0	Pyrene	330	U
85-68-7	Butylbenzylphthalate	330	U
91-94-1	3,3'-Dichlorobenzidine	330	U
56-55-3	Benzo(a)Anthracene	330	U
117-81-7	bis(2-Ethylhexyl)Phthalate	330	U
218-01-9	Chrysene	330	U
117-84-0	Di-n-Octyl Phthalate	330	U
205-99-2	Benzo(b)Fluoranthene	330	U
207-08-9	Benzo(k)Fluoranthene	330	U
50-32-8	Benzo(a)Pyrene	330	U
193-39-5	Indeno(1,2,3-cd)Pyrene	330	U
53-70-3	Dibenz(a,h)Anthracene	330	U
191-24-2	Benzo(g,h,i)Perylene	330	U

(1) - Cannot be separated from Diphenylamine

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
B07Q07

ab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 12049 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A212049-04A

Sample wt/vol: 30.7 (g/mL) G Lab File ID: 21229S14

Level: (low/med) LOW Date Received: 12/11/92

% Moisture: 2 decanted: (Y/N) N Date Extracted: 12/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 12/29/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.6

Number TICs found: 3

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN HYDROCARBON	6.65	170	BJ
2.	UNKNOWN HYDROCARBON	7.33	1500	BJ
3.	UNKNOWN ALCOHOL	8.68	200	BJ

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 12049 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A212049

Sample wt/vol: 30.2 (g/mL) G Lab File ID: 21229S1

Level: (low/med) LOW Date Received: 12/11/9

% Moisture: 2 decanted: (Y/N) N Date Extracted: 12/18/9

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 12/29/92

Injection Volume: 2.0(uL) Dilution Factor: 1.

GPC Cleanup: (Y/N) Y pH: 10.4

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	330	U
111-44-4	bis(2-Chloroethyl)Ether	330	U
95-57-8	2-Chlorophenol	330	U
541-73-1	1,3-Dichlorobenzene	330	U
106-46-7	1,4-Dichlorobenzene	330	U
95-50-1	1,2-Dichlorobenzene	330	U
95-48-7	2-Methylphenol	330	U
108-60-1	2,2'-oxybis(1-Chloropropane)	330	U
106-44-5	4-Methylphenol	330	U
621-64-7	N-Nitroso-Di-n-Propylamine	330	U
67-72-1	Hexachloroethane	330	U
98-95-3	Nitrobenzene	330	U
78-59-1	Isophorone	330	U
88-75-5	2-Nitrophenol	330	U
105-67-9	2,4-Dimethylphenol	330	U
111-91-1	bis(2-Chloroethoxy)Methane	330	U
120-83-2	2,4-Dichlorophenol	330	U
120-82-1	1,2,4-Trichlorobenzene	330	U
91-20-3	Naphthalene	330	U
106-47-8	4-Chloroaniline	330	U
87-68-3	Hexachlorobutadiene	330	U
59-50-7	4-Chloro-3-Methylphenol	330	U
91-57-6	2-Methylnaphthalene	330	U
77-47-4	Hexachlorocyclopentadiene	330	U
88-06-2	2,4,6-Trichlorophenol	330	U
95-95-4	2,4,5-Trichlorophenol	810	U
91-58-7	2-Chloronaphthalene	330	U
88-74-4	2-Nitroaniline	810	U
131-11-3	Dimethylphthalate	330	U
208-96-8	Acenaphthylene	330	U
99-09-2	3-Nitroaniline	810	U
83-32-9	Acenaphthene	330	U
51-28-5	2,4-Dinitrophenol	810	U

000017
EPA SAMPLE NO.

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

B07Q08

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 12049 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A212049-05A

Sample wt/vol: 30.2 (g/mL) G Lab File ID: 21229S16

Level: (low/med) LOW Date Received: 12/11/92

% Moisture: 2 decanted: (Y/N) N Date Extracted: 12/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 12/29/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 10.4

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
100-02-7	4-Nitrophenol	810	U
132-64-9	Dibenzofuran	330	U
121-14-2	2,4-Dinitrotoluene	330	U
606-20-2	2,6-Dinitrotoluene	330	U
84-66-2	Diethylphthalate	330	U
7005-72-3	4-Chlorophenyl-phenylether	330	U
86-73-7	Fluorene	330	U
100-01-6	4-Nitroaniline	810	U
534-52-1	4,6-Dinitro-2-methylphenol	810	U
86-30-6	N-Nitrosodiphenylamine (1)	330	U
101-55-3	4-Bromophenyl-phenylether	330	U
118-74-1	Hexachlorobenzene	330	U
87-86-5	Pentachlorophenol	810	U
85-01-8	Phenanthrene	330	U
120-12-7	Anthracene	330	U
86-74-8	Carbazole	330	U
84-74-2	Di-n-Butylphthalate	330	U
206-44-0	Fluoranthene	330	U
129-00-0	Pyrene	330	U
85-68-7	Butylbenzylphthalate	330	U
91-94-1	3,3'-Dichlorobenzidine	330	U
56-55-3	Benzo(a)Anthracene	330	U
117-81-7	bis(2-Ethylhexyl)Phthalate	330	U
218-01-9	Chrysene	330	U
117-84-0	Di-n-Octyl Phthalate	330	U
205-99-2	Benzo(b)Fluoranthene	330	U
207-08-9	Benzo(k)Fluoranthene	330	U
50-32-8	Benzo(a)Pyrene	330	U
193-39-5	Indeno(1,2,3-cd)Pyrene	330	U
53-70-3	Dibenz(a,h)Anthracene	330	U
191-24-2	Benzo(g,h,i)Perylene	330	U

(1) - Cannot be separated from Diphenylamine

000018

EPA SAMPLE NO.

B07Q08

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 12049 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A212049-05A

Sample wt/vol: 30.2 (g/mL) G Lab File ID: 21229S16

Level: (low/med) LOW Date Received: 12/11/92

% Moisture: 2 decanted: (Y/N) N Date Extracted: 12/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 12/29/92

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 10.4

Number TICs found: 4

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN HYDROCARBON	7.38	1600	BJ
2.	UNKNOWN ALCOHOL	8.72	200	J
3.	UNKNOWN CARBOXYLIC ACID ESTE	21.13	540	BJ
4.	UNKNOWN ALKANE	30.37	100	J

000019

EPA SAMPLE NO.

B07Q09

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 12049 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A212049-06A

Sample wt/vol: 30.2 (g/mL) G Lab File ID: 21230S02

Level: (low/med) LOW Date Received: 12/11/92

% Moisture: 3 decanted: (Y/N) N Date Extracted: 12/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 12/30/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.5

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	340	U
111-44-4	bis(2-Chloroethyl)Ether	340	U
95-57-8	2-Chlorophenol	340	U
541-73-1	1,3-Dichlorobenzene	340	U
106-46-7	1,4-Dichlorobenzene	340	U
95-50-1	1,2-Dichlorobenzene	340	U
95-48-7	2-Methylphenol	340	U
108-60-1	2,2'-oxybis(1-Chloropropane)	340	U
106-44-5	4-Methylphenol	340	U
621-64-7	N-Nitroso-Di-n-Propylamine	340	U
67-72-1	Hexachloroethane	340	U
98-95-3	Nitrobenzene	340	U
78-59-1	Isophorone	340	U
88-75-5	2-Nitrophenol	340	U
105-67-9	2,4-Dimethylphenol	340	U
111-91-1	bis(2-Chloroethoxy)Methane	340	U
120-83-2	2,4-Dichlorophenol	340	U
120-82-1	1,2,4-Trichlorobenzene	340	U
91-20-3	Naphthalene	340	U
106-47-8	4-Chloroaniline	340	U
87-68-3	Hexachlorobutadiene	340	U
59-50-7	4-Chloro-3-Methylphenol	340	U
91-57-6	2-Methylnaphthalene	340	U
77-47-4	Hexachlorocyclopentadiene	340	U
88-06-2	2,4,6-Trichlorophenol	340	U
95-95-4	2,4,5-Trichlorophenol	820	U
91-58-7	2-Chloronaphthalene	340	U
88-74-4	2-Nitroaniline	820	U
131-11-3	Dimethylphthalate	340	U
208-96-8	Acenaphthylene	340	U
99-09-2	3-Nitroaniline	820	U
83-32-9	Acenaphthene	340	U
51-28-5	2,4-Dinitrophenol	820	U

EPA SAMPLE NO

B07Q09

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 12049 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A212049-06A

Sample wt/vol: 30.2 (g/mL) G Lab File ID: 21230S02

Level: (low/med) LOW Date Received: 12/11/92

% Moisture: 3 decanted: (Y/N) N Date Extracted: 12/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 12/30/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.5

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
100-02-7	4-Nitrophenol	820	U
132-64-9	Dibenzofuran	340	U
121-14-2	2,4-Dinitrotoluene	340	U
606-20-2	2,6-Dinitrotoluene	340	U
84-66-2	Diethylphthalate	110	J
7005-72-3	4-Chlorophenyl-phenylether	340	U
86-73-7	Fluorene	340	U
100-01-6	4-Nitroaniline	820	U
534-52-1	4,6-Dinitro-2-methylphenol	820	U
86-30-6	N-Nitrosodiphenylamine (1)	340	U
101-55-3	4-Bromophenyl-phenylether	340	U
118-74-1	Hexachlorobenzene	340	U
87-86-5	Pentachlorophenol	820	U
85-01-8	Phenanthrene	340	U
120-12-7	Anthracene	340	U
86-74-8	Carbazole	340	U
84-74-2	Di-n-Butylphthalate	340	U
206-44-0	Fluoranthene	340	U
129-00-0	Pyrene	340	U
85-68-7	Butylbenzylphthalate	340	U
91-94-1	3,3'-Dichlorobenzidine	340	U
56-55-3	Benzo(a)Anthracene	340	U
117-81-7	bis(2-Ethylhexyl)Phthalate	340	U
218-01-9	Chrysene	340	U
117-84-0	Di-n-Octyl Phthalate	340	U
205-99-2	Benzo(b)Fluoranthene	340	U
207-08-9	Benzo(k)Fluoranthene	340	U
50-32-8	Benzo(a)Pyrene	340	U
193-39-5	Indeno(1,2,3-cd)Pyrene	340	U
53-70-3	Dibenz(a,h)Anthracene	340	U
191-24-2	Benzo(g,h,i)Perylene	340	U

(1) - Cannot be separated from Diphenylamine

000021
EPA SAMPLE NO.

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

B07Q09

ıb Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 12049 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A212049-06A

Sample wt/vol: 30.2 (g/mL) G Lab File ID: 21230S02

Level: (low/med) LOW Date Received: 12/11/92

% Moisture: 3 decanted: (Y/N) N Date Extracted: 12/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 12/30/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.5

Number TICs found: 5

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	SUBST. BENZENE	6.38	100	J
2.	UNKNOWN HYDROCARBON	6.65	140	BJ
3.	UNKNOWN HYDROCARBON	7.35	1400	BJ
4.	UNKNOWN ALCOHOL	8.68	240	BJ
5.	UNKNOWN ALKANE	30.33	68	J

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B07Q10

Lab Name: TMA/ARLI Contract: NHC

Lab Code: TMALA Case No.: 12049 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A212049-07A

Sample wt/vol: 30.5 (g/mL) G Lab File ID: 21230S03

Level: (low/med) LOW Date Received: 12/11/92

% Moisture: 6 decanted: (Y/N) N Date Extracted: 12/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 12/30/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.8

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	350	U
111-44-4	bis(2-Chloroethyl)Ether	350	U
95-57-8	2-Chlorophenol	350	U
541-73-1	1,3-Dichlorobenzene	350	U
106-46-7	1,4-Dichlorobenzene	350	U
95-50-1	1,2-Dichlorobenzene	350	U
95-48-7	2-Methylphenol	350	U
108-60-1	2,2'-oxybis(1-Chloropropane)	350	U
106-44-5	4-Methylphenol	350	U
621-64-7	N-Nitroso-Di-n-Propylamine	350	U
67-72-1	Hexachloroethane	350	U
98-95-3	Nitrobenzene	350	U
78-59-1	Isophorone	350	U
88-75-5	2-Nitrophenol	350	U
105-67-9	2,4-Dimethylphenol	350	U
111-91-1	bis(2-Chloroethoxy)Methane	350	U
120-83-2	2,4-Dichlorophenol	350	U
120-82-1	1,2,4-Trichlorobenzene	350	U
91-20-3	Naphthalene	350	U
106-47-8	4-Chloroaniline	350	U
87-68-3	Hexachlorobutadiene	350	U
59-50-7	4-Chloro-3-Methylphenol	350	U
91-57-6	2-Methylnaphthalene	350	U
77-47-4	Hexachlorocyclopentadiene	350	U
88-06-2	2,4,6-Trichlorophenol	350	U
95-95-4	2,4,5-Trichlorophenol	840	U
91-58-7	2-Chloronaphthalene	350	U
88-74-4	2-Nitroaniline	840	U
131-11-3	Dimethylphthalate	350	U
208-96-8	Acenaphthylene	350	U
99-09-2	3-Nitroaniline	840	U
83-32-9	Acenaphthene	350	U
51-28-5	2,4-Dinitrophenol	840	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B07Q10

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 12049 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A212049-07A

Sample wt/vol: 30.5 (g/mL) G Lab File ID: 21230S03

Level: (low/med) LOW Date Received: 12/11/92

% Moisture: 6 decanted: (Y/N) N Date Extracted: 12/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 12/30/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.8

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
100-02-7	4-Nitrophenol	840	U
132-64-9	Dibenzofuran	350	U
121-14-2	2,4-Dinitrotoluene	350	U
606-20-2	2,6-Dinitrotoluene	350	U
84-66-2	Diethylphthalate	350	U
7005-72-3	4-Chlorophenyl-phenylether	350	U
86-73-7	Fluorene	350	U
100-01-6	4-Nitroaniline	840	U
534-52-1	4,6-Dinitro-2-methylphenol	840	U
86-30-6	N-Nitrosodiphenylamine (1)	350	U
101-55-3	4-Bromophenyl-phenylether	350	U
118-74-1	Hexachlorobenzene	350	U
87-86-5	Pentachlorophenol	840	U
85-01-8	Phenanthrene	350	U
120-12-7	Anthracene	350	U
86-74-8	Carbazole	350	U
84-74-2	Di-n-Butylphthalate	350	U
206-44-0	Fluoranthene	350	U
129-00-0	Pyrene	350	U
85-68-7	Butylbenzylphthalate	350	U
91-94-1	3,3'-Dichlorobenzidine	350	U
56-55-3	Benzo(a)Anthracene	350	U
117-81-7	bis(2-Ethylhexyl)Phthalate	350	U
218-01-9	Chrysene	350	U
117-84-0	Di-n-Octyl Phthalate	350	U
205-99-2	Benzo(b)Fluoranthene	350	U
207-08-9	Benzo(k)Fluoranthene	350	U
50-32-8	Benzo(a)Pyrene	350	U
193-39-5	Indeno(1,2,3-cd)Pyrene	350	U
53-70-3	Dibenz(a,h)Anthracene	350	U
191-24-2	Benzo(g,h,i)Perylene	350	U

(1) - Cannot be separated from Diphenylamine

EPA SAMPLE NO.

B07Q10

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 12049 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A212049-07A

Sample wt/vol: 30.5 (g/mL) G Lab File ID: 21230S03

Level: (low/med) LOW Date Received: 12/11/92

% Moisture: 6 decanted: (Y/N) N Date Extracted: 12/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 12/30/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.8

Number TICs found: 7

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN HYDROCARBON	6.63	170	BJ
2.	UNKNOWN HYDROCARBON	7.32	1600	BJ
3.	UNKNOWN ALCOHOL	8.67	240	BJ
4.	UNKNOWN ALCOHOL	8.98	70	BJ
5.	UNKNOWN ALKANE	28.03	170	J
6.	UNKNOWN ALKANE	30.32	660	J
7.	UNKNOWN ALKANE	33.83	380	J

EPA SAMPLE NO.

B07Q11

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 12049 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A212049-08A

Sample wt/vol: 30.5 (g/mL) G Lab File ID: 21230S04

Level: (low/med) LOW Date Received: 12/11/92

% Moisture: 4 decanted: (Y/N) N Date Extracted: 12/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 12/30/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.4

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	340	U
111-44-4	bis(2-Chloroethyl)Ether	340	U
95-57-8	2-Chlorophenol	340	U
541-73-1	1,3-Dichlorobenzene	340	U
106-46-7	1,4-Dichlorobenzene	340	U
95-50-1	1,2-Dichlorobenzene	340	U
95-48-7	2-Methylphenol	340	U
108-60-1	2,2'-oxybis(1-Chloropropane)	340	U
106-44-5	4-Methylphenol	340	U
621-64-7	N-Nitroso-Di-n-Propylamine	340	U
67-72-1	Hexachloroethane	340	U
98-95-3	Nitrobenzene	340	U
78-59-1	Isophorone	340	U
88-75-5	2-Nitrophenol	340	U
105-67-9	2,4-Dimethylphenol	340	U
111-91-1	bis(2-Chloroethoxy)Methane	340	U
120-83-2	2,4-Dichlorophenol	340	U
120-82-1	1,2,4-Trichlorobenzene	340	U
91-20-3	Naphthalene	340	U
106-47-8	4-Chloroaniline	340	U
87-68-3	Hexachlorobutadiene	340	U
59-50-7	4-Chloro-3-Methylphenol	340	U
91-57-6	2-Methylnaphthalene	340	U
77-47-4	Hexachlorocyclopentadiene	340	U
88-06-2	2,4,6-Trichlorophenol	340	U
95-95-4	2,4,5-Trichlorophenol	820	U
91-58-7	2-Chloronaphthalene	340	U
88-74-4	2-Nitroaniline	820	U
131-11-3	Dimethylphthalate	340	U
208-96-8	Acenaphthylene	340	U
99-09-2	3-Nitroaniline	820	U
83-32-9	Acenaphthene	340	U
51-28-5	2,4-Dinitrophenol	820	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B07Q11

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 12049 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A212049-08A

Sample wt/vol: 30.5 (g/mL) G Lab File ID: 21230S04

Level: (low/med) LOW Date Received: 12/11/92

% Moisture: 4 decanted: (Y/N) N Date Extracted: 12/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 12/30/92

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.4

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
100-02-7	4-Nitrophenol	820	U
132-64-9	Dibenzofuran	340	U
121-14-2	2,4-Dinitrotoluene	340	U
606-20-2	2,6-Dinitrotoluene	340	U
84-66-2	Diethylphthalate	340	U
7005-72-3	4-Chlorophenyl-phenylether	340	U
86-73-7	Fluorene	340	U
100-01-6	4-Nitroaniline	820	U
534-52-1	4,6-Dinitro-2-methylphenol	820	U
86-30-6	N-Nitrosodiphenylamine (1)	340	U
101-55-3	4-Bromophenyl-phenylether	340	U
118-74-1	Hexachlorobenzene	340	U
87-86-5	Pentachlorophenol	820	U
85-01-8	Phenanthrene	340	U
120-12-7	Anthracene	340	U
86-74-8	Carbazole	340	U
84-74-2	Di-n-Butylphthalate	340	U
206-44-0	Fluoranthene	340	U
129-00-0	Pyrene	340	U
85-68-7	Butylbenzylphthalate	340	U
91-94-1	3,3'-Dichlorobenzidine	340	U
56-55-3	Benzo(a)Anthracene	340	U
117-81-7	bis(2-Ethylhexyl)Phthalate	340	U
218-01-9	Chrysene	340	U
117-84-0	Di-n-Octyl Phthalate	340	U
205-99-2	Benzo(b)Fluoranthene	340	U
207-08-9	Benzo(k)Fluoranthene	340	U
50-32-8	Benzo(a)Pyrene	340	U
193-39-5	Indeno(1,2,3-cd)Pyrene	340	U
53-70-3	Dibenz(a,h)Anthracene	340	U
191-24-2	Benzo(g,h,i)Perylene	340	U

(1) - Cannot be separated from Diphenylamine

000027
EPA SAMPLE NO.

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

B07Q11

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 12049 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A212049-08A

Sample wt/vol: 30.5 (g/mL) G Lab File ID: 21230S04

Level: (low/med) LOW Date Received: 12/11/92

% Moisture: 4 decanted: (Y/N) N Date Extracted: 12/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 12/30/92

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.4

Number TICs found: 5

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	SUBST. BENZENE	6.37	100	J
2.	UNKNOWN HYDROCARBON	7.33	1400	BJ
3.	UNKNOWN ALCOHOL	8.68	270	BJ
4.	UNKNOWN ALCOHOL	9.00	100	BJ
5.	UNKNOWN ALKANE	30.33	170	J

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B07Q12

ab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 12049 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A212049-12E

Sample wt/vol: 30.3 (g/mL) G Lab File ID: 21230S08

Level: (low/med) LOW Date Received: 12/11/92

% Moisture: 2 decanted: (Y/N) N Date Extracted: 12/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 12/30/92

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.1

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	330	U
111-44-4	bis(2-Chloroethyl)Ether	330	U
95-57-8	2-Chlorophenol	330	U
541-73-1	1,3-Dichlorobenzene	330	U
106-46-7	1,4-Dichlorobenzene	330	U
95-50-1	1,2-Dichlorobenzene	330	U
95-48-7	2-Methylphenol	330	U
108-60-1	2,2'-oxybis(1-Chloropropane)	330	U
106-44-5	4-Methylphenol	330	U
621-64-7	N-Nitroso-Di-n-Propylamine	330	U
67-72-1	Hexachloroethane	330	U
98-95-3	Nitrobenzene	330	U
78-59-1	Isophorone	330	U
88-75-5	2-Nitrophenol	330	U
105-67-9	2,4-Dimethylphenol	330	U
111-91-1	bis(2-Chloroethoxy)Methane	330	U
120-83-2	2,4-Dichlorophenol	330	U
120-82-1	1,2,4-Trichlorobenzene	330	U
91-20-3	Naphthalene	330	U
106-47-8	4-Chloroaniline	330	U
87-68-3	Hexachlorobutadiene	330	U
59-50-7	4-Chloro-3-Methylphenol	330	U
91-57-6	2-Methylnaphthalene	330	U
77-47-4	Hexachlorocyclopentadiene	330	U
88-06-2	2,4,6-Trichlorophenol	330	U
95-95-4	2,4,5-Trichlorophenol	810	U
91-58-7	2-Chloronaphthalene	330	U
88-74-4	2-Nitroaniline	810	U
131-11-3	Dimethylphthalate	330	U
208-96-8	Acenaphthylene	330	U
99-09-2	3-Nitroaniline	810	U
83-32-9	Acenaphthene	330	U
51-28-5	2,4-Dinitrophenol	810	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B07Q12

ab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 12049 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A212049-12E

Sample wt/vol: 30.3 (g/mL) G Lab File ID: 21230S08

Level: (low/med) LOW Data Received: 12/11/92

% Moisture: 2 decanted: (Y/N) N Data Extracted: 12/18/92

Concentrated Extract Volume: 500.0 (uL) Data Analyzed: 12/30/92

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.1

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
100-02-7	4-Nitrophenol	810	U
132-64-9	Dibenzofuran	330	U
121-14-2	2,4-Dinitrotoluene	330	U
606-20-2	2,6-Dinitrotoluene	330	U
84-66-2	Diethylphthalate	330	U
7005-72-3	4-Chlorophenyl-phenylether	330	U
86-73-7	Fluorene	330	U
100-01-6	4-Nitroaniline	810	U
534-52-1	4,6-Dinitro-2-methylphenol	810	U
86-30-6	N-Nitrosodiphenylamine (1)	330	U
101-55-3	4-Bromophenyl-phenylether	330	U
118-74-1	Hexachlorobenzene	330	U
87-86-5	Pentachlorophenol	810	U
85-01-8	Phenanthrene	330	U
120-12-7	Anthracene	330	U
86-74-8	Carbazole	330	U
84-74-2	Di-n-Butylphthalate	330	U
206-44-0	Fluoranthene	330	U
129-00-0	Pyrene	330	U
85-68-7	Butylbenzylphthalate	330	U
91-94-1	3,3'-Dichlorobenzidine	330	U
56-55-3	Benzo(a)Anthracene	330	U
117-81-7	bis(2-Ethylhexyl)Phthalate	330	U
218-01-9	Chrysene	330	U
117-84-0	Di-n-Octyl Phthalate	330	U
205-99-2	Benzo(b)Fluoranthene	330	U
207-08-9	Benzo(k)Fluoranthene	330	U
50-32-8	Benzo(a)Pyrene	330	U
193-39-5	Indeno(1,2,3-cd)Pyrene	330	U
53-70-3	Dibenz(a,h)Anthracene	330	U
191-24-2	Benzo(g,h,i)Perylene	330	U

(1) - Cannot be separated from Diphenylamine

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B07Q12

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 12049 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A212049-12E

Sample wt/vol: 30.3 (g/mL) G Lab File ID: 21230S08

Level: (low/med) LOW Date Received: 12/11/92

% Moisture: 2 decanted: (Y/N) N Date Extracted: 12/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 12/30/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.1

Number TICs found: 7

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	SUBST. BENZENE	6.38	67	J
2.	UNKNOWN HYDROCARBON	6.67	170	BJ
3.	UNKNOWN HYDROCARBON	7.37	1500	BJ
4.	UNKNOWN ALCOHOL	8.70	270	BJ
5.	UNKNOWN ALCOHOL	9.02	67	BJ
6.	UNKNOWN ALKANE	28.08	67	J
7.	UNKNOWN ALKANE	30.37	130	J

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B07Q14

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 12049 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A212049-09A

Sample wt/vol: 30.5 (g/mL) G Lab File ID: 21230S05

Level: (low/med) LOW Date Received: 12/11/92

% Moisture: 6 decanted: (Y/N) N Date Extracted: 12/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 12/30/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	350	U
111-44-4	bis(2-Chloroethyl)Ether	350	U
95-57-8	2-Chlorophenol	350	U
541-73-1	1,3-Dichlorobenzene	350	U
106-46-7	1,4-Dichlorobenzene	350	U
95-50-1	1,2-Dichlorobenzene	350	U
95-48-7	2-Methylphenol	350	U
108-60-1	2,2'-oxybis(1-Chloropropane)	350	U
106-44-5	4-Methylphenol	350	U
621-64-7	N-Nitroso-Di-n-Propylamine	350	U
67-72-1	Hexachloroethane	350	U
98-95-3	Nitrobenzene	350	U
78-59-1	Isophorone	350	U
88-75-5	2-Nitrophenol	350	U
105-67-9	2,4-Dimethylphenol	350	U
111-91-1	bis(2-Chloroethoxy)Methane	350	U
120-83-2	2,4-Dichlorophenol	350	U
120-82-1	1,2,4-Trichlorobenzene	350	U
91-20-3	Naphthalene	350	U
106-47-8	4-Chloroaniline	350	U
87-68-3	Hexachlorobutadiene	350	U
59-50-7	4-Chloro-3-Methylphenol	350	U
91-57-6	2-Methylnaphthalene	350	U
77-47-4	Hexachlorocyclopentadiene	350	U
88-06-2	2,4,6-Trichlorophenol	350	U
95-95-4	2,4,5-Trichlorophenol	840	U
91-58-7	2-Chloronaphthalene	350	U
88-74-4	2-Nitroaniline	840	U
131-11-3	Dimethylphthalate	350	U
208-96-8	Acenaphthylene	350	U
99-09-2	3-Nitroaniline	840	U
83-32-9	Acenaphthene	350	U
51-28-5	2,4-Dinitrophenol	840	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B07Q14

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 12049 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A212049-09A

Sample wt/vol: 30.5 (g/mL) G Lab File ID: 21230S05

Level: (low/med) LOW Date Received: 12/11/92

% Moisture: 6 decanted: (Y/N) N Date Extracted: 12/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 12/30/92

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
100-02-7	4-Nitrophenol	840	U
132-64-9	Dibenzofuran	350	U
121-14-2	2,4-Dinitrotoluene	350	U
606-20-2	2,6-Dinitrotoluene	350	U
84-66-2	Diethylphthalate	350	U
7005-72-3	4-Chlorophenyl-phenylether	350	U
86-73-7	Fluorene	350	U
100-01-6	4-Nitroaniline	840	U
534-52-1	4,6-Dinitro-2-methylphenol	840	U
86-30-6	N-Nitrosodiphenylamine (1)	350	U
101-55-3	4-Bromophenyl-phenylether	350	U
118-74-1	Hexachlorobenzene	350	U
87-86-5	Pentachlorophenol	840	U
85-01-8	Phenanthrene	350	U
120-12-7	Anthracene	350	U
86-74-8	Carbazole	350	U
84-74-2	Di-n-Butylphthalate	350	U
206-44-0	Fluoranthene	350	U
129-00-0	Pyrene	350	U
85-68-7	Butylbenzylphthalate	350	U
91-94-1	3,3'-Dichlorobenzidine	350	U
56-55-3	Benzo(a)Anthracene	350	U
117-81-7	bis(2-Ethylhexyl)Phthalate	350	U
218-01-9	Chrysene	350	U
117-84-0	Di-n-Octyl Phthalate	350	U
205-99-2	Benzo(b)Fluoranthene	350	U
207-08-9	Benzo(k)Fluoranthene	350	U
50-32-8	Benzo(a)Pyrene	350	U
193-39-5	Indeno(1,2,3-cd)Pyrene	350	U
53-70-3	Dibenz(a,h)Anthracene	350	U
191-24-2	Benzo(g,h,i)Perylene	350	U

(1) - Cannot be separated from Diphenylamine

EPA SAMPLE NO.

B07Q14

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

ab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 12049 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A212049-09A

Sample wt/vol: 30.5 (g/mL) G Lab File ID: 21230S05

Level: (low/med) LOW Date Received: 12/11/92

% Moisture: 6 decanted: (Y/N) N Date Extracted: 12/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 12/30/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.0

Number TICs found: 4

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN HYDROCARBON	7.37	1300	BJ
2.	UNKNOWN ALCOHOL	8.72	210	BJ
3.	UNKNOWN ALCOHOL	9.03	70	BJ
4.	UNKNOWN ALKANE	30.37	70	J

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B07Q15

ab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 12049 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A212049-10A

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 21230S06

Level: (low/med) LOW Date Received: 12/11/92

% Moisture: 4 decanted: (Y/N) N Date Extracted: 12/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 12/30/92

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	340	U
111-44-4	bis(2-Chloroethyl)Ether	340	U
95-57-8	2-Chlorophenol	340	U
541-73-1	1,3-Dichlorobenzene	340	U
106-46-7	1,4-Dichlorobenzene	340	U
95-50-1	1,2-Dichlorobenzene	340	U
95-48-7	2-Methylphenol	340	U
108-60-1	2,2'-oxybis(1-Chloropropane)	340	U
106-44-5	4-Methylphenol	340	U
621-64-7	N-Nitroso-Di-n-Propylamine	340	U
67-72-1	Hexachloroethane	340	U
98-95-3	Nitrobenzene	340	U
78-59-1	Isophorone	340	U
88-75-5	2-Nitrophenol	340	U
105-67-9	2,4-Dimethylphenol	340	U
111-91-1	bis(2-Chloroethoxy)Methane	340	U
120-83-2	2,4-Dichlorophenol	340	U
120-82-1	1,2,4-Trichlorobenzene	340	U
91-20-3	Naphthalene	340	U
106-47-8	4-Chloroaniline	340	U
87-68-3	Hexachlorobutadiene	340	U
59-50-7	4-Chloro-3-Methylphenol	340	U
91-57-6	2-Methylnaphthalene	340	U
77-47-4	Hexachlorocyclopentadiene	340	U
88-06-2	2,4,6-Trichlorophenol	340	U
95-95-4	2,4,5-Trichlorophenol	830	U
91-58-7	2-Chloronaphthalene	340	U
88-74-4	2-Nitroaniline	830	U
131-11-3	Dimethylphthalate	340	U
208-96-8	Acenaphthylene	340	U
99-09-2	3-Nitroaniline	830	U
83-32-9	Acenaphthene	340	U
51-28-5	2,4-Dinitrophenol	830	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B07Q15

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 12049 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A212049-10A

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 21230S06

Level: (low/med) LOW Date Received: 12/11/92

% Moisture: 4 decanted: (Y/N) N Date Extracted: 12/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 12/30/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
100-02-7	4-Nitrophenol	830	U
132-64-9	Dibenzofuran	340	U
121-14-2	2,4-Dinitrotoluene	340	U
606-20-2	2,6-Dinitrotoluene	340	U
84-66-2	Diethylphthalate	340	U
7005-72-3	4-Chlorophenyl-phenylether	340	U
86-73-7	Fluorene	340	U
100-01-6	4-Nitroaniline	830	U
534-52-1	4,6-Dinitro-2-methylphenol	830	U
86-30-6	N-Nitrosodiphenylamine (1)	340	U
101-55-3	4-Bromophenyl-phenylether	340	U
118-74-1	Hexachlorobenzene	340	U
87-86-5	Pentachlorophenol	830	U
85-01-8	Phenanthrene	340	U
120-12-7	Anthracene	340	U
86-74-8	Carbazole	340	U
84-74-2	Di-n-Butylphthalate	340	U
206-44-0	Fluoranthene	340	U
129-00-0	Pyrene	340	U
85-68-7	Butylbenzylphthalate	340	U
91-94-1	3,3'-Dichlorobenzidine	340	U
56-55-3	Benzo(a)Anthracene	340	U
117-81-7	bis(2-Ethylhexyl)Phthalate	340	U
218-01-9	Chrysene	340	U
117-84-0	Di-n-Octyl Phthalate	340	U
205-99-2	Benzo(b)Fluoranthene	340	U
207-08-9	Benzo(k)Fluoranthene	340	U
50-32-8	Benzo(a)Pyrene	340	U
193-39-5	Indeno(1,2,3-cd)Pyrene	340	U
53-70-3	Dibenz(a,h)Anthracene	340	U
191-24-2	Benzo(g,h,i)Perylene	340	U

(1) - Cannot be separated from Diphenylamine

EPA SAMPLE NO.

B07Q15

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 12049 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A212049-10A

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 21230S06

Level: (low/med) LOW Date Received: 12/11/92

% Moisture: 4 decanted: (Y/N) N Date Extracted: 12/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 12/30/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.0

Number TICs found: 9

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	SUBST. BENZENE	6.40	100	J
2.	UNKNOWN HYDROCARBON	6.68	140	BJ
3.	UNKNOWN HYDROCARBON	7.37	1600	BJ
4.	UNKNOWN ALCOHOL	8.72	280	BJ
5.	UNKNOWN ALCOHOL	9.03	100	BJ
6.	PROPANOIC ACID ISOMER	18.13	69	J
7.	UNKNOWN ALKANE	28.10	240	J
8.	UNKNOWN ALKANE	30.37	590	J
9.	UNKNOWN ALKANE	33.87	170	J

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE

B07Q16

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 12049 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A212049-11A

Sample wt/vol: 30.2 (g/mL) G Lab File ID: 21230S07

Level: (low/med) LOW Date Received: 12/11/92

% Moisture: 6 decanted: (Y/N) N Date Extracted: 12/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 12/30/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	350	U
111-44-4	bis(2-Chloroethyl)Ether	350	U
95-57-8	2-Chlorophenol	350	U
541-73-1	1,3-Dichlorobenzene	350	U
106-46-7	1,4-Dichlorobenzene	350	U
95-50-1	1,2-Dichlorobenzene	350	U
95-48-7	2-Methylphenol	350	U
108-60-1	2,2'-oxybis(1-Chloropropane)	350	U
106-44-5	4-Methylphenol	350	U
621-64-7	N-Nitroso-Di-n-Propylamine	350	U
67-72-1	Hexachloroethane	350	U
98-95-3	Nitrobenzene	350	U
78-59-1	Isophorone	350	U
88-75-5	2-Nitrophenol	350	U
105-67-9	2,4-Dimethylphenol	350	U
111-91-1	bis(2-Chloroethoxy)Methane	350	U
120-83-2	2,4-Dichlorophenol	350	U
120-82-1	1,2,4-Trichlorobenzene	350	U
91-20-3	Naphthalene	350	U
106-47-8	4-Chloroaniline	350	U
87-68-3	Hexachlorobutadiene	350	U
59-50-7	4-Chloro-3-Methylphenol	350	U
91-57-6	2-Methylnaphthalene	350	U
77-47-4	Hexachlorocyclopentadiene	350	U
88-06-2	2,4,6-Trichlorophenol	350	U
95-95-4	2,4,5-Trichlorophenol	840	U
91-58-7	2-Chloronaphthalene	350	U
88-74-4	2-Nitroaniline	840	U
131-11-3	Dimethylphthalate	350	U
208-96-8	Acenaphthylene	350	U
99-09-2	3-Nitroaniline	840	U
83-32-9	Acenaphthene	350	U
51-28-5	2,4-Dinitrophenol	840	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B07Q16

ab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 12049 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A212049-11A

Sample wt/vol: 30.2 (g/mL) G Lab File ID: 21230S07

Level: (low/med) LOW Date Received: 12/11/92

% Moisture: 6 decanted: (Y/N) N Date Extracted: 12/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 12/30/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
100-02-7	4-Nitrophenol	840	U
132-64-9	Dibenzofuran	350	U
121-14-2	2,4-Dinitrotoluene	350	U
606-20-2	2,6-Dinitrotoluene	350	U
84-66-2	Diethylphthalate	350	U
7005-72-3	4-Chlorophenyl-phenylether	350	U
86-73-7	Fluorene	350	U
100-01-6	4-Nitroaniline	840	U
534-52-1	4,6-Dinitro-2-methylphenol	840	U
86-30-6	N-Nitrosodiphenylamine (1)	350	U
101-55-3	4-Bromophenyl-phenylether	350	U
118-74-1	Hexachlorobenzene	350	U
87-86-5	Pentachlorophenol	840	U
85-01-8	Phenanthrene	350	U
120-12-7	Anthracene	350	U
86-74-8	Carbazole	350	U
84-74-2	Di-n-Butylphthalate	350	U
206-44-0	Fluoranthene	350	U
129-00-0	Pyrene	350	U
85-68-7	Butylbenzylphthalate	350	U
91-94-1	3,3'-Dichlorobenzidine	350	U
56-55-3	Benzo(a)Anthracene	350	U
117-81-7	bis(2-Ethylhexyl)Phthalate	350	U
218-01-9	Chrysene	350	U
117-84-0	Di-n-Octyl Phthalate	350	U
205-99-2	Benzo(b)Fluoranthene	350	U
207-08-9	Benzo(k)Fluoranthene	350	U
50-32-8	Benzo(a)Pyrene	350	U
193-39-5	Indeno(1,2,3-cd)Pyrene	350	U
53-70-3	Dibenz(a,h)Anthracene	350	U
191-24-2	Benzo(g,h,i)Perylene	350	U

(1) - Cannot be separated from Diphenylamine

EPA SAMPLE NO.

B07Q16

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 12049 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A212049-11A

Sample wt/vol: 30.2 (g/mL) G Lab File ID: 21230S07

Level: (low/med) LOW Date Received: 12/11/92

% Moisture: 6 decanted: (Y/N) N Date Extracted: 12/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 12/30/92

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.0

Number TICs found: 4

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN HYDROCARBON	7.35	1700	BJ
2.	UNKNOWN ALCOHOL	8.70	280	BJ
3.	UNKNOWN ALCOHOL	9.02	70	BJ
4.	UNKNOWN HYDROCARBON	29.55	110	J

ATTACHMENT 3

Summary of Data Qualifications

DATA QUALIFICATION SUMMARY - FORM B-7

SDG: 12049	REVIEWER: AS	DATE: 4/9/93	PAGE 1 OF 3
COMMENTS: Semivolatiles		Level 2 Validation	
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Unknown HC 6.68	UJN	B07Q04	TIC in blank
" " 7.37			
Unknown Alcohol 8.72			
" " 9.03			
Unknown H.C. 7.37	UJN	B07Q05	
Unknown alcohol 8.72			
Unknown alcohol 9.03			
Unknown Carboxylic acid 22.13			
Unknown H.C. 6.67	UJN	B07Q06	
" " 7.35			
Unknown alcohol 8.68			
" " 9.02			
Unknown Carboxylic acid			
Unknown H.C. 6.65	UJN	B07Q07	
" " 7.33			
" " alcohol 8.68			
Unknown H.C. 7.38	UJN	B07Q08	
Unknown alcohol 8.72	JN		presumptive endence
Unknown Carboxylic 22.13	UJN		TIC in blank
Unknown alkane 30.37	JN		presumptive endence
Unknown H.C. 6.65	UJN	B07Q09	TIC in blank
Unknown H.C. 7.35			
Unknown alcohol 8.68			
Subst. benzene 6.38	JN		presumptive endence
Unknown alkane 30.33			

4/12/93

DATA QUALIFICATION SUMMARY - FORM B-7

SDG: 12049	REVIEWER: AS	DATE: 4/9/93	PAGE 2 OF 3
COMMENTS: Semivolatiles			(Level 2 Validation)
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Unknown HC 6.63	UJN	B07Q10	TIC in blank ~~presumptive~~
Unknown HC 7.32			
Unknown alcohol 8.67			
" " 8.98			
Unknown Alkane 28.03	JN		presumptive evidence
" 30.32			
" 33.83			
Subst. Benzene 6.37	JN	B07Q11	
Unknown alkane 30.37			
Unknown HC 7.33	UJN		TIC in blank
Unknown alcohol 8.68			
Unknown alcohol 9.00			
Subst. benzene 6.38	JN	B07Q12	presumptive evidence
unknown alkane 28.08			
unknown alkane 30.37			
Unknown HC 6.67	UJN	~~B07Q13~~	TIC in blank
" " 7.37			
Unknown alcohol 8.70			
Unknown alcohol 9.02			
Unknown HC 7.37	UJN	B07Q14	TIC in blank
Unknown alcohol 8.72			
" " 9.03			
Unknown alkane 30.37	JN		presumptive evidence

✓ 4/12/93

DATA QUALIFICATION SUMMARY - FORM B-7

SDG: 12049	REVIEWER: AS	DATE: 4/9/93	PAGE 3 OF 3
COMMENTS: Semivolatiles		Level 2 Validation	
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Subs benzene (6.40)	JN	B07Q15	presumptive evidence ~~TIC in blank/sample~~
propanoic acid (18.13)			
Unknown alkane (28.10)			
unknown alkane (30.37)			
unknown alkane (33.87)			
Unknown H.C (6.68)	UJN		TIC in blank
(7.37)			
Unknown alcohol (8.72)			
(9.03)			
Unknown H.C (29.55)	JN	B07Q16	presumptive evidence ~~TIC in blank~~
Unknown H.C (7.35)	UJN		TIC in blank
unknown alcohol (8.70)			
unknown alcohol (9.02)			
Diethyl Phthalate	J	B07Q09	below CRQL

ATTACHMENT 4

As Qualified Data Summary

000004
EPA SAMPLE NO.

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

B07Q04

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 12049 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A212049-01A

Sample wt/vol: 30.2 (g/mL) G Lab File ID: 21229S09

Level: (low/med) LOW Date Received: 12/11/92

% Moisture: 8 decanted: (Y/N) N Date Extracted: 12/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 12/29/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 9.1

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	Qualifier
108-95-2	Phenol	360	U	(U)
111-44-4	bis(2-Chloroethyl)Ether	360	U	
95-57-8	2-Chlorophenol	360	U	
541-73-1	1,3-Dichlorobenzene	360	U	
106-46-7	1,4-Dichlorobenzene	360	U	
95-50-1	1,2-Dichlorobenzene	360	U	
95-48-7	2-Methylphenol	360	U	
108-60-1	2,2'-oxybis(1-Chloropropane)	360	U	
106-44-5	4-Methylphenol	360	U	
621-64-7	N-Nitroso-Di-n-Propylamine	360	U	
67-72-1	Hexachloroethane	360	U	
98-95-3	Nitrobenzene	360	U	
78-59-1	Isophorone	360	U	
88-75-5	2-Nitrophenol	360	U	
105-67-9	2,4-Dimethylphenol	360	U	
111-91-1	bis(2-Chloroethoxy)Methane	360	U	
120-83-2	2,4-Dichlorophenol	360	U	
120-82-1	1,2,4-Trichlorobenzene	360	U	
91-20-3	Naphthalene	360	U	
106-47-8	4-Chloroaniline	360	U	
87-68-3	Hexachlorobutadiene	360	U	
59-50-7	4-Chloro-3-Methylphenol	360	U	
91-57-6	2-Methylnaphthalene	360	U	
77-47-4	Hexachlorocyclopentadiene	360	U	
88-06-2	2,4,6-Trichlorophenol	360	U	
95-95-4	2,4,5-Trichlorophenol	860	U	
91-58-7	2-Chloronaphthalene	360	U	
88-74-4	2-Nitroaniline	860	U	
131-11-3	Dimethylphthalate	360	U	
208-96-8	Acenaphthylene	360	U	
99-09-2	3-Nitroaniline	860	U	
83-32-9	Acenaphthene	360	U	
51-28-5	2,4-Dinitrophenol	860	U	

✓ aur 4/12/93

000005
EPA SAMPLE NO.

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

B07Q04

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 12049 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A212049-01A

Sample wt/vol: 30.2 (g/mL) G Lab File ID: 21229S09

Level: (low/med) LOW Date Received: 12/11/92

% Moisture: 8 decanted: (Y/N) N Date Extracted: 12/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 12/29/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 9.1

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
100-02-7	4-Nitrophenol	860	U
132-64-9	Dibenzofuran	360	U
121-14-2	2,4-Dinitrotoluene	360	U
606-20-2	2,6-Dinitrotoluene	360	U
84-66-2	Diethylphthalate	360	U
7005-72-3	4-Chlorophenyl-phenylether	360	U
86-73-7	Fluorene	360	U
100-01-6	4-Nitroaniline	860	U
534-52-1	4,6-Dinitro-2-methylphenol	860	U
86-30-6	N-Nitrosodiphenylamine (1)	360	U
101-55-3	4-Bromophenyl-phenylether	360	U
118-74-1	Hexachlorobenzene	360	U
87-86-5	Pentachlorophenol	860	U
85-01-8	Phenanthrene	360	U
120-12-7	Anthracene	360	U
86-74-8	Carbazole	360	U
84-74-2	Di-n-Butylphthalate	360	U
206-44-0	Fluoranthene	360	U
129-00-0	Pyrene	360	U
85-68-7	Butylbenzylphthalate	360	U
91-94-1	3,3'-Dichlorobenzidine	360	U
56-55-3	Benzo(a)Anthracene	360	U
117-81-7	bis(2-Ethylhexyl)Phthalate	360	U
218-01-9	Chrysene	360	U
117-84-0	Di-n-Octyl Phthalate	360	U
205-99-2	Benzo(b)Fluoranthene	360	U
207-08-9	Benzo(k)Fluoranthene	360	U
50-32-8	Benzo(a)Pyrene	360	U
193-39-5	Indeno(1,2,3-cd)Pyrene	360	U
53-70-3	Dibenz(a,h)Anthracene	360	U
191-24-2	Benzo(g,h,i)Perylene	360	U

Qualifier

(1) - Cannot be separated from Diphenylamine

✓ cmc 4/12/93

000006

EPA SAMPLE NO.

B07Q04

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 12049 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A212049-01A

Sample wt/vol: 30.2 (g/mL) G Lab File ID: 21229S09

Level: (low/med) LOW Date Received: 12/11/92

% Moisture: 8 decanted: (Y/N) N Date Extracted: 12/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 12/29/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 9.1

Number TICs found: 4

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q	Qual.
1.	UNKNOWN HYDROCARBON	6.68	140	BJ	UJN
2.	UNKNOWN HYDROCARBON	7.37	1500	BJ	
3.	UNKNOWN ALCOHOL	8.72	220	BJ	
4.	UNKNOWN ALCOHOL	9.03	72	BJ	

✓ uwc 4/12/93

000007

EPA SAMPLE NO.

B07Q05

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 12049 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A212049-02A

Sample wt/vol: 30.1 (g/mL) G Lab File ID: 21229S12

Level: (low/med) LOW Date Received: 12/11/92

% Moisture: 3 decanted: (Y/N) N Date Extracted: 12/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 12/29/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.5

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	Qual
108-95-2	Phenol	340	U	(u)
111-44-4	bis(2-Chloroethyl)Ether	340	U	
95-57-8	2-Chlorophenol	340	U	
541-73-1	1,3-Dichlorobenzene	340	U	
106-46-7	1,4-Dichlorobenzene	340	U	
95-50-1	1,2-Dichlorobenzene	340	U	
95-48-7	2-Methylphenol	340	U	
108-60-1	2,2'-oxybis(1-Chloropropane)	340	U	
106-44-5	4-Methylphenol	340	U	
621-64-7	N-Nitroso-Di-n-Propylamine	340	U	
67-72-1	Hexachloroethane	340	U	
98-95-3	Nitrobenzene	340	U	
78-59-1	Isophorone	340	U	
88-75-5	2-Nitrophenol	340	U	
105-67-9	2,4-Dimethylphenol	340	U	
111-91-1	bis(2-Chloroethoxy)Methane	340	U	
120-83-2	2,4-Dichlorophenol	340	U	
120-82-1	1,2,4-Trichlorobenzene	340	U	
91-20-3	Naphthalene	340	U	
106-47-8	4-Chloroaniline	340	U	
87-68-3	Hexachlorobutadiene	340	U	
59-50-7	4-Chloro-3-Methylphenol	340	U	
91-57-6	2-Methylnaphthalene	340	U	
77-47-4	Hexachlorocyclopentadiene	340	U	
88-06-2	2,4,6-Trichlorophenol	340	U	
95-95-4	2,4,5-Trichlorophenol	820	U	
91-58-7	2-Chloronaphthalene	340	U	
88-74-4	2-Nitroaniline	820	U	
131-11-3	Dimethylphthalate	340	U	
208-96-8	Acenaphthylene	340	U	
99-09-2	3-Nitroaniline	820	U	
83-32-9	Acenaphthene	340	U	
51-28-5	2,4-Dinitrophenol	820	U	

✓ cmc 4/12/93

000008

EPA SAMPLE NO.

B07Q05

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 12049 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A212049-02A

Sample wt/vol: 30.1 (g/mL) G Lab File ID: 21229S12

Level: (low/med) LOW Date Received: 12/11/92

% Moisture: 3 decanted: (Y/N) N Date Extracted: 12/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 12/29/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.5

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
100-02-7	4-Nitrophenol	820	U
132-64-9	Dibenzofuran	340	U
121-14-2	2,4-Dinitrotoluene	340	U
606-20-2	2,6-Dinitrotoluene	340	U
84-66-2	Diethylphthalate	340	U
7005-72-3	4-Chlorophenyl-phenylether	340	U
86-73-7	Fluorene	340	U
100-01-6	4-Nitroaniline	820	U
534-52-1	4,6-Dinitro-2-methylphenol	820	U
86-30-6	N-Nitrosodiphenylamine (1)	340	U
101-55-3	4-Bromophenyl-phenylether	340	U
118-74-1	Hexachlorobenzene	340	U
87-86-5	Pentachlorophenol	820	U
85-01-8	Phenanthrene	340	U
120-12-7	Anthracene	340	U
86-74-8	Carbazole	340	U
84-74-2	Di-n-Butylphthalate	340	U
206-44-0	Fluoranthene	340	U
129-00-0	Pyrene	340	U
85-68-7	Butylbenzylphthalate	340	U
91-94-1	3,3'-Dichlorobenzidine	340	U
56-55-3	Benzo(a)Anthracene	340	U
117-81-7	bis(2-Ethylhexyl)Phthalate	340	U
218-01-9	Chrysene	340	U
117-84-0	Di-n-Octyl Phthalate	340	U
205-99-2	Benzo(b)Fluoranthene	340	U
207-08-9	Benzo(k)Fluoranthene	340	U
50-32-8	Benzo(a)Pyrene	340	U
193-39-5	Indeno(1,2,3-cd)Pyrene	340	U
53-70-3	Dibenz(a,h)Anthracene	340	U
191-24-2	Benzo(g,h,i)Perylene	340	U

(1) - Cannot be separated from Diphenylamine

✓ aac 4/12/93

000009

EPA SAMPLE NO.

B07Q05

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 12049 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A212049-02A

Sample wt/vol: 30.1 (g/mL) G Lab File ID: 21229S12

Level: (low/med) LOW Date Received: 12/11/92

% Moisture: 3 decanted: (Y/N) N Date Extracted: 12/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 12/29/92

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.5

Number TICs found: 4

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q	Qual.
1.	UNKNOWN HYDROCARBON	7.37	1500	BJ	UJN
2.	UNKNOWN ALCOHOL	8.72	210	BJ	
3.	UNKNOWN ALCOHOL	9.03	68	BJ	
4.	UNKNOWN CARBOXYLIC ACID ESTE	21.13	480	BJ	

✓ aml 4/12/93

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
000010

B07Q06

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 12049 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A212049-03A

Sample wt/vol: 30.4 (g/mL) G Lab File ID: 21229S13

Level: (low/med) LOW Date Received: 12/11/92

% Moisture: 2 decanted: (Y/N) N Date Extracted: 12/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 12/29/92

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 9.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	Qual
108-95-2	Phenol	330	U	u
111-44-4	bis(2-Chloroethyl)Ether	330	U	
95-57-8	2-Chlorophenol	330	U	
541-73-1	1,3-Dichlorobenzene	330	U	
106-46-7	1,4-Dichlorobenzene	330	U	
95-50-1	1,2-Dichlorobenzene	330	U	
95-48-7	2-Methylphenol	330	U	
108-60-1	2,2'-oxybis(1-Chloropropane)	330	U	
106-44-5	4-Methylphenol	330	U	
621-64-7	N-Nitroso-Di-n-Propylamine	330	U	
67-72-1	Hexachloroethane	330	U	
98-95-3	Nitrobenzene	330	U	
78-59-1	Isophorone	330	U	
88-75-5	2-Nitrophenol	330	U	
105-67-9	2,4-Dimethylphenol	330	U	
111-91-1	bis(2-Chloroethoxy)Methane	330	U	
120-83-2	2,4-Dichlorophenol	330	U	
120-82-1	1,2,4-Trichlorobenzene	330	U	
91-20-3	Naphthalene	330	U	
106-47-8	4-Chloroaniline	330	U	
87-68-3	Hexachlorobutadiene	330	U	
59-50-7	4-Chloro-3-Methylphenol	330	U	
91-57-6	2-Methylnaphthalene	330	U	
77-47-4	Hexachlorocyclopentadiene	330	U	
88-06-2	2,4,6-Trichlorophenol	330	U	
95-95-4	2,4,5-Trichlorophenol	810	U	
91-58-7	2-Chloronaphthalene	330	U	
88-74-4	2-Nitroaniline	810	U	
131-11-3	Dimethylphthalate	330	U	
208-96-8	Acenaphthylene	330	U	
99-09-2	3-Nitroaniline	810	U	
83-32-9	Acenaphthene	330	U	
51-28-5	2,4-Dinitrophenol	810	U	

CMK ✓ 4/12/93

000011
EPA SAMPLE NO.

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

B07Q06

Lab Name: TMA/ARLI Contract: NHC

Lab Code: TMALA Case No.: 12049 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A212049-03A

Sample wt/vol: 30.4 (g/mL) G Lab File ID: 21229813

Level: (low/med) LOW Date Received: 12/11/92

% Moisture: 2 decanted: (Y/N) N Date Extracted: 12/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 12/29/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 9.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	Qual.
100-02-7	4-Nitrophenol	810	U	U
132-64-9	Dibenzofuran	330	U	
121-14-2	2,4-Dinitrotoluene	330	U	
606-20-2	2,6-Dinitrotoluene	330	U	
84-66-2	Diethylphthalate	330	U	
7005-72-3	4-Chlorophenyl-phenylether	330	U	
86-73-7	Fluorene	330	U	
100-01-6	4-Nitroaniline	810	U	
534-52-1	4,6-Dinitro-2-methylphenol	810	U	
86-30-6	N-Nitrosodiphenylamine (1)	330	U	
101-55-3	4-Bromophenyl-phenylether	330	U	
118-74-1	Hexachlorobenzene	330	U	
87-86-5	Pentachlorophenol	810	U	
85-01-8	Phenanthrene	330	U	
120-12-7	Anthracene	330	U	
86-74-8	Carbazole	330	U	
84-74-2	Di-n-Butylphthalate	330	U	
206-44-0	Fluoranthene	330	U	
129-00-0	Pyrene	330	U	
85-68-7	Butylbenzylphthalate	330	U	
91-94-1	3,3'-Dichlorobenzidine	330	U	
56-55-3	Benzo(a)Anthracene	330	U	
117-81-7	bis(2-Ethylhexyl)Phthalate	330	U	
218-01-9	Chrysene	330	U	
117-84-0	Di-n-Octyl Phthalate	330	U	
205-99-2	Benzo(b)Fluoranthene	330	U	
207-08-9	Benzo(k)Fluoranthene	330	U	
50-32-8	Benzo(a)Pyrene	330	U	
193-39-5	Indeno(1,2,3-cd)Pyrene	330	U	
53-70-3	Dibenz(a,h)Anthracene	330	U	
191-24-2	Benzo(g,h,i)Perylene	330	U	

(1) - Cannot be separated from Diphenylamine

✓ cwc 4/12/93

000012
EPA SAMPLE NO.

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

B07Q06

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 12049 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A212049-03A

Sample wt/vol: 30.4 (g/mL) G Lab File ID: 21229S13

Level: (low/med) LOW Date Received: 12/11/92

% Moisture: 2 decanted: (Y/N) N Date Extracted: 12/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 12/29/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 9.0

Number TICs found: 5

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN HYDROCARBON	6.67	200	BJ
2.	UNKNOWN HYDROCARBON	7.35	2000	BJ
3.	UNKNOWN ALCOHOL	8.68	300	BJ
4.	UNKNOWN ALCOHOL	9.02	67	BJ
5.	UNKNOWN CARBOXYLIC ACID ESTE	21.10	470	BJ

✓ cmc 4/12/93

000013
EPA SAMPLE NO.

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

B07Q07

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 12049 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A212049-04A

Sample wt/vol: 30.7 (g/mL) G Lab File ID: 21229S14

Level: (low/med) LOW Date Received: 12/11/92

% Moisture: 2 decanted: (Y/N) N Date Extracted: 12/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 12/29/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.6

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	Qual
108-95-2	Phenol	330	U	U
111-44-4	bis(2-Chloroethyl)Ether	330	U	
95-57-8	2-Chlorophenol	330	U	
541-73-1	1,3-Dichlorobenzene	330	U	
106-46-7	1,4-Dichlorobenzene	330	U	
95-50-1	1,2-Dichlorobenzene	330	U	
95-48-7	2-Methylphenol	330	U	
108-60-1	2,2'-oxybis(1-Chloropropane)	330	U	
106-44-5	4-Methylphenol	330	U	
621-64-7	N-Nitroso-Di-n-Propylamine	330	U	
67-72-1	Hexachloroethane	330	U	
98-95-3	Nitrobenzene	330	U	
78-59-1	Isophorone	330	U	
88-75-5	2-Nitrophenol	330	U	
105-67-9	2,4-Dimethylphenol	330	U	
111-91-1	bis(2-Chloroethoxy)Methane	330	U	
120-83-2	2,4-Dichlorophenol	330	U	
120-82-1	1,2,4-Trichlorobenzene	330	U	
91-20-3	Naphthalene	330	U	
106-47-8	4-Chloroaniline	330	U	
87-68-3	Hexachlorobutadiene	330	U	
59-50-7	4-Chloro-3-Methylphenol	330	U	
91-57-6	2-Methylnaphthalene	330	U	
77-47-4	Hexachlorocyclopentadiene	330	U	
88-06-2	2,4,6-Trichlorophenol	330	U	
95-95-4	2,4,5-Trichlorophenol	800	U	
91-58-7	2-Chloronaphthalene	330	U	
88-74-4	2-Nitroaniline	800	U	
131-11-3	Dimethylphthalate	330	U	
208-96-8	Acenaphthylene	330	U	
99-09-2	3-Nitroaniline	800	U	
83-32-9	Acenaphthene	330	U	
51-28-5	2,4-Dinitrophenol	800	U	

✓ CMR 4/12/93

000014

EPA SAMPLE NO.

B07Q07

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 12049 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A212049-04A

Sample wt/vol: 30.7 (g/mL) G Lab File ID: 21229S14

Level: (low/med) LOW Date Received: 12/11/92

% Moisture: 2 decanted: (Y/N) N Date Extracted: 12/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 12/29/92

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.6

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
100-02-7	4-Nitrophenol	800	U
132-64-9	Dibenzofuran	330	U
121-14-2	2,4-Dinitrotoluene	330	U
606-20-2	2,6-Dinitrotoluene	330	U
84-66-2	Diethylphthalate	330	U
7005-72-3	4-Chlorophenyl-phenylether	330	U
86-73-7	Fluorene	330	U
100-01-6	4-Nitroaniline	800	U
534-52-1	4,6-Dinitro-2-methylphenol	800	U
86-30-6	N-Nitrosodiphenylamine (1)	330	U
101-55-3	4-Bromophenyl-phenylether	330	U
118-74-1	Hexachlorobenzene	330	U
87-86-5	Pentachlorophenol	800	U
85-01-8	Phenanthrene	330	U
120-12-7	Anthracene	330	U
86-74-8	Carbazole	330	U
84-74-2	Di-n-Butylphthalate	330	U
206-44-0	Fluoranthene	330	U
129-00-0	Pyrene	330	U
85-68-7	Butylbenzylphthalate	330	U
91-94-1	3,3'-Dichlorobenzidine	330	U
56-55-3	Benzo(a)Anthracene	330	U
117-81-7	bis(2-Ethylhexyl)Phthalate	330	U
218-01-9	Chrysene	330	U
117-84-0	Di-n-Octyl Phthalate	330	U
205-99-2	Benzo(b)Fluoranthene	330	U
207-08-9	Benzo(k)Fluoranthene	330	U
50-32-8	Benzo(a)Pyrene	330	U
193-39-5	Indeno(1,2,3-cd)Pyrene	330	U
53-70-3	Dibenz(a,h)Anthracene	330	U
191-24-2	Benzo(g,h,i)Perylene	330	U

(1) - Cannot be separated from Diphenylamine

✓ cwc 4/12/93

000015

EPA SAMPLE NO.

B07Q07

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 12049 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A212049-04A

Sample wt/vol: 30.7 (g/mL) G Lab File ID: 21229S14

Level: (low/med) LOW Date Received: 12/11/92

% Moisture: 2 decanted: (Y/N) N Date Extracted: 12/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 12/29/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.6

Number TICs found: 3

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN HYDROCARBON	6.65	170	BJ
2.	UNKNOWN HYDROCARBON	7.33	1500	BJ
3.	UNKNOWN ALCOHOL	8.68	200	BJ

Qu
UJ

✓ case 4/12/93

000016

EPA SAMPLE №

B07Q08

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 12049 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A212049-05A

Sample wt/vol: 30.2 (g/mL) G Lab File ID: 21229S16

Level: (low/med) LOW Date Received: 12/11/92

% Moisture: 2 decanted: (Y/N) N Date Extracted: 12/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 12/29/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 10.4

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	Qua
108-95-2	Phenol	330	U	U
111-44-4	bis(2-Chloroethyl)Ether	330	U	
95-57-8	2-Chlorophenol	330	U	
541-73-1	1,3-Dichlorobenzene	330	U	
106-46-7	1,4-Dichlorobenzene	330	U	
95-50-1	1,2-Dichlorobenzene	330	U	
95-48-7	2-Methylphenol	330	U	
108-60-1	2,2'-oxybis(1-Chloropropane)	330	U	
106-44-5	4-Methylphenol	330	U	
621-64-7	N-Nitroso-Di-n-Propylamine	330	U	
67-72-1	Hexachloroethane	330	U	
98-95-3	Nitrobenzene	330	U	
78-59-1	Isophorone	330	U	
88-75-5	2-Nitrophenol	330	U	
105-67-9	2,4-Dimethylphenol	330	U	
111-91-1	bis(2-Chloroethoxy)Methane	330	U	
120-83-2	2,4-Dichlorophenol	330	U	
120-82-1	1,2,4-Trichlorobenzene	330	U	
91-20-3	Naphthalene	330	U	
106-47-8	4-Chloroaniline	330	U	
87-68-3	Hexachlorobutadiene	330	U	
59-50-7	4-Chloro-3-Methylphenol	330	U	
91-57-6	2-Methylnaphthalene	330	U	
77-47-4	Hexachlorocyclopentadiene	330	U	
88-06-2	2,4,6-Trichlorophenol	330	U	
95-95-4	2,4,5-Trichlorophenol	810	U	
91-58-7	2-Chloronaphthalene	330	U	
88-74-4	2-Nitroaniline	810	U	
131-11-3	Dimethylphthalate	330	U	
208-96-8	Acenaphthylene	330	U	
99-09-2	3-Nitroaniline	810	U	
83-32-9	Acenaphthene	330	U	
51-28-5	2,4-Dinitrophenol	810	U	

✓ cmc 4/12/93

000017
EPA SAMPLE NO.

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

B07Q08

Lab Name: TMA/ARLI Contract: NHC

Lab Code: TMALA Case No.: 12049 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A212049-05A

Sample wt/vol: 30.2 (g/mL) G Lab File ID: 21229S16

Level: (low/med) LOW Date Received: 12/11/92

% Moisture: 2 decanted: (Y/N) N Date Extracted: 12/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 12/29/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 10.4

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
100-02-7	4-Nitrophenol	810	U
132-64-9	Dibenzofuran	330	U
121-14-2	2,4-Dinitrotoluene	330	U
606-20-2	2,6-Dinitrotoluene	330	U
84-66-2	Diethylphthalate	330	U
7005-72-3	4-Chlorophenyl-phenylether	330	U
86-73-7	Fluorene	330	U
100-01-6	4-Nitroaniline	810	U
534-52-1	4,6-Dinitro-2-methylphenol	810	U
86-30-6	N-Nitrosodiphenylamine (1)	330	U
101-55-3	4-Bromophenyl-phenylether	330	U
118-74-1	Hexachlorobenzene	330	U
87-86-5	Pentachlorophenol	810	U
85-01-8	Phenanthrene	330	U
120-12-7	Anthracene	330	U
86-74-8	Carbazole	330	U
84-74-2	Di-n-Butylphthalate	330	U
206-44-0	Fluoranthene	330	U
129-00-0	Pyrene	330	U
85-68-7	Butylbenzylphthalate	330	U
91-94-1	3,3'-Dichlorobenzidine	330	U
56-55-3	Benzo(a)Anthracene	330	U
117-81-7	bis(2-Ethylhexyl)Phthalate	330	U
218-01-9	Chrysene	330	U
117-84-0	Di-n-Octyl Phthalate	330	U
205-99-2	Benzo(b)Fluoranthene	330	U
207-08-9	Benzo(k)Fluoranthene	330	U
50-32-8	Benzo(a)Pyrene	330	U
193-39-5	Indeno(1,2,3-cd)Pyrene	330	U
53-70-3	Dibenz(a,h)Anthracene	330	U
191-24-2	Benzo(g,h,i)Perylene	330	U

Qual

(1) - Cannot be separated from Diphenylamine

✓ aue 4/12/93

000018

EPA SAMPLE NO.

B07Q08

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 12049 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A212049-05A

Sample wt/vol: 30.2 (g/mL) G Lab File ID: 21229S16

Level: (low/med) LOW Date Received: 12/11/92

% Moisture: 2 decanted: (Y/N) N Date Extracted: 12/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 12/29/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 10.4

Number TICs found: 4

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN HYDROCARBON	7.38	1600	BJ
2.	UNKNOWN ALCOHOL	8.72	200	J
3.	UNKNOWN CARBOXYLIC ACID ESTE	21.13	540	BJ
4.	UNKNOWN ALKANE	30.37	100	J

✓ aue 4/12/93

000019

EPA SAMPLE NO.

B07Q09

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 12049 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A212049-06A

Sample wt/vol: 30.2 (g/mL) G Lab File ID: 21230S02

Level: (low/med) LOW Date Received: 12/11/92

% Moisture: 3 decanted: (Y/N) N Date Extracted: 12/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 12/30/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.5

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	Qual
108-95-2	Phenol	340	U	U
111-44-4	bis(2-Chloroethyl)Ether	340	U	
95-57-8	2-Chlorophenol	340	U	
541-73-1	1,3-Dichlorobenzene	340	U	
106-46-7	1,4-Dichlorobenzene	340	U	
95-50-1	1,2-Dichlorobenzene	340	U	
95-48-7	2-Methylphenol	340	U	
108-60-1	2,2'-oxybis(1-Chloropropane)	340	U	
106-44-5	4-Methylphenol	340	U	
621-64-7	N-Nitroso-Di-n-Propylamine	340	U	
67-72-1	Hexachloroethane	340	U	
98-95-3	Nitrobenzene	340	U	
78-59-1	Isophorone	340	U	
88-75-5	2-Nitrophenol	340	U	
105-67-9	2,4-Dimethylphenol	340	U	
111-91-1	bis(2-Chloroethoxy)Methane	340	U	
120-83-2	2,4-Dichlorophenol	340	U	
120-82-1	1,2,4-Trichlorobenzene	340	U	
91-20-3	Naphthalene	340	U	
106-47-8	4-Chloroaniline	340	U	
87-68-3	Hexachlorobutadiene	340	U	
59-50-7	4-Chloro-3-Methylphenol	340	U	
91-57-6	2-Methylnaphthalene	340	U	
77-47-4	Hexachlorocyclopentadiene	340	U	
88-06-2	2,4,6-Trichlorophenol	340	U	
95-95-4	2,4,5-Trichlorophenol	820	U	
91-58-7	2-Chloronaphthalene	340	U	
88-74-4	2-Nitroaniline	820	U	
131-11-3	Dimethylphthalate	340	U	
208-96-8	Acenaphthylene	340	U	
99-09-2	3-Nitroaniline	820	U	
83-32-9	Acenaphthene	340	U	
51-28-5	2,4-Dinitrophenol	820	U	

✓ cmc 4/12/93

000020

EPA SAMPLE NO.

B07Q09

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 12049 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A212049-06A

Sample wt/vol: 30.2 (g/mL) G Lab File ID: 21230S02

Level: (low/med) LOW Date Received: 12/11/92

% Moisture: 3 decanted: (Y/N) N Date Extracted: 12/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 12/30/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.5

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	Qual
100-02-7	4-Nitrophenol	820	U	U
132-64-9	Dibenzofuran	340	U	
121-14-2	2,4-Dinitrotoluene	340	U	
606-20-2	2,6-Dinitrotoluene	340	U	
84-66-2	Diethylphthalate	110	J	J
7005-72-3	4-Chlorophenyl-phenylether	340	U	U
86-73-7	Fluorene	340	U	
100-01-6	4-Nitroaniline	820	U	
534-52-1	4,6-Dinitro-2-methylphenol	820	U	
86-30-6	N-Nitrosodiphenylamine (1)	340	U	
101-55-3	4-Bromophenyl-phenylether	340	U	
118-74-1	Hexachlorobenzene	340	U	
87-86-5	Pentachlorophenol	820	U	
85-01-8	Phenanthrene	340	U	
120-12-7	Anthracene	340	U	
86-74-8	Carbazole	340	U	
84-74-2	Di-n-Butylphthalate	340	U	
206-44-0	Fluoranthene	340	U	
129-00-0	Pyrene	340	U	
85-68-7	Butylbenzylphthalate	340	U	
91-94-1	3,3'-Dichlorobenzidine	340	U	
56-55-3	Benzo(a)Anthracene	340	U	
117-81-7	bis(2-Ethylhexyl)Phthalate	340	U	
218-01-9	Chrysene	340	U	
117-84-0	Di-n-Octyl Phthalate	340	U	
205-99-2	Benzo(b)Fluoranthene	340	U	
207-08-9	Benzo(k)Fluoranthene	340	U	
50-32-8	Benzo(a)Pyrene	340	U	
193-39-5	Indeno(1,2,3-cd)Pyrene	340	U	
53-70-3	Dibenz(a,h)Anthracene	340	U	
191-24-2	Benzo(g,h,i)Perylene	340	U	

(1) - Cannot be separated from Diphenylamine

✓ uwc 4/12/93

000021
EPA SAMPLE NO.

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

B07Q09

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 12049 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A212049-06A

Sample wt/vol: 30.2 (g/mL) G Lab File ID: 21230S02

Level: (low/med) LOW Date Received: 12/11/92

% Moisture: 3 decanted: (Y/N) N Date Extracted: 12/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 12/30/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.5

Number TICs found: 5

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q	Qu
1.	SUBST. BENZENE	6.38	100	J	JN
2.	UNKNOWN HYDROCARBON	6.65	140	BJ	JN
3.	UNKNOWN HYDROCARBON	7.35	1400	BJ	
4.	UNKNOWN ALCOHOL	8.68	240	BJ	
5.	UNKNOWN ALKANE	30.33	68	J	JN

✓ cmc 4/12/93

000022

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B07Q10

Lab Name: TMA/ARLI Contract: NHC

Lab Code: TMALA Case No.: 12049 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A212049-07A

Sample wt/vol: 30.5 (g/mL) G Lab File ID: 21230S03

Level: (low/med) LOW Date Received: 12/11/92

% Moisture: 6 decanted: (Y/N) N Date Extracted: 12/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 12/30/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.8

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	Qual.
108-95-2	Phenol	350	U	U
111-44-4	bis(2-Chloroethyl)Ether	350	U	
95-57-8	2-Chlorophenol	350	U	
541-73-1	1,3-Dichlorobenzene	350	U	
106-46-7	1,4-Dichlorobenzene	350	U	
95-50-1	1,2-Dichlorobenzene	350	U	
95-48-7	2-Methylphenol	350	U	
108-60-1	2,2'-oxybis(1-Chloropropane)	350	U	
106-44-5	4-Methylphenol	350	U	
621-64-7	N-Nitroso-Di-n-Propylamine	350	U	
67-72-1	Hexachloroethane	350	U	
98-95-3	Nitrobenzene	350	U	
78-59-1	Isophorone	350	U	
88-75-5	2-Nitrophenol	350	U	
105-67-9	2,4-Dimethylphenol	350	U	
111-91-1	bis(2-Chloroethoxy)Methane	350	U	
120-83-2	2,4-Dichlorophenol	350	U	
120-82-1	1,2,4-Trichlorobenzene	350	U	
91-20-3	Naphthalene	350	U	
106-47-8	4-Chloroaniline	350	U	
87-68-3	Hexachlorobutadiene	350	U	
59-50-7	4-Chloro-3-Methylphenol	350	U	
91-57-6	2-Methylnaphthalene	350	U	
77-47-4	Hexachlorocyclopentadiene	350	U	
88-06-2	2,4,6-Trichlorophenol	350	U	
95-95-4	2,4,5-Trichlorophenol	840	U	
91-58-7	2-Chloronaphthalene	350	U	
88-74-4	2-Nitroaniline	840	U	
131-11-3	Dimethylphthalate	350	U	
208-96-8	Acenaphthylene	350	U	
99-09-2	3-Nitroaniline	840	U	
83-32-9	Acenaphthene	350	U	
51-28-5	2,4-Dinitrophenol	840	U	

✓ cmc 4/12/93

EPA SAMPLE NO

B07Q10

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 12049 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A212049-07A

Sample wt/vol: 30.5 (g/mL) G Lab File ID: 21230S03

Level: (low/med) LOW Date Received: 12/11/92

% Moisture: 6 decanted: (Y/N) N Date Extracted: 12/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 12/30/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.8

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	Qual
100-02-7	4-Nitrophenol	840	U	U
132-64-9	Dibenzofuran	350	U	
121-14-2	2,4-Dinitrotoluene	350	U	
606-20-2	2,6-Dinitrotoluene	350	U	
84-66-2	Diethylphthalate	350	U	
7005-72-3	4-Chlorophenyl-phenylether	350	U	
86-73-7	Fluorene	350	U	
100-01-6	4-Nitroaniline	840	U	
534-52-1	4,6-Dinitro-2-methylphenol	840	U	
86-30-6	N-Nitrosodiphenylamine (1)	350	U	
101-55-3	4-Bromophenyl-phenylether	350	U	
118-74-1	Hexachlorobenzene	350	U	
87-86-5	Pentachlorophenol	840	U	
85-01-8	Phenanthrene	350	U	
120-12-7	Anthracene	350	U	
86-74-8	Carbazole	350	U	
84-74-2	Di-n-Butylphthalate	350	U	
206-44-0	Fluoranthene	350	U	
129-00-0	Pyrene	350	U	
85-68-7	Butylbenzylphthalate	350	U	
91-94-1	3,3'-Dichlorobenzidine	350	U	
56-55-3	Benzo(a)Anthracene	350	U	
117-81-7	bis(2-Ethylhexyl)Phthalate	350	U	
218-01-9	Chrysene	350	U	
117-84-0	Di-n-Octyl Phthalate	350	U	
205-99-2	Benzo(b)Fluoranthene	350	U	
207-08-9	Benzo(k)Fluoranthene	350	U	
50-32-8	Benzo(a)Pyrene	350	U	
193-39-5	Indeno(1,2,3-cd)Pyrene	350	U	
53-70-3	Dibenz(a,h)Anthracene	350	U	
191-24-2	Benzo(g,h,i)Perylene	350	U	

(1) - Cannot be separated from Diphenylamine

✓ CWR 4/12/93

EPA SAMPLE NO

B07Q10

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: TMA/ARLI Contract: NHC

Lab Code: TMALA Case No.: 12049 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A212049-07A

Sample wt/vol: 30.5 (g/mL) G Lab File ID: 21230S03

Level: (low/med) LOW Date Received: 12/11/92

% Moisture: 6 decanted: (Y/N) N Date Extracted: 12/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 12/30/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.8

Number TICs found: 7

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN HYDROCARBON	6.63	170	BJ
2.	UNKNOWN HYDROCARBON	7.32	1600	BJ
3.	UNKNOWN ALCOHOL	8.67	240	BJ
4.	UNKNOWN ALCOHOL	8.98	70	BJ
5.	UNKNOWN ALKANE	28.03	170	J
6.	UNKNOWN ALKANE	30.32	660	J
7.	UNKNOWN ALKANE	33.83	380	J

✓ 4/12/93

000025

EPA SAMPLE NO.

B07Q11

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 12049 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A212049-08A

Sample wt/vol: 30.5 (g/mL) G Lab File ID: 21230S04

Level: (low/med) LOW Date Received: 12/11/92

% Moisture: 4 decanted: (Y/N) N Date Extracted: 12/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 12/30/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.4

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	Qua
108-95-2	Phenol	340	U	U
111-44-4	bis(2-Chloroethyl)Ether	340	U	
95-57-8	2-Chlorophenol	340	U	
541-73-1	1,3-Dichlorobenzene	340	U	
106-46-7	1,4-Dichlorobenzene	340	U	
95-50-1	1,2-Dichlorobenzene	340	U	
95-48-7	2-Methylphenol	340	U	
108-60-1	2,2'-oxybis(1-Chloropropane)	340	U	
106-44-5	4-Methylphenol	340	U	
621-64-7	N-Nitroso-Di-n-Propylamine	340	U	
67-72-1	Hexachloroethane	340	U	
98-95-3	Nitrobenzene	340	U	
78-59-1	Isophorone	340	U	
88-75-5	2-Nitrophenol	340	U	
105-67-9	2,4-Dimethylphenol	340	U	
111-91-1	bis(2-Chloroethoxy)Methane	340	U	
120-83-2	2,4-Dichlorophenol	340	U	
120-82-1	1,2,4-Trichlorobenzene	340	U	
91-20-3	Naphthalene	340	U	
106-47-8	4-Chloroaniline	340	U	
87-68-3	Hexachlorobutadiene	340	U	
59-50-7	4-Chloro-3-Methylphenol	340	U	
91-57-6	2-Methylnaphthalene	340	U	
77-47-4	Hexachlorocyclopentadiene	340	U	
88-06-2	2,4,6-Trichlorophenol	340	U	
95-95-4	2,4,5-Trichlorophenol	820	U	
91-58-7	2-Chloronaphthalene	340	U	
88-74-4	2-Nitroaniline	820	U	
131-11-3	Dimethylphthalate	340	U	
208-96-8	Acenaphthylene	340	U	
99-09-2	3-Nitroaniline	820	U	
83-32-9	Acenaphthene	340	U	
51-28-5	2,4-Dinitrophenol	820	U	

✓ cwk 4/12/93

EPA SAMPLE NO.

B07Q11

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 12049 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A212049-08A

Sample wt/vol: 30.5 (g/mL) G Lab File ID: 21230S04

Level: (low/med) LOW Date Received: 12/11/92

% Moisture: 4 decanted: (Y/N) N Date Extracted: 12/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 12/30/92

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.4

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	Qual.
100-02-7	4-Nitrophenol	820	U	u
132-64-9	Dibenzofuran	340	U	
121-14-2	2,4-Dinitrotoluene	340	U	
606-20-2	2,6-Dinitrotoluene	340	U	
84-66-2	Diethylphthalate	340	U	
7005-72-3	4-Chlorophenyl-phenylether	340	U	
86-73-7	Fluorene	340	U	
100-01-6	4-Nitroaniline	820	U	
534-52-1	4,6-Dinitro-2-methylphenol	820	U	
86-30-6	N-Nitrosodiphenylamine (1)	340	U	
101-55-3	4-Bromophenyl-phenylether	340	U	
118-74-1	Hexachlorobenzene	340	U	
87-86-5	Pentachlorophenol	820	U	
85-01-8	Phenanthrene	340	U	
120-12-7	Anthracene	340	U	
86-74-8	Carbazole	340	U	
84-74-2	Di-n-Butylphthalate	340	U	
206-44-0	Fluoranthene	340	U	
129-00-0	Pyrene	340	U	
85-68-7	Butylbenzylphthalate	340	U	
91-94-1	3,3'-Dichlorobenzidine	340	U	
56-55-3	Benzo(a)Anthracene	340	U	
117-81-7	bis(2-Ethylhexyl)Phthalate	340	U	
218-01-9	Chrysene	340	U	
117-84-0	Di-n-Octyl Phthalate	340	U	
205-99-2	Benzo(b)Fluoranthene	340	U	
207-08-9	Benzo(k)Fluoranthene	340	U	
50-32-8	Benzo(a)Pyrene	340	U	
193-39-5	Indeno(1,2,3-cd)Pyrene	340	U	
53-70-3	Dibenz(a,h)Anthracene	340	U	
191-24-2	Benzo(g,h,i)Perylene	340	U	

(1) - Cannot be separated from Diphenylamine

✓ cmc 4/12/93

000027
EPA SAMPLE NO.

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

B07Q11

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 12049 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A212049-08A

Sample wt/vol: 30.5 (g/mL) G Lab File ID: 21230S04

Level: (low/med) LOW Date Received: 12/11/92

% Moisture: 4 decanted: (Y/N) N Date Extracted: 12/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 12/30/92

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.4

Number TICs found: 5

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	SUBST. BENZENE	6.37	100	J
2.	UNKNOWN HYDROCARBON	7.33	1400	BJ
3.	UNKNOWN ALCOHOL	8.68	270	BJ
4.	UNKNOWN ALCOHOL	9.00	100	BJ
5.	UNKNOWN ALKANE	30.33	170	J

Q
J
J
J

✓ CWR 4/12/93

000028

EPA SAMPLE NO.

B07Q12

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 12049 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A212049-12E

Sample wt/vol: 30.3 (g/mL) G Lab File ID: 21230S08

Level: (low/med) LOW Date Received: 12/11/92

% Moisture: 2 decanted: (Y/N) N Date Extracted: 12/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 12/30/92

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.1

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	Qual
108-95-2	Phenol	330	U	U
111-44-4	bis(2-Chloroethyl)Ether	330	U	
95-57-8	2-Chlorophenol	330	U	
541-73-1	1,3-Dichlorobenzene	330	U	
106-46-7	1,4-Dichlorobenzene	330	U	
95-50-1	1,2-Dichlorobenzene	330	U	
95-48-7	2-Methylphenol	330	U	
108-60-1	2,2'-oxybis(1-Chloropropane)	330	U	
106-44-5	4-Methylphenol	330	U	
621-64-7	N-Nitroso-Di-n-Propylamine	330	U	
67-72-1	Hexachloroethane	330	U	
98-95-3	Nitrobenzene	330	U	
78-59-1	Isophorone	330	U	
88-75-5	2-Nitrophenol	330	U	
105-67-9	2,4-Dimethylphenol	330	U	
111-91-1	bis(2-Chloroethoxy)Methane	330	U	
120-83-2	2,4-Dichlorophenol	330	U	
120-82-1	1,2,4-Trichlorobenzene	330	U	
91-20-3	Naphthalene	330	U	
106-47-8	4-Chloroaniline	330	U	
87-68-3	Hexachlorobutadiene	330	U	
59-50-7	4-Chloro-3-Methylphenol	330	U	
91-57-6	2-Methylnaphthalene	330	U	
77-47-4	Hexachlorocyclopentadiene	330	U	
88-06-2	2,4,6-Trichlorophenol	330	U	
95-95-4	2,4,5-Trichlorophenol	810	U	
91-58-7	2-Chloronaphthalene	330	U	
88-74-4	2-Nitroaniline	810	U	
131-11-3	Dimethylphthalate	330	U	
208-96-8	Acenaphthylene	330	U	
99-09-2	3-Nitroaniline	810	U	
83-32-9	Acenaphthene	330	U	
51-28-5	2,4-Dinitrophenol	810	U	

✓ uwc 4/12/93

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B07Q12

Lab Name: TMA/ARLI Contract: NHC

Lab Code: TMALA Case No.: 12049 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A212049-12E

Sample wt/vol: 30.3 (g/mL) G Lab File ID: 21230S08

Level: (low/med) LOW Date Received: 12/11/92

% Moisture: 2 decanted: (Y/N) N Date Extracted: 12/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 12/30/92

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.1

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	Qual.
100-02-7	4-Nitrophenol	810	U	(u)
132-64-9	Dibenzofuran	330	U	
121-14-2	2,4-Dinitrotoluene	330	U	
606-20-2	2,6-Dinitrotoluene	330	U	
84-66-2	Diethylphthalate	330	U	
7005-72-3	4-Chlorophenyl-phenylether	330	U	
86-73-7	Fluorene	330	U	
100-01-6	4-Nitroaniline	810	U	
534-52-1	4,6-Dinitro-2-methylphenol	810	U	
86-30-6	N-Nitrosodiphenylamine (1)	330	U	
101-55-3	4-Bromophenyl-phenylether	330	U	
118-74-1	Hexachlorobenzene	330	U	
87-86-5	Pentachlorophenol	810	U	
85-01-8	Phenanthrene	330	U	
120-12-7	Anthracene	330	U	
86-74-8	Carbazole	330	U	
84-74-2	Di-n-Butylphthalate	330	U	
206-44-0	Fluoranthene	330	U	
129-00-0	Pyrene	330	U	
85-68-7	Butylbenzylphthalate	330	U	
91-94-1	3,3'-Dichlorobenzidine	330	U	
56-55-3	Benzo(a)Anthracene	330	U	
117-81-7	bis(2-Ethylhexyl)Phthalate	330	U	
218-01-9	Chrysene	330	U	
117-84-0	Di-n-Octyl Phthalate	330	U	
205-99-2	Benzo(b)Fluoranthene	330	U	
207-08-9	Benzo(k)Fluoranthene	330	U	
50-32-8	Benzo(a)Pyrene	330	U	
193-39-5	Indeno(1,2,3-cd)Pyrene	330	U	
53-70-3	Dibenz(a,h)Anthracene	330	U	
191-24-2	Benzo(g,h,i)Perylene	330	U	

(1) - Cannot be separated from Diphenylamine

✓ CWR 4/12/93

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B07Q12

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 12049 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A212049-12E

Sample wt/vol: 30.3 (g/mL) G Lab File ID: 21230S08

Level: (low/med) LOW Date Received: 12/11/92

% Moisture: 2 decanted: (Y/N) N Date Extracted: 12/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 12/30/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.1

Number TICs found: 7

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	SUBST. BENZENE	6.38	67	J
2.	UNKNOWN HYDROCARBON	6.67	170	BJ
3.	UNKNOWN HYDROCARBON	7.37	1500	BJ
4.	UNKNOWN ALCOHOL	8.70	270	BJ
5.	UNKNOWN ALCOHOL	9.02	67	BJ
6.	UNKNOWN ALKANE	28.08	67	J
7.	UNKNOWN ALKANE	30.37	130	J

✓ CWR 4/12/93

EPA SAMPLE NO

B07Q14

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 12049 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A212049-09A

Sample wt/vol: 30.5 (g/mL) G Lab File ID: 21230S05

Level: (low/med) LOW Date Received: 12/11/92

% Moisture: 6 decanted: (Y/N) N Date Extracted: 12/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 12/30/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	Qual
108-95-2	Phenol	350	U	(u)
111-44-4	bis(2-Chloroethyl)Ether	350	U	
95-57-8	2-Chlorophenol	350	U	
541-73-1	1,3-Dichlorobenzene	350	U	
106-46-7	1,4-Dichlorobenzene	350	U	
95-50-1	1,2-Dichlorobenzene	350	U	
95-48-7	2-Methylphenol	350	U	
108-60-1	2,2'-oxybis(1-Chloropropane)	350	U	
106-44-5	4-Methylphenol	350	U	
621-64-7	N-Nitroso-Di-n-Propylamine	350	U	
67-72-1	Hexachloroethane	350	U	
98-95-3	Nitrobenzene	350	U	
78-59-1	Isophorone	350	U	
88-75-5	2-Nitrophenol	350	U	
105-67-9	2,4-Dimethylphenol	350	U	
111-91-1	bis(2-Chloroethoxy)Methane	350	U	
120-83-2	2,4-Dichlorophenol	350	U	
120-82-1	1,2,4-Trichlorobenzene	350	U	
91-20-3	Naphthalene	350	U	
106-47-8	4-Chloroaniline	350	U	
87-68-3	Hexachlorobutadiene	350	U	
59-50-7	4-Chloro-3-Methylphenol	350	U	
91-57-6	2-Methylnaphthalene	350	U	
77-47-4	Hexachlorocyclopentadiene	350	U	
88-06-2	2,4,6-Trichlorophenol	350	U	
95-95-4	2,4,5-Trichlorophenol	840	U	
91-58-7	2-Chloronaphthalene	350	U	
88-74-4	2-Nitroaniline	840	U	
131-11-3	Dimethylphthalate	350	U	
208-96-8	Acenaphthylene	350	U	
99-09-2	3-Nitroaniline	840	U	
83-32-9	Acenaphthene	350	U	
51-28-5	2,4-Dinitrophenol	840	U	

✓ ame 4/12/93

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B07Q14

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 12049 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A212049-09A

Sample wt/vol: 30.5 (g/mL) G Lab File ID: 21230S05

Level: (low/med) LOW Date Received: 12/11/92

% Moisture: 6 decanted: (Y/N) N Date Extracted: 12/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 12/30/92

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.0

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND		Q	Qual
100-02-7	4-Nitrophenol	840	U	U
132-64-9	Dibenzofuran	350	U	
121-14-2	2,4-Dinitrotoluene	350	U	
606-20-2	2,6-Dinitrotoluene	350	U	
84-66-2	Diethylphthalate	350	U	
7005-72-3	4-Chlorophenyl-phenylether	350	U	
86-73-7	Fluorene	350	U	
100-01-6	4-Nitroaniline	840	U	
534-52-1	4,6-Dinitro-2-methylphenol	840	U	
86-30-6	N-Nitrosodiphenylamine (1)	350	U	
101-55-3	4-Bromophenyl-phenylether	350	U	
118-74-1	Hexachlorobenzene	350	U	
87-86-5	Pentachlorophenol	840	U	
85-01-8	Phenanthrene	350	U	
120-12-7	Anthracene	350	U	
86-74-8	Carbazole	350	U	
84-74-2	Di-n-Butylphthalate	350	U	
206-44-0	Fluoranthene	350	U	
129-00-0	Pyrene	350	U	
85-68-7	Butylbenzylphthalate	350	U	
91-94-1	3,3'-Dichlorobenzidine	350	U	
56-55-3	Benzo(a)Anthracene	350	U	
117-81-7	bis(2-Ethylhexyl)Phthalate	350	U	
218-01-9	Chrysene	350	U	
117-84-0	Di-n-Octyl Phthalate	350	U	
205-99-2	Benzo(b)Fluoranthene	350	U	
207-08-9	Benzo(k)Fluoranthene	350	U	
50-32-8	Benzo(a)Pyrene	350	U	
193-39-5	Indeno(1,2,3-cd)Pyrene	350	U	
53-70-3	Dibenz(a,h)Anthracene	350	U	
191-24-2	Benzo(g,h,i)Perylene	350	U	

(1) - Cannot be separated from Diphenylamine

✓ WRC 4/12/93

EPA SAMPLE NO.

B07Q14

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 12049 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A212049-09A

Sample wt/vol: 30.5 (g/mL) G Lab File ID: 21230S05

Level: (low/med) LOW Date Received: 12/11/92

% Moisture: 6 decanted: (Y/N) N Date Extracted: 12/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 12/30/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.0

Number TICs found: 4

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q	Qu
1.	UNKNOWN HYDROCARBON	7.37	1300	BJ	UC
2.	UNKNOWN ALCOHOL	8.72	210	BJ	
3.	UNKNOWN ALCOHOL	9.03	70	BJ	
4.	UNKNOWN ALKANE	30.37	70	J	J'

✓ cwc 4/12/93

EPA SAMPLE NO.

B07Q15

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 12049 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A212049-10A

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 21230S06

Level: (low/med) LOW Date Received: 12/11/92

% Moisture: 4 decanted: (Y/N) N Date Extracted: 12/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 12/30/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	Qual
108-95-2	Phenol	340	U	U
111-44-4	bis(2-Chloroethyl)Ether	340	U	
95-57-8	2-Chlorophenol	340	U	
541-73-1	1,3-Dichlorobenzene	340	U	
106-46-7	1,4-Dichlorobenzene	340	U	
95-50-1	1,2-Dichlorobenzene	340	U	
95-48-7	2-Methylphenol	340	U	
108-60-1	2,2'-oxybis(1-Chloropropane)	340	U	
106-44-5	4-Methylphenol	340	U	
621-64-7	N-Nitroso-Di-n-Propylamine	340	U	
67-72-1	Hexachloroethane	340	U	
98-95-3	Nitrobenzene	340	U	
78-59-1	Isophorone	340	U	
88-75-5	2-Nitrophenol	340	U	
105-67-9	2,4-Dimethylphenol	340	U	
111-91-1	bis(2-Chloroethoxy)Methane	340	U	
120-83-2	2,4-Dichlorophenol	340	U	
120-82-1	1,2,4-Trichlorobenzene	340	U	
91-20-3	Naphthalene	340	U	
106-47-8	4-Chloroaniline	340	U	
87-68-3	Hexachlorobutadiene	340	U	
59-50-7	4-Chloro-3-Methylphenol	340	U	
91-57-6	2-Methylnaphthalene	340	U	
77-47-4	Hexachlorocyclopentadiene	340	U	
88-06-2	2,4,6-Trichlorophenol	340	U	
95-95-4	2,4,5-Trichlorophenol	830	U	
91-58-7	2-Chloronaphthalene	340	U	
88-74-4	2-Nitroaniline	830	U	
131-11-3	Dimethylphthalate	340	U	
208-96-8	Acenaphthylene	340	U	
99-09-2	3-Nitroaniline	830	U	
83-32-9	Acenaphthene	340	U	
51-28-5	2,4-Dinitrophenol	830	U	

✓ CMC 4/12/93

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B07Q15

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 12049 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A212049-10A

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 21230S06

Level: (low/med) LOW Date Received: 12/11/92

% Moisture: 4 decanted: (Y/N) N Date Extracted: 12/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 12/30/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	Qual.
100-02-7	4-Nitrophenol	830	U	u
132-64-9	Dibenzofuran	340	U	
121-14-2	2,4-Dinitrotoluene	340	U	
606-20-2	2,6-Dinitrotoluene	340	U	
84-66-2	Diethylphthalate	340	U	
7005-72-3	4-Chlorophenyl-phenylether	340	U	
86-73-7	Fluorene	340	U	
100-01-6	4-Nitroaniline	830	U	
534-52-1	4,6-Dinitro-2-methylphenol	830	U	
86-30-6	N-Nitrosodiphenylamine (1)	340	U	
101-55-3	4-Bromophenyl-phenylether	340	U	
118-74-1	Hexachlorobenzene	340	U	
87-86-5	Pentachlorophenol	830	U	
85-01-8	Phenanthrene	340	U	
120-12-7	Anthracene	340	U	
86-74-8	Carbazole	340	U	
84-74-2	Di-n-Butylphthalate	340	U	
206-44-0	Fluoranthene	340	U	
129-00-0	Pyrene	340	U	
85-68-7	Butylbenzylphthalate	340	U	
91-94-1	3,3'-Dichlorobenzidine	340	U	
56-55-3	Benzo(a)Anthracene	340	U	
117-81-7	bis(2-Ethylhexyl)Phthalate	340	U	
218-01-9	Chrysene	340	U	
117-84-0	Di-n-Octyl Phthalate	340	U	
205-99-2	Benzo(b)Fluoranthene	340	U	
207-08-9	Benzo(k)Fluoranthene	340	U	
50-32-8	Benzo(a)Pyrene	340	U	
193-39-5	Indeno(1,2,3-cd)Pyrene	340	U	
53-70-3	Dibenz(a,h)Anthracene	340	U	
191-24-2	Benzo(g,h,i)Perylene	340	U	

(1) - Cannot be separated from Diphenylamine

✓ aue 4/12/93

EPA SAMPLE NO.

B07Q15

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 12049 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A212049-10A

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 21230S06

Level: (low/med) LOW Date Received: 12/11/92

% Moisture: 4 decanted: (Y/N) N Date Extracted: 12/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 12/30/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.0

Number TICs found: 9

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	SUBST. BENZENE	6.40	100	J
2.	UNKNOWN HYDROCARBON	6.68	140	BJ
3.	UNKNOWN HYDROCARBON	7.37	1600	BJ
4.	UNKNOWN ALCOHOL	8.72	280	BJ
5.	UNKNOWN ALCOHOL	9.03	100	BJ
6.	PROPANOIC ACID ISOMER	18.13	69	J
7.	UNKNOWN ALKANE	28.10	240	J
8.	UNKNOWN ALKANE	30.37	590	J
9.	UNKNOWN ALKANE	33.87	170	J

JN
UJ
JN

✓ 4/12/93

000037

EPA SAMPLE NO.

B07Q16

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 12049 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A212049-11A

Sample wt/vol: 30.2 (g/mL) G Lab File ID: 21230S07

Level: (low/med) LOW Date Received: 12/11/92

% Moisture: 6 decanted: (Y/N) N Date Extracted: 12/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 12/30/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	Qual
108-95-2	Phenol	350	U	U
111-44-4	bis(2-Chloroethyl)Ether	350	U	
95-57-8	2-Chlorophenol	350	U	
541-73-1	1,3-Dichlorobenzene	350	U	
106-46-7	1,4-Dichlorobenzene	350	U	
95-50-1	1,2-Dichlorobenzene	350	U	
95-48-7	2-Methylphenol	350	U	
108-60-1	2,2'-oxybis(1-Chloropropane)	350	U	
106-44-5	4-Methylphenol	350	U	
621-64-7	N-Nitroso-Di-n-Propylamine	350	U	
67-72-1	Hexachloroethane	350	U	
98-95-3	Nitrobenzene	350	U	
78-59-1	Isophorone	350	U	
88-75-5	2-Nitrophenol	350	U	
105-67-9	2,4-Dimethylphenol	350	U	
111-91-1	bis(2-Chloroethoxy)Methane	350	U	
120-83-2	2,4-Dichlorophenol	350	U	
120-82-1	1,2,4-Trichlorobenzene	350	U	
91-20-3	Naphthalene	350	U	
106-47-8	4-Chloroaniline	350	U	
87-68-3	Hexachlorobutadiene	350	U	
59-50-7	4-Chloro-3-Methylphenol	350	U	
91-57-6	2-Methylnaphthalene	350	U	
77-47-4	Hexachlorocyclopentadiene	350	U	
88-06-2	2,4,6-Trichlorophenol	350	U	
95-95-4	2,4,5-Trichlorophenol	840	U	
91-58-7	2-Chloronaphthalene	350	U	
88-74-4	2-Nitroaniline	840	U	
131-11-3	Dimethylphthalate	350	U	
208-96-8	Acenaphthylene	350	U	
99-09-2	3-Nitroaniline	840	U	
83-32-9	Acenaphthene	350	U	
51-28-5	2,4-Dinitrophenol	840	U	

✓ ann 4/12/93

EPA SAMPLE NO.

B07Q16

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 12049 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A212049-11A

Sample wt/vol: 30.2 (g/mL) G Lab File ID: 21230S07

Level: (low/med) LOW Date Received: 12/11/92

% Moisture: 6 decanted: (Y/N) N Date Extracted: 12/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 12/30/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.0

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

Qual.

CAS NO.	COMPOUND		Q
100-02-7	4-Nitrophenol	840	U
132-64-9	Dibenzofuran	350	U
121-14-2	2,4-Dinitrotoluene	350	U
606-20-2	2,6-Dinitrotoluene	350	U
84-66-2	Diethylphthalate	350	U
7005-72-3	4-Chlorophenyl-phenylether	350	U
86-73-7	Fluorene	350	U
100-01-6	4-Nitroaniline	840	U
534-52-1	4,6-Dinitro-2-methylphenol	840	U
86-30-6	N-Nitrosodiphenylamine (1)	350	U
101-55-3	4-Bromophenyl-phenylether	350	U
118-74-1	Hexachlorobenzene	350	U
87-86-5	Pentachlorophenol	840	U
85-01-8	Phenanthrene	350	U
120-12-7	Anthracene	350	U
86-74-8	Carbazole	350	U
84-74-2	Di-n-Butylphthalate	350	U
206-44-0	Fluoranthene	350	U
129-00-0	Pyrene	350	U
85-68-7	Butylbenzylphthalate	350	U
91-94-1	3,3'-Dichlorobenzidine	350	U
56-55-3	Benzo(a)Anthracene	350	U
117-81-7	bis(2-Ethylhexyl)Phthalate	350	U
218-01-9	Chrysene	350	U
117-84-0	Di-n-Octyl Phthalate	350	U
205-99-2	Benzo(b)Fluoranthene	350	U
207-08-9	Benzo(k)Fluoranthene	350	U
50-32-8	Benzo(a)Pyrene	350	U
193-39-5	Indeno(1,2,3-cd)Pyrene	350	U
53-70-3	Dibenz(a,h)Anthracene	350	U
191-24-2	Benzo(g,h,i)Perylene	350	U

(1) - Cannot be separated from Diphenylamine

✓ cwe 4/12/93

000039
EPA SAMPLE NO.

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

B07Q16

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 12049 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A212049-11A

Sample wt/vol: 30.2 (g/mL) G Lab File ID: 21230S07

Level: (low/med) LOW Date Received: 12/11/92

% Moisture: 6 decanted: (Y/N) N Date Extracted: 12/18/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 12/30/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.0

Number TICs found: 4

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN HYDROCARBON	7.35	1700	BJ
2.	UNKNOWN ALCOHOL	8.70	280	BJ
3.	UNKNOWN ALCOHOL	9.02	70	BJ
4.	UNKNOWN HYDROCARBON	29.55	110	J

✓ cmc 4/12/93

ATTACHMENT 5

Data Review Supporting Documentation

(15)

SEMI-VOLATILE ORGANIC DATA VALIDATION CHECKLIST - FORM A-2

PROJECT: White Bluffs Pickling Acid Cribs ERA	REVIEWER: CMC/A.S	DATE: 4/5/93
LABORATORY: TMA/ARLI	CASE: A2-12-049	SDG:
SAMPLES/MATRIX: Soils:		
B07Q04	B07Q08	B07Q14
B07Q05	B07Q09	B07Q15
B07Q06	B07Q10	B07Q16
B07Q07	B07Q11	B07Q12

Level 2 Validation
All samples.

1. DATA PACKAGE COMPLETENESS

Review the data package for completeness and check off the items below. If any data review elements are missing contact the laboratory for submittal.

Data Package Item	Present?:	Yes	No	N/A
Case Narrative		✓		
Data Summary		✓		
Chain-of-Custody	(present in GenChem 12-049)	✓		✓
QC Summary				
Surrogate report		✓		
MS/MSD report		✓		
Blank summary report		✓		
GC/MS tuning report		✓		
Internal standard summary report		✓		
Sample Data				
Sample reports		✓		
TIC reports for each sample		✓		
RIC reports for all samples		✓		
Raw and corrected spectra for all detected results		✓		
Raw and corrected library search data for all reported TIC		✓		
Quantitation and calculation data for all TIC		✓		
Standards Data				
Initial calibration report		✓		
RIC and quantitation reports for initial calibration		✓		
Continuing calibration reports		✓		
RIC and quantitation reports for cont. calibrations		✓		
Internal standard summary report		✓		
Raw QC Data				
Tuning report, spectra and mass lists		✓		
Blank analysis reports		✓		
TIC reports for all blanks		✓		
RIC and quantitation reports for blanks		✓		
Raw and corrected spectra for all detected results in blanks		✓		
Raw and corrected library search data for all reported TIC		✓		
Quantitation and calculation data for all TIC		✓		
MS/MSD report forms		✓		

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Data Package Item	Present?: Yes	No	N/A
RIC and quantitation reports for MS/MSD	✓		
Additional Data			
Moisture/% solids data sheets (present in Gen Chem 12-049)	✓		✓
Reduction formulae			✓
Instrument time logs			✓
Chemist notebook pages			✓
Sample preparation sheets	✓		

2. HOLDING TIMES

Were all samples extracted within holding time?	Yes	No	N/A
Were all samples analyzed within holding time?	Yes	No	N/A

ACTION: If any holding times were exceeded, but not by greater than a factor of two, qualify associated samples as estimated (J for detects or UJ for nondetects), otherwise reject all nondetects (R) and qualify all associated detects as estimated (J).

3. INSTRUMENT CALIBRATION, TUNING AND PERFORMANCE CHECKS

3.1 GC/MS TUNING AND PERFORMANCE CHECKS

Is a DFTPP tune report present for each applicable 12h period?	Yes	No	N/A
Do all tunes on all instruments meet the tuning criteria?	Yes	No	N/A
Do all tunes on all instruments meet the expanded criteria?	Yes	No	N/A
Has the laboratory made any calculation or transciption errors?	Yes	No	N/A
Have the proper significant figures been reported?	Yes	No	N/A

ACTION: If the mass calibration is out of specification but within the expanded criteria, qualify associated data as estimated (J for detects and UJ for nondetects). If all tuning criteria are not met, qualify all associated data as unusable (R).

3.2 INITIAL CALIBRATION

Is an initial calibration report provided for all instruments?	Yes	No	N/A
Are all RSD values ≤30% (2/88 SOW)?	Yes	No	N/A
Are all RRF values ≥0.05 (2/88 SOW)?	Yes	No	N/A
Are all applicable RSD values ≤20.5% (3/90 SOW)?	Yes	No	N/A
Are all applicable RSD values ≤40% (3/90 SOW)?	Yes	No	N/A

Are all applicable RRF values within SOW limits (3/90 SOW)? Yes No N/A

Are all erratic performance compound RRF values ≥0.01 (3/90 SOW)? Yes No N/A

ACTION: With the exception of compounds that exhibit erratic performance and making allowances for up to four TCL compounds or surrogates, if any RRF value is out of specification qualify all detected results for the particular compound as estimated (J) and all nondetects as unusable (R). Making allowances for up to four TCL compounds or surrogates, if any RSD value is out of specification qualify all associated data as estimated (J for detects or UJ for nondetects).

3.3. CONTINUING CALIBRATION

Is a continuing calibration report present for all 12-h periods in which associated samples were analyzed? Yes No N/A

Are all RRF values ≥0.05 (2/88 SOW)? Yes No N/A

Are all %D values ≤25% (2/88 or 3/90 SOW)? Yes No N/A

Are all %D values ≤40% (3/90 SOW)? Yes No N/A

Are all RRF values within SOW limits (3/90 SOW)? Yes No N/A

Are all erratic performance compound RRF values ≥0.01 (3/90 SOW)? Yes No N/A

ACTION: With the exception of compounds that exhibit erratic performance and making allowances for up to four TCL compounds or surrogates, if any RRF value is out of specification qualify all associated detected results as estimated and all nondetects as unusable (R). Making allowances for up to four TCL compounds or surrogates, if any %D is out of specification, qualify all associated results as estimated (J for detects or UJ for nondetects).

4. BLANKS

4.1 LABORATORY BLANKS

Has the laboratory conducted a method blank analysis per matrix for every extraction batch? Yes No N/A

Are compounds reported in the laboratory blanks? Yes No N/A

ACTION: Qualify all sample results < 10 times the highest blank concentration for the common laboratory contaminants, as nondetects (U) or at the SQL if the result is < CRQL. Qualify all remaining sample results < 5 times the blank concentration in similar fashion.

4.2. FIELD BLANKS

Are compounds reported in the field blanks? Yes No N/A

None submitted

ACTION: Qualify all detected sample results ≤ 5 times the amount in any valid field blank as nondetects (U) and note the results of the field blanks in the validation narrative.

5. ACCURACY

5.1 SURROGATE RECOVERY/SYSTEM MONITORING COMPOUND RECOVERY

Are any surrogate recoveries out of specification? Yes No N/A

Are any surrogate recoveries $< 10\%$? Yes No N/A

Are any method blank surrogate recoveries out of specification? Yes No N/A

ACTION: Qualify all associated data as estimated (J for detects and UJ for nondetects) if at least two semivolatile surrogates are out of specification. If any surrogate is below 10% recovery qualify associated detected results as estimated (J) and associated nondetect results as unusable (R). If method blank surrogates are out of specification and associated sample surrogates are acceptable no qualification is required, however, the laboratory should be contacted for an explanation.

5.2 MATRIX SPIKE RECOVERY

Has an MS/MSD analysis been conducted per matrix in the sample group? Yes No N/A

Are MS/MSD recoveries within specification? Yes No N/A

Are there any calculation errors? Yes No N/A

A.S.

Level II

ACTION: If an MS/MSD analysis has not been conducted contact the laboratory for an explanation. Review the MS/MSD recoveries in conjunction with other QC data such as surrogate recoveries and note the results in the validation narrative. If MS/MSD recoveries are out of specification and sample concentration is > 5 times the spike concentration, no qualification is required, otherwise qualify results as follows: Qualify positive results for the specific class of compound (aromatics and non-aromatics) as estimated (J) in all samples if associated surrogates are also out of specification. The qualification shall only be done on samples of similar matrix as the MS/MSD samples. If it is determined from the review that only the spiked samples are affected by low recoveries, qualify only the results for the spiked sample as described above. If it is determined from the review that out of specification MS/MSD recoveries are indicative of systematic problems in the laboratory such as sample preparation or sample-specific matrix interferences this must be noted in the validation narrative along with the potential affect on the sample results.

5.3 PERFORMANCE AUDIT SAMPLES

Are the results for the performance audit samples within the acceptance limits? Yes No N/A

None submitt

ACTION: Note the results of the performance audit samples in the validation narrative.

6. PRECISION

6.1 MATRIX SPIKE/MATRIX SPIKE DUPLICATES

Are all RPD values within specification? Yes No N/A

Are there any calculation errors? Yes No N/A

N.S.

Level 2

ACTION: Review the MS/MSD results in conjunction with other QC data such as field duplicates and note the results in the validation narrative. If MS/MSD RPDs are out of specification and sample results are >5xCRQL qualify positive results for the specific class of compound (aromatics and non-aromatics) as estimated (J). If it is determined from the review that out of specification MS/MSD results are indicative of systematic problems in the laboratory such as sample preparation or sample-specific matrix interferences this must be noted in the validation narrative along with the potential affect on the sample results.

6.2 FIELD DUPLICATE SAMPLES

Are field duplicate RPD values acceptable? Yes No N/A

ACTION: Note the results of the field duplicate samples in the validation narrative.

6.3 FIELD SPLIT SAMPLES

Are field split RPD values acceptable? Yes No N/A

ACTION: Note the results of the field split samples in the validation narrative.

7. SYSTEM PERFORMANCE

7.1 INTERNAL STANDARDS PERFORMANCE

Are any internal standard area counts outside the acceptance limits? Yes No N/A

Are retention times for any internal standard outside the ±30 second windows established by the most recent calibration check? Yes No N/A

ACTION: If the area counts are outside the acceptance limits qualify all associated results as estimated (J for detects and UJ for nondetects. If it is determined from the review that out of specification area counts and relative retention times are indicative of systematic problems within the laboratory the reviewer may consider rejection of all affected sample data (R).

8. COMPOUND IDENTIFICATION AND QUANTITATION

8.1 COMPOUND IDENTIFICATION

Are detected compounds within ±0.06 relative retention time units of the associated calibration standard?	Yes	No	N/A
Are all ions at a relative intensity of ≥10% in the standard spectra present in the sample spectra?	Yes	No	N/A
Do the relative intensities between the standard and sample spectra agree within 20%?	Yes	No	N/A
Have all ions > 10% in the sample spectra that are not present in the standard spectra been reviewed for possible background contamination?	Yes	No	N/A
Are molecular ions in the reference spectrum present in the sample spectrum?	Yes	No	N/A

ACTION: If compound identification is in error and retention time and mass spectral criteria are exceeded qualify all affected positive results as unusable (R). If cross-contamination between analyses is suspected, qualify affected data as unusable (R).

8.2 REPORTED RESULTS AND QUANTITATION LIMITS

Has the laboratory used the correct RRF values and internal standards for quantitation?	Yes	No	N/A
Are results and quantitation limits calculated properly?	Yes	No	N/A
Has the laboratory reported the sample quantitation limits within 5xCRQL values?	Yes	No	N/A

ACTION: If the quantitation limits are in error contact the laboratory for clarification and note in the validation narrative.

8.3 TENTATIVELY IDENTIFIED COMPOUNDS

Has the laboratory conducted a spectral library search on all candidate TIC peaks in accordance with the analytical SOW?	Yes	No	N/A
Has the laboratory properly identified and coded all TIC?	Yes	No	N/A

ACTION: If the laboratory has failed to search the minimum number of TIC peaks in the chromatogram contact the laboratory for submittal of the required data. Qualify as nondetects (U) all TIC compounds present in samples and blanks using the review criteria specified in the validation requirements. If TIC identification is in error sample results should be qualified as nondetects (U) or unusable (R). If TIC identifications are judged valid, qualify the results as presumptive and estimated (JN).

9. OVERALL ASSESSMENT AND SUMMARY

Has the laboratory conducted the analysis in accordance with the analytical SOW?	Yes	No	N/A
Were project specific data quality objectives met for this analysis?	Yes	No	N/A

ACTION: Summarize all the data qualifications and complete the data validation narrative as specified in Section 10.0 of the data validation requirements.

COMMENTS (attach additional sheets as necessary):

Compound detected below CRQL was qualified as an estimate: diethyl phthalate in sample B07Q09

HOLDING TIME SUMMARY - FORM B-1

SDG: 12049	REVIEWER: Clare Russell	DATE: 4/5/93	PAGE 1 OF 1
COMMENTS: Semivolatiles — 1990 SOW			Level 2 Validation

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
soil B07Q04	SVOA	12/4/92	12/18/92 ✓	12/29/92 ✓	14 ✓	11 ✓	None
B07Q05							
B07Q06							
B07Q07							
B07Q08							
B07Q09				12/30/92 ✓			
B07Q10		12/7/92			11 ✓	12	
B07Q11							
B07Q12							
B07Q14							
B07Q15							
B07Q16							

✓ 4/5/93

B-1

WHC-SD-EN-SPP-002, Rev. 1

CALIBRATION DATA SUMMARY - FORM B-2

SDG: 12049	REVIEWER: AS	DATE: 4/9/93		PAGE 1 OF 1	
COMMENTS: Semivolatile				Level 2 Validation	
CALIB. TYPE:	INITIAL CONTINUING	INSTRUMENT:		SHERMA Capillary column	
CALIB. DATE	COMPOUND	RF	RSD/%D/%R	SAMPLES AFFECTED	QUALIFIER
~~12/11/92~~					
12/11/92, 12/29, 12/30,	All GC/MS tuning within limits. ✓		—	—	—
12/11/92	All Ical %RSD & RRF acceptable ✓		—	—	—
12/29/92	All % D & RRF-50 acceptable ✓		—	—	—
12/30/92	All %D & RRF-50 acceptable ✓		—	—	—

✓ CMR 4/12/93

BLANK AND SAMPLE DATA SUMMARY - FORM B-3

SDG: 12049 | REVIEWER: AS | DATE: 4/9/93 | PAGE 1 OF 1

COMMENTS: Semivolatiles (Level 2 Validation)

SAMPLE ID	COMPOUND	RESULT	Q	RT	UNITS	5X RESULT	10X RESULT	SAMPLES AFFECTED	QUALIFIER
SBLK 12185	No TCL compounds detected					—	—	—	—
	TICs detected:								
1)	Unknown H.C 6.68	160	J		ug/kg	~~1600~~ 800		See B-7 (and below)	VJN
2)	" " 7.37	1500				~~15000~~ 7500			
3)	Unknown alcohol 8.72	230				~~23~~ 1150			
4)	" " 9.03	65				325			
5)	Unknown carboxylic acid 21.13	490				2450			
6)	Hexanedioic acid 25.68	390				1950			

RT Samples affected:

(6.68) 1) B07Q04, ~~B07Q05~~ DD, B07Q06, B07Q07, B07Q09, B07Q10, B07Q12, B07Q15

(7.37) 2) B07Q04, B07Q05, B07Q06, B07Q07, B07Q08, B07Q09, B07Q10, B07Q11, B07Q12, B07Q14, B07Q15, B07Q16

(8.72) 3) B07Q04, B07Q05, B07Q06, B07Q07, B07Q09, B07Q10, B07Q11, B07Q12, B07Q14, B07Q15, B07Q16

(9.03) 4) B07Q04, B07Q05, B07Q06, B07Q10, B07Q11, B07Q12, B07Q14, B07Q15, B07Q16

(21.13) 5) B07Q05, B07Q06, B07Q08

(25.68) 6) — none —

✓ 4/12/93

ACCURACY DATA SUMMARY - FORM B-4

SDG: 12049	REVIEWER: AS	DATE: 4/9/93	PAGE 1 OF 1	
COMMENTS: Semivolitiles			Level 2 Validation	
SAMPLE ID	COMPOUND	% RECOVERY	SAMPLE(S) AFFECTED	QUALIFIER REQUIRED
All surrogate recoveries are within limits.		66 - ~~96~~ 114%	—	—
(sample 807Q04) All MS/MSD recoveries are within limits		~~63~~ 59 - ~~75~~ 81%	—	—
All IS area recoveries and RT are within limits.			—	—

AWR 4/12/93

PRECISION DATA SUMMARY - FORM B-5

SDG: 12049	REVIEWER AS	DATE: 4/9/93	PAGE 1 OF 1			
COMMENTS: Semivolatiles					Level 2 Validation	
COMPOUND	SAMPLE ID:	SAMPLE ID:	RPD	SAMPLES AFFECTED	QUALIFIER	
matrix spike dup	All RPDs acceptable = 1-14% (using sample B07Q04)	—	—	—	—	
Field Duplicates → none in this package.						
Field Splits	B07Q12	B07Q13				
all TCL compounds	- non-detect -					
TIC (6.38) subst. benzene	67 JN					
(28.08) unknown alkane	67 JN					
(30.37) unknown alkane	130 JN					

MMR 4/12/93

CALCULATION SUMMARY - FORM B-6

SDG: 12049	REVIEWER: AS	DATE: 4/9/93	PAGE 1 OF 3

COMMENTS:

These calculations include only compounds detected that were not qualified as undetected due to blank contam.

B07Q09:

✓ Diethylphthalate = $\frac{16962(20)(500)(2)}{73040(1.487)(1)(.97)(30.2)} = \frac{339240,000}{3181635.2}$ = 106.62

✓ TIC Subst. Benzene (RT 6.38) = $\frac{17762}{134084} \times \frac{20(500)(2)}{(0.97)(30.2)} = 90.4$ ✓ ok

✓ TIC Unknown Alkane (RT 30.33) = $\frac{20271}{194958} \times \frac{20(500)(2)}{(.97)(30.2)} = 70.9$ ✓

B07Q08

✓ TIC Unknown Alcohol (RT 8.72) = $\frac{46047}{147542} \times \frac{(20)(500)(2)}{(.98)(30.2)} = 211$ ✓ For all differenc due to sig. figu used in c

✓ TIC Unknown Alkane (RT 30.37) = $\frac{40289}{\cancel{147542}\ 288911} \times \frac{(20)(500)(2)}{(0.98)(30.2)} = 94.2$ ✓

B07Q10

✓ TIC Unknown Alkane (RT 28.03) = $\frac{73028}{268353} \times \frac{(20)(500)(2)}{(0.94)(30.5)} = 189.8$ ✓

✓ TIC Unknown Alkane (RT 30.32) = $\frac{284720}{294320} \times \frac{(20)(500)(2)}{(0.94)(30.5)} = 675$ ✓

✓ TIC Unknown Alkane (RT 33.83) = $\frac{167104}{294320} \times \frac{(20)(500)(2)}{(0.94)(30.5)} = 396$ ✓

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Page 2 of 3

Job No. 2978-56

Project Case 12-049 Semivolatiles

Date 4/12/93

Calculations for

Made by Clare Russell

For all TICs, calc. differences are due to sig figure differences. cur

B07Q11

✓ TIC Subst. Benzene (RT 6.37) $= \frac{23228}{151348} * \frac{(20)(500)(2)}{(0.96)(30.5)} = 105$ ✓

✓ TIC Unknown Alkane (RT 30.33) $= \frac{57957}{256560} * \frac{(20)(500)(2)}{(0.96)(30.5)} = 154$ ✓

B07Q12

✓ TIC Subst. Benzene (RT 6.38) $= \frac{19261}{155290} * \frac{20(500)(2)}{(0.98)(30.3)} = 84$ ✓

✓ TIC Unknown Alkane (RT 28.08) $= \frac{23714}{232794} * \frac{20(500)(2)}{(0.98)(30.3)} = 69$ ✓

✓ TIC Unknown Alkane (RT 30.37) $= \frac{53755}{267662} * \frac{20(500)(2)}{(0.98)(30.3)} = 135$ ✓

B07Q14

✓ TIC Unknown Alkane (RT 30.37) $= \frac{27125}{243562} * \frac{(20)(500)(2)}{(0.94)(30.5)} = 78$ ✓

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Page 3 of 3

Job No. 2978-56

Project Case 12-049 Semivolatiles

Date 4/12/93

Calculations for

Made by Clare Russell

For all TICs, calc. differences due to sig. figure differences. cmr

B07Q15

✓ TIC Subst. Benzene (RT 6.40) = $\frac{21302}{144988} * \frac{(20)(500)(2)}{(30.0)(0.96)} = 102$ ✓

✓ TIC Propanoic Acid Isomer (RT 18.13) = $\frac{25886}{229648} \frac{(20)(500)(2)}{(30.0)(0.96)} = 78$ ✓

✓ TIC Unknown Alkane (RT 28.10) = $\frac{64530}{196720} \frac{(20)(500)(2)}{(30.0)(0.96)} = 228$ ✓

✓ TIC Unknown Alkane (RT 30.37) = $\frac{197789}{232967} \frac{(20)(500)(2)}{(30.0)(0.96)} = 590$ ✓

✓ TIC Unknown Alkane (RT 33.87) = $\frac{59491}{232967} \frac{(20)(500)(2)}{(30.0)(0.96)} = 177$ ✓

B07Q16

✓ TIC Unknown Hydrocarbon (RT 29.55) = $\frac{40428}{235306} * \frac{(20)(500)(2)}{(0.94)(30.2)} = 121$ ✓

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HCRL-WHC/93160-T-93-009

E-93-16/2978-56

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PICKLING ACID CRIB ERA DATA VALIDATION
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Document Number: HCRL-WHC/93160-L93-028 Date: 4/14/93

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Project Files (1=Administrative; 2=Correspondence; 3=Source Data; 4=Technical Data)

1.1	File Index		2.1	Incoming Correspondence		4.1	Task Plan
1.2	Distribution Lists		2.2	Outgoing Correspondence	X	4.2	Data Pkg. Completeness Verif. Checklist
1.3	Project Procedures		2.3	Internal Correspondence		4.3	Data Valid. Calcs./Annotated DP
1.4	Project Modifications					4.4	Prelim. QA Reports
1.5	Staff		3.1	Task Order		4.5	Data Valid. & Qual. Summary Rpts.
1.5.1	Staff Resumes		3.2	Sample Lists		4.5.1	Internal Drafts/Comments/Resol.
1.5.2	Staff Training		3.3	Data Validation Procedures		4.5.2	WHC Review Draft Comments/Resol.
1.5.3	Auth. Former Site Employee		3.4	Original Chemical Data		4.5.3	Final Report
1.6	QA		3.5	Original Radiochem. Data		4.6	Weekly Status Reports
1.6.1	QA Implement Procedures					4.7	Weekly Management Reports
1.6.2	QA Audits						
1.6.3	QA Training						
1.7	Budget						
1.7.1	Budget Status						
1.7.2	Invoices						
1.8	Requisitions						
1.9	Meeting Minutes						
1.10	Record of Telecon						
1.11	Progress Reports						
1.12	Subcontractor						

HARTCROWSER

Earth and Environmental Technologies

Hart Crowser, Inc.
[illegible] Swift Avenue, Suite [illegible]
Richland, WA 99352
FAX 509 946 42[illegible]
[illegible]

J-2978-56

April 16, 1993

Ms. Jil Frain
Westinghouse Hanford Company
P.O. Box 1970 / MSIN H6-04
Richland, Washington 99352

Subject: WHC Order No. MLW-SSV-037106
Task Order No. E-93-16
Preliminary Quality Assurance Record
White Bluffs Pickling Acid Cribs ERA
TMA Case Number A2-12-049 - Volatile Organics

Dear Ms. Frain:

Ebasco and Hart Crowser are pleased to provide you with the attached results of our review and validation of the subject data from the White Bluffs Pickling Acid Cribs ERA. The attached results are provided to you in partial fulfillment of Subtask 03 of our task plan dated March 12, 1993. The subject data package consisted of one low level soil sample submitted for analysis for volatile organics. The sample results were fully validated. In addition, all of the supporting quality control summaries were reviewed.

The samples were analyzed by TMA using the U.S. Environmental Protection Agency (EPA) Contract Laboratory Program (CLP) statement of work. All analytical results, together with the data qualifiers which we have assigned as a result of our review, are provided in Attachment 4. Table 1 is an annotated list of the attachments to this letter report.

DATA QUALITY OBJECTIVES SUMMARY

Data quality objectives for accuracy and precision (including GC/MS tuning, surrogates, matrix spike/matrix spike duplicates, continuing calibrations, compound identifications, and internal standards), and quantitation limit requirements were met for this case with the exception of the following: a low concentration of acetone was detected in the method blank, and toluene was reported below the quantitation limit.

MAJOR DEFICIENCIES (REJECTED DATA)

No data were rejected.

MINOR DEFICIENCIES (OTHER QUALIFIED DATA)

The following resulted in the qualification of the sample data. All qualified data are discussed in Attachments 3 and 5.

Acetone was detected in the method blank. The acetone concentration in the sample was less than 10 times the blank concentration. Therefore, the acetone concentration for the sample was qualified as undetected (U), and the associated quantitation level was raised to the contract required quantitation limit (CRQL).

Trace concentrations of toluene were detected in the sample. As the toluene concentration was near the instrument detection limit and was below the CRQL, the concentration was qualified as an estimate (J).

No other data qualifiers were assigned.

We trust that these preliminary results meet your needs. Our qualifier assignments will be finalized at the time the summary report is published. The final qualifiers may vary from those presented here, reflecting any trends in data quality or laboratory performance observed over the course of the White Bluffs Pickling Acid Cribs ERA data validation effort. Please contact me if you have any questions with regard to our activities.

Sincerely,

HART CROWSER, INC.

D. MARK GERBOTH, P.E.
Project Manager
HC#134:RL1743.DOC

Attachments

cc: Mark Gerboth (w/o attachments)
Jeff Grover (w/o attachments)
Westinghouse EDMC
Project File - HCRL-WHC/9316-L-93-008

Table 1 - Annotated List of Attachments

Attachment 1 - Glossary of Data Qualifiers

This attachment provides a glossary explaining all data qualifiers applied as a result of the validation.

Attachment 2 - As Received Laboratory Sample Concentration Reports

This attachment provides a copy of the as-received sample concentration reports. This may be a tabular summary similar to that provided in Attachment 4, or may be a copy of the laboratory reports (e.g., Form I).

Attachment 3 - Summary of Data Qualifications (Form B-7)

This attachment provides a complete summary of all qualifications applied as a result of the validation.

Attachment 4 - As Qualified Data Summary

This attachment provides a tabular data summary of all data qualified from the validation.

Attachment 5 - Data Review Supporting Documentation

This attachment provides copies of the data validation checklists, data summary forms, telephone contact memoranda and other documentation completed as a result of the data validation.

ATTACHMENT 1

Glossary of Data Qualifiers

Glossary of Data Qualifiers

U - Indicates the compound or analyte was analyzed for and not detected. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.

UJ - Indicates the compound or analyte was analyzed for and not detected. Due to quality control deficiencies identified during data validation the value reported may not accurately reflect the sample quantitation limit.

J - Indicates the compound or analyte was analyzed for and detected. The associated value is estimated but the data are useable for decision making processes.

R - Indicates the compound or analyte was analyzed for and due to an identified quality control deficiency the data are unusable.

NJ - Indicates the presumptive evidence of a compound at an estimated value.

N - Indicates presumptive evidence of a compound.

ATTACHMENT 2

As Received Laboratory Sample Concentration Reports

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B07Q12

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 12049 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A212049-12F

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 21218R05

Level: (low/med) LOW Date Received: 12/11/92

% Moisture: not dec. 2 Date Analyzed: 12/18/92

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	10	U
67-64-1	Acetone	9	BJ
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	3	J
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

000003
EPA SAMPLE NO

B07Q12

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: TMA/ARLI Contract: MHC

Lab Code: TMALA Case No.: 12049 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A212049-12F

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 21218R05

Level: (low/med) LOW Date Received: 12/11/92

% Moisture: not dec. 2 Date Analyzed: 12/18/92

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

ATTACHMENT 3

Summary of Data Qualifications

DATA QUALIFICATION SUMMARY - FORM B-7

SDG: 12049	REVIEWER: AS	DATE: 4/8/93	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Acetone	U at CRQL	B07Q12	blank contamination
Toluene	J	↓	below CRQL

4/9/93

ATTACHMENT 4

As Qualified Data Summary

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B07Q12

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 12049 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A212049-12F

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 21218R05

Level: (low/med) LOW Date Received: 12/11/92

% Moisture: not dec. 2 Date Analyzed: 12/18/92

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	10	U
67-64-1	Acetone	9	BJ
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	3	J
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

000003
EPA SAMPLE NO.

B07Q12

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 12049 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A212049-12F

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 21218R05

Level: (low/med) LOW Date Received: 12/11/92

% Moisture: not dec. 2 Date Analyzed: 12/18/92

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

✓ CWR 4/9/93

ATTACHMENT 5

Data Review Supporting Documentation

WHC-SD-EN-SPP-002, Rev. 1

VOLATILE ORGANIC DATA VALIDATION CHECKLIST - FORM A-1

PROJECT: White Bluffs Pickling Acid Cribs ERA	REVIEWER: CMK	DATE: 4/5/93
LABORATORY: TMA/ARLI	CASE: A2-12-049	SDG:
SAMPLES/MATRIX: Soils :		
B07Q12		
	Level 2 Validation	

1. DATA PACKAGE COMPLETENESS

Review the data package for completeness and check off the items below. If any data review elements are missing contact the laboratory for submittal.

Data Package Item	Present?:	Yes	No	N/A
Case Narrative		✓		
Data Summary		✓		
Chain-of-Custody	present in Gen Chem 12-049			✓
QC Summary				
Surrogate report		✓		
MS/MSD report		✓		
Blank summary report		✓		
GC/MS tuning report		✓		
Internal standard summary report		✓		
Sample Data				
Sample reports		✓		
TIC reports for each sample		✓		
RIC reports for all samples		✓		
Raw and corrected spectra for all detected results		✓		
Raw and corrected library search data for all reported TIC				✓
Quantitation and calculation data for all TIC				✓
Standards Data				
Initial calibration report		✓		
RIC and quantitation reports for initial calibration		✓		
Continuing calibration reports		✓		
RIC and quantitation reports for cont. calibrations		✓		
Internal standard summary report		✓		
Raw QC Data				
Tuning report, spectra and mass lists		✓		
Blank analysis reports		✓		
TIC reports for all blanks		✓		
RIC and quantitation reports for blanks		✓		
Raw and corrected spectra for all detected results in blanks		✓		
Raw and corrected library search data for all reported TIC				✓

Data Package Item	Present?: Yes	No	N/A
Quantitation and calculation data for all TIC			✓
MS/MSD report forms	✓		
RIC and quantitation reports for MS/MSD	✓		
Additional Data			
Moisture/% solids data sheets (present in GenChem 12-049)			✓
Reduction formulae			✓
Instrument time logs			✓
Chemist notebook pages			✓
Sample preparation sheets			✓

2. HOLDING TIMES

Complete the holding time summary form listing all samples and dates of collection and analysis.

Were all samples analyzed within holding time? (Yes) No N/A

ACTION: If any holding times were exceeded, but not by greater than a factor of two, qualify associated samples as estimated (J for detects or UJ for nondetects), otherwise reject all nondetects (R) and qualify all associated detects as estimated (J).

3. INSTRUMENT CALIBRATION, TUNING AND PERFORMANCE CHECKS

3.1 GC/MS TUNING AND PERFORMANCE CHECKS

Is a bromofluorobenzene tune report present for each applicable 12-h period? (Yes) No N/A

Do all tunes on all instruments meet the tuning criteria? (Yes) No N/A

Do all tunes on all instruments meet the expanded criteria? (Yes) No N/A

Has the laboratory made any calculation or transciption errors? Yes (No) N/A

Have the proper significant figures been reported? (Yes) No N/A

ACTION: If the mass calibration is out of specification but within the expanded criteria, qualify associated data as estimated (J for detects or UJ for nondetects). If all tuning criteria are missed, qualify all associated data as unusable (R).

3.2 INITIAL CALIBRATION

Is an initial calibration report provided for all instruments? (Yes) No N/A

Are all RSD values ≤30% (2/88 SOW)? Yes No (N/A)

Are all RRF values ≥0.05 (2/88 SOW)? Yes No (N/A)

Are all applicable RSD values ≤20.5% (3/90 SOW)?	Yes	No	N/A
Are all applicable RSD values ≤40% (3/90 SOW)?	Yes	No	N/A
Are all applicable RRF values within SOW limits (3/90 SOW)?	Yes	No	N/A
Are all erratic performance compound RRF values ≥0.01 (3/90 SOW)?	Yes	No	N/A

ACTION: With the exception of compounds that exhibit erratic performance and making allowances for up to two TCL compounds, if any RRF value is out of specification qualify all detected results for the particular compound as estimated (J) and all nondetects as unusable (R). Making allowances for up to two TCL compounds, if any RSD value is out of specification qualify all associated data as estimated (J for detects or UJ for nondetects).

3.3. CONTINUING CALIBRATION

Is a continuing calibration report present for all 12-h periods in which associated samples were analyzed?	Yes	No	N/A
Are all RRF values ≥0.05 (2/88 SOW)?	~~Yes~~ are	No	N/A
Are all %D values ≤25% (2/88 or 3/90 SOW)?	Yes	~~No~~ are	N/A
Are all %D values ≤40% (3/90 SOW)?	Yes	No	N/A
Are all RRF values within SOW limits (3/90 SOW)?	Yes	No	N/A
Are all erratic performance compound RRF values ≥0.01 (3/90 SOW)?	Yes	No	N/A

ACTION: With the exception of compounds that exhibit erratic performance and making allowances for up to two TCL compounds, if any RRF value is out of specification qualify all associated detected results as estimated and all nondetects as unusable (R). Making allowances for up to two TCL compounds, if any %D is out of specification, qualify all associated results as estimated (J for detects or UJ for nondetects).

4. BLANKS

4.1 LABORATORY BLANKS

Has the laboratory conducted a method blank analysis per matrix for every 12-h period in which samples were analyzed?	Yes	No	N/A
Are TCL compounds present in the laboratory blanks?	Yes	No	N/A

ACTION: Qualify all sample results ≤10 time the highest blank concentration for the common laboratory contaminants, as nondetects (U) or at the SQL if the result is <CRQL. Qualify all remaining sample results ≤5 times the blank concentration in similar fashion.

4.2. FIELD BLANKS

Are TCL compounds present in the field blanks? Yes No N/A

None submitted

ACTION: Qualify all detected sample results ≤ 5 times the amount in any valid field blank as nondetects (U) and note the field blank results in the validation narrative.

5. ACCURACY

5.1 SURROGATE/SYSTEM MONITORING COMPOUND RECOVERY

Are any surrogate recoveries out of specification? Yes No N/A

Are any surrogate recoveries $< 10\%$? Yes No N/A

Are any method blank surrogate recoveries out of specification? Yes No N/A

ACTION: Qualify all associated sample results as estimated (J for detects or UJ for nondetects) for surrogates out of specification but $> 10\%$. Qualify all associated positive sample results as estimated (J) and all nondetect results as unusable (R) for all surrogates below 10%. If method blank surrogates are out of specification and the associated sample surrogates are acceptable no qualification is necessary, however, the laboratory should be contacted for an explanation.

5.2 MATRIX SPIKE RECOVERY

Has an MS/MSD analysis been conducted per matrix in the sample group? Yes No N/A

Are MS/MSD recoveries within specification? Yes No N/A

Are there any calculation errors? Yes No N/A (Level II Val'n)

ACTION: If an MS/MSD analysis has not been conducted contact the laboratory for an explanation. Review the MS/MSD recoveries in conjunction with other QC data such as surrogate recoveries and note the results in the validation narrative. If MS/MSD recoveries are out of specification and sample concentration is > 5 times the spike concentration, no qualification is required, otherwise qualify results as follows: Qualify positive results for the specific class of compound (aromatics and non-aromatics) as estimated (J) in all samples if associated surrogates are also out of specification. The qualification shall only be done on samples of similar matrix as the MS/MSD samples. If it is determined from the review that only the spiked samples are affected by low recoveries, qualify only the results for the spiked sample as described above. If it is determined from the review that out of specification MS/MSD recoveries are indicative of systematic problems in the laboratory such as sample preparation or sample-specific matrix interferences this must be noted in the validation narrative along with the potential affect on the sample results.

5.3 PERFORMANCE AUDIT SAMPLES

Are the performance audit sample results within the acceptance limits? Yes No N/A None submitted

ACTION: Note the results of the performance audit sample in the validation narrative.

6. PRECISION

6.1 MATRIX SPIKE/MATRIX SPIKE DUPLICATES

Are RPD values within specification? Yes No N/A

Are there any calculation errors? Yes ~~No~~ ok N/A (Level I Val'r

ACTION: Review the MS/MSD results in conjunction with other QC data such as field duplicates and note the results in the validation narrative. If MS/MSD RPDs are out of specification and sample results are >5xCRQL qualify positive results for the specific class of compound (aromatics and non-aromatics) as estimated (J). If it is determined from the review that out of specification MS/MSD results are indicative of systematic problems in the laboratory such as sample preparation or sample-specific matrix interferences this must be noted in the validation narrative along with the potential affect on the sample results.

6.2 FIELD DUPLICATE SAMPLES

Are field duplicate RPD values acceptable? Yes No N/A None submitted

ACTION: Note the results of the field duplicate samples in the validation narrative.

6.3 FIELD SPLIT SAMPLES

Are field split RPD values acceptable? Yes No ~~N/A~~ ok ~~None submitt~~

ACTION: Note the results of the field split samples in the validation narrative.

7. SYSTEM PERFORMANCE

7.1 INTERNAL STANDARDS PERFORMANCE

Are any internal standard area counts outside the acceptance limits? Yes ~~No~~ N/A

Are retention times for any internal standard outside the ±30 second windows established by the most recent calibration check? Yes No N/A

ACTION: If the area counts are outside the acceptance limits qualify all associated results as estimated (J for detects or UJ for nondetects). If it is determined from the review that out of specification area counts and relative retention times are indicative of systematic problems within the laboratory the reviewer may consider rejection of all affected sample data (R).

8. COMPOUND IDENTIFICATION AND QUANTITATION

8.1 COMPOUND IDENTIFICATION

Are detected compounds within ±0.06 relative retention time units of the associated calibration standard?	Yes	No	N/A
Are all ions at a relative intensity of ≥10% in the standard spectra present in the sample spectra?	Yes	No	N/A
Do the relative intensities between the standard and sample spectra agree within 20%?	Yes	No	N/A
Have all ions > 10% in the sample spectra that are not present in the standard spectra been reviewed for possible background contamination?	Yes	No	N/A
Are molecular ions present in the reference specrum present in the sample spectrum?	Yes	No	N/A

ACTION: If compound identification is in error and retention time and mass spectral criteria are exceeded qualify all affected positive results as unusable (R). If cross-contamination between analyses is suspected, qualify affected data as unusable (R). Note the results in the validation narrative.

8.2 REPORTED RESULTS AND QUANTITATION LIMITS

Has the laboratory used the correct RRF values and internal standard(s) for quantitation?	Yes	No	N/A
Are results and quantitation limits calculated properly?	Yes	No	N/A
Has the laboratory reported the sample quantitation limits within 5xCRQL values?	Yes	No	N/A

ACTION: If the results and quantitation limits are in error contact the laboratory for clarification and note in the validation narrative.

8.3 TENTATIVELY IDENTIFIED COMPOUNDS (TIC)

Has the laboratory conducted a spectral library search on all candidate TIC peaks in accordance with the analytical SOW?	Yes	No	N/A None detected
Has the laboratory properly identified and coded all TIC?	Yes	No	N/A

ACTION: If the laboratory has failed to search the minimum number of TIC peaks in the chromatogram contact the laboratory for submittal of the required data. Qualify as nondetects (U) all TIC compounds present in samples and blanks using the review criteria specified in the validation requirements. If TIC identification is in error sample results should be qualified as nondetects (U) or unusable (R). If TIC identifications are judged valid, qualify the results as presumptive and estimated (JN).

9. OVERALL ASSESSMENT AND SUMMARY

Has the laboratory conducted the analysis in accordance with the analytical SOW?	Yes	No	N/A
Were project specific data quality objectives met for this analysis?	Yes	No	N/A

ACTION: Summarize all the data qualifications recommended in the foregoing sections, and complete the data validation narrative according to the requirements of Section 10.0 of the data validation requirements.

COMMENTS (attach additional sheets as necessary):

HOLDING TIME SUMMARY - FORM B-1

A2-12-049

SDG:	REVIEWER: Marc Russell	DATE: 4/5/93	PAGE 1 OF 1
COMMENTS:			Level 2 Validation

	FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
soil	B07Q12	VOA	12/7/93	—	12/18/92	—	11	—

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CALIBRATION DATA SUMMARY - FORM B-2

SDG: 12049	REVIEWER: AS	DATE: 4/8/93	PAGE 1 OF 1	
COMMENTS:			Level 2 Validation	
CALIB. TYPE: INITIAL CONTINUING		INSTRUMENT: 4500-packed		
CALIB. DATE	COMPOUND	RF	RSD/%D/%R	SAMPLES AFFECTED	QUALIFIER
12/7/92	GC/MS Tuning acceptable	—	—	—	—
12/18/93	" "	—	—	—	—
12/7/93	Ical = All % RSD acceptable		—	—	—
12/18/93	Ccal = All %D + RRF acceptable		—	—	—

✓ 4/9/93

BLANK AND SAMPLE DATA SUMMARY - FORM B-3

SDG: 12049	REVIEWER: HS	DATE: 4/8/93	PAGE 1 OF 1

COMMENTS:

SAMPLE ID	COMPOUND	RESULT	Q	RT	UNITS	5X RESULT	10X RESULT	SAMPLES AFFECTED	QUALIFIER
VBLK1218R	Acetone	17			ug/kg		170	B07Q12	U at CRQL
	No other contaminants were found.								

✓ 4/9/93

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ACCURACY DATA SUMMARY - FORM B-4

SDG: 12049	REVIEWER: AS	DATE: 4/8/93	PAGE 1 OF 1	
COMMENTS:			Level 2 Validation	
SAMPLE ID	COMPOUND	% RECOVERY	SAMPLE(S) AFFECTED	QUALIFIER REQUIRED
All surrogate recoveries are within limits.		106-114%	—	—
All MS/MSD recoveries are within limits		87-113%	—	—
All IS, area recoveries & RT windows are acceptable.			—	—
				OK

✓ CMR 4/9/93

PRECISION DATA SUMMARY - FORM B-5

SDG: 12049	REVIEWER AS	DATE: 4/8/93	PAGE 1 OF 1		
COMMENTS:					
COMPOUND	SAMPLE ID:	SAMPLE ID:	RPD	SAMPLES AFFECTED	QUALIFIER
MS/MSD All RPD values are acceptable =		0 - 5 %	—	—	—
Field Duplicate	This sample is not a field duplicate sample.				none
Field Split	B07Q12	B07Q13			
acetone	10 U	10 U	NA		none
methylene chloride	10 U	6 J	± CRQL ✓		↓
toluene	3 J	10 U	± CRQL ✓		
All other compounds were non-detects and precision could not be evaluated.					

✓ 4/9/93

CALCULATION SUMMARY - FORM B-6

SDG: 12049	REVIEWER: AS	DATE: 4/8/93	PAGE 1 OF 1

COMMENTS:

B07Q12 = Acetone = $\frac{2314(50)}{(.772)(17080)}$ = 8.77 ÷ (0.98) = 8.95

Toluene = $\frac{1903(50)}{48726(.689)}$ = 2.83 ÷ (0.98) = 2.89

ok

✓ 4/9/93