JAN 04 1994 <i>Station # 12</i>	<div style="border: 1px solid black; border-radius: 50%; width: 40px; height: 40px; display: flex; align-items: center; justify-content: center; margin: 0 auto;"> 44 </div> ENGINEERING DATA TRANSMITTAL	Page 1 of <u>1</u> 1. EDT 600848
---	---	--

2. To: (Receiving Organization) RCRA Closures	3. From: (Originating Organization) 100 Area RI	4. Related EDT No.: NA
5. Proj./Prog./Dept./Div.: 81310	6. Cog. Engr.: M. T. Stankovich	7. Purchase Order No.: NA
8. Originator Remarks: D-Pond Validated Sample Results		9. Equip./Component No.: NA
11. Receiver Remarks: <div style="text-align: center; font-weight: bold; font-size: 1.2em;"> RECEIVED FEB 09 1994 OSTI </div>		10. System/Bldg./Facility: 100-DR-1/120-D-1
		12. Major Assm. Dwg. No.: NA
		13. Permit/Permit Application No.: NA
		14. Required Response Date: NA

15. DATA TRANSMITTED					(F)	(G)	(H)	(I)
(A) Item No.	(B) Document/Drawing No.	(C) Sheet No.	(D) Rev. No.	(E) Title or Description of Data Transmitted	Impact Level	Reason for Transmittal	Originator Disposition	Receiver Disposition
1	WHC-SD-EN-TI-167 <i>197</i>		0	Data Validation Report for the 100-D Ponds Operable Unit, 100 D-Pond Sampling	3Q	2	1	

16. KEY			
Impact Level (F)	Reason for Transmittal (G)	Disposition (H) & (I)	
1, 2, 3, or 4 (see MRP 5.43)	1. Approval 2. Release 3. Information 4. Review 5. Post-Review 6. Dist. (Receipt Acknow. Required)	1. Approved 2. Approved w/comment 3. Disapproved w/comment 4. Reviewed no/comment 5. Reviewed w/comment 6. Receipt acknowledged	

17. SIGNATURE/DISTRIBUTION (See Impact Level for required signatures)									
(G)	(H)	(J) Name (K) Signature (L) Date (M) MSIN				(J) Name (K) Signature (L) Date (M) MSIN			
Reason	Disp.								
1	1	Cog. Eng. MT Stankovich <i>[Signature]</i> 10/15/93 H6-02				EPIC (2) H6-08 3			
1	1	Cog. Mgr. RP Henckel <i>[Signature]</i> H6-02				Central Files (2) L8-04 3			
1	1	QA FARWICK, DANA G <i>[Signature]</i> 10/24/93 H4-17				IRA (2) H4-17 3			
1	1	HASM KN Pool <i>[Signature]</i> 10/21/93 H4-23				RA Ruck H6-23 3			
1	1	RCRA Closures, SN Luke <i>[Signature]</i> H6-23							

18. <i>[Signature]</i> Signature of EDT Originator Date <i>10/20/93</i>	19. _____ Authorized Representative Date for Receiving Organization	20. <i>[Signature]</i> Cognizant/Project Engineer's Manager Date <i>10-26-93</i>	21. DOE APPROVAL (if required) Ltr. No. ☐ Approved ☐ Approved w/comments ☐ Disapproved w/comments
---	--	--	--

BD-7400-172-2 (07/91) GEF097

DISTRIBUTION OF THIS DOCUMENT IS UNLIMITED

BD-7400-172-1 (07/91)

Date Received:

INFORMATION RELEASE REQUEST

Reference:
WHC-CM-3-4

Complete for all Types of Release

Purpose		ID Number (include revision, volume, etc.) WHC-SD-EN-AP-197, Rev. 0
☐ Speech or Presentation	☐ Reference	List attachments.
☐ Full Paper (Check only one suffix)	☒ Technical Report	
☐ Summary	☐ Thesis or Dissertation	Date Release Required October 18, 1993
☐ Abstract	☐ Manual	
☐ Visual Aid	☐ Brochure/Flier	
☐ Speakers Bureau	☐ Software/Database	
☐ Poster Session	☐ Controlled Document	
☐ Videotape	☐ Other	

Title: Data Validation Report for the 100-D Ponds Operable Unit - 100-D Ponds Sampling

Unclassified Category
UC- N/A

Impact Level 3Q

New or novel (patentable) subject matter? ☒ No ☐ Yes
If "Yes", has disclosure been submitted by WHC or other company?
☐ No ☐ Yes (Disclosure No(s)).

Information received from others in confidence, such as proprietary data, trade secrets, and/or inventions?
☒ No ☐ Yes (Identify)

Copyrights? ☒ No ☐ Yes
If "Yes", has written permission been granted?
☐ No ☐ Yes (Attach Permission)

Trademarks?
☒ No ☐ Yes (Identify)

Complete for Speech or Presentation

Title of Conference or Meeting NA		Group or Society Sponsoring	
Date(s) of Conference or Meeting	City/State	Will proceedings be published? ☐ Yes ☐ No	Will material be handed out? ☐ Yes ☐ No

Title of Journal
N/A

CHECKLIST FOR SIGNATORIES

Review Required per WHC-CM-3-4	Yes	No	Reviewer - Signature Indicates Approval	
			Name (printed)	Signature Date
Classification/Unclassified Controlled Nuclear Information	☐	☒	S. W. BERGLIN	<i>[Signature]</i> 11/5/93
Patent - General Counsel	☒	☐		
Legal - General Counsel	☒	☐		
Applied Technology/Export Controlled Information or International Program	☐	☒		
WHC Program/Project	☒	☐	P. D. Mix	<i>[Signature]</i> 11/3/93
Communications	☐	☒	G. J. Goldberg	<i>[Signature]</i> 12/2/93
RL Program/Project	☒	☐	R. B. McLeod	<i>[Signature]</i> 12/30/93
Publication Services	☒	☐	L. S. Hermann	<i>[Signature]</i> 12/30/93
Other Program/Project	☐	☒		

Information conforms to all applicable requirements. The above information is certified to be correct.

References Available to Intended Audience ☒ Yes ☐ No	INFORMATION RELEASE ADMINISTRATION APPROVAL STAMP Stamp is required before release. Release is contingent upon resolution of mandatory comments.
Transmit to DOE-HQ/Office of Scientific and Technical Information ☒ Yes ☐ No		
Author/Requestor (Printed/Signature) M. T. Stankovich <i>[Signature]</i> 10/12/92		
Intended Audience ☐ Internal ☐ Sponsor ☒ External Responsible Manager (Printed/Signature) R. P. Henckel <i>[Signature]</i> 10/14/93		
Date Cancelled		Date Disapproved

SUPPORTING DOCUMENT		1. Total Pages 109
2. Title Data Validation Report for the 100-D Ponds Operable Unit - 100-D Ponds Sampling	3. Number WHC-SD-EN-TI-197	4. Rev No. 0
5. Key Words Volatile organics, Semivolatile organics, Pesticides/PCB, Inorganics	6. Author Name: M. T. Stankovich <i>M T Stankovich</i> 10/12/93 Signature Organization/Charge Code 81310/PV311	
7. Abstract APPROVED FOR PUBLIC RELEASE <i>V. Burkland 1/3/94</i> WHC, 1993, Data Validation Report for the 100-D Ponds Operable Unit - 100-D Ponds Sampling, WHC-SD-EN-TI-197, Rev. 0, prepared by A. T. Kearney, Inc., for Westinghouse Hanford Company, Richland, Washington.		
8. PURPOSE AND USE OF DOCUMENT - This document was prepared for use within the U.S. Department of Energy and its contractors. It is to be used only to perform, direct, or integrate work under U.S. Department of Energy contracts. This document is not approved for public release until reviewed. PATENT STATUS - This document copy, since it is transmitted in advance of patent clearance, is made available in confidence solely for use in performance of work under contracts with the U.S. Department of Energy. This document is not to be published nor its contents otherwise disseminated or used for purposes other than specified above before patent approval for such release or use has been secured, upon request, from the Patent Counsel, U.S. Department of Energy Field Office, Richland, WA. DISCLAIMER - This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, nor any of their contractors, subcontractors or their employees, makes any warranty, expressed or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or any third party's use or the results of such use of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof or its contractors or subcontractors. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.		10. RELEASE STAMP <div style="border: 1px solid black; padding: 5px; text-align: center;">OFFICIAL RELEASE (11) BY WHC DATE JAN 04 1994 <i>Stankovich</i></div>
9. Impact Level 3Q		

DISCLAIMER

This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.

MASTER

ACRONYMS

%D	Percent difference
AA	Atomic absorption
BFB	Bromofluorobenzene
BNA	Base/neutral and acid (equivalent to semivolatiles)
CCB	Continuing calibration blank
CCV	Continuing calibration verification
CLP	Contract Laboratory Program
CRA	CRDL standard for AA
CRDL	Contract required detection limit
CRI	CRDL standard for ICP
CRII	CRDL standard for ICP initial
CRIF	CRDL standard for ICP final
CRQL	Contract required quantitation limit
DBC	Dibutylchloroendate
DFTPP	Decafluorotriphenylphosphine
DQO	Data quality objectives
EPA	U.S. Environmental Protection Agency
GC/MS	Gas chromatography/mass spectrometry
GC	Gas chromatography
GFAA	Graphite furnace atomic absorption
GPC	Gel permeation chromatography
ICB	Initial Calibration Blank
ICP	Inductively coupled plasma emission spectrometry
ICS	ICP interference check sample
ICV	Initial calibration verification
IDL	Instrument detection limit
LCS	Laboratory control sample
LCSS	Laboratory control sample soil
LCSW	Laboratory control sample water
MSA	Method of standard addition
MS/MSD	Matrix spike/matrix spike duplicate
NV	Not Validated
PCB	Polychlorinated biphenyl
PEM	Performance evaluation mixture
QA	Quality assurance
QC	Quality control
RF	Response factor
RIC	Reconstructed ion chromatogram
RPD	Relative percent difference
RRF	Relative response factor
RRT	Relative retention time
RSD	Relative standard deviation
RT	Retention time
SDG	Sample delivery group
SOW	Statement of work
TAL	Target analyte list
TCL	Target compound list
TIC	Tentatively identified compounds
TCLP	Toxicity characteristic leaching procedure
TOC	Total organic carbon
TOX	Total organic halides
V	Validated
VOC	Volatile organic compounds

CONTENTS

1.0	INTRODUCTION	1-1
2.0	VOLATILE ORGANIC DATA VALIDATION	2-1
3.0	SEMIVOLATILE DATA VALIDATION	3-1
4.0	PESTICIDE AND PCB DATA VALIDATION	4-1
5.0	INORGANIC DATA VALIDATION	5-1
6.0	REFERENCES	6-1

1.0 INTRODUCTION

The following samples were obtained from the 100-D Ponds Operable Unit Sampling event:

B06D25	B06D31	B06D40	B06D46	B06D52
B06D26	B06D32	B06D41	B06D47	B06D53
B06D27	B06D33	B06D42	B06D48	B06D54
B06D28	B06D34	B06D43	B06D49	B06D55
B06D29	B06D38	B06D44	B06D50	B06D56
B06D30	B06D39	B06D45	B06D51	B06D57

Westinghouse-Hanford has requested that 100 percent of the Sample Delivery Groups be validated for the 100-D Ponds Operable Unit Sampling Investigation. Therefore, the data from the chemical analysis of all 30 samples from this sampling event and their related quality assurance samples were reviewed and validated to verify that reported sample results were of sufficient quality to support decisions regarding remedial actions performed at this site.

A total of 19 samples were analyzed for inorganic TCLP metals. The TCLP is designed to determine the mobility of both organic and inorganic analytes present in liquid, solid and multiphasic wastes as defined in 40 CFR 261. The samples were analyzed by Thermo-Analytic Laboratories (TMA) and Roy F. Weston Laboratories (WESTON) using U.S. Environmental Protection Agency (EPA) CLP protocols and SW846 methods.

Sample analyses included:

- Volatile organics
- Semivolatile organics
- Pesticide/PCB organics
- Inorganics.

The table below lists the Sample Delivery Groups (SDGs) that were validated for this sampling event and included in this report.

SDG No.	Matrix	No. of Samples Analyzed	Parameters
B06D25	S	7	VOC
B06D25	S	6	BNA, Pesticide/PCB, Inorganics
B06D29	S	2	VOC, BNA, Pesticide/PCB
B06D29	S	1	Inorganics
B06D29	W	1	Inorganics
B06D31	S	17	VOC
B06D31	S	15	BNA, Pesticide/PCB, Inorganics
B06D31	W	15	Inorganics
B06D51	W	4	VOC
B06D51	W	3	BNA, Pesticide/PCB, Inorganics

Data quality was reviewed and analytical results validated using Westinghouse-Hanford procedures and related EPA protocols and guidelines. Data were qualified based upon their quality and the guidance provided by these sources. In instances where the protocols differed, the Westinghouse-Hanford guidance was followed.

Two sets of split samples were submitted to TMA and Roy F. Weston Laboratories as shown below:

Set 1:

<u>Sample No.</u>	<u>Split Sample No.</u>	<u>Location</u>
B06D27	B06D29	SP-6

Set 2:

<u>Sample No.</u>	<u>Split Sample No.</u>	<u>Location</u>
B06D31	B06D33	PP-7

The split sample results for both sets were included in the validated data. The results were compared using the sample guidelines for determining the RPD between a sample and its duplicate. The sample results for sampling location PP-7 were within specified QC limits. The sample results for sampling location SP-6 were determined to have moisture contents of well over 50% leading to increased detection limits and standard method error. Therefore, a direct comparison of the results from this location has not been made. All results for both well locations appear in the summary tables within this report.

Two sets of field duplicate samples were submitted to TMA as shown below.

Set 1:

<u>Sample No.</u>	<u>Duplicate Sample No.</u>	<u>Location</u>
B06D27	B06D28	SP-6

Set 2:

<u>Sample No.</u>	<u>Duplicate Sample No.</u>	<u>Location</u>
B06D31	B06D32	PP-7

The duplicate sample results for both sets were included in the validated data. The results were compared using the sample guidelines for determining the RPD between a sample and its duplicate. The sample results for sampling location PP-7 were within the specified QC limits. The sample results for sampling location SP-6 were determined to have moisture contents of well over 50% leading to increased detection limits and standard method error. Therefore, a direct comparison of the results from this location has not been made. All results for both locations appear in the summary tables within this report.

Two sets of equipment blanks were submitted to TMA as shown in the table below. The first set was collected on 8/25/92. The second set was collected on 8/26/92.

Set 1:

Sample Number

B06D50

Set 2:

Sample Number

B06D52
B06D57

Under EPA protocol, equipment blanks are water samples used to indicate whether or not decontamination procedures were adequate or that contamination was not inherent in the equipment used. The equipment blank information provided was inadequate to determine what contamination, if any, was a result of the

WELL AND SAMPLE INFORMATION				SAMPLE LOCATION INFORMATION
SAMPLE LOCATION	SAMPLE NUMBER	MATRIX	DATE SAMPLED	VOLATILES
PP-1	B06D42	S	8/25/92	2-11
PP-2	B06D41	S	8/25/92	2-11
PP-3	B06D40	S	8/25/92	2-11
PP-4	B06D39	S	8/25/92	2-11
PP-5	B06D38	S	8/25/92	2-11
PP-6	B06D26	S	8/25/92	2-6
	B06D34	S	8/25/92	2-11
PP-7	B06D25	S	8/25/92	2-6
	B06D31	S	8/25/92	2-11
	B06D32	S	8/25/92	2-11
	B06D33	S	8/25/92	2-8
EB-PP	B06D50	S	8/25/92	2-6
SP-1	B06D43	S	8/25/92	2-11
SP-2	B06D45	S	8/26/92	2-12
SP-3	B06D46	S	8/26/92	2-12
SP-4	B06D47	S	8/26/92	2-12
SP-5	B06D48	S	8/26/92	2-12
SP-5,7	B06D51	W	8/25/92	2-17
SP-6	B06D27	S	8/26/92	2-6
	B06D28	S	8/26/92	2-6
	B06D29	S	8/26/92	2-8
	B06D44	S	8/26/92	2-11
SP-7	B06D30	S	8/26/92	2-6
	B06D49	S	8/26/92	2-12
EB-SP	B06D57	W	8/26/92	2-17
EB	B06D52	W	8/26/92	2-17
TB	B06D53	W	8/26/92	2-17
	B06D54	S	8/26/92	2-6
	B06D55	S	8/26/92	2-12
	B06D56	S	8/26/92	2-12

2.0 VOLATILE ORGANIC DATA VALIDATION

2.1 DATA PACKAGE COMPLETENESS

The following data packages (SDG Nos.) were submitted for validation and found to be complete:

B06D25	B06D29	B06D31	B06D51
--------	--------	--------	--------

The percent moisture content was determined, as required, for all soil samples submitted for analysis. Several samples had significant moisture content. The following samples displayed moisture contents of fifty percent or more.

- Sample numbers B06D27, B06D28 and B06D30 in SDG No. B06D25.
- Sample number B06D29 in SDG No. B06D29.
- Sample numbers B06D43, B06D44, B06D45, B06D46, B06D47, B06D48 and B06D49 in SDG No. B06D31.

All results for these samples have been qualified as estimates and flagged "J".

2.2 HOLDING TIMES

Analytical holding times were assessed to ascertain whether the Westinghouse-Hanford holding time requirements for volatile organic analyses were met by the laboratory. The Westinghouse-Hanford holding time requirements for volatile organic analyses are as follows: soil samples must be analyzed within 14 days of the date of sample collection; aqueous samples must be analyzed within seven days of the date of sample collection (if unpreserved); and all samples must be shipped on ice to the laboratory and stored at 4°C until analysis.

Holding times were met for all samples.

2.3 INSTRUMENT CALIBRATION AND TUNING

Instrument calibration is performed to establish that the GC/MS instrument is capable of producing acceptable and reliable analytical data over a range of concentrations. The initial and continuing calibrations are to be performed according to CLP protocols. An initial multipoint calibration is performed prior to sample analysis to establish the linear range of the GC/MS

WHC-SD-EN-TI-197, Rev. 0

instrument. Continuing calibration checks are performed to verify that instrument performance is stable and reproducible on a day-to-day basis.

The continuing calibration results for sample numbers B06D44 and B06D48 in SDG No. B06D31 exhibited differences slightly above the QC limits for bromomethane, chloroethane and carbon disulfide. All associated results were qualified as estimates and flagged "J".

All other initial and continuing calibration results were acceptable.

2.3.1 GC/MS Tuning/Instrument Performance Check

Tuning is performed to ensure that mass resolution, identification, and, to some degree, sensitivity of the GC/MS instrument have been established. When analyzing for volatile organics, instrument tuning is performed with BFB. Instrument tuning must be performed prior to the analysis of either standards or samples and must meet the criteria for acceptable GC/MS instrument tuning using BFB as outlined in Westinghouse-Hanford (WHC 1991) and in EPA (EPA 1988a and 1988b) criteria.

The original data were checked for transcription and calculation errors to verify that tuning criteria were met. Prior to calibration and sample analysis, all tuning criteria were met.

All GC/MS tuning data were acceptable.

2.4 BLANKS

Method blank and field blank analyses are performed to determine the extent of laboratory or field contamination of samples. No contaminants should be present in the blanks. Analytical results for analytes present in any sample at less than 5 times the concentration of that analyte found in associated blanks should be qualified as non-detects; common laboratory contaminants present in the samples at less than 10 times the concentration of that analyte are qualified as non-detects.

Due to the presence of laboratory blank contamination, the following samples were flagged "U" for methylene chloride:

- Sample number B06D33 in SDG No. B06D29.
- Sample number B06D51 in SDG No. B06D51.

Due to the presence of laboratory blank contamination, the following samples were flagged "U" for acetone:

- Sample number B06D33 in SDG No. B06D29.

All other laboratory and field blank results were acceptable.

2.5 ACCURACY

Accuracy was assessed by evaluating the recoveries of stable isotopically labeled surrogate compounds added to all samples and blanks, and by the analysis of a representative sample which was spiked with a variety of volatile organic compounds.

2.5.1 Matrix Spike Recovery

Matrix spike compounds are added to a sample which is representative of the sample delivery group. Matrix spike analyses are performed in duplicate using five compounds and should be within the established quality control limits (EPA 1988b). The matrix spike analyses estimate how much the target compounds are interfered with, either positively or negatively, by the sample matrix.

All MS/MSD results were acceptable.

2.5.2 Surrogate Recovery

Matrix-specific surrogate compound recovery control windows have been established by the EPA CLP program. When a surrogate compound recovery is out of the control window, all positively identified target compounds associated with the unacceptable surrogate recoveries are qualified as estimates (J). Undetected compounds are qualified as having an estimated detection limit (UJ).

- Sample numbers B06D39, B06D41 and B06D42 in SDG No. B06D31 had a percent recovery for one surrogate compound outside of QC limits. All VOC results for these three samples were qualified as estimates and flagged "J".

All other surrogate recovery results were acceptable.

2.6 PRECISION

Precision is expressed by the relative percent difference (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample. When the laboratory has not performed duplicate spike analyses, precision may also be assessed using unspiked duplicate sample analyses. Field precision is measured by analyzing duplicate samples taken in the field.

All matrix spike/matrix spike duplicate RPD results were acceptable.

2.7 INTERNAL STANDARDS PERFORMANCE

Internal standard performance was assessed to determine whether abrupt changes in instrument response and sensitivity occurred that may have affected the reliability of the analytical data. The response (area or height) of the internal standards must not vary by more than 100 percent or -50 percent from the response of the internal standard that was used to calculate the upper and lower bounds. The upper and lower bounds define the range for acceptable internal standard response (area/height) for the sample analyses.

Several samples exhibited low internal standard areas. The analyte results associated with each of the following internal standards were qualified as estimates and flagged "J".

- Chlorobenzene-d5 in sample numbers B06D34 and B06D39 in SDG No. B06D31.
- 1,4-Difluorobenzene and chlorobenzene-d5 in sample number B06D33 in SDG No. B06D29, and sample number B06D40 in SDG No. B06D31.
- Bromochloromethane, 1,4-difluorobenzene and chlorobenzene-d5 in sample number B06D42 in SDG No. B06D31.

All other internal standard recovery results were acceptable.

2.8 COMPOUND IDENTIFICATION AND QUANTITATION

The identity of detected compounds are confirmed to investigate the possibility of false positives. The confirmation of compound identification during the quality assurance review focuses on false positives because only mass spectra for positive identifications are submitted. However, target compounds that are reported as undetected are also evaluated to investigate the possibility of false negatives. Confirmation of possible false negatives is addressed by reviewing other factors relating to analytical sensitivity (e.g., relative response factors, detection limits, linearity, analytical recovery).

Compound quantitations and reported detection limits were recalculated for a minimum of 20 percent of the samples in each case to verify that they are accurate and are consistent with CLP requirements.

Below the CRQL, instrument precision becomes more variable as the instrument detection limit is approached. Therefore, the

concentration of any compound that was detected below the CRQL was qualified as an estimate (J).

2.9 OVERALL ASSESSMENT AND SUMMARY

A thorough review of ongoing data acquisition and instrument performance criteria was made to assess overall GC/MS instrument performance. No changes in instrument performance were noted that would result in the degradation of data quality. No indications of unacceptable instrument performance (i.e., shifts in baseline stability, retention time shifts, extraneous peaks, or sensitivity) were found during the quality assurance review.

In general, the volatile data presented in this report met the protocol-specified QA/QC requirements. Minor blank contamination was detected in nine samples. All results for eleven samples were qualified as estimates due to high moisture content. The quantitations reported for these samples should be considered to be gross estimates. Several samples displayed surrogate recoveries and internal standard areas outside of QC limits, apparently due to matrix interferences. The associated data were qualified as estimates and are usable for limited purposes only. All other data are considered valid and usable within the standard error associated with the method.

VOLATILE ORGANIC ANALYSIS, SOIL MATRIX, (ug/Kg)

Page 1 of 1

Project: WESTINGHOUSE-HANFORD																			
Laboratory: TMA																			
Case		SDG: B06D25																	
Sample Number		B06D25		B06D26		B06D27		B06D28		B06D30		B06D50		B06D54					
Location		PP-7		PP-6		SP-6		SP-6		SP-7									
Remarks								DUP				EB		TB					
Sample Date		08/25/92		08/25/92		08/26/92		08/26/92		08/26/92		08/25/92		08/26/92					
Analysis Date		09/03/92		09/03/92		09/03/92		09/03/92		09/03/92		09/03/92		09/03/92					
Volatile Organic Compound	CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Chloromethane	10	10	U	11	U	42	UJ	53	UJ	71	UJ	10	U	10	U				
Bromomethane	10	10	U	11	U	42	UJ	53	UJ	71	UJ	10	U	10	U				
Vinyl Chloride	10	10	U	11	U	42	UJ	53	UJ	71	UJ	10	U	10	U				
Chloroethane	10	10	U	11	U	42	UJ	53	UJ	71	UJ	10	U	10	U				
Methylene Chloride	10	10	U	11	U	42	UJ	53	UJ	71	UJ	10	U	10	U				
Acetone	10	10	U	11	U	780	J	970	J	610	J	10	U	14					
Carbon Disulfide	10	10	U	11	U	31	J	71	J	38	J	10	U	10	U				
1,1-Dichloroethene	10	10	U	11	U	42	UJ	53	UJ	71	UJ	10	U	10	U				
1,1-Dichloroethane	10	10	U	11	U	42	UJ	53	UJ	71	UJ	10	U	10	U				
1,2-Dichloroethene (total)	10	10	U	11	U	42	UJ	53	UJ	71	UJ	10	U	10	U				
Chloroform	10	10	U	11	U	42	UJ	53	UJ	71	UJ	10	U	10	U				
1,2-Dichloroethane	10	10	U	11	U	42	UJ	53	UJ	71	UJ	10	U	10	U				
2-Butanone	10	10	J	12		140	J	240	J	150	J	10	U	10	U				
1,1,1-Trichloroethane	10	10	U	6	J	42	UJ	53	UJ	71	UJ	10	U	10	U				
Carbon Tetrachloride	10	10	U	11	U	42	UJ	53	UJ	71	UJ	10	U	10	U				
Bromodichloromethane	10	10	U	11	U	42	UJ	53	UJ	71	UJ	10	U	10	U				
1,2-Dichloropropane	10	10	U	11	U	42	UJ	53	UJ	71	UJ	10	U	10	U				
cis-1,3-Dichloropropene	10	10	U	11	U	42	UJ	53	UJ	71	UJ	10	U	10	U				
Trichloroethene	10	10	U	11	U	42	UJ	53	UJ	71	UJ	10	U	10	U				
Dibromochloromethane	10	10	U	11	U	42	UJ	53	UJ	71	UJ	10	U	10	U				
1,1,2-Trichloroethane	10	10	U	11	U	42	UJ	53	UJ	71	UJ	10	U	10	U				
Benzene	10	10	U	11	U	42	UJ	53	UJ	71	UJ	10	U	10	U				
trans-1,3-Dichloropropene	10	10	U	11	U	42	UJ	53	UJ	71	UJ	10	U	10	U				
Bromoform	10	10	U	11	U	42	UJ	53	UJ	71	UJ	10	U	10	U				
4-Methyl-2-pentanone	10	9	J	11	U	42	UJ	7	J	71	UJ	10	U	10	U				
2-Hexanone	10	9	J	11	U	42	UJ	53	UJ	71	UJ	10	U	10	U				
Tetrachloroethene	10	10	U	11	U	42	UJ	53	UJ	71	UJ	10	U	10	U				
1,1,2,2-Tetrachloroethane	10	3	J	11	U	42	UJ	53	UJ	71	UJ	10	U	10	U				
Toluene	10	10	U	11	U	13	J	11	J	71	UJ	10	U	10	U				
Chlorobenzene	10	10	U	11	U	42	UJ	53	UJ	71	UJ	10	U	10	U				
Ethylbenzene	10	10	U	11	U	42	UJ	53	UJ	71	UJ	10	U	10	U				
Styrene	10	10	U	11	U	42	UJ	53	UJ	71	UJ	10	U	10	U				
Xylene (total)	10	10	U	11	U	42	UJ	53	UJ	71	UJ	10	U	10	U				

DUP = Duplicate, EB = Equipment Blank, PP = Percolation Pond, SP = Settling Pond, TB = Trip Blank

WMC-SD-EN-TI-197, Rev. 0

2-7

Project: WESTINGHOUSE-HANFORD																					
Laboratory: Roy F. Weston																					
Case		SDG: B06D29																			
Sample Number		B06D29		B06D33																	
Location		SP-6		PP-7																	
Remarks		Split		Split																	
Sample Date		08/26/92		08/25/92																	
Analysis Date		09/04/92		09/01/92																	
Volatile Organic Compound	CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Chloromethane	10	37	UJ	10	U																
Bromomethane	10	37	UJ	10	U																
Vinyl Chloride	10	37	UJ	10	U																
Chloroethane	10	37	UJ	10	U																
Methylene Chloride	10	110	J	14	U																
Acetone	10	490	J	38	U																
Carbon Disulfide	10	37	UJ	10	U																
1,1-Dichloroethene	10	37	UJ	10	U																
1,1-Dichloroethane	10	37	UJ	10	U																
1,2-Dichloroethene (total)	10	37	UJ	10	U																
Chloroform	10	37	UJ	10	U																
1,2-Dichloroethane	10	37	UJ	10	U																
2-Butanone	10	32	J	10	U																
1,1,1-Trichloroethane	10	37	UJ	10	UJ																
Carbon Tetrachloride	10	37	UJ	10	UJ																
Bromodichloromethane	10	37	UJ	10	UJ																
1,2-Dichloropropane	10	37	UJ	10	UJ																
cis-1,3-Dichloropropene	10	37	UJ	10	UJ																
Trichloroethene	10	37	UJ	10	UJ																
Dibromochloromethane	10	37	UJ	10	UJ																
1,1,2-Trichloroethane	10	37	UJ	10	UJ																
Benzene	10	37	UJ	10	UJ																
trans-1,3-Dichloropropene	10	37	UJ	10	UJ																
Bromoform	10	37	UJ	10	UJ																
4-Methyl-2-pentanone	10	37	UJ	10	UJ																
2-Hexanone	10	37	UJ	10	UJ																
Tetrachloroethene	10	37	UJ	10	UJ																
1,1,2,2-Tetrachloroethane	10	37	UJ	10	UJ																
Toluene	10	5	J	10	UJ																
Chlorobenzene	10	37	UJ	10	UJ																
Ethylbenzene	10	37	UJ	10	UJ																
Styrene	10	37	UJ	10	UJ																
Xylene (total)	10	37	UJ	10	UJ																

PP = Percolation Pond, SP = Settling Pond

BLANK AND SAMPLE DATA SUMMARY

[illegible]

[illegible]

Project: WESTINGHOUSE-HANFORD																					
Laboratory: TMA																					
Case		SDG: B06D31																			
Sample Number		B06D31		B06D32		B06D34		B06D38		B06D39		B06D40		B06D41		B06D42		B06D43		B06D44	
Location		PP-7		PP-7		PP-6		PP-5		PP-4		PP-3		PP-2		PP-1		SP-1		SP-6	
Remarks				DUP																	
Sample Date		08/25/92		08/25/92		08/25/92		08/25/92		08/25/92		08/25/92		08/25/92		08/25/92		08/25/92		08/26/92	
Analysis Date		09/03/92		09/03/92		09/03/92		09/03/92		09/03/92		09/03/92		09/03/92		09/03/92		09/04/92		09/08/92	
Volatile Organic Compound	CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Chloromethane	10	10	U	10	U	11	U	10	U	10	UJ	10	U	10	UJ	10	UJ	130	UJ	120	UJ
Bromomethane	10	10	U	10	U	11	U	10	U	10	UJ	10	U	10	UJ	10	UJ	130	UJ	120	UJ
Vinyl Chloride	10	10	U	10	U	11	U	10	U	10	UJ	10	U	10	UJ	10	UJ	130	UJ	120	UJ
Chloroethane	10	10	U	10	U	11	U	10	U	10	UJ	10	U	10	UJ	10	UJ	130	UJ	120	UJ
Methylene Chloride	10	5	U	5	U	6	U	5	U	5	UJ	5	U	5	UJ	5	UJ	66	UJ	62	UJ
Acetone	10	10	U	10	U	11	U	10	U	10	UJ	10	U	10	UJ	10	UJ	850	J	500	J
Carbon Disulfide	10	5	U	5	U	6	U	5	U	5	UJ	5	U	5	UJ	5	UJ	66	UJ	62	UJ
1,1-Dichloroethene	10	5	U	5	U	6	U	5	U	5	UJ	5	U	5	UJ	5	UJ	66	UJ	62	UJ
1,1-Dichloroethane	10	5	U	5	U	6	U	5	U	5	UJ	5	U	5	UJ	5	UJ	66	UJ	62	UJ
1,2-Dichloroethene (total)	10	5	U	5	U	6	U	5	U	5	UJ	5	U	5	UJ	5	UJ	66	UJ	62	UJ
Chloroform	10	5	U	5	U	6	U	5	U	5	UJ	5	U	5	UJ	5	UJ	66	UJ	62	UJ
1,2-Dichloroethane	10	5	U	5	U	6	U	5	U	5	UJ	5	U	5	UJ	5	UJ	66	UJ	62	UJ
2-Butanone	10	10	U	10	U	11	U	10	U	10	UJ	10	UJ	10	UJ	10	UJ	130	UJ	120	UJ
1,1,1-Trichloroethane	10	5	U	5	U	6	U	5	U	5	UJ	5	UJ	5	UJ	5	UJ	66	UJ	62	UJ
Carbon Tetrachloride	10	5	U	5	U	6	U	5	U	5	UJ	5	UJ	5	UJ	5	UJ	66	UJ	62	UJ
Vinyl Acetate	10	10	U	10	U	11	U	10	U	10	UJ	10	UJ	10	UJ	10	UJ	130	UJ	120	UJ
Bromodichloromethane	10	5	U	5	U	6	U	5	U	5	UJ	5	UJ	5	UJ	5	UJ	66	UJ	62	UJ
1,2-Dichloropropane	10	5	U	5	U	6	U	5	U	5	UJ	5	UJ	5	UJ	5	UJ	66	UJ	62	UJ
cis-1,3-Dichloropropene	10	5	U	5	U	6	U	5	U	5	UJ	5	UJ	5	UJ	5	UJ	66	UJ	62	UJ
Trichloroethene	10	5	U	5	U	6	U	5	U	5	UJ	5	UJ	5	UJ	5	UJ	66	UJ	62	UJ
Dibromochloromethane	10	5	U	5	U	6	U	5	U	5	UJ	5	UJ	5	UJ	5	UJ	66	UJ	62	UJ
1,1,2-Trichloroethane	10	5	U	5	U	6	U	5	U	5	UJ	5	UJ	5	UJ	5	UJ	66	UJ	62	UJ
Benzene	10	5	U	5	U	6	U	5	U	5	UJ	5	UJ	5	UJ	5	UJ	66	UJ	62	UJ
trans-1,3-Dichloropropene	10	5	U	5	U	6	U	5	U	5	UJ	5	UJ	5	UJ	5	UJ	66	UJ	62	UJ
2-Chloroethyl vinyl ether	10	10	U	10	U	11	U	10	U	10	UJ	10	UJ	10	UJ	10	UJ	130	UJ	120	UJ
Bromoform	10	5	U	5	U	6	U	5	U	5	UJ	5	UJ	5	UJ	5	UJ	66	UJ	62	UJ
4-Methyl-2-pentanone	10	10	U	10	U	11	UJ	10	U	10	UJ	10	UJ	10	UJ	10	UJ	130	UJ	120	UJ
2-Hexanone	10	10	U	10	U	11	UJ	10	U	10	UJ	10	UJ	10	UJ	10	UJ	130	UJ	120	UJ
Tetrachloroethene	10	5	U	5	U	6	UJ	5	U	5	UJ	5	UJ	5	UJ	5	UJ	66	UJ	62	UJ
1,1,2,2-Tetrachloroethane	10	5	U	5	U	6	UJ	5	U	5	UJ	5	UJ	5	UJ	5	UJ	66	UJ	62	UJ
Toluene	10	9		4	J	6	UJ	8		14	J	22	J	14	J	12	J	66	UJ	62	UJ
Chlorobenzene	10	5	U	5	U	6	UJ	5	U	5	UJ	5	UJ	5	UJ	5	UJ	66	UJ	62	UJ
Ethylbenzene	10	5	U	5	U	6	UJ	5	U	5	UJ	5	UJ	5	UJ	5	UJ	66	UJ	62	UJ
Styrene	10	5	U	5	U	6	UJ	5	U	5	UJ	5	UJ	5	UJ	5	UJ	66	UJ	62	UJ
Xylene (total)	10	5	U	5	U	6	UJ	5	U	5	UJ	5	UJ	5	UJ	5	UJ	66	UJ	62	UJ

DUP = Duplicate, PP = Percolation Pond, SP = Settling Pond, TB = Trip Blank

Project: WESTINGHOUSE-HANFORD																			
Laboratory: TMA																			
Case		SDG: B06D31																	
Sample Number		B06D45		B06D46		B06D47		B06D48		B06D49		B06D55		B06D56					
Location		SP-2		SP-3		SP-4		SP-5		SP-7									
Remarks												TB		TB					
Sample Date		08/26/92		08/26/92		08/26/92		08/26/92		08/26/92		08/26/92		08/26/92					
Analysis Date		09/04/92		09/04/92		09/05/92		09/08/92		09/05/92		09/03/92		09/04/92					
Volatile Organic Compound	CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Chloromethane	10	69	UJ	93	UJ	130	UJ	170	UJ	130	UJ	10	U	10	U				
Bromomethane	10	69	UJ	93	UJ	130	UJ	170	UJ	130	UJ	10	U	10	U				
Vinyl Chloride	10	69	UJ	93	UJ	130	UJ	170	UJ	130	UJ	10	U	10	U				
Chloroethane	10	69	UJ	93	UJ	130	UJ	170	UJ	130	UJ	10	U	10	U				
Methylene Chloride	10	35	UJ	46	UJ	66	UJ	83	UJ	66	UJ	5	U	5	U				
Acetone	10	570	J	380	J	580	J	2200	J	430	J	8	J	21	J				
Carbon Disulfide	10	29	J	40	J	66	UJ	83	UJ	66	UJ	5	U	5	U				
1,1-Dichloroethene	10	35	UJ	46	UJ	66	UJ	83	UJ	66	UJ	5	U	5	U				
1,1-Dichloroethane	10	35	UJ	46	UJ	66	UJ	83	UJ	66	UJ	5	U	5	U				
1,2-Dichloroethene (total)	10	35	UJ	46	UJ	66	UJ	83	UJ	66	UJ	5	U	5	U				
Chloroform	10	35	UJ	46	UJ	66	UJ	83	UJ	66	UJ	5	U	5	U				
1,2-Dichloroethane	10	35	UJ	46	UJ	66	UJ	83	UJ	66	UJ	5	U	5	U				
2-Butanone	10	69	UJ	93	UJ	130	UJ	390	J	130	UJ	10	U	10	U				
1,1,1-Trichloroethane	10	35	UJ	46	UJ	66	UJ	83	UJ	66	UJ	5	U	5	U				
Carbon Tetrachloride	10	35	UJ	46	UJ	66	UJ	83	UJ	66	UJ	5	U	5	U				
Vinyl Acetate	10	69	UJ	93	UJ	130	UJ	170	UJ	130	UJ	10	U	10	U				
Bromodichloromethane	10	35	UJ	46	UJ	66	UJ	83	UJ	66	UJ	5	U	5	U				
1,2-Dichloropropane	10	35	UJ	46	UJ	66	UJ	83	UJ	66	UJ	5	U	5	U				
cis-1,3-Dichloropropene	10	35	UJ	46	UJ	66	UJ	83	UJ	66	UJ	5	U	5	U				
Trichloroethene	10	35	UJ	46	UJ	66	UJ	83	UJ	66	UJ	5	U	5	U				
Dibromochloromethane	10	35	UJ	46	UJ	66	UJ	83	UJ	66	UJ	5	U	5	U				
1,1,2-Trichloroethane	10	35	UJ	46	UJ	66	UJ	83	UJ	66	UJ	5	U	5	U				
Benzene	10	35	UJ	46	UJ	66	UJ	83	UJ	66	UJ	5	U	5	U				
trans-1,3-Dichloropropene	10	35	UJ	46	UJ	66	UJ	83	UJ	66	UJ	5	U	5	U				
2-Chloroethyl vinyl ether	10	69	UJ	93	UJ	130	UJ	170	UJ	130	UJ	10	U	10	U				
Bromoform	10	35	UJ	46	UJ	66	UJ	83	UJ	66	UJ	5	U	5	U				
4-Methyl-2-pentanone	10	69	UJ	93	UJ	130	UJ	170	UJ	130	UJ	10	U	10	U				
2-Hexanone	10	69	UJ	93	UJ	130	UJ	170	UJ	130	UJ	10	U	10	U				
Tetrachloroethene	10	35	UJ	46	UJ	66	UJ	83	UJ	66	UJ	5	U	5	U				
1,1,2,2-Tetrachloroethane	10	35	UJ	46	UJ	66	UJ	83	UJ	66	UJ	5	U	5	U				
Toluene	10	35	UJ	46	UJ	66	UJ	83	UJ	66	UJ	5	U	5	U				
Chlorobenzene	10	35	UJ	46	UJ	66	UJ	83	UJ	66	UJ	5	U	5	U				
Ethylbenzene	10	35	UJ	46	UJ	66	UJ	83	UJ	66	UJ	5	U	5	U				
Styrene	10	35	UJ	46	UJ	66	UJ	83	UJ	66	UJ	5	U	5	U				
Xylene (total)	10	35	UJ	46	UJ	66	UJ	83	UJ	66	UJ	5	U	5	U				

DUP = Duplicate, PP = Percolation Pond, SP = Settling Pond, TB = Trip Blank

CALIBRATION DATA SUMMARY

[illegible]

BLANK AND SAMPLE DATA SUMMARY

[illegible]

ACCURACY DATA SUMMARY

[illegible]

2-16

Project: WESTINGHOUSE-HANFORD																					
Laboratory: TMA																					
Case		SDG: B06D51																			
Sample Number		B06D51		B06D52		B06D53		B06D57													
Location		SP-5,7																			
Remarks				EB		TB		EB													
Sample Date		08/25/92		08/26/92		08/26/92		08/26/92													
Analysis Date		09/04/92		09/04/92		09/04/92		09/04/92													
Volatile Organic Compound	CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Chloromethane	10	10	U	10	U	10	U	10	U												
Bromomethane	10	10	U	10	U	10	U	10	U												
Vinyl Chloride	10	10	U	10	U	10	U	10	U												
Chloroethane	10	10	U	10	U	10	U	10	U												
Methylene Chloride	10	10	U	2	J	2	J	3	J												
Acetone	10	10	U	10	U	10	U	10	U												
Carbon Disulfide	10	5	U	5	U	5	U	5	U												
1,1-Dichloroethene	10	5	U	5	U	5	U	5	U												
1,1-Dichloroethane	10	5	U	5	U	5	U	5	U												
1,2-Dichloroethene (total)	10	5	U	5	U	5	U	5	U												
Chloroform	10	5	U	5	U	2	J	5	U												
1,2-Dichloroethane	10	5	U	5	U	5	U	5	U												
2-Butanone	10	10	U	10	U	10	U	10	U												
1,1,1-Trichloroethane	10	5	U	5	U	5	U	5	U												
Carbon Tetrachloride	10	5	U	5	U	5	U	5	U												
Vinyl Acetate	10	10	U	10	U	10	U	10	U												
Bromodichloromethane	10	5	U	5	U	5	U	5	U												
1,2-Dichloropropane	10	5	U	5	U	5	U	5	U												
cis-1,3-Dichloropropene	10	5	U	5	U	5	U	5	U												
2-Chloroethylvinylether	10	10	U	10	U	10	U	10	U												
Trichloroethene	10	5	U	5	U	5	U	5	U												
Dibromochloromethane	10	5	U	5	U	5	U	5	U												
1,1,2-Trichloroethane	10	5	U	5	U	5	U	5	U												
Benzene	10	5	U	5	U	5	U	5	U												
trans-1,3-Dichloropropene	10	5	U	5	U	5	U	5	U												
Bromoform	10	5	U	5	U	5	U	5	U												
4-Methyl-2-pentanone	10	10	U	10	U	10	U	10	U												
2-Hexanone	10	10	U	10	U	10	U	10	U												
Tetrachloroethene	10	5	U	5	U	5	U	5	U												
1,1,2,2-Tetrachloroethane	10	5	U	5	U	5	U	5	U												
Toluene	10	5	U	5	U	5	U	5	U												
Chlorobenzene	10	5	U	5	U	5	U	5	U												
Ethylbenzene	10	5	U	5	U	5	U	5	U												
Styrene	10	5	U	5	U	5	U	5	U												
Xylene (total)	10	5	U	5	U	5	U	5	U												

TB = Trip Blank, EB = Equipment Blank, SP = Settling Pond

BLANK AND SAMPLE DATA SUMMARY

[illegible]

WELL AND SAMPLE INFORMATION				SAMPLE LOCATION INFORMATION
SAMPLE LOCATION	SAMPLE NUMBER	MATRIX	DATE SAMPLED	SEMIVOLATILES
PP-1	B06D42	S	8/25/92	3-13, 3-14
PP-2	B06D41	S	8/25/92	3-13, 3-14
PP-3	B06D40	S	8/25/92	3-13, 3-14
PP-4	B06D39	S	8/25/92	3-13, 3-14
PP-5	B06D38	S	8/25/92	3-13, 3-14
PP-6	B06D26	S	8/25/92	3-6, 3-7
	B06D34	S	8/25/92	3-13, 3-14
PP-7	B06D25	S	8/25/92	3-6, 3-7
	B06D31	S	8/25/92	3-13, 3-14
	B06D32	S	8/25/92	3-13, 3-14
	B06D33	S	8/25/92	3-9, 3-10
EB-PP	B06D50	S	8/25/92	3-6, 3-7
SP-1	B06D43	S	8/25/92	3-13, 3-14
SP-2	B06D45	S	8/26/92	3-15, 3-16
SP-3	B06D46	S	8/26/92	3-15, 3-16
SP-4	B06D47	S	8/26/92	3-15, 3-16
SP-5	B06D48	S	8/26/92	3-15, 3-16
SP-5,7	B06D51	W	8/25/92	3-18, 3-19
SP-6	B06D27	S	8/26/92	3-6, 3-7
	B06D28	S	8/26/92	3-6, 3-7
	B06D29	S	8/26/92	3-9, 3-10
	B06D44	S	8/26/92	3-13, 3-14
SP-7	B06D30	S	8/26/92	3-6, 3-7
	B06D49	S	8/26/92	3-15, 3-16
EB-SP	B06D57	W	8/26/92	3-18, 3-19
EB	B06D52	W	8/26/92	3-18, 3-19

3.0 SEMIVOLATILE DATA VALIDATION

3.1 DATA PACKAGE COMPLETENESS

The following data packages (SDG Nos.) were submitted for validation and found to be complete:

B06D25 B06D29 B06D31 B06D51

The percent moisture content was determined, as required, for all soil samples submitted for analysis. Several samples had significant moisture content. The following samples displayed moisture contents of fifty percent or more.

- Sample numbers B06D27, B06D28 and B06D30 in SDG No. B06D25.
- Sample number B06D29 in SDG No. B06D29.
- Sample numbers B06D43, B06D44, B06D45, B06D46, B06D47, B06D48 and B06D49 in SDG No. B06D31.

All results for these samples have been qualified as estimates and flagged "J".

3.2 HOLDING TIMES

Analytical holding times were assessed to ascertain whether the holding time requirements for semivolatile analyses were met by the laboratory. Westinghouse-Hanford protocols require that samples be extracted within seven days of collection and be analyzed within 40 days of extraction (WHC 1991a).

Holding time requirements were met for all samples.

3.3 INSTRUMENT CALIBRATION AND TUNING

3.3.1 GC/MS Tuning/Instrument Performance Check

Tuning is performed to ensure that mass resolution, and to some degree, sensitivity, of the GC/MS instrument has been established. When analyzing for semivolatile organic compounds, the GC/MS is tuned using DFTPP. The GC/MS must be tuned prior to the analysis of either standards or samples, and tuning must meet the criteria established by the analytical protocol. The specific criteria for acceptable GC/MS tuning using DFTPP are

outlined in Westinghouse-Hanford procedures (WHC 1991) and in CLP protocols (EPA 1988a and 1988b).

As part of data validation, the original tuning data were checked for transcription and calculation errors to verify that tuning and performance criteria were met.

All tuning and performance criteria were met.

3.3.2 Initial Calibration

The GC/MS instrument is calibrated to ensure that it is capable of producing acceptable and reliable analytical data over a range of concentrations. The initial and continuing calibrations are to be performed according to CLP protocols. An initial multipoint calibration is performed prior to sample analysis to establish the linearity range of the GC/MS instrument. Continuing calibration checks are performed to verify that instrument performance is stable and reproducible on a day-to-day basis.

Instrument response is established by the initial calibration when the RRFs for all target compounds are greater than or equal to 0.05 units. Linearity is established when the RSDs of the RRFs are less than or equal to 30 percent.

All initial calibration results were acceptable.

3.3.3 Continuing Calibration

The criteria for accepting the continuing calibration require that a standard be analyzed at least once per 12 hour period and that the RRFs of all target compounds be greater than or equal to 0.05 units. In addition, the percent difference of these RRFs must be less than or equal to 25 percent of the average RRFs calculated for the associated initial calibration.

All continuing calibration results were acceptable.

3.4 BLANKS

Method blank and field blank analyses are performed to determine the extent of laboratory or field contamination of samples. No contaminants should be present in the blanks. Analytical results for analytes present in any sample at less than 5 times the concentration of that analyte found in associated blanks should be qualified as non-detects; in the case of certain common laboratory contaminants, results less than 10 times blank concentrations should be qualified as non-detects.

Due to the presence of laboratory blank contamination, the following samples were flagged "U" for di-n-butylphthalate:

- Sample number B06D29 in SDG No. B06D29.
- Sample number B06D51 in SDG No. B06D51.

All other laboratory blank results were acceptable.

3.5 ACCURACY

Accuracy was assessed by evaluating the recoveries of stable isotopically labeled surrogate compounds added to all samples and blanks, and by the analysis of a representative sample which was spiked with a variety of organic compounds.

3.5.1 Matrix Spike Recovery

Matrix spike compounds are added to a sample which is representative of the sample delivery group. Matrix spike analyses are performed in duplicate using the 11 compounds specified by CLP protocols. All recoveries for the 11 compounds should be within the established QC limits (EPA 1988b). The matrix spike analyses estimate how much the analyses for the target compounds are interfered with, either positively or negatively, by the sample matrix. Because the matrix spike is performed using only one of the samples extracted within the SDG, these data alone cannot be used to evaluate the precision and accuracy of individual samples.

All matrix spike/matrix spike duplicate recovery results were acceptable.

3.5.2 Surrogate Recovery

Surrogate compound recoveries are calculated using analytical results from six stable, isotopically labeled surrogate compounds added to the sample prior to sample preparation and analysis. Matrix-specific surrogate compound recovery control windows have been established by the EPA CLP program. When recoveries for any two surrogate compounds are out of the control window, all positively identified target compound concentrations in samples associated with the unacceptable surrogate recoveries are qualified as estimates (J) and undetected compounds are qualified estimated below the detection limit (UJ).

All surrogate recovery results were acceptable.

3.6 PRECISION

The precision is expressed by the RPD between the recoveries of the matrix spike and the matrix spike duplicate analyses performed on a sample, and through a comparison of the results

WHC-SD-EN-TI-197, Rev. 0

for field duplicate samples. Acceptable RPD control windows for matrix spike/matrix spike duplicate analyses have been established by the EPA CLP program.

Field precision is measured by analyzing duplicate samples taken in the field. No standards have been established for qualifying data based on RPD for duplicate field samples by CLP protocols. Westinghouse-Hanford procedures establish the following criteria for duplicate field sample analyses for organic compounds, based on criteria established for inorganic analyses for laboratory duplicates:

1. For compounds whose concentrations are greater than 5 times CRQL, RPDs, must be ± 20 percent for aqueous samples and ± 35 percent for soil samples.
2. When one or both results are present at concentrations less than 5 times CRQL, the concentration difference must be $\pm$ CRQL for aqueous samples and $\pm 2 \times \text{CRQL}$ for soil samples.

All matrix spike/matrix spike duplicate RPD results were acceptable for all samples.

3.7 SYSTEM PERFORMANCE

Internal standard performance was assessed to determine whether abrupt changes in instrument response and sensitivity occurred that may have affected the reliability of the analytical data. The response (area or height) of the internal standards must not vary by more than -50 percent or +100 percent from the response of the calibration standard that was used to calculate the upper and lower bounds. The upper and lower bounds define the range for acceptable internal standard response (area/height) for the sample analyses. In addition, retention times for the internal standard must not vary more than ± 30 seconds from that of the associated calibration standard.

All internal standard results were acceptable.

3.8 COMPOUND IDENTIFICATION AND QUANTITATION

The identities of detected compounds were confirmed to investigate the possibility of false positives. The confirmation of compound identification during the QA review focuses on false positives because only mass spectra for positive identifications are submitted. However, target compounds that are reported as undetected are also evaluated to investigate the possibility of false negatives. Confirmation of possible false negatives is addressed by reviewing other factors relating to analytical sensitivity (e.g., detection limits, linearity, analytical recovery). Compound retention times and mass spectra must match

those for the standard within set to tolerance limits (EPA 1988b).

3.8.1 Reported Results and Quantitation Limits

Compound quantitations and reported detection limits were recalculated and verified to ensure that they are accurate and are consistent with the internal standards and relative retention times specified by the CLP scope of work.

At concentrations below the CRQL, instrument precision becomes more variable as the IDL is approached. Therefore, the concentrations of any compound detected below the CRQL are qualified as estimates.

All compound identifications and quantitations have been verified as correct.

3.8.2 Tentatively Identified Compounds

Several TICs were identified in the blanks and samples which were flagged "U" according to Westinghouse-Hanford protocols; if the sample result was ± 0.06 RRT from that of the blank and if the sample result was less than 5 times the highest blank concentration.

3.9 OVERALL ASSESSMENT AND SUMMARY

A thorough review of ongoing data acquisition and instrument performance criteria was made to assess overall GC/MS instrument performance. No changes in instrument performance were noted that would result in the degradation of data quality. No indications of unacceptable instrument performance (i.e., shifts in baseline stability, retention time shifts, extraneous peaks, sensitivity) were found during the quality assurance review.

In general, the semivolatile data presented in this report met the protocol-specified QA/QC requirements. Minor laboratory blank contamination was detected in two samples. Due to high moisture contents all results for eleven samples were qualified as estimates. The quantitations reported for these samples should be used as gross estimates only. All other data are considered valid and usable within the standard error associated with the method.

SEMIVOLATILE ORGANIC ANALYSIS, SOIL MATRIX, (ug/Kg)

Page 1 of 2

Project: WESTINGHOUSE-HANFORD																					
Laboratory: TMA																					
Case		SDG: B06D25																			
Sample Number		B06D25		B06D26		B06D27		B06D28		B06D30		B06D50									
Location		PP-7		PP-6		SP-6		SP-6		SP-7											
Remarks								DUP				EB									
Sample Date		08/25/92		08/25/92		08/26/92		08/26/92		08/26/92		08/25/92									
Extraction Date		09/02/92		09/02/92		09/02/92		09/02/92		09/02/92		09/02/92									
Analysis Date		09/08/92		09/08/92		09/09/92		09/08/92		09/09/92		09/08/92									
Semivolatile Compound	CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Phenol	330	330	U	370	U	1400	UJ	1700	UJ	2300	UJ	320	U								
bis(2-Chloroethyl)ether	330	330	U	370	U	1400	UJ	1700	UJ	2300	UJ	320	U								
2-Chlorophenol	330	330	U	370	U	1400	UJ	1700	UJ	2300	UJ	320	U								
1,3-Dichlorobenzene	330	330	U	370	U	1400	UJ	1700	UJ	2300	UJ	320	U								
1,4-Dichlorobenzene	330	330	U	370	U	1400	UJ	1700	UJ	2300	UJ	320	U								
1,2-Dichlorobenzene	330	330	U	370	U	1400	UJ	1700	UJ	2300	UJ	320	U								
2-Methylphenol	330	330	U	370	U	1400	UJ	1700	UJ	2300	UJ	320	U								
2,2'-oxybis(1-Chloropropane)	330	330	U	370	U	1400	UJ	1700	UJ	2300	UJ	320	U								
4-Methylphenol	330	330	U	370	U	1400	UJ	1700	UJ	2300	UJ	320	U								
N-Nitroso-di-n-propylamine	330	330	U	370	U	1400	UJ	1700	UJ	2300	UJ	320	U								
Hexachloroethane	330	330	U	370	U	1400	UJ	1700	UJ	2300	UJ	320	U								
Nitrobenzene	330	330	U	370	U	1400	UJ	1700	UJ	2300	UJ	320	U								
Isophorone	330	330	U	370	U	1400	UJ	1700	UJ	2300	UJ	320	U								
2-Nitrophenol	330	330	U	370	U	1400	UJ	1700	UJ	2300	UJ	320	U								
2,4-Dimethylphenol	330	330	U	370	U	1400	UJ	1700	UJ	2300	UJ	320	U								
bis(2-Chloroethoxy)methane	330	330	U	370	U	1400	UJ	1700	UJ	2300	UJ	320	U								
2,4-Dichlorophenol	330	330	U	370	U	1400	UJ	1700	UJ	2300	UJ	320	U								
1,2,4-Trichlorobenzene	330	330	U	370	U	1400	UJ	1700	UJ	2300	UJ	320	U								
Naphthalene	330	330	U	370	U	1400	UJ	1700	UJ	2300	UJ	320	U								
4-Chloroaniline	330	330	U	370	U	1400	UJ	1700	UJ	2300	UJ	320	U								
Hexachlorobutadiene	330	330	U	370	U	1400	UJ	1700	UJ	2300	UJ	320	U								
4-Chloro-3-methylphenol	330	330	U	370	U	1400	UJ	1700	UJ	2300	UJ	320	U								
2-Methylnaphthalene	330	330	U	370	U	1400	UJ	1700	UJ	2300	UJ	320	U								
Hexachlorocyclopentadiene	330	330	U	370	U	1400	UJ	1700	UJ	2300	UJ	320	U								
2,4,6-Trichlorophenol	330	330	U	370	U	1400	UJ	1700	UJ	2300	UJ	320	U								
2,4,5-Trichlorophenol	1700	810	U	910	U	3300	UJ	4100	UJ	5600	UJ	790	U								
2-Chloronaphthalene	330	330	U	370	U	1400	UJ	1700	UJ	2300	UJ	320	U								
2-Nitroaniline	1700	810	U	910	U	3300	UJ	4100	UJ	5600	UJ	790	U								
Dimethylphthalate	330	330	U	370	U	1400	UJ	1700	UJ	2300	UJ	320	U								
Acenaphthylene	330	330	U	370	U	1400	UJ	1700	UJ	2300	UJ	320	U								
3-Nitroaniline	1700	810	U	910	U	3300	UJ	4100	UJ	5600	UJ	790	U								
Acenaphthene	330	330	U	370	U	1400	UJ	1700	UJ	2300	UJ	320	U								
2,4-Dinitrophenol	1700	810	U	910	U	3300	UJ	4100	UJ	5600	UJ	790	U								

DUP = Duplicate, EB = Equipment Blank, PP = Percolation Pond, SP = Settling Pond

WHC-SD-EN-TI-197, Rev. 0

Project: WESTINGHOUSE-HANFORD																					
Laboratory: TMA																					
Case		SDG: B06D25																			
Sample Number		B06D25		B06D26		B06D27		B06D28		B06D30		B06D50									
Location		PP-7		PP-6		SP-6		SP-6		SP-7											
Remarks								DUP				EB									
Sample Date		08/25/92		08/25/92		08/26/92		08/26/92		08/26/92		08/25/92									
Extraction Date		09/02/92		09/02/92		09/02/92		09/02/92		09/02/92		09/02/92									
Analysis Date		09/08/92		09/08/92		09/09/92		09/08/92		09/09/92		09/08/92									
Semivolatile Compound	CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
4-Nitrophenol	1700	810	U	910	U	3300	UJ	4100	UJ	5600	UJ	790	U								
Dibenzofuran	330	330	U	370	U	1400	UJ	1700	UJ	2300	UJ	320	U								
2,4-Dinitrotoluene	330	330	U	370	U	1400	UJ	1700	UJ	2300	UJ	320	U								
2,6-Dinitrotoluene	330	330	U	370	U	1400	UJ	1700	UJ	2300	UJ	320	U								
Diethylphthalate	330	330	U	370	U	170	J	1700	UJ	2300	UJ	320	U								
4-Chlorophenyl-phenylether	330	330	U	370	U	1400	UJ	1700	UJ	2300	UJ	320	U								
Fluorene	330	330	U	370	U	1400	UJ	1700	UJ	2300	UJ	320	U								
4-Nitroaniline	1700	810	U	910	U	3300	UJ	4100	UJ	5600	UJ	790	U								
4,6-Dinitro-2-methylphenol	1700	810	U	910	U	3300	UJ	4100	UJ	5600	UJ	790	U								
N-Nitrosodiphenylamine	330	330	U	370	U	1400	UJ	1700	UJ	2300	UJ	320	U								
4-Bromophenyl-phenylether	330	330	U	370	U	1400	UJ	1700	UJ	2300	UJ	320	U								
Hexachlorobenzene	330	330	U	370	U	1400	UJ	1700	UJ	2300	UJ	320	U								
Pentachlorophenol	1700	810	U	910	U	3300	UJ	4100	UJ	5600	UJ	790	U								
Phenanthrene	330	330	U	370	U	1400	UJ	1700	UJ	2300	UJ	320	U								
Anthracene	330	330	U	370	U	1400	UJ	1700	UJ	2300	UJ	320	U								
Carbazole	330	330	U	370	U	1400	UJ	1700	UJ	2300	UJ	320	U								
Di-n-butylphthalate	330	330	U	370	U	1400	UJ	270	J	2300	UJ	320	U								
Fluoranthene	330	330	U	370	U	1400	UJ	1700	UJ	2300	UJ	320	U								
Pyrene	330	330	U	370	U	1400	UJ	1700	UJ	2300	UJ	320	U								
Butylbenzylphthalate	330	330	U	370	U	1400	UJ	1700	UJ	2300	UJ	320	U								
3,3'-Dichlorobenzidine	330	330	U	370	U	1400	UJ	1700	UJ	2300	UJ	320	U								
Benzo(a)anthracene	330	330	U	370	U	1400	UJ	1700	UJ	2300	UJ	320	U								
bis(2-Ethylhexyl)phthalate	330	330	U	370	U	1400	UJ	1700	UJ	2300	UJ	34	J								
Chrysene	330	330	U	370	U	1400	UJ	1700	UJ	2300	UJ	320	U								
Di-n-octylphthalate	330	330	U	370	U	1400	UJ	1700	UJ	2300	UJ	320	U								
Benzo(b)fluoranthene	330	330	U	370	U	1400	UJ	1700	UJ	2300	UJ	320	U								
Benzo(k)fluoranthene	330	330	U	370	U	1400	UJ	1700	UJ	2300	UJ	320	U								
Benzo(a)pyrene	330	330	U	370	U	1400	UJ	1700	UJ	2300	UJ	320	U								
Indeno(1,2,3-cd)pyrene	330	330	U	370	U	1400	UJ	1700	UJ	2300	UJ	320	U								
Dibenzo(a,h)anthracene	330	330	U	370	U	1400	UJ	1700	UJ	2300	UJ	320	U								
Benzo(g,h,i)perylene	330	330	U	370	U	1400	UJ	1700	UJ	2300	UJ	320	U								

DUP = Duplicate, EB = Equipment Blank, PP = Percolation Pond, SP = Settling Pond

3-8

Project: WESTINGHOUSE-HANFORD																						
Laboratory: Roy F. Weston																						
Case		SDG: B06D29																				
Sample Number		B06D29		B06D33REP																		
Location		SP-6		PP-7																		
Remarks		Split		Split																		
Sample Date		08/26/92		08/25/92																		
Extraction Date		09/03/92		09/03/92																		
Analysis Date		09/28/92		09/28/92																		
Semivolatile Compound		CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Phenol		330	1200	UJ	130	J																
bis(2-Chloroethyl)ether		330	1200	UJ	330	U																
2-Chlorophenol		330	1200	UJ	330	U																
1,3-Dichlorobenzene		330	1200	UJ	330	U																
1,4-Dichlorobenzene		330	1200	UJ	330	U																
1,2-Dichlorobenzene		330	1200	UJ	330	U																
2-Methylphenol		330	1200	UJ	330	U																
2,2'-oxybis(1-Chloropropane)		330	1200	UJ	330	U																
4-Methylphenol		330	1200	UJ	330	U																
N-Nitroso-di-n-propylamine		330	1200	UJ	330	U																
Hexachloroethane		330	1200	UJ	330	U																
Nitrobenzene		330	1200	UJ	330	U																
Isophorone		330	1200	UJ	330	U																
2-Nitrophenol		330	1200	UJ	330	U																
2,4-Dimethylphenol		330	1200	UJ	330	U																
bis(2-Chloroethoxy)methane		330	1200	UJ	330	U																
2,4-Dichlorophenol		330	1200	UJ	330	U																
1,2,4-Trichlorobenzene		330	1200	UJ	330	U																
Naphthalene		330	1200	UJ	330	U																
4-Chloroaniline		330	1200	UJ	330	U																
Hexachlorobutadiene		330	1200	UJ	330	U																
4-Chloro-3-methylphenol		330	1200	UJ	330	U																
2-Methylnaphthalene		330	1200	UJ	330	U																
Hexachlorocyclopentadiene		330	1200	UJ	330	U																
2,4,6-Trichlorophenol		330	1200	UJ	330	U																
2,4,5-Trichlorophenol		1700	3100	UJ	840	U																
2-Chloronaphthalene		330	1200	UJ	330	U																
2-Nitroaniline		1700	3100	UJ	840	U																
Dimethylphthalate		330	1200	UJ	330	U																
Acenaphthylene		330	1200	UJ	330	U																
2,6-Dinitrotoluene		330	1200	UJ	330	U																
3-Nitroaniline		1700	3100	UJ	840	U																
Acenaphthene		330	1200	UJ	330	U																

PP = Percolation Pond, SP = Settling Pond

Project: WESTINGHOUSE-HANFORD																					
Laboratory: Roy F. Weston																					
Case		SDG: B06D29																			
Sample Number		B06D29		B06D33REP																	
Location		SP-6		PP-7																	
Remarks		Split		Split																	
Sample Date		08/26/92		08/25/92																	
Extraction Date		09/03/92		09/03/92																	
Analysis Date		09/28/92		09/28/92																	
Semivolatile Compound		CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	
2,4-Dinitrophenol		1700	3100	UJ	840	U															
4-Nitrophenol		1700	3100	UJ	840	U															
Dibenzofuran		330	1200	UJ	330	U															
2,4-Dinitrotoluene		330	1200	UJ	330	U															
Diethylphthalate		330	1200	UJ	330	U															
4-Chlorophenyl-phenylether		330	1200	UJ	330	U															
Fluorene		330	1200	UJ	330	U															
4-Nitroaniline		1700	3100	UJ	840	U															
4,6-Dinitro-2-methylphenol		1700	3100	UJ	840	U															
N-Nitrosodiphenylamine		330	1200	UJ	330	U															
4-Bromophenyl-phenylether		330	1200	UJ	330	U															
Hexachlorobenzene		330	1200	UJ	330	U															
Pentachlorophenol		1700	3100	UJ	840	U															
Phenanthrene		330	1200	UJ	330	U															
Anthracene		330	1200	UJ	330	U															
Carbazole		330	1200	UJ	330	U															
Di-n-butylphthalate		330	1200	UJ	850																
Fluoranthene		330	1200	UJ	330	U															
Pyrene		330	1200	UJ	330	U															
Butylbenzylphthalate		330	1200	UJ	330	U															
3,3'-Dichlorobenzidine		330	1200	UJ	330	U															
Benzo(a)anthracene		330	1200	UJ	330	U															
Chrysene		330	1200	UJ	330	U															
bis(2-Ethylhexyl)phthalate		330	370	J	39	J															
Di-n-octylphthalate		330	1200	UJ	330	U															
Benzo(b)fluoranthene		330	1200	UJ	330	U															
Benzo(k)fluoranthene		330	1200	UJ	330	U															
Benzo(a)pyrene		330	1200	UJ	330	U															
Indeno(1,2,3-cd)pyrene		330	1200	UJ	330	U															
Dibenzo(a,h)anthracene		330	1200	UJ	330	U															
Benzo(g,h,i)perylene		330	1200	UJ	330	U															

3-10

WHC-SD-EN-TI-197, Rev. 0

BLANK AND SAMPLE DATA SUMMARY

[illegible]

[illegible]

Project: WESTINGHOUSE-HANFORD																						
Laboratory: TMA																						
Case		SDG: B0D631																				
Sample Number		B06D31		B06D32		B06D34		B06D38		B06D39		B06D40		B06D41		B06D42		B06D43		B06D44		
Location		PP-7		PP-7		PP-6		PP-5		PP-4		PP-3		PP-2		PP-1		SP-1		SP-6		
Remarks				DUP																		
Sample Date		08/25/92		08/25/92		08/25/92		08/25/92		08/25/92		08/25/92		08/25/92		08/25/92		08/25/92		08/26/92		
Extraction Date		09/04/92		09/04/92		09/04/92		09/04/92		09/04/92		09/04/92		09/08/92		09/04/92		09/04/92		09/04/92		
Analysis Date		09/15/92		09/15/92		09/15/92		09/15/92		09/15/92		09/15/92		09/17/92		09/15/92		09/15/92		09/15/92		
Semivolatile Compound		CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Phenol		330	320	U	340	U	360	U	340	U	340	U	320	U	340	U	340	U	1700	UJ	1600	UJ
bis(2-Chloroethyl)ether		330	320	U	340	U	360	U	340	U	340	U	320	U	340	U	340	U	1700	UJ	1600	UJ
2-Chlorophenol		330	320	U	340	U	360	U	340	U	340	U	320	U	340	U	340	U	1700	UJ	1600	UJ
1,3-Dichlorobenzene		330	320	U	340	U	360	U	340	U	340	U	320	U	340	U	340	U	1700	UJ	1600	UJ
1,4-Dichlorobenzene		330	320	U	340	U	360	U	340	U	340	U	320	U	340	U	340	U	1700	UJ	1600	UJ
Benzyl Alcohol		330	320	U	340	U	360	U	340	U	340	U	320	U	340	U	340	U	1700	UJ	1600	UJ
1,2-Dichlorobenzene		330	320	U	340	U	360	U	340	U	340	U	320	U	340	U	340	U	1700	UJ	1600	UJ
2-Methylphenol		330	320	U	340	U	360	U	340	U	340	U	320	U	340	U	340	U	1700	UJ	1600	UJ
bis(2-Chloroisopropyl)Ether		330	320	U	340	U	360	U	340	U	340	U	320	U	340	U	340	U	1700	UJ	1600	UJ
4-Methylphenol		330	320	U	340	U	360	U	340	U	340	U	320	U	340	U	340	U	1700	UJ	1600	UJ
N-Nitroso-di-n-propylamine		330	320	U	340	U	360	U	340	U	340	U	320	U	340	U	340	U	1700	UJ	1600	UJ
Hexachloroethane		330	320	U	340	U	360	U	340	U	340	U	320	U	340	U	340	U	1700	UJ	1600	UJ
Nitrobenzene		330	320	U	340	U	360	U	340	U	340	U	320	U	340	U	340	U	1700	UJ	1600	UJ
Isophorone		330	320	U	340	U	360	U	340	U	340	U	320	U	340	U	340	U	1700	UJ	1600	UJ
2-Nitrophenol		330	320	U	340	U	360	U	340	U	340	U	320	U	340	U	340	U	1700	UJ	1600	UJ
2,4-Dimethylphenol		330	320	U	340	U	360	U	340	U	340	U	320	U	340	U	340	U	1700	UJ	1600	UJ
Benzoic Acid		1700	1600	U	1600	U	1800	U	1600	U	1600	U	1500	U	1600	U	1600	U	8400	UJ	7800	UJ
bis(2-Chloroethoxy)methane		330	320	U	340	U	360	U	340	U	340	U	320	U	340	U	340	U	1700	UJ	1600	UJ
2,4-Dichlorophenol		330	320	U	340	U	360	U	340	U	340	U	320	U	340	U	340	U	1700	UJ	1600	UJ
1,2,4-Trichlorobenzene		330	320	U	340	U	360	U	340	U	340	U	320	U	340	U	340	U	1700	UJ	1600	UJ
Naphthalene		330	320	U	340	U	360	U	340	U	340	U	320	U	340	U	340	U	1700	UJ	1600	UJ
4-Chloroaniline		330	320	U	340	U	360	U	340	U	340	U	320	U	340	U	340	U	1700	UJ	1600	UJ
Hexachlorobutadiene		330	320	U	340	U	360	U	340	U	340	U	320	U	340	U	340	U	1700	UJ	1600	UJ
4-Chloro-3-methylphenol		330	320	U	340	U	360	U	340	U	340	U	320	U	340	U	340	U	1700	UJ	1600	UJ
2-Methylnaphthalene		330	320	U	340	U	360	U	340	U	340	U	320	U	340	U	340	U	1700	UJ	1600	UJ
Hexachlorocyclopentadiene		330	320	U	340	U	360	U	340	U	340	U	320	U	340	U	340	U	1700	UJ	1600	UJ
2,4,6-Trichlorophenol		330	320	U	340	U	360	U	340	U	340	U	320	U	340	U	340	U	1700	UJ	1600	UJ
2,4,5-Trichlorophenol		1700	1600	U	1600	U	1800	U	1600	U	1600	U	1500	U	1600	U	1600	U	8400	UJ	7800	UJ
2-Chloronaphthalene		330	320	U	340	U	360	U	340	U	340	U	320	U	340	U	340	U	1700	UJ	1600	UJ
2-Nitroaniline		1700	1600	U	1600	U	1800	U	1600	U	1600	U	1500	U	1600	U	1600	U	8400	UJ	7800	UJ
Dimethylphthalate		330	320	U	340	U	360	U	340	U	340	U	320	U	340	U	340	U	1700	UJ	1600	UJ
Acenaphthylene		330	320	U	340	U	360	U	340	U	340	U	320	U	340	U	340	U	1700	UJ	1600	UJ

DUP = Duplicate, SP = Settling Pond, PP = Percolation Pond

Project: WESTINGHOUSE-HANFORD																					
Laboratory: TMA																					
Case	SDG: B0D631																				
Sample Number	B06D31	B06D32		B06D34		B06D38		B06D39		B06D40		B06D41		B06D42		B06D43		B06D44			
Location	PP-7	PP-7		PP-6		PP-5		PP-4		PP-3		PP-2		PP-1		SP-1		SP-6			
Remarks		DUP																			
Sample Date	08/25/92	08/25/92		08/25/92		08/25/92		08/25/92		08/25/92		08/25/92		08/25/92		08/25/92		08/26/92			
Extraction Date	09/04/92	09/04/92		09/04/92		09/04/92		09/04/92		09/04/92		09/04/92		09/04/92		09/04/92		09/04/92			
Analysis Date	09/15/92	09/15/92		09/15/92		09/15/92		09/15/92		09/15/92		09/15/92		09/17/92		09/15/92		09/15/92			
Semivolatile Compound	CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q		
3-Nitroaniline	1700	1600	U	1600	U	1800	U	1600	U	1600	U	1500	U	1600	U	1600	U	8400	UJ	7800	UJ
Acenaphthene	330	320	U	340	U	360	U	340	U	340	U	320	U	340	U	340	U	1700	UJ	1600	UJ
2,4-Dinitrophenol	1700	1600	U	1600	U	1800	U	1600	U	1600	U	1500	U	1600	U	1600	U	8400	UJ	7800	UJ
4-Nitrophenol	1700	1600	U	1600	U	1800	U	1600	U	1600	U	1500	U	1600	U	1600	U	8400	UJ	7800	UJ
Dibenzofuran	330	320	U	340	U	360	U	340	U	340	U	320	U	340	U	340	U	1700	UJ	1600	UJ
2,4-Dinitrotoluene	330	320	U	340	U	360	U	340	U	340	U	320	U	340	U	340	U	1700	UJ	1600	UJ
2,6-Dinitrotoluene	330	320	U	340	U	360	U	340	U	340	U	320	U	340	U	340	U	1700	UJ	1600	UJ
Diethylphthalate	330	320	U	340	U	360	U	340	U	340	U	320	U	340	U	340	U	1000	J	1600	UJ
4-Chlorophenyl-phenylether	330	320	U	340	U	360	U	340	U	340	U	320	U	340	U	340	U	1700	UJ	1600	UJ
Fluorene	330	320	U	340	U	360	U	340	U	340	U	320	U	340	U	340	U	1700	UJ	1600	UJ
4-Nitroaniline	1700	1600	U	1600	U	1800	U	1600	U	1600	U	1500	U	1600	U	1600	U	8400	UJ	7800	UJ
4,6-Dinitro-2-methylphenol	1700	1600	U	1600	U	1800	U	1600	U	1600	U	1500	U	1600	U	1600	U	8400	UJ	7800	UJ
N-Nitrosodiphenylamine	330	320	U	340	U	360	U	340	U	340	U	320	U	340	U	340	U	1700	UJ	1600	UJ
4-Bromophenyl-phenylether	330	320	U	340	U	360	U	340	U	340	U	320	U	340	U	340	U	1700	UJ	1600	UJ
Hexachlorobenzene	330	320	U	340	U	360	U	340	U	340	U	320	U	340	U	340	U	1700	UJ	1600	UJ
Pentachlorophenol	1700	1600	U	1600	U	1800	U	1600	U	1600	U	1500	U	1600	U	1600	U	8400	UJ	7800	UJ
Phenanthrene	330	320	U	340	U	360	U	340	U	340	U	320	U	340	U	340	U	1700	UJ	1600	UJ
Anthracene	330	320	U	340	U	360	U	340	U	340	U	320	U	340	U	340	U	1700	UJ	1600	UJ
Di-n-butylphthalate	330	320	U	340	U	360	U	340	U	340	U	320	U	340	U	340	U	1700	UJ	1600	UJ
Fluoranthene	330	320	U	340	U	360	U	340	U	340	U	320	U	340	U	340	U	1700	UJ	1600	UJ
Pyrene	330	320	U	340	U	360	U	340	U	340	U	320	U	340	U	340	U	1700	UJ	1600	UJ
Butylbenzylphthalate	330	320	U	340	U	360	U	340	U	340	U	320	U	340	U	340	U	1700	UJ	1600	UJ
3,3'-Dichlorobenzidine	330	640	U	680	U	730	U	670	U	670	U	640	U	670	U	680	U	3500	UJ	3200	UJ
Benzo(a)anthracene	330	320	U	340	U	360	U	340	U	340	U	320	U	340	U	340	U	1700	UJ	1600	UJ
bis(2-Ethylhexyl)phthalate	330	320	U	340	U	360	U	340	U	340	U	320	U	340	U	340	U	410	J	400	J
Chrysene	330	320	U	340	U	360	U	340	U	340	U	320	U	340	U	340	U	1700	UJ	1600	UJ
Di-n-octylphthalate	330	320	U	340	U	360	U	340	U	340	U	320	U	340	U	340	U	1700	UJ	1600	UJ
Benzo(b)fluoranthene	330	320	U	340	U	360	U	340	U	340	U	320	U	340	U	340	U	1700	UJ	1600	UJ
Benzo(k)fluoranthene	330	320	U	340	U	360	U	340	U	340	U	320	U	340	U	340	U	1700	UJ	1600	UJ
Benzo(a)pyrene	330	320	U	340	U	360	U	340	U	340	U	320	U	340	U	340	U	1700	UJ	1600	UJ
Indeno(1,2,3-cd)pyrene	330	320	U	340	U	360	U	340	U	340	U	320	U	340	U	340	U	1700	UJ	1600	UJ
Dibenzo(a,h)anthracene	330	320	U	340	U	360	U	340	U	340	U	320	U	340	U	340	U	1700	UJ	1600	UJ
Benzo(g,h,i)perylene	330	320	U	340	U	360	U	340	U	340	U	320	U	340	U	340	U	1700	UJ	1600	UJ

DUP = Duplicate, SP = Settling Pond, PP = Percolation Pond

WHC-SD-EN-TI-197, Rev. 0

SEMIVOLATILE ORGANIC ANALYSIS, SOIL MATRIX, (ug/Kg)

Page 3 of 4

Project: WESTINGHOUSE-HANFORD																					
Laboratory: TMA																					
Case		SDG: B0D631																			
Sample Number		B06D45	B06D46		B06D47		B06D48		B06D49												
Location		SP-2	SP-3		SP-4		SP-5		SP-7												
Remarks																					
Sample Date		08/26/92	08/26/92		08/26/92		08/26/92		08/26/92												
Extraction Date		09/04/92	09/04/92		09/04/92		09/04/92		09/04/92												
Analysis Date		09/25/92	09/25/92		09/25/92		09/26/92		09/26/92												
Semivolatile Compound	CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Phenol	330	860	UJ	1100	UJ	1600	UJ	2100	U	1600	UJ										
bis(2-Chloroethyl)ether	330	860	UJ	1100	UJ	1600	UJ	2100	UJ	1600	UJ										
2-Chlorophenol	330	860	UJ	1100	UJ	1600	UJ	2100	UJ	1600	UJ										
1,3-Dichlorobenzene	330	860	UJ	1100	UJ	1600	UJ	2100	UJ	1600	UJ										
1,4-Dichlorobenzene	330	860	UJ	1100	UJ	1600	UJ	2100	UJ	1600	UJ										
Benzyl Alcohol	330	860	UJ	1100	UJ	1600	UJ	2100	UJ	1600	UJ										
1,2-Dichlorobenzene	330	860	UJ	1100	UJ	1600	UJ	2100	UJ	1600	UJ										
2-Methylphenol	330	860	UJ	1100	UJ	1600	UJ	2100	UJ	1600	UJ										
bis(2-Chloroisopropyl)Ether	330	860	UJ	1100	UJ	1600	UJ	2100	UJ	1600	UJ										
4-Methylphenol	330	860	UJ	1100	UJ	1600	UJ	2100	UJ	1600	UJ										
N-Nitroso-di-n-propylamine	330	860	UJ	1100	UJ	1600	UJ	2100	UJ	1600	UJ										
Hexachloroethane	330	860	UJ	1100	UJ	1600	UJ	2100	UJ	1600	UJ										
Nitrobenzene	330	860	UJ	1100	UJ	1600	UJ	2100	UJ	1600	UJ										
Isophorone	330	860	UJ	1100	UJ	1600	UJ	2100	UJ	1600	UJ										
2-Nitrophenol	330	860	UJ	1100	UJ	1600	UJ	2100	UJ	1600	UJ										
2,4-Dimethylphenol	330	860	UJ	1100	UJ	1600	UJ	2100	UJ	1600	UJ										
Benzoic Acid	1700	4200	UJ	5600	UJ	7800	UJ	10000	UJ	7900	UJ										
bis(2-Chloroethoxy)methane	330	860	UJ	1100	UJ	1600	UJ	2100	UJ	1600	UJ										
2,4-Dichlorophenol	330	860	UJ	1100	UJ	1600	UJ	2100	UJ	1600	UJ										
1,2,4-Trichlorobenzene	330	860	UJ	1100	UJ	1600	UJ	2100	UJ	1600	UJ										
Naphthalene	330	860	UJ	1100	UJ	1600	UJ	2100	UJ	1600	UJ										
4-Chloroaniline	330	860	UJ	1100	UJ	1600	UJ	2100	UJ	1600	UJ										
Hexachlorobutadiene	330	860	UJ	1100	UJ	1600	UJ	2100	UJ	1600	UJ										
4-Chloro-3-methylphenol	330	860	UJ	1100	UJ	1600	UJ	2100	UJ	1600	UJ										
2-Methylnaphthalene	330	860	UJ	1100	UJ	1600	UJ	2100	UJ	1600	UJ										
Hexachlorocyclopentadiene	330	860	UJ	1100	UJ	1600	UJ	2100	UJ	1600	UJ										
2,4,6-Trichlorophenol	330	860	UJ	1100	UJ	1600	UJ	2100	UJ	1600	UJ										
2,4,5-Trichlorophenol	1700	4200	UJ	5600	UJ	7800	UJ	10000	UJ	7900	UJ										
2-Chloronaphthalene	330	860	UJ	1100	UJ	1600	UJ	2100	UJ	1600	UJ										
2-Nitroaniline	1700	4200	UJ	5600	UJ	7800	UJ	10000	UJ	7900	UJ										
Dimethylphthalate	330	860	UJ	1100	UJ	1600	UJ	2100	UJ	1600	UJ										
Acenaphthylene	330	860	UJ	1100	UJ	1600	UJ	2100	UJ	1600	UJ										
3-Nitroaniline	1700	4200	UJ	5600	UJ	7800	UJ	10000	UJ	7900	UJ										
Acenaphthene	330	860	UJ	1100	UJ	1600	UJ	2100	UJ	1600	UJ										

DUP = Duplicate, SP = Settling Pond, PP = Percolation Pond

WHC-SD-EN-TI-197, Rev. 0

Project: WESTINGHOUSE-HANFORD																						
Laboratory: TMA																						
Case	SDG: B0D631																					
Sample Number	B06D45	B06D46		B06D47		B06D48		B06D49														
Location	SP-2	SP-3		SP-4		SP-5		SP-7														
Remarks																						
Sample Date	08/26/92	08/26/92		08/26/92		08/26/92		08/26/92														
Extraction Date	09/04/92	09/04/92		09/04/92		09/04/92		09/04/92														
Analysis Date	09/15/92	09/15/92		09/15/92		09/16/92		09/16/92														
Semivolatile Compound	CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	
2,4-Dinitrophenol	1700	4200	UJ	5600	UJ	7800	UJ	10000	UJ	7900	UJ											
4-Nitrophenol	1700	4200	UJ	5600	UJ	7800	UJ	10000	UJ	7900	UJ											
Dibenzofuran	330	860	UJ	1100	UJ	1600	UJ	2100	UJ	1600	UJ											
2,4-Dinitrotoluene	330	860	UJ	1100	UJ	1600	UJ	2100	UJ	1600	UJ											
2,6-Dinitrotoluene	330	860	UJ	1100	UJ	1600	UJ	2100	UJ	1600	UJ											
Diethylphthalate	330	860	UJ	1100	UJ	1600	UJ	2100	UJ	1600	UJ											
4-Chlorophenyl-phenylether	330	860	UJ	1100	UJ	1600	UJ	2100	UJ	1600	UJ											
Fluorene	330	860	UJ	1100	UJ	1600	UJ	2100	UJ	1600	UJ											
4-Nitroaniline	1700	4200	UJ	5600	UJ	7800	UJ	10000	UJ	7900	UJ											
4,6-Dinitro-2-methylphenol	1700	4200	UJ	5600	UJ	7800	UJ	10000	UJ	7900	UJ											
N-Nitrosodiphenylamine	330	860	UJ	1100	UJ	1600	UJ	2100	UJ	1600	UJ											
4-Bromophenyl-phenylether	330	860	UJ	1100	UJ	1600	UJ	2100	UJ	1600	UJ											
Hexachlorobenzene	330	860	UJ	1100	UJ	1600	UJ	2100	UJ	1600	UJ											
Pentachlorophenol	1700	4200	UJ	5600	UJ	7800	UJ	10000	UJ	7900	UJ											
Phenanthrene	330	860	UJ	1100	UJ	1600	UJ	2100	UJ	1600	UJ											
Anthracene	330	860	UJ	1100	UJ	1600	UJ	2100	UJ	1600	UJ											
Di-n-butylphthalate	330	860	UJ	1100	UJ	1600	UJ	2100	UJ	1600	UJ											
Fluoranthene	330	860	UJ	1100	UJ	1600	UJ	2100	UJ	1600	UJ											
Pyrene	330	860	UJ	1100	UJ	1600	UJ	2100	UJ	1600	UJ											
Butylbenzylphthalate	330	860	UJ	1100	UJ	1600	UJ	2100	UJ	1600	UJ											
3,3'-Dichlorobenzidine	330	1700	UJ	2300	UJ	3200	UJ	4200	UJ	3300	UJ											
Benzo(a)anthracene	330	860	UJ	1100	UJ	1600	UJ	2100	UJ	1600	UJ											
bis(2-Ethylhexyl)phthalate	330	860	UJ	240	J	1600	UJ	2100	UJ	1600	UJ											
Chrysene	330	860	UJ	1100	UJ	1600	UJ	2100	UJ	1600	UJ											
Di-n-octylphthalate	330	860	UJ	1100	UJ	1600	UJ	2100	UJ	1600	UJ											
Benzo(b)fluoranthene	330	860	UJ	1100	UJ	1600	UJ	2100	UJ	1600	UJ											
Benzo(k)fluoranthene	330	860	UJ	1100	UJ	1600	UJ	2100	UJ	1600	UJ											
Benzo(a)pyrene	330	860	UJ	1100	UJ	1600	UJ	2100	UJ	1600	UJ											
Indeno(1,2,3-cd)pyrene	330	860	UJ	1100	UJ	1600	UJ	2100	UJ	1600	UJ											
Dibenzo(a,h)anthracene	330	860	UJ	1100	UJ	1600	UJ	2100	UJ	1600	UJ											
Benzo(g,h,i)perylene	330	860	UJ	1100	UJ	1600	UJ	2100	UJ	1600	UJ											

DUP = Duplicate, SP = Settling Pond, PP = Percolation Pond

3-17

SEMIVOLATILE ORGANIC ANALYSIS, WATER MATRIX, (ug/L)

Page 1 of 2

Project: WESTINGHOUSE-HANFORD																					
Laboratory: TMA																					
Case		SDG: B06D51																			
Sample Number		B06D51		B06D52		B06D57															
Location		SP-5,7																			
Remarks				EB		EB															
Sample Date		08/25/92		08/26/92		08/26/92															
Extraction Date		09/01/92		09/01/92		09/01/92															
Analysis Date		09/21/92		09/21/92		09/21/92															
Semivolatile Compound	CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Phenol	10	10	U	10	U	10	U														
bis(2-Chloroethyl)ether	10	10	U	10	U	10	U														
2-Chlorophenol	10	10	U	10	U	10	U														
1,3-Dichlorobenzene	10	10	U	10	U	10	U														
1,4-Dichlorobenzene	10	10	U	10	U	10	U														
Benzyl Alcohol	10	10	U	10	U	10	U														
1,2-Dichlorobenzene	10	10	U	10	U	10	U														
2-Methylphenol	10	10	U	10	U	10	U														
bis(2-Chloroisopropyl)Ether	10	10	U	10	U	10	U														
4-Methylphenol	10	10	U	10	U	10	U														
N-Nitroso-di-n-propylamine	10	10	U	10	U	10	U														
Hexachloroethane	10	10	U	10	U	10	U														
Nitrobenzene	10	10	U	10	U	10	U														
Isophorone	10	10	U	10	U	10	U														
2-Nitrophenol	10	10	U	10	U	10	U														
2,4-Dimethylphenol	10	10	U	10	U	10	U														
Benzoic Acid	50	50	U	50	U	50	U														
bis(2-Chloroethoxy)methane	10	10	U	10	U	10	U														
2,4-Dichlorophenol	10	10	U	10	U	10	U														
1,2,4-Trichlorobenzene	10	10	U	10	U	10	U														
Naphthalene	10	10	U	10	U	10	U														
4-Chloroaniline	10	10	U	10	U	10	U														
Hexachlorobutadiene	10	10	U	10	U	10	U														
4-Chloro-3-methylphenol	10	10	U	10	U	10	U														
2-Methylnaphthalene	10	10	U	10	U	10	U														
Hexachlorocyclopentadiene	10	10	U	10	U	10	U														
2,4,6-Trichlorophenol	10	10	U	10	U	10	U														
2,4,5-Trichlorophenol	50	50	U	50	U	50	U														
2-Chloronaphthalene	10	10	U	10	U	10	U														
2-Nitroaniline	50	50	U	50	U	50	U														
Dimethylphthalate	10	10	U	10	U	10	U														
Acenaphthylene	10	10	U	10	U	10	U														
2,6-Dinitrotoluene	10	10	U	10	U	10	U														

EB = Equipment Blank, SP = Settling Pond

WHC-SD-EN-TI-197, Rev. 0

SEMIVOLATILE ORGANIC ANALYSIS, WATER MATRIX, (ug/L)

Page 2 of 2

Project: WESTINGHOUSE HANFORD																						
Laboratory: TMA																						
Case	SDG: B06D51																					
Sample Number	B06D51		B06D52		B06D57																	
Location	SP-5,7																					
Remarks			EB		EB																	
Sample Date	08/25/92		08/26/92		08/26/92																	
Extraction Date	09/01/92		09/01/92		09/01/92																	
Analysis Date	09/21/92		09/21/92		09/21/92																	
Semivolatile Compound	CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	
3-Nitroaniline	50	50	U	50	U	50	U															
Acenaphthene	10	10	U	10	U	10	U															
2,4-Dinitrophenol	50	50	U	50	U	50	U															
4-Nitrophenol	50	50	U	50	U	50	U															
Dibenzofuran	10	10	U	10	U	10	U															
2,4-Dinitrotoluene	10	10	U	10	U	10	U															
Diethylphthalate	10	10	U	10	U	10	U															
4-Chlorophenyl-phenylether	10	10	U	10	U	10	U															
Fluorene	10	10	U	10	U	10	U															
4-Nitroaniline	50	50	U	50	U	50	U															
4,6-Dinitro-2-methylphenol	50	50	U	50	U	50	U															
N-Nitrosodiphenylamine	10	10	U	10	U	10	U															
4-Bromophenyl-phenylether	10	10	U	10	U	10	U															
Hexachlorobenzene	10	10	U	10	U	10	U															
Pentachlorophenol	50	50	U	50	U	50	U															
Phenanthrene	10	10	U	10	U	10	U															
Anthracene	10	10	U	10	U	10	U															
Di-n-Butylphthalate	10	10	U	3	J	3	J															
Fluoranthene	10	10	U	10	U	10	U															
Pyrene	10	10	U	10	U	10	U															
Butylbenzylphthalate	10	10	U	10	U	10	U															
3,3'-Dichlorobenzidine	10	20	U	20	U	20	U															
Benzo(a)anthracene	10	10	U	10	U	10	U															
Chrysene	10	10	U	10	U	10	U															
bis(2-Ethylhexyl)phthalate	10	10	U	10	U	10	U															
Di-n-octylphthalate	10	10	U	10	U	10	U															
Benzo(b)fluoranthene	10	10	U	10	U	10	U															
Benzo(k)fluoranthene	10	10	U	10	U	10	U															
Benzo(a)pyrene	10	10	U	10	U	10	U															
Indeno(1,2,3-cd)pyrene	10	10	U	10	U	10	U															
Dibenzo(a,h)anthracene	10	10	U	10	U	10	U															
Benzo(g,h,i)perylene	10	10	U	10	U	10	U															

EB = Equipment Blank, SP = Settling Pond

WHC-SD-EN-TI-197, Rev. 0

BLANK AND SAMPLE DATA SUMMARY

[illegible]

3-21

WELL AND SAMPLE INFORMATION				SAMPLE LOCATION INFORMATION
SAMPLE LOCATION	SAMPLE NUMBER	MATRIX	DATE SAMPLED	PESTICIDES/PCBs
PP-1	B06D42	S	8/25/92	4-10
PP-2	B06D41	S	8/25/92	4-10
PP-3	B06D40	S	8/25/92	4-10
PP-4	B06D39	S	8/25/92	4-10
PP-5	B06D38	S	8/25/92	4-10
PP-6	B06D26	S	8/25/92	4-5
	B06D34	S	8/25/92	4-10
PP-7	B06D25	S	8/25/92	4-5
	B06D31	S	8/25/92	4-10
	B06D32	S	8/25/92	4-10
	B06D33	S	8/25/92	4-7
EB-PP	B06D50	S	8/25/92	4-5
SP-1	B06D43	S	8/25/92	4-10
SP-2	B06D45	S	8/26/92	4-11
SP-3	B06D46	S	8/26/92	4-11
SP-4	B06D47	S	8/26/92	4-11
SP-5	B06D48	S	8/26/92	4-11
SP-5,7	B06D51	W	8/25/92	4-14
SP-6	B06D27	S	8/26/92	4-5
	B06D28	S	8/26/92	4-5
	B06D29	S	8/26/92	4-7
	B06D44	S	8/26/92	4-10
SP-7	B06D30	S	8/26/92	4-5
	B06D49	S	8/26/92	4-11
EB-SP	B06D57	W	8/26/92	4-14
EB	B06D52	W	8/26/92	4-14

4.0 PESTICIDE AND PCB DATA VALIDATION

4.1 DATA PACKAGE COMPLETENESS

The following data packages (SDG Nos.) were submitted for validation and found to be complete:

B06D25

B06D29

B06D31

B06D51

The percent moisture content was determined, as required, for all soil samples submitted for analysis. Several samples had significant moisture content. The following samples displayed moisture contents of fifty percent or more.

- Sample numbers B06D27, B06D28 and B06D30 in SDG No. B06D25.
- Sample number B06D29 in SDG No. B06D29.
- Sample numbers B06D43, B06D44, B06D45, B06D46, B06D47, B06D48 and B06D49 in SDG No. B06D31.

All results for these samples have been qualified as estimates and flagged "J".

4.2 HOLDING TIMES

Analytical holding times were assessed to ascertain whether the holding time requirements for pesticide/PCB analyses were met by the laboratory. Westinghouse-Hanford procedures require that samples be extracted within seven days of collection and analyzed within 40 days of extraction (WHC 1991a).

The sample to extraction holding time was exceeded, though not grossly exceeded, for sample number B06D44 in SDG No. B06D31. All results for this sample were qualified as estimates and flagged "J".

All other holding time requirements were met.

4.3 INSTRUMENT PERFORMANCE AND CALIBRATIONS

Instrument performance was assessed to ensure that adequate chromatographic resolution and instrument sensitivity were achieved by the gas chromatographic system.

The specific criteria for acceptable instrument performance are outlined in EPA guidelines (EPA 1988a and 1988b), including the evaluation and qualification procedures that may be performed on the analytical results.

During the quality assurance review, all indicators for acceptable instrument performance were verified. The criteria established by CLP protocols were met and the results are acceptable, except as noted.

Instrument calibration is performed to ensure that the chromatographic system is capable of producing acceptable and reliable analytical data. The initial and continuing calibrations are to be performed according to procedures established by CLP protocols. An initial calibration is performed prior to sample analysis to establish the linear range of the system, including a demonstration that all target compounds can be detected. Continuing calibration checks are performed to verify that instrument performance is stable and reproducible on a day-to-day basis.

4.3.1 Initial Calibrations

The laboratory performed an initial multipoint calibration for all target compounds at the concentrations required by CLP protocols. The linearity of the initial calibration is established when the percent RSD or the calibration factors are less than or equal to 10 percent (or 15% for certain analytes).

All initial calibration results were acceptable.

4.3.2 Calibration Verification

The criteria for acceptable continuing calibrations requires that the calibration factors for all target compounds have a percent difference of less than or equal to 15 percent of the average calibration factor calculated for the associated initial calibration standard. The 15 percent difference value is required for results calculated using the chromatographic column which is used for quantitative purposes. In addition, the percent difference of the calibration factors calculated for the chromatographic column that is used for confirmation must be less than or equal to 20 percent.

All calibration verification results were acceptable.

4.4 BLANKS

Method blank and field blank analyses are performed to determine the extent of laboratory or field contamination of samples. No contaminants should be present in the blanks. Analytical results for analytes present in any sample at less

than 5 times the concentration of that analyte found in associated blanks should be qualified as non-detects.

There were no compounds of concern detected in the method or field blanks.

4.5 ACCURACY

Accuracy was assessed by evaluating the recoveries of the surrogate compounds and the matrix spike recoveries calculated for the sample analyses.

4.5.1 Matrix Spike Recovery

Matrix spike analyses are performed in duplicate using six compounds specified by CLP protocols. The recoveries for the six compounds must be within the acceptable quality control limits established by CLP protocols.

All matrix spike/matrix spike duplicate results were acceptable.

4.5.2 Surrogate Recovery

Surrogate compound recoveries are calculated using analytical results from two stable surrogate compounds added to the sample prior to sample preparation and analysis. Matrix-specific surrogate compound recovery control windows have been established by the EPA CLP program. When recoveries for either surrogate compound are out of the control window, all positively identified target compound concentrations in samples associated with the unacceptable surrogate recoveries are qualified as estimates (J) and undetected compounds are qualified estimated below the detection limit (UJ).

Sample number B06D29 in SDG No. B06D29 exhibited slightly low recoveries for both surrogate compounds. All associated results were qualified as estimates and flagged "J".

Surrogate recovery results were acceptable for all other samples.

4.6 PRECISION

Precision is expressed by the RPD between the recoveries of the matrix spike and the matrix spike duplicate analyses performed on a sample. When the laboratory has not performed duplicate spike analyses, precision may also be assessed by using unspiked duplicate analyses.

All matrix spike/matrix spike duplicate RPDs were acceptable.

4.7 COMPOUND IDENTIFICATION AND QUANTITATION

The data were evaluated to confirm the positive concentrations and to investigate the possibility of false negatives in all other data. Confirmation of possible false negatives is addressed by reviewing other factors relating to analytical sensitivity (e.g., detection limits, instrument linearity, analytical recovery). These factors were found to be in control, and the data are acceptable.

Compound quantitations and reported detection limits were recalculated and verified for a minimum of 20 percent of the samples in each case to ensure that they were accurate and are consistent with CLP requirements (EPA 1988a). The reported detection limits must be in accordance with the CRQLs specified in the applicable CLP statement of work.

Due to an oversight on the part of the laboratory a "J" qualifier was not added to methoxychlor and aroclor-1260 results for sample number B06D34 in SDG No. B06D31. Samples have been qualified as estimates and flagged "J" due to detects quantitated below the CRQL.

All compound identifications, CRQLs, and quantitation results were acceptable.

4.8 OVERALL ASSESSMENT AND SUMMARY

A thorough review of ongoing data acquisition and instrument performance criteria was made to assess overall GC/MS instrument performance. No changes in instrument performance were noted that would result in the degradation of data quality. No indications of unacceptable instrument performance (i.e., shifts in baseline stability, retention time shifts, extraneous peaks, or sensitivity) were found during the quality assurance review.

In general, the pesticide/PCB data presented in this report met the protocol-specified QA/QC requirements. The surrogate recoveries were low on both columns for one sample. The sampling to analysis holding time was exceeded for one sample. In both cases all associated results were qualified as estimates and flagged "J". Due to high moisture content, all results for eleven samples were qualified as estimates. The quantitations reported from these samples should be used as gross estimates only. All other data are considered valid and usable within the standard error associated with the method.

PESTICIDE/PCB ORGANIC ANALYSIS, SOIL MATRIX, (ug/Kg)

Page 1 of 1

Project: WESTINGHOUSE-HANFORD																					
Laboratory: TMA																					
Case		SDG: B06D25																			
Sample Number		B06D25		B06D26		B06D27		B06D28		B06D30		B06D50									
Location		PP-7		PP-6		SP-6		SP-6		SP-7											
Remarks								DUP				EB									
Sample Date		08/25/92		08/25/92		08/26/92		08/26/92		08/26/92		08/25/92									
Extraction Date		09/02/92		09/02/92		09/02/92		09/02/92		09/02/92		09/02/92									
Analysis Date		09/30/92		09/30/92		09/30/92		09/30/92		09/30/92		09/30/92									
Pesticide/PCB	CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
alpha-BHC	1.7	1.7	U	1.9	U	6.9	UJ	8.8	UJ	12	UJ	1.7	U								
beta-BHC	1.7	1.7	U	1.9	U	6.9	UJ	8.8	UJ	12	UJ	1.7	U								
delta-BHC	1.7	1.7	U	1.9	U	6.9	UJ	8.8	UJ	12	UJ	1.7	U								
gamma-BHC (Lindane)	1.7	1.7	U	1.9	U	6.9	UJ	8.8	UJ	12	UJ	1.7	U								
Heptachlor	1.7	1.7	U	1.9	U	6.9	UJ	8.8	UJ	12	UJ	1.7	U								
Aldrin	1.7	1.7	U	1.9	U	6.9	UJ	8.8	UJ	12	UJ	1.7	U								
Heptachlor epoxide	1.7	1.7	U	1.9	U	6.9	UJ	8.8	UJ	12	UJ	1.7	U								
Endosulfan I	1.7	1.7	U	1.9	U	6.9	UJ	8.8	UJ	12	UJ	1.7	U								
Dieldrin	3.3	3.3	U	3.7	U	13	UJ	17	UJ	23	UJ	3.2	U								
4,4'-DDE	3.3	3.3	U	3.7	U	13	UJ	17	UJ	170	J	3.2	U								
Endrin	3.3	3.3	U	3.7	U	13	UJ	17	UJ	23	UJ	3.2	U								
Endosulfan II	3.3	3.3	U	3.7	U	13	UJ	17	UJ	23	UJ	3.2	U								
4,4'-DDD	3.3	3.3	U	3.7	U	13	UJ	17	UJ	23	UJ	3.2	U								
Endosulfan sulfate	3.3	3.3	U	3.7	U	13	UJ	17	UJ	23	UJ	3.2	U								
4,4'-DDT	3.3	3.3	U	3.7	U	13	UJ	17	UJ	23	UJ	3.2	U								
Methoxychlor	17.0	17	U	19	U	69	UJ	88	UJ	120	UJ	17	U								
Endrin Ketone	3.3	3.3	U	3.7	U	13	UJ	17	UJ	23	UJ	3.2	U								
Endrin Aldehyde	3.3	3.3	U	3.7	U	13	UJ	17	UJ	23	UJ	3.2	U								
alpha-Chlordane	1.7	1.7	U	1.9	U	6.9	UJ	8.8	UJ	12	UJ	1.7	U								
gamma-Chlordane	1.7	1.7	U	1.9	U	6.9	UJ	8.8	UJ	12	UJ	1.7	U								
Toxaphene	170.0	170	U	190	U	690	UJ	880	UJ	1200	UJ	170	U								
Aroclor-1016	33.0	33	U	37	U	130	UJ	170	UJ	230	UJ	32	U								
Aroclor-1221	33.0	67	U	76	U	270	UJ	350	UJ	470	UJ	66	U								
Aroclor-1232	67.0	33	U	37	U	130	UJ	170	UJ	230	UJ	32	U								
Aroclor-1242	33.0	33	U	37	U	130	UJ	170	UJ	230	UJ	32	U								
Aroclor-1248	33.0	33	U	37	U	130	UJ	170	UJ	230	UJ	32	U								
Aroclor-1254	33.0	33	U	100		130	UJ	170	UJ	230	UJ	32	U								
Aroclor-1260	33.0	33	U	37	U	130	UJ	170	UJ	230	UJ	32	U								

DUP = Duplicate, EB = Equipment Blank, PP = Percolation Pond, SP = Settling Pond

WHC-SD-EN-TI-197, Rev. 0

DATA QUALIFICATION SUMMARY

[illegible]

Project: WESTINGHOUSE-HANFORD																					
Laboratory: Roy F. Weston																					
Case		SDG: B06D29																			
Sample Number		B06D29				B06D33															
Location		SP-6				PP-7															
Remarks		Split				Split															
Sample Date		08/26/92				08/25/92															
Extraction Date		09/03/92				09/03/92															
Analysis Date		10/03/92				10/03/92															
Pesticide/PCB	CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
alpha-BHC	1.7	6.2	UJ	1.7	U																
beta-BHC	1.7	6.2	UJ	1.7	U																
delta-BHC	1.7	6.2	UJ	1.7	U																
gamma-BHC (Lindane)	1.7	6.2	UJ	1.7	U																
Heptachlor	1.7	6.2	UJ	1.7	U																
Aldrin	1.7	6.2	UJ	1.7	U																
Heptachlor epoxide	1.7	6.2	UJ	1.7	U																
Endosulfan I	1.7	6.2	UJ	1.7	U																
Dieldrin	3.3	12	UJ	3.4	U																
4,4'-DDE	3.3	12	UJ	3.4	U																
Endrin	3.3	12	UJ	3.4	U																
Endosulfan II	3.3	12	UJ	3.4	U																
4,4'-DDD	3.3	12	UJ	3.4	U																
Endosulfan sulfate	3.3	12	UJ	3.4	U																
4,4'-DDT	3.3	12	UJ	3.4	U																
Methoxychlor	17.0	62	UJ	17	U																
Endrin Ketone	3.3	12	UJ	3.4	U																
Endrin Aldehyde	3.3	12	UJ	3.4	U																
alpha-Chlordane	1.7	6.2	UJ	1.7	U																
gamma-Chlordane	1.7	6.2	UJ	1.7	U																
Toxaphene	170.0	620	UJ	170	U																
Aroclor-1016	33.0	120	UJ	34	U																
Aroclor-1221	33.0	250	UJ	69	U																
Aroclor-1232	67.0	120	UJ	34	U																
Aroclor-1242	33.0	120	UJ	34	U																
Aroclor-1248	33.0	120	UJ	34	U																
Aroclor-1254	33.0	120	UJ	34	U																
Aroclor-1260	33.0	120	UJ	34	U																

PP = Percolation Pond, SP = Settling Pond

ACCURACY DATA SUMMARY

[illegible]

Project: WESTINGHOUSE-HANFORD																															
Laboratory: TMA																															
Case	SDG: B06D31																														
Sample Number	B06D31		B06D32		B06D34		B06D38		B06D39		B06D40		B06D41		B06D42		B06D43		B06D44												
Location	PP-7		PP-7		PP-6		PP-5		PP-4		PP-3		PP-2		PP-1		SP-1		SP-6												
Remarks			DUP																												
Sample Date	08/25/92		08/25/92		08/25/92		08/25/92		08/25/92		08/25/92		08/25/92		08/25/92		08/25/92		08/26/92												
Extraction Date	09/05/92		09/05/92		09/05/92		09/05/92		09/05/92		09/05/92		09/05/92		09/05/92		09/05/92		09/05/92												
Analysis Date	09/30/92		09/30/92		09/30/92		09/30/92		09/30/92		10/01/92		10/01/92		10/01/92		10/01/92		10/01/92												
Pesticide/PCB	CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q										
alpha-BHC		1.7	1.7	U		1.7	U		1.9	U		1.7	U		1.8	U		1.7	U		8.5	UJ		8.3	UJ		8.3	UJ		8.3	UJ
beta-BHC		1.7	1.7	U		1.7	U		1.9	U		1.7	U		1.8	U		1.7	U		1.7	U		8.5	UJ		8.3	UJ		8.3	UJ
delta-BHC		1.7	1.7	U		1.7	U		1.9	U		1.7	U		1.8	U		1.7	U		1.7	U		8.5	UJ		8.3	UJ		8.3	UJ
gamma-BHC (Lindane)		1.7	1.7	U		1.7	U		1.9	U		1.7	U		1.8	U		1.7	U		1.7	U		8.5	UJ		8.3	UJ		8.3	UJ
Heptachlor		1.7	1.7	U		1.7	U		1.9	U		1.7	U		1.8	U		1.7	U		1.7	U		8.5	UJ		8.3	UJ		8.3	UJ
Aldrin		1.7	1.7	U		1.7	U		1.9	U		1.7	U		1.8	U		1.7	U		1.7	U		8.5	UJ		8.3	UJ		8.3	UJ
Heptachlor epoxide		1.7	1.7	U		1.7	U		1.9	U		1.7	U		1.8	U		1.7	U		1.7	U		8.5	UJ		8.3	UJ		8.3	UJ
Endosulfan I		1.7	1.7	U		1.7	U		1.9	U		1.7	U		1.8	U		1.7	U		1.7	U		8.5	UJ		8.3	UJ		8.3	UJ
Dieldrin		3.3	3.4	U		3.3	U		3.6	U		3.4	U		3.4	U		3.3	U		3.4	U		3.4	U		16	UJ		16	UJ
4,4'-DDE		3.3	3.4	U		3.3	U		3.6	U		3.4	U		3.4	U		3.3	U		3.4	U		3.4	U		16	UJ		16	UJ
Endrin		3.3	3.4	U		3.3	U		3.6	U		3.4	U		3.4	U		3.3	U		3.4	U		3.4	U		16	UJ		16	UJ
Endosulfan II		3.3	3.4	U		3.3	U		3.6	U		3.4	U		3.4	U		3.3	U		3.4	U		3.4	U		16	UJ		16	UJ
4,4'-DDD		3.3	3.4	U		3.3	U		3.6	U		3.4	U		3.4	U		3.3	U		3.4	U		3.4	U		16	UJ		16	UJ
Endosulfan sulfate		3.3	3.4	U		3.3	U		3.6	U		3.4	U		3.4	U		3.3	U		3.4	U		3.4	U		16	UJ		16	UJ
4,4'-DDT		3.3	3.4	U		3.3	U		3.6	U		3.4	U		3.4	U		3.3	U		3.4	U		3.4	U		16	UJ		16	UJ
Methoxychlor		17.0	17	U		17	U		15	J		17	U		18	U		17	U		17	U		17	U		85	J		83	UJ
Endrin Ketone		3.3	N/A			N/A			N/A			N/A			N/A			N/A			N/A			N/A			N/A			N/A	
Endrin Aldehyde		3.3	3.4	U		3.3	U		3.6	U		3.4	U		3.4	U		3.3	U		3.4	U		3.4	U		16	UJ		16	UJ
Chlordane		1.7	34	U		33	U		36	U		34	U		34	U		33	U		34	U		34	U		160	UJ		160	UJ
Toxaphene		170.0	170	U		170	U		190	U		170	U		180	U		170	U		170	U		170	U		850	UJ		830	UJ
Aroclor-1016		33.0	34	U		33	U		36	U		34	U		34	U		33	U		34	U		34	U		160	UJ		160	UJ
Aroclor-1221		33.0	34	U		33	U		36	U		34	U		34	U		33	U		34	U		34	U		160	UJ		160	UJ
Aroclor-1232		67.0	34	U		33	U		36	U		34	U		34	U		33	U		34	U		34	U		160	UJ		160	UJ
Aroclor-1242		33.0	34	U		33	U		36	U		34	U		34	U		33	U		34	U		34	U		160	UJ		160	UJ
Aroclor-1248		33.0	34	U		33	U		36	U		34	U		34	U		33	U		34	U		34	U		160	UJ		160	UJ
Aroclor-1254		33.0	34	U		33	U		36	U		34	U		34	U		33	U		34	U		34	U		160	UJ		160	UJ
Aroclor-1260		33.0	34	U		33	U		34	J		34	U		34	U		33	U		34	U		34	U		160	UJ		160	UJ

DUP = Duplicate, N/A = Not Applicable, PP = Percolation Pond, SP = Settling Pond

Project: WESTINGHOUSE-HANFORD																					
Laboratory: TMA																					
Case		SDG: B06D31																			
Sample Number		B06D45		B06D46		B06D47		B06D48		B06D49											
Location		SP-2		SP-3		SP-4		SP-5		SP-7											
Remarks																					
Sample Date		08/26/92		08/26/92		08/26/92		08/26/92		08/26/92											
Extraction Date		09/05/92		09/05/92		09/05/92		09/05/92		09/05/92											
Analysis Date		10/01/92		10/01/92		10/01/92		10/01/92		10/01/92											
Pesticide/PCB	CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
alpha-BHC	1.7	4.6	UJ	6.1	UJ	8.4	UJ	11	UJ	8.5	UJ										
beta-BHC	1.7	4.6	UJ	6.1	UJ	8.4	UJ	11	UJ	8.5	UJ										
delta-BHC	1.7	4.6	UJ	6.1	UJ	8.4	UJ	11	UJ	8.5	UJ										
gamma-BHC (Lindane)	1.7	4.6	UJ	6.1	UJ	8.4	UJ	11	UJ	8.5	UJ										
Heptachlor	1.7	4.6	UJ	6.1	UJ	8.4	UJ	11	UJ	8.5	UJ										
Aldrin	1.7	4.6	UJ	6.1	UJ	8.4	UJ	11	UJ	8.5	UJ										
Heptachlor epoxide	1.7	4.6	UJ	6.1	UJ	8.4	UJ	11	UJ	8.5	UJ										
Endosulfan I	1.7	4.6	UJ	6.1	UJ	8.4	UJ	11	UJ	8.5	UJ										
Dieldrin	3.3	9.0	UJ	12	UJ	16	UJ	21	UJ	16	UJ										
4,4'-DDE	3.3	9.0	UJ	12	UJ	16	UJ	21	UJ	16	UJ										
Endrin	3.3	9.0	UJ	12	UJ	16	UJ	21	UJ	16	UJ										
Endosulfan II	3.3	9.0	UJ	12	UJ	16	UJ	21	UJ	16	UJ										
4,4'-DDD	3.3	9.0	UJ	12	UJ	16	UJ	21	UJ	16	UJ										
Endosulfan sulfate	3.3	9.0	UJ	12	UJ	16	UJ	21	UJ	16	UJ										
4,4'-DDT	3.3	9.0	UJ	12	UJ	16	UJ	21	UJ	16	UJ										
Methoxychlor	17.0	46	UJ	61	UJ	84	UJ	110	UJ	85	UJ										
Endrin Ketone	3.3	N/A		N/A		N/A		N/A		N/A											
Endrin Aldehyde	3.3	9.0	UJ	12	UJ	16	UJ	21	UJ	16	UJ										
Chlordane	1.7	90	UJ	120	UJ	160	UJ	210	UJ	160	UJ										
Toxaphene	170.0	460	UJ	610	UJ	840	UJ	1100	UJ	850	UJ										
Aroclor-1016	33.0	90	UJ	120	UJ	160	UJ	210	UJ	160	UJ										
Aroclor-1221	33.0	90	UJ	120	UJ	160	UJ	210	UJ	160	UJ										
Aroclor-1232	67.0	90	UJ	120	UJ	160	UJ	210	UJ	160	UJ										
Aroclor-1242	33.0	90	UJ	120	UJ	160	UJ	210	UJ	160	UJ										
Aroclor-1248	33.0	90	UJ	120	UJ	160	UJ	210	UJ	160	UJ										
Aroclor-1254	33.0	90	UJ	120	UJ	160	UJ	210	UJ	160	UJ										
Aroclor-1260	33.0	90	UJ	120	UJ	160	UJ	210	UJ	160	UJ										

DUP = Duplicate, N/A = Not Applicable, PP = Percolation Pond, SP = Settling Pond

HOLDING TIME SUMMARY

[illegible]

4-13

PESTICIDE/PCB ORGANIC ANALYSIS, WATER MATRIX, (ug/L)

Page 1 of 1

Project: WESTINGHOUSE-HANFORD																						
Laboratory: TMA																						
Case		SDG: B06D51																				
Sample Number		B06D51		B06D52		B06D57																
Location		SP-5,7																				
Remarks				EB		EB																
Sample Date		08/25/92		08/26/92		08/26/92																
Extraction Date		09/01/92		09/01/92		09/01/92																
Analysis Date		10/09/92		10/09/92		10/09/92																
Pesticide/PCB		CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
alpha-BHC		0.05	0.05	U	0.05	U	0.05	U														
beta-BHC		0.05	0.05	U	0.05	U	0.05	U														
delta-BHC		0.05	0.05	U	0.05	U	0.05	U														
gamma-BHC (Lindane)		0.05	0.05	U	0.05	U	0.05	U														
Heptachlor		0.05	0.05	U	0.05	U	0.05	U														
Aldrin		0.05	0.05	U	0.05	U	0.05	U														
Heptachlor epoxide		0.05	0.05	U	0.05	U	0.05	U														
Endosulfan I		0.05	0.05	U	0.05	U	0.05	U														
Dieldrin		0.10	0.10	U	0.10	U	0.10	U														
4,4'-DDE		0.10	0.10	U	0.10	U	0.10	U														
Endrin		0.10	0.10	U	0.10	U	0.10	U														
Endosulfan II		0.10	0.10	U	0.10	U	0.10	U														
4,4'-DDD		0.10	0.10	U	0.10	U	0.10	U														
Endosulfan sulfate		0.10	0.10	U	0.10	U	0.10	U														
4,4'-DDT		0.10	0.10	U	0.10	U	0.10	U														
Methoxychlor		0.50	0.50	U	0.50	U	0.50	U														
Endrin Ketone		0.10	0.10	U	0.10	U	0.10	U														
Endrin Aldehyde		0.10	0.10	U	0.10	U	0.10	U														
alpha-Chlordane		0.05	0.50	U	0.50	U	0.50	U														
gamma-Chlordane		0.05	0.50	U	0.50	U	0.50	U														
Toxaphene		5.00	1.00	U	1.00	U	1.00	U														
Aroclor-1016		1.00	0.50	U	0.50	U	0.50	U														
Aroclor-1221		1.00	0.50	U	0.50	U	0.50	U														
Aroclor-1232		2.00	0.50	U	0.50	U	0.50	U														
Aroclor-1242		1.00	0.50	U	0.50	U	0.50	U														
Aroclor-1248		1.00	0.50	U	0.50	U	0.50	U														
Aroclor-1254		1.00	1.00	U	1.00	U	1.00	U														
Aroclor-1260		1.00	1.00	U	1.00	U	1.00	U														

EB = Equipment Blank, SP = Settling Pond

WELL AND SAMPLE INFORMATION				SAMPLE LOCATION INFORMATION
SAMPLE LOCATION	SAMPLE NUMBER	MATRIX	DATE SAMPLED	INORGANICS
PP-1	B06D42	S/TCLP	8/25/92	5-21, 5-23
PP-2	B06D41	S/TCLP	8/25/92	5-21, 5-23
PP-3	B06D40	S/TCLP	8/25/92	5-21, 5-23
PP-4	B06D39	S/TCLP	8/25/92	5-21, 5-23
PP-5	B06D38	S/TCLP	8/25/92	5-21, 5-23
PP-6	B06D26	S	8/25/92	5-9
	B06D34	S/TCLP	8/25/92	5-21, 5-23
PP-7	B06D25	S	8/25/92	5-9
	B06D31	S/TCLP	8/25/92	5-21, 5-23
	B06D32	S/TCLP	8/25/92	5-21, 5-23
	B06D33	TCLP	8/25/92	5-18
EB-PP	B06D50	S	8/25/92	5-9
SP-1	B06D43	S/TCLP	8/25/92	5-21, 5-23
SP-2	B06D45	S/TCLP	8/26/92	5-22, 5-24
SP-3	B06D46	S/TCLP	8/26/92	5-22, 5-24
SP-4	B06D47	S/TCLP	8/26/92	5-22, 5-24
SP-5	B06D48	S/TCLP	8/26/92	5-22, 5-24
SP-5,7	B06D51	W/TCLP	8/25/92	5-28, 5-29
SP-6	B06D27	S	8/26/92	5-9
	B06D28	S	8/26/92	5-9
	B06D29	S	8/26/92	5-13
	B06D44	S/TCLP	8/26/92	5-21, 5-24
SP-7	B06D30	S	8/26/92	5-9
	B06D49	S/TCLP	8/26/92	5-22, 5-24
EB-SP	B06D57	W/TCLP	8/26/92	5-28, 5-29
EB	B06D52	W/TCLP	8/26/92	5-28, 5-29

5.0 INORGANIC DATA VALIDATION

5.1 DATA PACKAGE COMPLETENESS

The following data packages (SDG Nos.) were submitted for validation and checked for completeness:

B06D25

B06D29

B06D31

B06D51

Data packages B06D29, B06D31 and B06D51 were also analyzed for TCLP metals. Westinghouse-Hanford validation guidelines do not specifically address validation of TCLP analytes, therefore validation was based on the same criteria used for total constituents.

5.2 HOLDING TIMES

Analytical holding times for ICP metals, GFAA metals and CVAA mercury analyses were assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: samples must be analyzed within 28 days for mercury, 14 days for cyanide and within six months for all other metals.

The holding time was exceeded for mercury for sample numbers B06D31, B06D32, B06D34, B06D38, B06D39, B06D40, B06D41 and B06D42 in SDG No. B06D31. The associated results were qualified as estimates and flagged "J".

All other holding time requirements for all analytes in all data packages reviewed were met.

5.3 INSTRUMENT PERFORMANCE AND CALIBRATIONS

Performance of specific instrument quality assurance and quality control procedures, including deficiencies noted during the quality assurance review, are outlined below.

Three calibration standards and a blank were analyzed for arsenic, lead, selenium and thallium by GFAA. The correlation coefficient of a least squares linear regression met the requirements for calibration in all cases.

Up to five calibration standards and a blank were analyzed for mercury by CVAA. The correlation coefficient of a least squares linear regression met the requirements for calibration.

At least one standard and a blank were analyzed by ICP for all other elements.

The above calibrations were each immediately verified with an ICV standard and a calibration blank. The ICV was prepared from a source independent of the calibration standards, at a mid-calibration range concentration. The ICV percent recovery must fall within the control limits of 90 to 110 percent for metals analyzed by ICP and GFAA, and 80 to 120 percent for mercury. Calibration linearity near the detection limit was verified with a standard prepared at a concentration near the CRDL.

The ICVs met the recommended control limits in all cases.

The calibrations were subsequently verified at regular intervals using a CCV standard. The control windows for percent recovery of CCV standards are the same as the ICV windows described above.

The CCVs met the recommended control limits in all cases.

5.3.1 ICP Calibration

An ICS was analyzed at the beginning and end of each ICP sample run to verify the laboratory interelement and background correction factors. Results for the ICS solution must fall within the control limit of ± 20 percent of the true value.

A five-fold serial dilution is required for all elements analyzed by ICP. The subsequent concentrations of the reanalysis are compared with the original analysis. If the analyte concentration is sufficiently high (a minimum factor of 50 above the IDL) then the serial dilution must agree within 10% of the original determination after correction for dilution.

The ICS has been analyzed at the proper frequency however, ICSAB true values were not provided with the laboratory data and therefore, percent recovery values could not be verified.

5.3.2 Atomic Absorption Calibrations

Duplicate injections are required for all GFAA analyses. The duplicate injections establish the precision of the individual analytical determinations. For sample concentrations greater than the CRDL, duplicate injections must agree within ± 20 percent RSD or CV. The duplicate injection results are discussed in Section 5.7.1 of this report

5.4 BLANKS

Samples with digestate concentrations (in ug/L) of less than five times ($<5\times$) the highest amount found in any of the associated blanks have had their associated values qualified as non-detected (U). Samples with concentrations of greater than five times ($>5\times$) the highest amount found in any of the associated blanks do not require qualification.

Due to the presence of laboratory blank contamination, the following sample was flagged "U" for beryllium:

- Sample number B06D29 in SDG No. B06D29.

Due to the presence of laboratory blank contamination, the following samples were flagged "U" for cadmium:

- Sample numbers B06D26, B06D27, B06D28 and B06D30 in SDG No. B06D25.

Due to the presence of laboratory blank contamination, the following sample was flagged "U" for calcium:

- Sample number B06D50 in SDG No. B06D25.

Due to the presence of laboratory blank contamination, the following samples were flagged "U" for cobalt:

- Sample numbers B06D27, B06D28 and B06D30 in SDG No. B06D25.

Due to the presence of laboratory blank contamination, the following sample was flagged "U" for manganese:

- Sample number B06D50 in SDG No. B06D25.

Due to the presence of laboratory blank contamination, the following samples were flagged "U" for nickel:

- Sample numbers B06D27, B06D28 and B06D30 in SDG No. B06D25.

Due to the presence of laboratory blank contamination, the following samples were flagged "U" for silver:

- Sample numbers B06D25, B06D26, B06D28 and B06D30 in SDG No. B06D25.

Due to the presence of laboratory blank contamination, the following samples were flagged "U" for sodium:

- Sample numbers B06D28, B06D30 and B06D50 in SDG No. B06D25.

Due to the presence of laboratory blank contamination, the following sample was flagged "U" for zinc:

- Sample number B06D50 in SDG. No. B06D25.

All other laboratory blank results were acceptable.

5.5 ACCURACY

5.5.1 Matrix Spike Recovery

Matrix spike analyses are used to assess the analytical accuracy of the reported data and the effect of the matrix on the ability to accurately quantify sample concentrations. Matrix spike recoveries must generally fall within the range of 75 to 125 percent. Samples with a spike recovery of less than 30% and a sample value below the IDL were rejected and flagged "R". Samples with a spike recovery greater than 125% and a sample value below the IDL do not require qualification. All other samples with a spike recovery outside the QC limits are qualified as estimates and flagged "J".

The matrix spike recovery fell outside the QC limits and the associated results flagged "J" for lead in the following sample:

- Sample number B06D29 in SDG No. B06D29.

The matrix spike recovery fell outside the QC limits and the associated results flagged "J" for manganese in the following sample:

- Sample number B06D29 in SDG No. B06D29.

The matrix spike recovery fell outside the QC limits and the associated results flagged "J" for selenium in the following samples:

- Sample number B06D33 in SDG No. B06D29.
- All samples in SDG No. B06D31.
- Sample numbers B06D51, B06D52 and B06D57 in SDG No. B06D51.

The matrix spike recovery fell outside the QC limits and the associated results flagged "J" for silver in the following samples:

- Sample number B06D33 in SDG No. B06D29.
- Sample numbers B06D51, B06D52 and B06D57 in SDG No. B06D51.

The matrix spike recovery fell outside the QC limits and the associated results flagged "J" for thallium in the following sample:

- Sample number B06D29 in SDG No. B06D29.

All other matrix spike recovery results were acceptable.

5.5.2 Laboratory Control Sample Recovery

The LCS monitors the overall performance of the analysis, including the sample preparation. An LCS should be digested or distilled and analyzed with every batch of samples prepared and analyzed simultaneously. The performance criteria for solid LCS samples are established through interlaboratory studies coordinated by a certifying agency (e.g., EPA or an independent commercial supplier).

One solid LCS was digested and analyzed for each of the cases in this report that contain soil samples. The results were compared against the control limits provided and found to be acceptable. However, LCS solid samples for soil samples digested and analyzed by Roy F. Weston Laboratories could not be verified as actual soil samples. According to the Roy F. Weston digestion logbooks, two milliliters of ICV were used for the LCS, however, according to Exhibit E, Section V, Item 8 (pg. E-19) of the USEPA Statement of Work for Inorganics Analysis, Document Number ILM01.0, the ICV can only be used for the LCS digestion and analysis of aqueous samples. A solid LCS provided by the EPA or a certified agent is required for soil samples.

Since Westinghouse-Hanford protocols do not address this issue, samples were not flagged based on the use of an incorrect LCS. Under CLP protocol samples are required to be redigested and reanalyzed in instances where the LCS did not meet the criteria.

All other LCS results were found to be acceptable.

One liquid LCS was digested and analyzed for each of the cases in this report that contained water samples. The results were compared against the control limit of 80-120% as required by the EPA CLP SOW 3/90 protocol and found to be acceptable.

All LCSW results were found to be acceptable.

5.6 PRECISION

5.6.1 Laboratory Duplicate Samples

The laboratory duplicate results measure the precision of the method by measuring a second aliquot of the sample that is treated the same way as the original. Samples whose precision fell outside the quality control requirements were flagged as estimates "J".

With the exception of TCLP mercury, duplicate sample analyses for TCLP analytes in SDG Nos. B06D29, B06D31, B06D51 were not performed by the laboratory. Therefore, precision could not be determined for associated samples.

The laboratory duplicate RPD results were above QC limits and the associated results flagged "J" for mercury for sample number B06D29 in SDG No. B06D29.

All other laboratory duplicate recovery results were acceptable.

5.6.2 ICP Serial Dilution

The ICP serial dilution is used to determine whether significant physical or chemical interferences exist due to sample matrix. If sample concentration is ≥ 50 times the IDL for an analyte and the %D is outside the control limits the associated data must be qualified as estimates "J".

The ICP serial dilution results were outside the QC limits and the associated results flagged "J" for zinc for sample number B06D29 in SDG No. B06D29.

All other ICP serial dilution results were acceptable.

5.7 FURNACE AA QUALITY CONTROL

The post-digestion analytical spike is analyzed to determine the extent of interference in the digestate matrix. When the results of the analytical spike analyses exceeds the control window of 85 to 115 percent recovery and the absorbance of the sample is greater than fifty percent of the analytical spike absorbance, then the sample must be reanalyzed using the MSA. The duplicate injections and the analytical spike recoveries establish the precision and accuracy of the individual GFAA determinations.

5.7.1 Duplicate Injections

Each furnace analysis requires a minimum of two injections (burns), except for full Method of Standard Addition (MSA). For concentrations greater than CRDL, the duplicate injection readings must agree within 50% relative standard deviation (RSD) or coefficient of variation (CV). If these requirements are not met, the analytical sample must be rerun once (i.e., two additional burns). If the readings are then still outside the QC limits, the result is qualified as an estimate and flagged "J".

All RSDs between duplicate injections met QC requirements. All duplicate injection quality control requirements were met.

5.7.2 Analytical Spike Recoveries

For all samples whose analytical spike results are outside the 85 to 115 percent control limit, but whose absorbances are less than 50 percent of the analytical spike absorbance, the samples were flagged as estimates "J". In cases where the analytical spike recovery was 0.0 percent, the results were rejected and flagged "R".

The analytical spike recovery fell outside the established QC limits and the associated results flagged "J" for lead in the following sample:

- Sample number B06D29 in SDG No. B06D29.

The analytical spike recovery fell outside the established QC limits and the associated results flagged "J" for selenium in the following samples:

- Sample numbers B06D25 and B06D26 in SDG No. B06D25.
- Sample number B06D29 in SDG No. B06D29.

The analytical spike recovery fell outside the established QC limits and the associated results flagged "J" for thallium in the following sample:

- Sample number B06D29 in SDG No. B06D29.

All other analytical spike recovery results were acceptable.

5.7.3 Method of Standard Addition (MSA) Results

For all samples whose analytical spike results are outside the 85 to 115 percent control limit and whose absorbances are greater than 50 percent of the analytical spike absorbance an MSA is required. In cases where the MSA correlation coefficient was less than 0.995 the MSA analysis was repeated once. If the correlation coefficient was still less than 0.995, samples were flagged as estimates "J".

The MSA correlation coefficient was less than 0.995 and the associated results flagged "J" for arsenic in the following samples:

- Sample numbers B06D26 and B06D27 in SDG No. B06D25.

The MSA correlation coefficient was less than 0.995 and the associated results flagged "J" for selenium in the following sample:

- Sample number B06D30 in SDG No. B06D25.

5.8 ANALYTE QUANTITATION AND DETECTION LIMITS

Twenty percent of sample results and reported detection limits were recalculated to ensure that the reported results were accurate. Raw data were examined for anomalies, transcription errors, and reduction errors.

The reviewer verified that the results and detection limits fell within the linear range of the instrument.

5.9 OVERALL ASSESSMENT AND SUMMARY

All samples were analyzed and reported under the 1990 CLP protocol (EPA 1990). Several inconsistencies and deviations from the protocol were observed. They are as follows:

A CCV and CCB must be analyzed immediately after the ICV and ICB. ICAP and Mercury do not follow this protocol. For ICAP analysis a CCV and CCB were run after the initial interference checks and CRI. This is incorrect because the ICASA/AB and CRII are considered analytical samples and according to the CLP protocol a CCV and CCB must be run prior to any analytical samples. For mercury, the CCV and CCB were analyzed for after the first ten samples. Refer to Sections E-11 paragraph 5b and E-15 paragraph 4a of the EPA CLP SOW 3/90 protocol.

The LCSs for soil samples digested and analyzed by Roy F. Weston Laboratories could not be verified as actual solid samples. According to Roy F. Weston digestion logbooks, a liquid LCS was digested and analyzed, and a control limit of 80-120% was used. Under EPA CLP SOW 390 protocol an actual solid sample provided by the EPA or a certified agent is required.

The TCLP extraction logbook pages for samples in SDG Nos. B06D31 and B06D51 were not provided. Verification of correct TCLP sample extraction and preparation could not be performed.

With the exception of TCLP mercury, duplicate sample analyses for TCLP samples in SDG Nos. B06D29, B06D31 and B06D51 were not performed. Therefore, precision could not be determined.

The preparation blank results for TCLP mercury samples in SDG No. B06D51 were incorrectly calculated as soils but were marked with units for liquid. Samples were recalculated to reflect water analysis.

All raw data associated with Roy F. Weston has not been labeled with the client (EPA) ID number. Results labeled with only the laboratory sample ID number is insufficient. Refer to Section B-10 of the EPA CLP SOW 390.

Except as noted in the preceding sections, all other data are usable for all purposes.

DUP = Duplicate, EB = Equipment Blank, PP = Percolation Pond, SP = Settling Pond

BLANK AND SAMPLE DATA SUMMARY

SDG: B06D25		REVIEWER: PMG			DATE: 8/24/93			PAGE <u>1</u> OF <u>1</u>	
COMMENTS:									
SAMPLE ID	COMPOUND	RESULT	Q	RT	UNITS	5X RESULT	10X RESULT	SAMPLES AFFECTED	QUALIFIER
CCB	Cadmium	2.5			ug/L	12.5	25.0	B06D26, B06D27, B06D28, B06D30	U
PBS	Calcium	240.6			ug/L	1203	2406	B06D50	U
CCB	Cobalt	2.9			ug/L	14.5	29.0	B06D27, B06D28, B06D30	U
CCB	Manganese	6.9			ug/L	34.5	69.0	B06D50	U
CCB	Nickel	7.1			ug/L	35.5	71.0	B06D27, B06D28, B06D30	U
CCB	Silver	3.0			ug/L	15.0	30.0	B06D25, B06D26, B06D28, B06D30	U
PBS	Sodium	134.2			ug/L	671.0	1342	B06D28, B06D30, B06D50	U
PBS	Zinc	10.6			ug/L	53.0	106	B06D50	U

5-10

WHC-SD-EN-TI-197, Rev. 0

ACCURACY DATA SUMMARY

[illegible]

[illegible]

INORGANIC ANALYSIS, SOIL MATRIX, (mg/Kg)

Page__1__ of __1__

[illegible]

WHC-SD-EN-TI-197, Rev. 0

SP = Settling Pond

BLANK AND SAMPLE DATA SUMMARY

[illegible]

ACCURACY DATA SUMMARY

[illegible]

PRECISION DATA SUMMARY

[illegible]

5-17

5-18

ACCURACY DATA SUMMARY

[illegible]

DUP = Duplicate, PP = Percolation Pond, SP = Settling Pond

[illegible]

5-22

INORGANIC ANALYSIS, WATER MATRIX, (ug/L)

Page__1__ of __2__

[illegible]

DUP = Duplicate, PP = Percolation Pond, SP = Settling Pond

WHC-SD-EN-TI-197, Rev. 0

[illegible]

5-24

WHC-SD-EN-TI-197, Rev. 0

DUP = Duplicate, PP = Percolation Pond, SP = Settling Pond

HOLDING TIME SUMMARY

SDG: B06D31		REVIEWER: PMG		DATE: 8/31/93		PAGE <u>1</u> OF <u>1</u>	
COMMENTS: TCLP							
FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE TCLP EXTRACTION	DATE ANALYZED	EXT. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B06D31	Mercury	8/25/92	9/23/92	10/7/92	28	28	J
B06D32	Mercury	8/25/92	9/23/92	10/7/92	28	28	J
B06D34	Mercury	8/25/92	9/23/92	10/7/92	28	28	J
B06D38	Mercury	8/25/92	9/23/92	10/7/92	28	28	J
B06D39	Mercury	8/25/92	9/23/92	10/7/92	28	28	J
B06D40	Mercury	8/25/92	9/23/92	10/7/92	28	28	J
B06D41	Mercury	8/25/92	9/23/92	10/7/92	28	28	J
B06D42	Mercury	8/25/92	9/23/92	10/7/92	28	28	J

ACCURACY DATA SUMMARY

[illegible]

[illegible]

INORGANIC ANALYSIS, WATER MATRIX, (ug/L)

Page__1__ of __1__

[illegible]

EB = Equipment Blank, SP = Settling Pond

WHC-SD-EN-TI-197, Rev. 0

INORGANIC ANALYSIS, WATER MATRIX, (ug/L)

Page__1__ of__1__

[illegible]

WHC-SD-EN-TI-197, Rev. 0

ACCURACY DATA SUMMARY

[illegible]

5-31

6.0 REFERENCES

- EPA, 1987, *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*, SW-846, Third Edition, Environmental Protection Agency, Washington, D.C.
- EPA, 1988a, *EPA Contract Laboratory Program Statement of Work for Organics Analyses, Multi-Media, Multi-Concentration*, U.S. Environmental Protection Agency, Washington, D.C.
- EPA, 1988b, *Laboratory Data Validation Functional Guidelines for Evaluating Organics Analyses*, U.S. Environmental Protection Agency, Washington, D.C.
- EPA, 1988c, *EPA Contract Laboratory Program Statement of Work for Inorganics Analyses, Multi-Media, Multi-Concentration*, U.S. Environmental Protection Agency, Washington, D.C.
- EPA, 1988d, *Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analyses*, U.S. Environmental Protection Agency, Washington, D.C.
- EPA, 1990, *EPA Contract Laboratory Program Statement of Work for Inorganic Analyses, Multi-media, Multi-Concentration*, U.S. Environmental Protection Agency, Washington, D.C.
- EPA, 1991, *EPA Contract Laboratory Program Statement of Work for Organics Analyses, Multi-Media, Multi-Concentration*, Environmental Protection Agency, Washington, D.C.
- WHC, 1992a, *Data Validation Procedures for Chemical Analyses*, WHC-SD-EN-SPP-002, Rev. 1, Westinghouse Hanford Company, April 1992.
- WHC, 1992b, *Data Validation Procedure for Radiological Analyses*, WHC-SD-EN-SPP-001, Westinghouse Hanford Company, 1992.

DATE

FILMED

6 / 1 / 94

END