USEPA CONTRACT LABORATORY PROGRAM

STATEMENT OF WORK

FOR

ORGANICS ANALYSIS

Multi-Media, Multi-Concentration

SOM01.1
May 2005

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STATEMENT OF WORK

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Exhibit A - Summary of Requirements

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1.0 PURPOSE

The purpose of the multi-media, multi-concentration organic analytical service is to provide analytical data for use by the U.S. Environmental Protection Agency (USEPA) in support of its investigation and clean-up activities under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and the Superfund Amendments and Reauthorization Act of 1986 (SARA). Other USEPA Program Offices that have similar analytical data needs also use this service.

2.0 DESCRIPTION OF SERVICE

The organic analytical service provides a contractual framework for laboratories to apply USEPA Contract Laboratory Program (CLP) analytical methods for the isolation, detection, and quantitative measurement of 52 volatile, 67 semivolatile, 21 pesticide, and 9 Aroclor target compounds in water and soil/sediment samples. The analytical service provides the methods to be used, and the specific contractual requirements by which USEPA will evaluate the data. This service uses Gas Chromatograph/Mass Spectrometer (GC/MS) and Gas Chromatograph/Electron Capture Detector (GC/ECD) methods to analyze the target compounds.

3.0 DATA USES

This analytical service provides data that USEPA uses for a variety of purposes, such as determining the nature and extent of contamination at a hazardous waste site, assessing priorities for response based on risks to human health and the environment, determining appropriate cleanup actions, and determining when remedial actions are complete. The data may be used in all stages in the investigation of a hazardous waste site, including, but not limited to, site inspections; Hazard Ranking System (HRS) scoring; remedial investigation/feasibility studies; remedial design; treatability studies; and removal actions.

The data may also be used in litigation against Potentially Responsible Parties (PRPs) in the enforcement of Superfund legislation. As a result, the Contractor must be aware of the importance of maintaining the integrity of the data generated under the contract, since it is used to make major decisions regarding public health and environmental welfare. The Contractor may be required to appear and testify to the accuracy and/or validity of the data generated.

4.0 SUMMARY OF REQUIREMENTS

4.1 Introduction to the Statement of Work

This Statement of Work (SOW) is designed as part of the documentation for a contract between USEPA and a commercial laboratory performing analyses in support of USEPA Superfund programs. The SOW is comprised of eight exhibits and one appendix. Exhibit A provides an overview of the SOW and its general requirements. Exhibit B contains a description of the reporting and deliverables requirements, in addition to the data reporting forms and the form instructions. Exhibit C specifies the Target Compound List (TCL) for this SOW with the Contract Required Quantitation Limits (CRQLs) for the sample matrices. Exhibit D details the specific analytical procedures to be used with this SOW and resulting contracts. Exhibit E provides descriptions of required Quality Assurance/Quality Control (QA/QC), Standard Operating Procedures (SOPs), and procedures used for evaluating analytical methodologies, QA/QC performance, and the reporting of data. Exhibit F contains chain-of-custody and sample documentation requirements which the Contractor

shall follow. To ensure proper understanding of the terms utilized in this SOW, a glossary can be found in Exhibit G (when a term is used in the text without explanation, the glossary meaning shall be applicable). Specifications for reporting electronic data appear in Exhibit H. Appendix A contains a listing of USEPA Registry Names, Synonyms, and Chemical Abstracts Service (CAS) Registry Numbers.

4.2 Overview of Major Task Areas

For each sample, the Contractor shall perform the tasks described in this section. Specific requirements for each task are detailed in the exhibits as referenced.

4.2.1 Task I: Sample Receiving, Storage, and Disposal

4.2.1.1 Chain-of-Custody

The Contractor shall receive and maintain samples under proper chain-of-custody procedures. All associated document control and inventory procedures shall be developed and followed. Documentation, as described herein, shall be required to show that all procedures are being strictly followed. This documentation shall be reported as the Complete Sample Delivery Group (SDG) File (CSF) (Exhibit B). The Contractor shall establish and use appropriate procedures to safeguard confidential information received from USEPA. See Exhibit F for specific requirements.

4.2.1.2 Sample Scheduling/Shipments

Sample shipments to the Contractor's facility will be scheduled and coordinated by the Contract Laboratory Program (CLP) Sample Management Office (SMO). The Contractor shall communicate with SMO personnel by telephone, fax, and/or email, as necessary throughout the process of sample scheduling, shipment, analysis, and data reporting, to ensure that samples are properly processed.

4.2.1.2.1 Samples will be shipped routinely to the Contractor through an overnight delivery service. However, as necessary, the Contractor shall be responsible for any handling or processing required for the receipt of sample shipments. This includes the pick-up of samples at the nearest servicing airport, bus station, or other carrier service within the Contractor's geographical area. The Contractor shall be available to receive and process sample shipments at any time the delivery service is operating, including Saturdays.

4.2.1.2.2 If there are problems with the samples (e.g., mixed media, containers broken or leaking) or sample documentation/paperwork (e.g., Traffic Report/Chain of Custody Records (TR/COCs) not with shipment, sample and TR/COC numbers do not correspond), the Contractor shall immediately contact SMO for resolution. The Contractor shall immediately notify SMO regarding any problems and laboratory conditions that affect the timeliness of analyses and data reporting. In particular, the Contractor shall notify SMO personnel and the USEPA Regional CLP Project Officer (CLP PO) in advance regarding sample data that will be delivered late and shall specify the estimated delivery date.

4.2.1.2.3 To monitor the temperature of the sample shipping cooler more effectively, each USEPA Regional office may include a sample shipping cooler temperature blank with each cooler shipped.

The temperature blank will be clearly labeled: EPA COOLER TEMPERATURE INDICATOR. The Contractor shall record the presence or absence of the cooler temperature indicator bottle on Form DC-1, Item 8 - Cooler Temperature Indicator Bottle (Exhibit B).

4.2.1.2.3.1 When the USEPA Regional office supplies a cooler temperature indicator bottle in the sample shipping cooler, the Contractor shall use the USEPA-supplied cooler temperature indicator bottle to determine the cooler temperature. The temperature of the cooler shall be measured at the time of sample receipt by the Contractor.

4.2.1.2.3.2 The temperature of the sample shipping cooler shall be measured and recorded immediately upon opening the cooler, and prior to unpacking the samples or removing the packing material.

4.2.1.2.3.3 To determine the temperature of the cooler, the Contractor shall locate the cooler temperature indicator bottle in the sample shipping cooler, remove the cap, and insert a calibrated thermometer into the cooler temperature indicator bottle. Prior to recording the temperature, the Contractor shall allow a minimum of 3 minutes, but not greater than 5 minutes, for the thermometer to equilibrate with the liquid in the bottle. At a minimum, the calibrated thermometer (±1°C) shall have a measurable range of 0-50°C. Other devices that can measure temperature may be used if they can be calibrated to ±1°C and have a range of 0-50°C. If a temperature indicator bottle is not present in the cooler, an alternative means of determining cooler temperature shall be used. Under no circumstances shall a thermometer or any other device be inserted into a sample bottle for the purpose of determining cooler temperature. The Contractor shall contact SMO and inform them that a temperature indicator bottle was not present in the cooler. The Contractor shall document the alternative technique used to determine cooler temperature in the SDG Narrative.

4.2.1.2.3.4 If the temperature of the sample shipping cooler's temperature indicator exceeds 10°C, the Contractor shall contact SMO and inform them of the temperature deviation. SMO will contact the Region from which the samples were shipped for instructions on how to proceed. The Region will either require that no sample analysis(es) be performed or that the Contractor proceed with the analysis(es). SMO will in turn notify the Contractor of the Region's decision. The Contractor shall document the Region's decision and the EPA Sample Numbers of all samples for which temperatures exceed 10°C in the SDG Narrative.

4.2.1.2.3.5 The Contractor shall record the temperature of the cooler on the Form DC-1, Item 9 - Cooler Temperature, and in the SDG Narrative (Exhibit B).

4.2.1.2.4 The Contractor shall accept all samples scheduled by SMO, provided that the total number of samples received in any calendar month does not exceed the monthly limitation expressed in the contract. Should the Contractor elect to accept additional samples, the Contractor shall remain bound by all contract requirements for analysis of those samples accepted.

4.2.1.2.5 The Contractor is required to retain unused sample volume, partially used sample volume in original sample container, used sample containers, and empty sample bottle containers for a period of 60 days after data submission. From time of receipt until analysis, the Contractor shall maintain all water (preserved and unpreserved) and/or preserved soil/sediment samples at 4°C (±2°C). The Contractor shall maintain all unpreserved soil/sediment samples at -7°C (±2°C).

4.2.1.2.6 The Contractor shall be required to routinely return sample shipping containers (e.g., coolers) to the appropriate sampling office within 14 calendar days following shipment receipt (Contract Clause entitled "Government Furnished Supplies and Materials").

4.2.2 Task II: Sample Preparation and Analysis

4.2.2.1 Overview

The Contractor is advised that the samples received under the contract are usually from known or suspected hazardous waste sites and may contain high levels of organic and inorganic materials of a potentially hazardous nature. For example, the Contractor should not assume that samples that are scheduled for trace volatiles analysis do not contain analytes at concentrations appropriate for other methods. If there is any doubt about the appropriateness of a selected method, the Contractor should contact SMO for further guidance. It is the Contractor's responsibility to take all necessary measures to ensure laboratory safety.

4.2.2.2 If analysis by the Selected Ion Monitoring (SIM) technique is requested, analysis by the appropriate full scan method must be performed prior to the SIM analysis. If the full scan analysis detects all the SIM target compounds at or above the CRQLs, then the SIM analysis is not to be performed.

4.2.2.3 Sample analyses will be scheduled by groups of samples, each defined as a Case and identified by a unique USEPA Case Number assigned by SMO. A Case signifies a group of samples collected at one site or geographical area over a finite time period, and will include one or more field samples with associated blanks. Samples may be shipped to the Contractor in a single shipment or multiple shipments over a period of time, depending on the size of the Case.

4.2.2.3.1 A Case consists of one or more SDG(s). An SDG is defined by the following, whichever is most frequent:

- Each Case of field samples received; or
- Each 20 field samples [excluding Performance Evaluation (PE) samples] within a Case; or
- Each 7 calendar day period (3 calendar day period for 7 day turnaround) during which field samples in a Case are received (said period beginning with receipt of the first sample in the SDG).

In addition, all samples and/or sample fractions assigned to an SDG must have been scheduled under the same contractual

turnaround time. Preliminary Results have **no impact** on defining the SDG.

4.2.2.3.2 Samples may be assigned to SDGs by matrix (i.e., all soils in one SDG, all waters in another), at the discretion of the laboratory. However, PE samples received within a Case shall be assigned to an SDG containing field samples for that Case. Such assignment shall be made at the time the samples are received, and shall not be made retroactively.

4.2.2.3.3 Each sample received by the Contractor will be labeled with an EPA Sample Number, and accompanied by a TR/COC bearing the Sample Number and descriptive information regarding the sample.

4.2.2.3.4 The Contractor shall submit signed copies of TR/COCs for all samples in an SDG to SMO within **three working days** following receipt of the last sample in the SDG. Faxed copies of TR/COCs do not meet this requirement. TR/COCs shall be submitted in SDG sets (i.e., all TR/COCs for an SDG shall be clipped together) with an SDG Cover Sheet containing information regarding the SDG, as specified in Exhibit B.

4.2.2.3.5 USEPA Case Numbers, SDG Numbers, and EPA Sample Numbers shall be used by the Contractor in identifying samples received under the contract, both verbally and in reports/correspondence.

4.2.2.4 If insufficient sample volume (less than the required amount) is received to perform the analysis, the Contractor shall contact SMO to inform them of the problem. SMO will contact the Region for instructions. The Region will either approve that no sample analysis be performed, or require that a reduced volume be used for the sample analysis. No other changes in the analysis will be permitted. SMO will notify the Contractor of the Region's decision. The Contractor shall document the Region's decision in the SDG Narrative.

4.2.2.5 Preparation Techniques

The Contractor will prepare samples as described in Exhibit D. For semivolatile, pesticide, and Aroclor samples, an aliquot is extracted with a solvent and concentrated. The concentrated extract is subjected to fraction-specific cleanup procedures and then analyzed by Gas Chromatograph/Mass Spectrometer (GC/MS) for semivolatiles, and Gas Chromatograph/Electron Capture Detector (GC/ECD) for the pesticides and Aroclors target compounds listed in Exhibit C. For volatile samples, an aliquot is purged with an inert gas, trapped on a solid sorbent, and then desorbed onto the GC/MS for analysis of the target compounds listed in Exhibit C.

4.2.2.6 Analytical Techniques

The target compounds listed in Exhibit C shall be identified as described in the methodologies given in Exhibit D. Automated computer programs may be used to facilitate the identification of compounds.

4.2.2.7 Qualitative Verification of Compounds

The volatile and semivolatile compounds identified by GC/MS techniques shall be verified by an analyst competent in the interpretation of mass spectra by comparison of the suspect mass spectrum to the mass spectrum of a standard of the suspected

compound. This procedure requires the use of multiple internal standards.

4.2.2.7.1 If a compound initially identified by GC/MS techniques cannot be verified, but in the technical judgment of the mass spectral interpretation specialist the identification is correct, then the Contractor shall report that identification and proceed with quantitation.

4.2.2.7.2 The pesticide and Aroclor compounds identified by GC/ECD techniques shall be verified by an analyst competent in the interpretation of gas chromatograms and by comparison of the Retention Times (RTs) of the suspected unknowns with the RTs of respective standards of the suspected compounds. Pesticide compounds shall also be confirmed by GC/MS techniques if the compounds are of sufficient concentration to be detected by the GC/MS. Aroclor compounds of sufficient concentration need to be confirmed by GC/MS techniques only if requested by the Region.

4.2.2.8 Quantitation of Verified Compounds

The Contractor shall quantitate components identified by GC/MS techniques by the internal standard method stipulated in Exhibit D. Where multiple internal standards are required by USEPA, the Contractor shall perform quantitation utilizing the internal standards specified in Exhibit D. The Contractor shall quantitate components analyzed by GC/ECD techniques by the external standard method stipulated in Exhibit D. The Contractor shall also perform an initial 5 point calibration, verify its linearity, determine the breakdown of labile components, and determine calibration factors for all standards analyzed by GC/ECD techniques, as described in Exhibit D.

4.2.2.9 Tentative Identification of Non-Target Sample Components

For each analysis of a sample, the Contractor shall conduct mass spectral library searches to determine tentative compound identifications as follows: for each volatile sample, the Contractor shall conduct a search to determine the possible identity of up to 30 organic compounds of greatest concentration which are not Deuterated Monitoring Compounds (DMCs), internal standard compounds, or alkanes, and are not target compounds listed in Exhibit C under volatiles or semivolatiles. For each semivolatile sample, the Contractor shall conduct a search to determine the possible identification of up to 30 organic compounds of greatest concentration which are not DMCs, internal standard compounds, or alkanes, and are not target compounds listed in Exhibit C under volatiles or semivolatiles. In performing searches, the NIST/EPA/NIH (2002 release or later) and/or Wiley (1991 release or later), or equivalent, mass spectral library shall be used.

NOTE: Substances with responses less than 10% of the nearest internal standard are not required to be searched in this fashion.

4.2.2.10 Quality Assurance/Quality Control (QA/QC) Procedures

The Contractor shall strictly adhere to all specific QA/QC procedures prescribed in Exhibits D and E. Records documenting the use of the protocol shall be maintained in accordance with the

document control procedures prescribed in Exhibit F, and shall be reported in accordance with Exhibit B and Exhibit H.

4.2.2.10.1 The Contractor shall maintain a Quality Assurance Plan (QAP) with the objective of providing sound analytical chemical measurements. This program shall incorporate the QC procedures, any necessary corrective action, and all documentation required during data collection, as well as the quality assessment measures performed by management to ensure acceptable data production.

4.2.2.10.2 Additional QC shall be conducted in the form of the analysis of PE samples submitted to the laboratory by USEPA. Unacceptable results of all such QC or PE samples may be used as the basis for an equitable adjustment to reflect the reduced value of the data to USEPA or rejection of data for specific compound(s) within an SDG or the entire SDG. Also, unacceptable results may be used as the basis for contract action. "Compliant performance" is defined as that which yields correct analyte identification and concentration values, as determined by USEPA, as well as meeting the contract requirements for analysis (Exhibit D), QA/QC (Exhibit E), data reporting and other deliverables (Exhibits B and H), and sample custody, sample documentation, and SOP documentation (Exhibit F). As an alternative to data rejection, USEPA may require reanalysis of non-compliant samples. Reanalysis will be performed by the Contractor at no additional cost to USEPA, unless it is determined that the PE sample(s) was defective.

4.2.2.11 Modified Analysis

The Contractor may be requested by USEPA to perform modified analyses. These modifications may include, but are not limited to: additional compounds, sample matrices other than soil/sediment or water, and lower quantitation limits. These requests will be made by the USEPA Regional CLP PO, USEPA Office of Superfund Remediation and Technology Innovation (OSRTI) Analytical Services Branch (ASB) Organic Program Manager (PM), and USEPA Contracting Officer (CO) in writing, prior to sample scheduling. All contract requirements specified in the SOW/specifications will remain in effect unless the USEPA CO provides written approval for the modification(s) and a waiver for associated defects. The USEPA CO approval must be obtained prior to sample scheduling.

4.2.3 Task III: Sample Reporting Requirements and Resubmission of Data

4.2.3.1 USEPA has provided the Contractor with formats for the reporting of data (Exhibits B and H). The Contractor shall be responsible for completing and submitting analysis data sheets and electronic data in the format specified in this SOW and within the time specified in Exhibit B, Section 1.1.

4.2.3.2 Use of formats other than those designated by USEPA will be deemed as non-compliant. Such data are unacceptable. Resubmission in the specified format at no additional cost to USEPA shall be required.

4.2.3.3 Computer-generated forms may be submitted in the hardcopy Sample Data Package(s) provided that the forms are in **exact USEPA format.** This means that the order of data elements is the same as on each USEPA-required form, including form numbers and titles, page numbers, and header information.

4.2.3.4 If the submitted data package does not conform to the specified contractual or technical criteria, the Contractor will be required to resubmit the data package and electronic data deliverable with all deficiencies corrected at its own expense. The Contractor will respond within 7 days to requests for additional information or explanations that result from the Government's inspection activities. If the Contractor is required to submit or resubmit data as a result of a Regional request, the data shall be clearly marked as ADDITIONAL DATA. The Contractor shall include a cover letter that describes which data are being delivered, to which EPA Case Number the data pertain, and who requested the data. Any and all resubmissions must be in accordance with the documentation requirements of this SOW.

4.2.3.5 The data reported by the Contractor on the hardcopy data forms and the associated electronic data submitted by the Contractor shall contain identical information. If discrepancies are found during Government inspection, the Contractor shall be required to resubmit either the corrected hardcopy forms or the corrected electronic data, or both sets of corrected data, at no additional cost to USEPA.

4.2.3.6 In addition, the Contractor must be aware of the importance of maintaining the integrity of the data generated under the contract, since it is used to make major decisions regarding public health and environmental welfare. The data may also be used in litigation against Potentially Responsible Parties (PRPs) in the enforcement of Superfund legislation.

EXHIBIT B

REPORTING AND DELIVERABLES REQUIREMENTS

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1.0 CONTRACT REPORTS/DELIVERABLES DISTRIBUTION

1.1 Report Deliverable Schedule

The following table reiterates the contract reporting and deliverables requirements specified in the Contract Schedule (Performance/Delivery Schedule) and specifies the distribution that is required for each deliverable. The turnaround times for Items B through D listed below are 7, 14, and 21 days.

NOTE: Specific recipient names and addresses are subject to change during the term of the contract. The US Environmental Protection Agency (USEPA) Office of Superfund Remediation and Technology Innovation (OSRTI) Analytical Services Branch (ASB) Organic Program Manager (PM) will notify the Contractor, in writing, of such changes when they occur.

TABLE 1

Report Deliverable Schedule

Item		No. of Copies[A]	Delivery Schedule	Distribution	
				SMO	Region
A.[2]	Sample Traffic Reports/ Chain of Custody Records	1	3 working days after receipt of last sample in an Sample Delivery Group (SDG).[1]	X	
B.[2]	Sample Data Package[B]	1	XX[C] days after receipt of last sample in an SDG.	X	
C.[2]	Electronic Data Deliverable	1	XX[C] days after receipt of last sample in an SDG.	X	
D.[2, 3]	Complete SDG File	1	XX[C] days after receipt of last sample in an SDG.		X
E.[2]	Hardcopy Data in PDF Format	1	XX[c] days after receipt of last sample in an SDG		X

TABLE 1

Report Deliverable Schedule (Con't)

Item		No. of Copies[A]	Delivery Schedule	Distribution	
				SMO	Region
F.[4]	Preliminary Results (VOA Analyses)	1	Within 48 hours after receipt of each sample in an SDG at laboratory, if requested.	X	X
	Preliminary Results (SV, PEST, and ARO Analyses)	1	Within 72 hours after receipt of each sample in an SDG at laboratory, if requested.	X	X
G.[5]	Standard Operating Procedures-- Technical and Evidentiary	1	Revise within 60 days after contract award. Submit within 7 days of receipt of written request to recipients as directed.	As directed	
H.[5]	Quality Assurance Plan	1	Revise within 60 days after contract award. Submit within 7 days of receipt of written request to recipients as directed.	As directed	
I.	GC/MS GC/ECD Electronic Data	Lot	Retain for 3 years after data submission. Submit within 7 days after receipt of written request by CLP PO.	As directed	

TABLE 1 (Con't)

Report Deliverable Schedule

Item		No. of Copies[A]	Delivery Schedule	Distribution	
				SMO	Region
J.[6]	Extracts	Lot	Retain for 365 days after data submission. Submit within 7 days after receipt of written request by CLP PO or SMO, at USEPA's direction.	As directed	
K.	Method Detection Limit Study		Submit to USEPA within 7 days after receipt of written request by CLP PO or SMO, at USEPA's direction.	As directed	

Laboratories:

[A]The number of copies specified are the number of copies required to be delivered to each recipient.

[B]Contractor-concurrent delivery to USEPA-designated recipient [e.g., Quality Assurance Technical Support(QATS)] may be required upon request by the USEPA Regional Contract Laboratory Program Project Officer (CLP PO). Retain for 365 days after data submission, and submit as directed within 7 days after receipt of written request by the CLP PO. Supplemental data (i.e., logbooks) may be requested in writing from the Regional staff or QATS. All written communication sent by USEPA must include the laboratory's CLP PO in the distribution list. If the CLP PO has not been included in the distribution list, contact the OSRTI ASB Organic Program Manager.

[C]The number of days associated with these elements will be provided in the associated laboratory contract document, and will also be provided at the time of the sample scheduling by the Sample Management Office (SMO) Contractor.

[1]A Sample Delivery Group (SDG) is a group of samples within a Case, received over a period of 7 days or less (3 calendar day period for 7-day turnaround) and not exceeding 20 samples [excluding Performance Evaluation (PE) samples] and scheduled under the same contractual turnaround time. Note that Preliminary Results have no impact on defining the SDG. Data for all samples in the SDG are due concurrently. The date of delivery of the SDG or any samples within the SDG is the date that the last sample in the SDG is received. See Exhibit A for further description.

[2]**DELIVERABLES ARE TO BE REPORTED TOTAL AND COMPLETE. Delivery shall be made such that all designated recipients receive the item on the same calendar day. The Data Receipt Data (DRD) of the SDG and any samples within the SDG is the date that the Electronic Data Deliverable (EDD) and the Hardcopy of the Deliverable have both been received. If one of these items is delivered at a later date, the date that the last item is delivered is the SDG DRD. If the deliverables are due on a Saturday, Sunday, or Federal holiday, then they shall be delivered on the next business day. Deliverables delivered after this time will be considered late.**

[3]Complete Sample Delivery Group File (CSF) will contain the original Sample Data Package plus all of the original documents described under Section 2.6.

[4]If requested at the time of sample scheduling, the Contractor shall provide Preliminary Results, consisting of Form I and Form I TIC analytical results, by fraction, for field and Quality Control (QC) sample analyses via facsimile or email, Form X for Pesticides, and Form X for Aroclors. The Contractor may submit Preliminary Results in electronic format after obtaining permission from USEPA. The Contractor will be notified of the fax number or email address at the time of sample scheduling. Sample Traffic Report/Chain of Custody Records (TR/COCs) and SDG Cover Sheets shall be submitted with the Preliminary Results. The Contractor shall contact SMO after confirming transmission. The Contractor shall document all communication in a telephone contact log.

[5] See Exhibit E and Exhibit F for a more detailed description.

[6]Method Detection Limit (MDL) Study is to be performed annually, or for each new instrument, whichever is more frequent. The information should be available on file and provided to USEPA within 7 days after the receipt of a written request.

Preliminary Results Delivery Schedule:

If the sample arrives before 5 p.m., the Preliminary Results for that sample are due within the required turnaround time. If the sample is received after 5 p.m., the Preliminary Results for that sample are due within the required turnaround time beginning at 8 a.m. the following day. **DELIVERABLES ARE TO BE REPORTED TOTAL AND COMPLETE. Concurrent delivery is required. Delivery shall be made such that all designated recipients receive the item on the same calendar day. If the deliverables are due on a Saturday, Sunday, or Federal holiday, then they shall be delivered on the next business day. Deliverables delivered after this time will be considered late.**

NOTE: As specified in the Contract Schedule (Government Furnished Supplies and Materials), unless otherwise instructed by the CLP SMO based on a Regional decision, the Contractor shall dispose of unused sample volume and used sample bottles/containers no earlier than 60 days following submission of the reconciled CSF. Sample disposal and disposal of unused sample bottles/containers are the responsibility of the Contractor, and should be done in accordance with all applicable laws and regulations governing disposal of such materials.

1.2 Distribution

The following addresses correspond to the "Distribution" column in Table 1 of Section 1.1:

SMO: USEPA Contract Laboratory Program
Sample Management Office (SMO)[1]
15000 Conference Center Drive
Chantilly, VA 20151-3808

USEPA REGIONS:

SMO will provide the Contractor with the list of addresses for the 10 USEPA Regions. SMO will provide the Contractor with updated Regional address/name lists as necessary throughout the period of the contract and identify other client recipients on a case-by-case basis.

USEPA ASB Organic Program Manager (PM):
Mailing Address:

USEPA OSRTI Analytical Services Branch
Ariel Rios Building (5204G)
1200 Pennsylvania Avenue, N.W.
Washington, D.C. 20460
Attn: CLP Organic Program Manager

Fed-Ex/Overnight Delivery:

USEPA OSRTI Analytical Services Branch
1235 Jefferson Davis Highway
Crystal Gateway I, 12th Floor
Arlington, VA 22202
Attn: CLP Organic Program Manager

USEPA Regional CLP Project Officer (CLP PO):

SMO will provide the Contractor with the list of addresses for the USEPA Regional CLP POs. SMO will provide the Contractor with updated address/name lists as necessary throughout the period of the contract.

QATS: USEPA Contract Laboratory Program
Quality Assurance Technical Support Laboratory[2]
2700 Chandler Avenue, Building C
Las Vegas, NV 89120
Attn: Data Audit Staff

[1]SMO is a Contractor-operated facility operating under the SMO contract, awarded and administered by USEPA.

[2]The QATS Laboratory is a Contractor-operated facility operating under the QATS contract, awarded and administered by USEPA.

2.0 REPORTING REQUIREMENTS AND ORDER OF DATA DELIVERABLES

2.1 Introduction

The Contractor shall provide reports and other deliverables as specified in the Contract Schedule (Performance/Delivery Schedule). The required content and form of each deliverable is described in this Exhibit. All reports and documentation **must be**:

- Legible;
- Clearly labeled and completed in accordance with instructions in this exhibit;
- Arranged in the order specified in this section;
- Paginated consecutively in ascending order starting from the Sample Delivery Group (SDG) Narrative;
- Copies must be legible and double-sided; and
- Information reported on the forms listed in this Exhibit [excluding the Sample Log-In Sheet (DC-1) and the Complete SDG File (CSF) Inventory Sheet (DC-2)] must be either typewritten or computer-generated. Handwritten corrections of the information must be legible, signed, and dated.

NOTE: CSFs need not be double-sided. (The CSF is composed of original documents.) However, Sample Data Packages delivered to the Sample Management Office (SMO), and USEPA-designated recipients [e.g., Quality Assurance Technical Support (QATS)] upon written request, must be double-sided.

2.1.1 Requirements for each deliverable item cited in the Contract Schedule (Performance/Delivery Schedule) are specified in Sections 2.3 through 2.11. Prior to submission, the Contractor shall arrange items and the components of each item in the order listed in these sections.

2.1.2 The Contractor shall use EPA Case Numbers (including SDG numbers) and EPA Sample Numbers to identify samples received under the contract, both verbally and in reports/correspondence. The Contract Number shall be specified in all correspondence.

2.1.3 If Selected Ion Monitoring (SIM) analysis is performed, then all SIM data (Forms and raw data) must be arranged at the end of the subsection (i.e., Trace VOA-SIM must be at the end of the Trace-VOA section and SV-SIM must be at the end of the Semivolatiles section).

2.2 Resubmission of Data

If submitted documentation does not conform to the above criteria, the Contractor is required to resubmit such documentation with deficiency(ies) corrected within 6 business days, at no additional cost to USEPA. Only the nonconforming documentation is required to be resubmitted (i.e., if only the hardcopy in Portable Document Format (PDF) is nonconforming, then a resubmittal of only the corrected hardcopy is required).

2.2.1 Whenever the Contractor is required to submit or resubmit data as a result of an on-site laboratory evaluation, or through a USEPA Regional Contract Laboratory Program Project Officer (CLP PO) action, or through a Regional data reviewer's request, the data shall be

clearly marked as ADDITIONAL DATA and shall be sent to both contractual data recipients (SMO and the Region), and to the USEPA-designated recipient (e.g., QATS) within 7 days of a written request for the Sample Data Package. The Contractor shall include a cover letter that describes which data are being delivered, to which USEPA Case(s) the data pertain, and **who requested the data**.

2.2.2 Whenever the Contractor is required to submit or resubmit data as a result of Contract Compliance Screening (CCS) review by SMO, the data shall be sent to both contractual data recipients (SMO and the Region), and to the USEPA-designated recipient (e.g., QATS when a written request for the Sample Data Package has been made within 6 business days of receipt of CCS results of first submission data). In all instances, the Contractor shall include a color-coded COVER SHEET (Laboratory Response To Results of Contract Compliance Screening) provided by SMO.

2.3 Quality Assurance Plan (QAP) and Standard Operating Procedures (SOPs)

The Contractor shall adhere to the requirements in Exhibits E and F.

2.4 Traffic Report/Chain of Custody Records (TR/COCs)

Each sample received by the Contractor will be labeled with an EPA Sample Number. EPA Sample Numbers are five digits in length and continuous (without spaces or hyphens). Each sample will be accompanied by a Sample TR/COC bearing the Sample Number and descriptive information regarding the sample. The Contractor shall complete the TR/COC (marked "Lab Copy for Return to SMO"), recording the date of sample receipt and shall sign the TR/COC. Information shall be recorded for each sample in the SDG.

2.4.1 The Contractor shall submit TR/COCs in SDG sets (i.e., TR/COCs for all samples in an SDG shall be clipped together), with an SDG Cover Sheet attached. The SDG Cover Sheet shall contain the following items:

- Laboratory name;
- Contract number;
- Modification number;
- Sample analysis price (full sample price from the contract);
- Case Number;
- List of fractions analyzed; and
- List of EPA Sample Numbers of all samples in the SDG, identifying the **first** and **last** samples received, and the Laboratory Receipt Dates (LRDs).

NOTE: When more than one sample is received in the first or last SDG shipment, the "first" sample received would be the lowest Sample Number (considering both alpha and numeric designations); the "last" sample received would be the highest Sample Number (considering both alpha and numeric designations).

2.4.2 EPA Sample Numbers are five digits in length and continuous (without spaces or hyphens). If the Contractor receives Sample Numbers of any other length, the Contractor shall contact SMO immediately.

2.4.3 Each TR/COC shall be clearly marked with the SDG Number, entered below the LRD on the TR/COC. The TR/COC for the **last** sample received in the SDG shall be clearly marked "SDG-FINAL SAMPLE". The SDG Number is the EPA Sample Number of the first sample received in the SDG. When several samples are received together in the first SDG shipment, the SDG Number shall be the lowest Sample Number (considering both alpha and numeric designations) in the first group of samples received under the SDG.

2.4.4 If samples are received at the laboratory with multi-sample TR/COCs, all the samples on one multi-sample TR/COC may not necessarily be in the same SDG. In this instance, the Contractor shall make the appropriate number of photocopies of the TR/COC, and submit one copy with each SDG Cover Sheet.

2.5 Sample Data Package

The Sample Data Package is divided into the six major units described in this section. The last four units are each specific to an analytical fraction (Trace Volatiles/SIM, Low/Medium Volatiles, Semivolatiles/SIM, Pesticides, and Aroclors). If analysis by SIM is required, report all data for SIM analysis as a subsection at the end of the applicable fraction. If the analysis of a fraction is not required, then that fraction-specific unit is not required as a deliverable. The Sample Data Package shall include data for the analyses of all samples in one SDG, including: field samples; dilutions; reanalyses; blanks; Laboratory Control Samples (LCSs); and any requested Matrix Spikes and Matrix Spike Duplicates (MS/MSDs). The Contractor shall retain a copy of the Sample Data Package for 365 days after final acceptance of data. After this time, the Contractor may dispose of the package.

2.5.1 SDG Narrative

This document shall be clearly labeled "SDG Narrative" and shall contain: Laboratory Name; Case Number; EPA Sample Numbers in the SDG, differentiating between initial analyses and reanalyses; SDG Number; Contract Number; and detailed documentation of any Quality Control (QC), sample, shipment, and/or analytical problems encountered in processing the samples reported in the data package. For soil samples collected and pre-weighed in the field for volatiles analysis, the laboratory shall document all discrepancies between sample weights determined in the field and in the laboratory in the SDG Narrative. For aqueous samples, the laboratory shall report all samples where headspace or air bubbles are present. The laboratory shall also document how soil samples for volatiles analysis were handled upon receipt (e.g., storage in refrigerator, transferred to closed-system vials and frozen, etc.).

The Contractor shall document, in the SDG Narrative, the alternative technique used to determine cooler temperature if a temperature indicator bottle is not present in the cooler. Any temperature deviations (>10°C) should be noted for the affected EPA samples. The Contractor shall also provide, in the SDG Narrative, sufficient information, including equations or curves (at least one equation or curve per method), to allow the recalculation of sample results from raw instrument output. The Contractor shall also include a discussion of any flexibility Statement of Work (SOW) modifications. This includes attaching a copy of the USEPA-approved modification

form to the SDG Narrative. Additionally, the Contractor shall also identify and explain any differences that exist between the Form Is and supporting documentation provided in the data package and those previously provided as Preliminary Results.

All Gas Chromatography (GC) columns used for analysis shall be documented here, by fraction. List the GC column identification--brand name, the internal diameter, in millimeters (mm), and the length, in meters (m), packing/coating material, and film thickness. The trap used for volatile analysis shall be described here. List trap name, when denoted by the manufacturer, its composition (packing material/brand name, amount of packing material, in length). The Contractor shall include any technical and administrative problems encountered, the corrective actions taken, the resolution, and an explanation for all flagged edits (e.g., manual edits) on quantitation lists. The Contractor shall document in the SDG Narrative all instances of manual integration.

The SDG Narrative shall contain the following statement, verbatim: **"I certify that this Sample Data Package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy Sample Data Package and in the electronic data deliverable has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature."** This statement shall be directly followed by an original signature of the Laboratory Manager or designee with typed lines below it containing the signer's name and title, and the date of signature.

2.5.1.1 Whenever data from sample reanalyses are submitted, the Contractor shall state in the SDG Narrative for **each** reanalysis whether the reanalysis is billable, and if so, why. This includes required billable reanalysis for Aroclor samples meeting the criteria in Exhibit D Aroclors, Section 11.3.8.

2.5.1.2 The Contractor shall list the pH determined for each water sample submitted for volatiles analysis. This information may appear as a simple list or table in the SDG Narrative. The purpose of this pH determination is to ensure that all water volatiles samples were acidified in the field. No pH adjustment is to be performed by the Contractor on water samples for volatiles analysis.

2.5.1.3 The Contractor shall submit in writing all email correspondences or telephone conversations with SMO or the Region.

2.5.2 Traffic Report/Chain Of Custody Records (TR/COC)

The Contractor shall include a copy of the TR/COCs submitted in Section 2.4 for all of the samples in the SDG. The TR/COCs shall be arranged in increasing EPA Sample Number order, considering both letters and numbers. Copies of the SDG Cover Sheet are to be included with the copies of the TR/COCs. (See Section 2.4 for more detail on reporting requirements for TR/COCs.) In the case of multi-sample TR/COCs, the Contractor shall make the appropriate number of photocopies of the TR/COC so that a copy is submitted with each applicable data package. In addition, in any instance where samples from more than one multi-sample TR/COC are in the same data package, the Contractor shall submit a copy of the SDG Cover Sheet with copies of the TR/COCs.

2.5.3 Volatiles Data

2.5.3.1 Volatiles Quality Control (QC) Summary

2.5.3.1.1 Deuterated Monitoring Compound (DMC) Recovery (Form II VOA-1, VOA-2, VOA-3, VOA-4, VOA-SIM1, VOA-SIM2)

2.5.3.1.2 Matrix Spike/Matrix Spike Duplicate Recovery (Form III VOA-1, VOA-2): This data shall be provided upon USEPA Region's request for analysis of MS/MSDs.

2.5.3.1.3 Method Blank Summary (Form IV VOA, VOA-SIM): If more than a single form is necessary, forms shall be arranged in chronological order by date of analysis of the blank, by instrument.

2.5.3.1.4 Gas Chromatograph/Mass Spectrometer (GC/MS) Instrument Performance Check (Form V VOA): If more than a single form is necessary, forms shall be arranged in chronological order, by instrument.

NOTE: This form is not required for the optional analysis when submitting data using the SIM technique.

2.5.3.1.5 Internal Standard Area and RT Summary (Form VIII VOA, VOA-SIM): If more than a single form is necessary, forms shall be arranged in chronological order, by instrument.

2.5.3.2 Volatiles Sample Data

Sample data shall be arranged with the Volatile Organics Analysis Data Sheet (Form I VOA-1, VOA-2, including Form I VOA-TIC), followed by the raw data for volatile samples. The sample data shall be placed in order of increasing EPA Sample Number, considering both letters and numbers. Volatile sample data for SIM analysis must be arranged together with the rest of the SIM Volatiles data at the end of the subsection.

2.5.3.2.1 Target Compound Results, Volatile Organics Analysis Data Sheet (Form I VOA-1, VOA-2). Tabulated results (identification and quantitation) of the specified target compounds (Exhibit C - Volatiles) shall be included. The validation and release of these results are authorized by a specific, signed statement in the SDG Narrative (see Section 2.5.1). In the event that the Laboratory Manager cannot verify all data reported for each sample, the Laboratory Manager shall provide a detailed description of the problems associated with the sample in the SDG Narrative.

2.5.3.2.2 Tentatively Identified Compounds (TICs) (Form I VOA-TIC). Form I VOA-TIC is the tabulated list of the highest probable match for up to 30 organic compounds that are not target compounds, DMCs, internal standard compounds, or alkanes, and are not listed in Exhibit C - Volatiles and Semivolatiles. An alkane is defined as any hydrocarbon with the generic formula C_nH_{2n+2} (straight-chain or branched) or C_nH_{2n} (cyclic) that contains only C-H and C-C single bonds. The tabulated list includes the Chemical Abstracts Service (CAS) Number (if applicable), tentative identification, and estimated concentration. This form shall be included even if no compounds are found.

NOTE: This form is not required when submitting data for the optional analysis using the SIM technique.

2.5.3.2.3 Reconstructed Total Ion Chromatograms (for each sample including dilutions and reanalyses). Reconstructed ion chromatograms shall be normalized to the largest nonsolvent component and shall contain the following header information:

- EPA Sample Number;
- Date and time of analysis;
- GC/MS instrument identifier;
- Laboratory File Identifier; and
- Analyst ID.

NOTE: Each Selected Ion Current Profile (SICP) for samples taken through the optional analysis using the SIM technique shall be labeled as in this section.

2.5.3.2.3.1 Internal standards and DMCs shall be labeled with the names of compounds, either directly out from the peak or on a printout of Retention Times (RTs) if RTs are printed over the peak. Labeling of other compounds is not required and should not detract from the legibility of the required labels.

2.5.3.2.3.2 If automated data system procedures are used for preliminary identification and/or quantitation of the target compounds, the complete data system report shall be included in all Sample Data Packages, in addition to the reconstructed ion chromatogram. The complete data system report shall include all of the information listed below.

- EPA Sample Number;
- Date and time of analysis;
- RT or scan number of identified target compounds;
- Ion used for quantitation with measured area;
- Copy of area table from data system;
- On column concentration/amount, including units;
- GC/MS instrument identifier;
- Laboratory File Identifier; and
- Analyst ID.

2.5.3.2.3.3 In all instances where the data system report has been edited, or where manual integration or manual quantitation has been performed, the GC/MS Operator shall identify such edits or manual procedures by initialing and dating the changes made to the report, and shall include the integration scan range. The GC/MS Operator shall also mark each integrated area with the letter "m" on the quantitation

report. In addition, a hardcopy printout of the Extracted Ion Current Profile (EICP) of the quantitation ion displaying the manual integration shall be included in the raw data. This applies to all compounds listed in Exhibit C - Volatiles, internal standards, and DMCs.

2.5.3.2.4 Other Required Information. For each sample, by each compound identified, the following items shall be included in the data package:

- Copies of raw spectra and copies of background-subtracted mass spectra of target compounds listed in Exhibit C - Volatiles that are identified in the sample and corresponding background-subtracted target compound standard mass spectra. This includes target compounds that are identified during the optional analysis using the SIM technique. Spectra shall be labeled with EPA Sample Number, Laboratory File Identifier, date and time of analysis, and GC/MS instrument identifier. Compound names shall be clearly marked on all spectra; and

- Copies of mass spectra of organic compounds not listed in Exhibit C with associated best-match spectra (maximum of three best matches). Spectra shall be labeled with EPA Sample Number, Laboratory File Identifier, date and time of analysis, and GC/MS instrument identifier. Compound names shall be clearly marked on all spectra.

2.5.3.3 Volatiles Standards Data

2.5.3.3.1 Initial Calibration Data (Form VI VOA-1, VOA-2, VOA-3, VOA-SIM) shall be included in order by instrument, if more than one instrument is used.

- Volatile standard(s) reconstructed ion chromatograms and quantitation reports for the initial (five-point) calibration, labeled as in Section 2.5.3.2.3. Spectra are not required.

- All initial calibration data that pertain to samples in the data package shall be included, regardless of when it was performed and for which Case. When more than one initial calibration is performed, the data shall be in chronological order, by instrument.

- Labels for standards shall reflect the concentrations of the non-ketone analytes in µg/L. (If the non-ketone analytes have a concentration of 5.0 µg/L then the reported label shall be RRF5.0.

  NOTE: For low-level soil samples, the concentration of the low standard is 2.5 µg/L. Since 10 mL purge volumes are required for low-level soil standards, the reported label shall be RRF2.5.

- EICPs displaying each manual integration.

2.5.3.3.2 Continuing Calibration Verification Data (Form VII VOA-1, VOA-2, VOA-3, VOA-SIM) shall be included in order by instrument, if more than one instrument is used.

- Volatile standard(s) reconstructed ion chromatograms and quantitation reports for all continuing (12-hour) calibration verifications, labeled as in Section 2.5.3.2.3. Spectra are not required.

- When more than one Continuing Calibration Verification (CCV) is performed, forms shall be in chronological order, by instrument.

- EICPs displaying each manual integration.

2.5.3.3.3 In all instances where the data system report has been edited, or where manual integration or quantitation has been performed, the GC/MS Operator shall identify such edits or manual procedures by initialing and dating the changes made to the report, and shall include the integration scan range. The GC/MS Operator shall also mark each integrated area with the letter "m" on the quantitation report. In addition, a hardcopy printout of the EICP of the quantitation ion displaying the manual integration shall be included in the raw data. This applies to all compounds listed in Exhibit C - Volatiles, internal standards, and DMCs.

2.5.3.4 Volatiles Raw QC Data

2.5.3.4.1 4-Bromofluorobenzene data shall be arranged in chronological order by instrument for each 12-hour period, for each GC/MS system utilized.

- Bar graph spectrum, labeled as in Section 2.5.3.2.3.

- Mass listing, labeled as in Section 2.5.3.2.3.

- Reconstructed total ion chromatogram, labeled as in Section 2.5.3.2.3.

2.5.3.4.2 Blank data shall be arranged by type of blank (method, storage, instrument) and shall be in chronological order, by instrument.

NOTE: This order is different from that used for samples.

- Tabulated results (Form I VOA-1, VOA-2, VOA-SIM).

- Tentatively Identified Compounds (Form I VOA-TIC) even if none are found.

- Reconstructed ion chromatogram(s) and quantitation report(s), labeled as in Section 2.5.3.2.3.

- Target compound spectra with laboratory-generated standard, labeled as in Section 2.5.3.2.4. Data systems that are incapable of dual display shall provide spectra in the following order:

  -- Raw target compound spectra.

  -- Enhanced or background-subtracted spectra.

  -- Laboratory-generated standard spectra.

- GC/MS library search spectra for TICs, labeled as in Section 2.5.3.2.4.

- Quantitation/calculation of TIC concentrations.

2.5.3.4.3 Volatiles Matrix Spike Data

- Tabulated results (Form I VOA-1, VOA-2) of target compounds. Form I VOA-TIC is not required.

- Reconstructed ion chromatogram(s) and quantitation report(s), labeled as in Section 2.5.3.2.3. Spectra are not required.

2.5.3.4.4 Volatiles Matrix Spike Duplicate Data

- Tabulated results (Form I VOA-1, VOA-2) of target compounds. Form I VOA-TIC is not required.

- Reconstructed ion chromatogram(s) and quantitation report(s), labeled as in Section 2.5.3.2.3. Spectra are not required.

2.5.4 Semivolatiles Data

2.5.4.1 Semivolatiles QC Summary

2.5.4.1.1 Deuterated Monitoring Compound Recovery (Form II SV-1, SV-2, SV-3, SV-4, SV-SIM)

2.5.4.1.2 Matrix Spike/Matrix Spike Duplicate Recovery (Form III SV-1, SV-2, SV-SIM): This data shall be provided upon the USEPA Region's request for analysis of MS/MSDs.

2.5.4.1.3 Method Blank Summary (Form IV SV, SV-SIM): If more than a single form is necessary, forms shall be arranged in chronological order by date of analysis of the blank, by instrument.

2.5.4.1.4 GC/MS Instrument Performance Check (Form V SV): If more than a single form is necessary, forms shall be arranged in chronological order, by instrument.

NOTE: This form is not required when submitting data for the analysis of Polynuclear Aromatic Hydrocarbons (PAHs)/pentachlorophenol using the SIM technique.

2.5.4.1.5 Internal Standard Area and RT Summary (Form VIII SV-1, SV-2, SV-SIM1, SV-SIM2): If more than a single form is necessary, forms shall be arranged in chronological order, by instrument.

2.5.4.2 Semivolatiles Sample Data

Sample data shall be arranged in packets with the Semivolatiles Organics Analysis Data Sheet (Form I SV-1, SV-2, including Form I SV-TIC), or Form I SV-SIM, if optional analysis of PAHs and pentachlorophenol is requested, followed by the raw data for semivolatiles samples. These sample packets shall be placed in order of increasing EPA Sample Number, considering both letters and numbers.

2.5.4.2.1 Target Compound Results, Semivolatiles Organics Analysis Data Sheet (Form I SV-1, SV-2). Tabulated results (identification and quantitation) of the specified target compounds (Exhibit C - Semivolatiles) shall be included. The validation and release of these results are authorized by a specific, signed statement in the SDG Narrative (Section 2.5.1). In the event that the Laboratory Manager cannot verify all data reported for each sample, the Laboratory Manager shall provide a detailed description of the problems associated with the sample in the SDG Narrative.

2.5.4.2.2 Semivolatile Tentatively Identified Compounds (Form I SV-TIC). Form I SV-TIC is the tabulated list of the highest probable match for up to 30 organic compounds that are not DMCs, internal standard compounds, or alkanes, and are not target compounds listed in Exhibit C - Volatiles and Semivolatiles. An alkane is defined as any hydrocarbon with the generic formula C_nH_{2n+2} that contains only C-H and C-C single bonds. The tabulated list includes the CAS Number (if applicable), tentative identification, and estimated concentration. This form shall be included even if no compounds are found.

NOTE: This form is not required when submitting data for the optional analysis of PAHs/pentachlorophenol using the SIM technique.

2.5.4.2.3 PAHs/Pentachlorophenol Analysis Data Sheet (Form I SV-SIM). This data form shall be submitted upon the USEPA Region's request for optional analysis of PAHs/pentachlorophenol using the SIM technique. The specific target PAHs/pentachlorophenol listed in Exhibit C - Semivolatiles shall be included. The validation and release of these results are authorized by a specific signed statement in the SDG Narrative (Section 2.5.1). In the event that the Laboratory Manager cannot verify all data reported for each sample, the Laboratory Manager shall provide a detailed description of the problems associated with the sample in the SDG Narrative.

2.5.4.2.4 Reconstructed Total Ion Chromatograms (for each sample, including dilutions and reanalyses). Reconstructed ion chromatograms shall be normalized to the largest nonsolvent component and shall contain the following header information:

- EPA Sample Number;
- Volume Injected (µL);
- Date and time of analysis;
- GC/MS instrument identifier;
- Laboratory File Identifier; and
- Analyst ID.

NOTE: Each SICP for samples taken through the optional analysis of PAHs/pentachlorophenol using the SIM technique shall be labeled as in Section 2.5.4.2.4.

2.5.4.2.4.1 Internal standard compounds and DMCs shall be labeled on reconstructed ion chromatography or SICPs with the names of

compounds, either directly out from the peak or on a printout of RTs if RTs are printed over the peak.

2.5.4.2.4.2 If automated data system procedures are used for preliminary identification and/or quantitation of the target compounds, the complete data system report shall be included in all Sample Data Packages, in addition to the reconstructed ion chromatogram or SICP for optional PAHs/pentachlorophenol analysis. The complete data system report shall include all of the information listed below. For laboratories that do not use automated data system procedures, a laboratory "raw data sheet" containing the following information shall be included in the Sample Data Package, in addition to the chromatogram:

- EPA Sample Number;
- Date and time of analysis;
- RT or scan number of identified target compounds;
- Ion used for quantitation with measured area;
- Copy of area table from data system;
- On column concentration/amount, including units;
- GC/MS instrument identifier;
- Laboratory File Identifier; and
- Analyst ID.

2.5.4.2.4.3 In all instances where the data system report has been edited, or where manual integration or quantitation has been performed, the GC/MS Operator shall identify such edits or manual procedures by initialing and dating the changes made to the report, and shall include the integration scan range. The GC/MS Operator shall also mark each integrated area with the letter "m" on the quantitation report. In addition, a hardcopy printout of the EICP of the quantitation ion displaying the manual integration shall be included in the raw data. This applies to all compounds listed in Exhibit C - Semivolatiles, internal standards, and DMCs.

2.5.4.2.5 Other Required Information. For each sample, by each compound identified, the following items shall be included in the data package.

- Copies of raw spectra and copies of background-subtracted mass spectra of target compounds listed in Exhibit C - Semivolatiles that are identified in the sample and corresponding background-subtracted target compound standard mass spectra. This includes PAH/pentachlorophenol target compounds that are identified during the optional analysis using the SIM technique. Spectra shall be labeled with EPA Sample Number, Laboratory File Identifier, date and time of analysis, and GC/MS instrument identifier. Compound names shall be clearly marked on all spectra.

- Copies of mass spectra of non-DMCs/non-internal standard organic compounds not listed in Exhibit C - Semivolatiles with associated best-match spectra (maximum of three best matches). This includes the mass spectra for tentatively identified alkanes. Spectra shall be labeled with EPA Sample Number, Laboratory File Identifier, date and time of analysis, and GC/MS instrument identifier. Compound names shall be clearly marked on all spectra.

2.5.4.3 Semivolatiles Standards Data

2.5.4.3.1 Initial Calibration Data (Form VI SV-1, SV-2, SV-3) or Form VI SV-SIM (when optional analysis of PAHs/pentachlorophenol is performed) shall be included in order by instrument, if more than one instrument is used.

- Semivolatile standard(s) reconstructed ion chromatograms and quantitation reports for the initial (five-point) calibration, labeled as in Section 2.5.4.2.4. Spectra are not required.

- When optional analysis of PAHs/pentachlorophenol is requested, then SICPs and quantitation reports for the initial calibration standards (five-point), labeled as in Section 2.5.4.2.4, shall be submitted. Spectra are not required.

- All initial calibration data that pertain to samples in the data package shall be included, regardless of when it was performed and for which Case. When more than one initial calibration is performed, the data shall be in chronological order, by instrument.

- Labels for standards shall reflect the concentrations of the majority of the analytes in ng/µL. (If the majority of the analytes have a concentration of 5.0 ng/µL then the reported label shall be RRF5.0.

- EICPs displaying each manual integration.

2.5.4.3.2 Continuing Calibration Verification Data (Form VII SV-1, SV-2, SV-3) or Form VII SV-SIM (when optional analysis of PAHs/pentachlorophenol is performed) shall be included in order by instrument, if more than one instrument is used.

- Semivolatile standard(s) reconstructed ion chromatograms and quantitation reports for all opening and closing CCVs, labeled as in Section 2.5.4.2.4. Spectra are not required.

- When optional analysis of PAHs/pentachlorophenol is requested, then SICPs and quantitation reports for all opening and closing CCVs, labeled as in Section 2.5.4.2.4. Spectra are not required.

- When more than one CCV is performed, forms shall be in chronological order, by instrument.

- EICPs displaying each manual integration.

2.5.4.3.3 In all instances where the data system report has been edited, or where manual integration or quantitation has been performed,

the GC/MS Operator shall identify such edits or manual procedures by initialing and dating the changes made to the report, and shall include the integration scan range. The GC/MS Operator shall also mark each integrated area with the letter "m" on the quantitation report. In addition, a hardcopy printout of the EICP of the quantitation ion displaying the manual integration shall be included in the raw data. This applies to all compounds listed in Exhibit C - Semivolatiles, internal standards, and DMCs.

2.5.4.4 Semivolatiles Raw Quality Control (QC) Data

2.5.4.4.1 Decafluorotriphenylphosphine (DFTPP) data shall be arranged in chronological order by instrument for each 12-hour period, for each GC/MS system utilized.

- Bar graph spectrum, labeled as in Section 2.5.4.2.4.
- Mass listing, labeled as in Section 2.5.4.2.4.
- Reconstructed total ion chromatogram, labeled as in Section 2.5.4.2.4.

2.5.4.4.2 Blank data shall be included in chronological order by extraction date.

NOTE: This order is different from that used for samples.

- Tabulated results (Form I SV-1, SV-2, SV-SIM).
- Tentatively Identified Compounds (Form I SV-TIC), even if none are found.
- Reconstructed ion chromatogram(s) and quantitation report(s), labeled as in Section 2.5.4.2.4.
- Target compound spectra with laboratory-generated standard, labeled as in Section 2.5.4.2.5. Data systems which are incapable of dual display shall provide spectra in the following order:
  - -- Raw target compound spectra.
  - -- Enhanced or background-subtracted spectra.
  - -- Laboratory-generated standard spectra.
- GC/MS library search spectra for TICs, labeled as in Section 2.5.4.2.4.
- Quantitation/calculation of TIC concentrations.

2.5.4.4.3 Semivolatiles Matrix Spike Data

- Tabulated results (Form I SV-1, SV-2) of target compounds. Form I SV-TIC is not required.
- Reconstructed ion chromatogram(s) and quantitation report(s), labeled as in Section 2.5.4.2.4. Spectra are not required.

2.5.4.4.4 Semivolatiles Matrix Spike Duplicate Data

- Tabulated results (Form I SV-1, SV-2) of target compounds. Form I SV-TIC is not required.
- Reconstructed ion chromatogram(s) and quantitation report(s), labeled as in Section 2.5.4.2.4. Spectra are not required.

2.5.4.4.5 Semivolatile Gel Permeation Chromatograph (GPC) Data

The two most recent Ultra Violet (UV) traces of the GPC calibration solution, and the reconstructed ion chromatogram and data system reports for the GPC blank shall be arranged in chronological order by GPC for the GPC calibration.

- UV traces labeled with the GPC column identifier, date of calibration, and compound names. Compound names shall be placed directly out from the peak, or on the printout of RTs when the RTs are printed directly over the peak.
- Reconstructed ion chromatogram and data system report(s) labeled as specified in Section 2.5.4.2.4 for GPC blank analysis.
- Reconstructed ion chromatogram and data system report(s) for the mid-point initial calibration standard associated with the GPC blank labeled, as specified in Section 2.5.4.2.4.

2.5.5 Pesticides Data

2.5.5.1 Pesticides QC Summary

2.5.5.1.1 Surrogate Recovery (Form II PEST-1, PEST-2)

2.5.5.1.2 Matrix Spike/Matrix Spike Duplicate Recovery (Form III PEST-1, PEST-2): MS/MSD is required for the Pesticides fraction, unless otherwise specified by the USEPA Region. See Exhibit D - Analytical Methods for Pesticides for frequency.

2.5.5.1.3 Laboratory Control Sample Recovery (Form III PEST-3, PEST-4).

2.5.5.1.4 Method Blank Summary (Form IV PEST): If more than a single form is necessary, forms shall be arranged in chronological order by date of analysis of the blank.

2.5.5.2 Pesticides Sample Data

Sample data shall be arranged in packets with the Pesticides Organics Analysis Data Sheet (Form I PEST), followed by the raw data for pesticide samples. These sample packets should then be placed in order of increasing EPA Sample Number, considering both letters and numbers.

2.5.5.2.1 Target Compound Results, Pesticides Organics Analysis Data Sheet (Form I PEST). Tabulated results (identification and quantitation) of the specified target compounds (Exhibit C - Pesticides) shall be included. The validation and release of these results is authorized by a specific, signed statement in the SDG Narrative (Section 2.5.1). In the event that the

Laboratory Manager cannot verify all data reported for each sample, the Laboratory Manager shall provide a detailed description of the problems associated with the sample in the SDG Narrative.

2.5.5.2.2 Copies of Pesticide Chromatograms. Positively identified compounds shall be labeled with the names of compounds, either directly out from the peak on the chromatogram, or on a printout of RTs on the data system printout if RTs are printed over the peak on the chromatogram. All chromatograms shall meet the acceptance criteria in Exhibit D - Analytical Methods for Pesticides, and shall be labeled with the following information:

- EPA Sample Number;
- Volume injected (µL);
- Date and time of injection;
- On column concentration/amount including units;
- GC column identifier (by stationary phase and internal diameter);
- GC instrument identifier; and
- Scaling factor (label the x and y axes using a numerical scale).

2.5.5.2.3 Copies of pesticide chromatograms from the second GC column shall be included and labeled as in Section 2.5.5.2.2.

2.5.5.2.4 Data System Printout. A printout of RT, corresponding peak height or peak area, and the on column amount shall accompany each chromatogram. The printout shall be labeled with the EPA Sample Number. In all instances where the data system report has been edited, or where manual integration or quantitation has been performed, the Gas Chromatograph/Electron Capture Detector (GC/ECD) Operator shall identify such edits or manual procedures by initialing and dating the changes made to the report, and shall include the integration time range. The GC/ECD Operator shall also mark each integrated area with the letter "m" on the quantitation report.

2.5.5.2.5 All manual worksheets shall be included in the Sample Data Package.

2.5.5.2.6 Other Required Information. If pesticides are confirmed by GC/MS, the Contractor shall submit copies of reconstructed ion chromatograms, raw spectra, and background-subtracted mass spectra of target compounds listed in Exhibit C - Pesticides that are identified in the sample and corresponding background-subtracted target compound standard mass spectra. Compound names shall be clearly marked on all spectra. For Toxaphene confirmed by GC/MS, the Contractor shall submit mass spectra of three major peaks from samples and standards.

2.5.5.3 Pesticides Standards Data

2.5.5.3.1 Initial Calibration of Single Component Analytes (Form VI PEST-1, PEST-2): For all GC columns and instruments, in chronological order by GC column and instrument.

2.5.5.3.2 Toxaphene Initial Calibration (Form VI PEST-3, PEST-4): For all GC columns and instruments, in chronological order by GC column and instrument.

2.5.5.3.3 Analyte Resolution Check Summary (Form VI PEST-5): For all GC columns and instruments, in chronological order by GC column and instrument.

2.5.5.3.4 Performance Evaluation Mixture (PEM)(Form VI PEST-6): For all GC columns and instruments, in chronological order by GC column and instrument.

2.5.5.3.5 Individual Standard Mixture A (Form VI PEST-7): For all GC columns and instruments, in chronological order by GC column and instrument.

2.5.5.3.6 Individual Standard Mixture B (Form VI PEST-8): For all GC columns and instruments, in chronological order by GC column and instrument.

2.5.5.3.7 Individual Standard Mixture C (Form VI PEST-9, PEST-10): For all GC columns and instruments, in chronological order by GC column and instrument.

2.5.5.3.8 Calibration Verification Summary (Form VII PEST-1): For all performance evaluation mixtures and instrument blanks, on all GC columns and instruments, in chronological order by GC column and instrument.

2.5.5.3.9 Calibration Verification Summary (Form VII PEST-2, PEST-3): For all mid-point concentrations of Individual Standard Mixtures A and B or C and instrument blanks used for calibration verification, on all GC columns and instruments, in chronological order by GC column and instrument.

2.5.5.3.10 Analytical Sequence (Form VIII PEST): For all GC columns and instruments, in chronological order by GC column and instrument.

2.5.5.3.11 Florisil Cartridge Check (Form IX PEST-1): For all lots of cartridges used to process samples in the SDG, using Individual Standard Mixture A or C.

2.5.5.3.12 GPC Calibration Verification (Form IX PEST-2): For all GPC columns, in chronological order by calibration verification date.

2.5.5.3.13 Identification Summary for Single Component Analytes (Form X PEST): For all samples with positively identified single component analytes, in order by increasing EPA Sample Number.

2.5.5.3.14 Chromatograms and data system printouts shall be included for all standards, including the following:

- Resolution check mixture.

- Performance Evaluation (PE) mixtures, all.
- Individual Standard Mixture A and B, both at five concentrations, for each initial calibration.

Or

- Individual Standard Mixture C, at five concentrations, each initial calibration
- Toxaphene, at five concentrations, each initial calibration.
- All mid-point concentrations of Individual Standard Mixtures A and B or C used for calibration verification.
- All Toxaphene standards analyzed for confirmation.

2.5.5.3.15 A printout of RT and corresponding peak height or peak area shall accompany each chromatogram. The printout shall be labeled with the EPA Sample Number. In addition, all chromatograms shall meet the acceptance criteria in Exhibit D - Analytical Methods for Pesticides, and shall be labeled with the following:

- EPA Sample Number for the standard (e.g., INDA1OK, INDA2OK, etc.). See Section 3 for details;
- Label all standard peaks for all individual compounds either directly out from the peak on the chromatogram or on the printout of RTs on the data system printout, if RTs are printed over the peak on the chromatogram;
- Total nanograms injected for each standard. When total nanograms injected appear on the printout, it is not necessary to include them on the chromatogram;
- Date and time of injection;
- GC column identifier (by stationary phase and internal diameter);
- GC instrument identifier; and
- Scaling factor (label the x and y axes using a numerical scale).

NOTE: In all instances where the data system report has been edited, or where manual integration or quantitation has been performed, the GC/ECD Operator shall identify such edits or manual procedures by initialing and dating the changes made to the report, and shall include the integration time range. The GC/ECD Operator shall also mark each integrated area with the letter "m" on the quantitation report.

2.5.5.4 Pesticides Raw Quality Control (QC) Data

2.5.5.4.1 Blank data shall be arranged by type of blank (method, instrument, sulfur cleanup) and shall be in chronological order by instrument.

NOTE: This order is different from that used for samples.

- Tabulated results (Form I PEST).
- Chromatogram(s) and data system printout(s) for each GC column and instrument used for analysis, labeled as in Sections 2.5.5.2.2 and 2.5.5.2.4.

2.5.5.4.2 Pesticides LCS Data

- Tabulated results (Form I PEST) of target compounds for both GC columns.
- Chromatograms and data systems printouts for both GC columns, labeled as in Sections 2.5.5.2.2 and 2.5.5.2.4.

2.5.5.4.3 Pesticides Matrix Spike Data

- Tabulated results (Form I PEST) of target compounds for both GC columns.
- Chromatograms and data system printouts for both GC columns, labeled as in Sections 2.5.5.2.2 and 2.5.5.2.4.

2.5.5.4.4 Pesticides Matrix Spike Duplicate Data

- Tabulated results (Form I PEST) of target compounds for both GC columns.
- Chromatograms and data system printouts for both GC columns, labeled as in Sections 2.5.5.2.2 and 2.5.5.2.4.

2.5.5.5 Raw Gel Permeation Chromatograph (GPC) Data

2.5.5.5.1 GPC Calibration. The UV traces for the GPC calibration solution, chromatograms, and the data system reports for the GPC blank shall be arranged in chronological order for the GPC calibration.

- UV traces labeled with the GPC column identifier, date of calibration, and compound names. Compound names shall be placed directly out from the peak, or on the printout of RTs when the RTs are printed directly over the peak.
- Chromatogram and data system report(s) labeled as specified in Sections 2.5.5.2.2 and 2.5.5.2.4 for GPC blank analyses.
- Chromatogram and data system report(s) for the mid-point initial calibration standard associated with the GPC blank labeled as specified in Section 2.5.5.3.15 (i.e., Individual Standard Mixture A, Individual Standard Mixture B, Individual Standard Mixture C, and the Toxaphene standards).

2.5.5.5.2 GPC Calibration Verification. The chromatogram and the data system report(s) shall be arranged in chronological order for the GPC calibration check.

- Chromatograms and data system printouts labeled as specified in Sections 2.5.5.2.2 and 2.5.5.2.4 for the GPC calibration verification solution analyses.

- Chromatogram and data system report(s) for the mid-point initial calibration standard associated with the GPC calibration verification solution labeled as specified in Section 2.5.5.3.15 (i.e., Individual Standard Mixtures A and B or C from the initial calibration sequence).

2.5.5.6 Raw Florisil Data

The chromatogram and data system report(s) shall be arranged in chronological order by Florisil cartridge performance check analyses.

- Chromatograms and data system reports, labeled as specified in Sections 2.5.5.2.2 and 2.5.5.2.4 for the Florisil cartridge performance check analyses.

- Chromatograms and data system reports for the mid-point initial calibration standard associated with the Florisil cartridge performance check analysis, labeled as specified in Section 2.5.5.3.15 (i.e., Individual Standard Mixture A, Individual Standard Mixture B, Individual Standard Mixture C, and the 2,4,5-Trichlorophenol solution).

2.5.6 Aroclors Data

2.5.6.1 Aroclors QC Summary

2.5.6.1.1 Surrogate Recovery (Form II ARO-1, ARO-2).

2.5.6.1.2 Matrix Spike/Matrix Spike Duplicate Recovery (Form III ARO-1, ARO-2): MS/MSD is required for the Aroclors fraction, unless otherwise specified by the USEPA Region. See Exhibit D - Analytical Methods for Aroclors, for frequency.

2.5.6.1.3 LCS Recovery (Form III ARO-3, ARO-4).

2.5.6.1.4 Method Blank Summary (Form IV ARO): If more than a single form is necessary, forms shall be arranged in chronological order by date of analysis of the blank.

2.5.6.2 Aroclors Sample Data

Sample data shall be arranged in packets with the Aroclors Organics Analysis Data Sheet (Form I ARO), followed by the raw data for Aroclor samples. These sample packets should then be placed in order of increasing EPA Sample Number, considering both letters and numbers.

NOTE: For a Sample analysis in which "S" flags are reported a Form I ARO is required for the original analysis (EPA Sample Number = xxxxx) in which "S" flags are reported, and a Form I ARO is required for the billable reanalysis (EPA Sample Number = XXXXXRE) of the sample performed after a valid 5-point calibration of the detected Aroclor. An additional Form I ARO is required for any necessary dilutions (EPA Sample Number = XXXXXDL).

2.5.6.2.1 Target Compound Results, Aroclors Organics Analysis Data Sheet (Form I ARO). Tabulated results (identification and quantitation) of the specified target compounds (Exhibit C - Aroclors) shall be included. The validation and release of these results is authorized by a specific, signed statement in the SDG Narrative (Section 2.5.1). In the event that the Laboratory Manager cannot verify all data reported for each sample, the Laboratory Manager shall provide a detailed description of the problems associated with the sample in the SDG Narrative.

2.5.6.2.2 Copies of Aroclor Chromatograms. Positively identified compounds shall be labeled with the names of compounds, either directly out from the peak on the chromatogram, or on a printout of RTs on the data system printout if RTs are printed over the peak on the chromatogram. All chromatograms shall meet the acceptance criteria in Exhibit D - Analytical Methods for Aroclors, and shall be labeled with the following information:

- EPA Sample Number;
- Volume injected (µL);
- Date and time of injection;
- On column concentration/amount including units;
- GC column identifier (by stationary phase and internal diameter);
- GC instrument identifier; and
- Scaling factor (label the x and y axes using a numerical scale).

2.5.6.2.3 Copies of Aroclor chromatograms from the second GC column shall be included and labeled as in Section 2.5.6.2.2.

2.5.6.2.4 Data System Printout

A printout of RT, corresponding peak height or peak area, and the on column amount shall accompany each chromatogram. The printout shall be labeled with the EPA Sample Number and standard concentration level. In all instances where the data system report has been edited, or where manual integration or quantitation has been performed, the GC/ECD Operator must identify such edits or manual procedures by initialing and dating the changes made to the report, and shall include the integration time range. The GC/MS Operator shall also mark each integrated area with the letter "m" in the quantitation report.

2.5.6.2.5 All manual worksheets shall be included in the Sample Data Package.

2.5.6.2.6 Other Required Information. If Aroclors are confirmed by GC/MS, the Contractor shall submit copies of reconstructed ion chromatograms. Raw spectra and background-subtracted mass spectra must be submitted for at least three major peaks of Aroclor target compounds (see Exhibit C - Aroclors) that are

identified in the sample and corresponding standard mass spectra. Compound names shall be clearly marked on all spectra.

2.5.6.3 Aroclors Standards Data

2.5.6.3.1 Initial Calibration of Aroclors (Form VI ARO-1, ARO-2, and ARO-3): For all GC columns, all instruments, in chronological order by GC column and instrument.

2.5.6.3.2 Calibration Verification Summary (Form VII ARO): For all calibration verification standards on all GC columns and instruments, in chronological order by GC column and instrument.

2.5.6.3.3 Analytical Sequence (Form VIII ARO): For all GC columns and instruments, in chronological order by GC column and instrument.

2.5.6.3.4 Identification Summary for Multicomponent Analytes (Form X ARO): For all samples with positively identified Aroclors, in order by increasing EPA Sample Number.

2.5.6.3.5 Chromatograms and data system printouts shall be included for all standards, including the following:

- All Aroclor standards used for initial calibration on each GC column and instrument.
- All Aroclor standards used for calibration verification on each GC column and instrument.
- All Aroclor standards analyzed for confirmation.

2.5.6.3.6 A printout of RT and corresponding peak height or peak area shall accompany each chromatogram. The printout shall be labeled with the EPA Sample Number. In addition, all chromatograms shall meet the acceptance criteria in Exhibit D - Analytical Methods for Aroclors, and shall be labeled with the following:

- EPA Sample Number for the standard (e.g., AR10161OK, AR12601OK). See Section 3 for details.
- Label all standard peaks with the compound name, either directly out from the peak on the chromatogram, or on the printout of RTs on the data system printout, if RTs are printed over the peak on the chromatogram.
- Total nanograms injected for each standard. When total nanograms injected appear on the printout, it is not necessary to include them on the chromatogram.
- Date and time of injection.
- GC column identifier (by stationary phase and internal diameter).

- GC instrument identifier.

- Scaling factor (label the x and y axes using a numerical scale).

NOTE: In all instances where the data system report has been edited, or where manual integration or quantitation has been performed, the GC/ECD Operator shall identify such edits or manual procedures by initialing and dating the changes made to the report, and shall include the integration time range. The GC/MS Operator shall also mark each integrated area with the letter "m" on the quantitation report.

2.5.6.4 Aroclors Raw Quality Control (QC) Data

2.5.6.4.1 Blank data shall be arranged in chronological order by extraction date.

NOTE: This order is different from that used for samples.

- Tabulated results (Form I ARO).

- Chromatogram(s) and data system printout(s) for each GC column and instrument used for analysis, labeled as in Sections 2.5.6.2.2 and 2.5.6.2.4.

2.5.6.4.2 Aroclors Laboratory Control Sample (LCS) Data

- Tabulated results (Form I ARO) of target compounds for both GC columns.

- Chromatograms and data system printouts for both GC columns, labeled as in Sections 2.5.6.2.2 and 2.5.6.2.4.

2.5.6.4.3 Aroclors Matrix Spike Data

- Tabulated results (Form I ARO) of target compounds for both GC columns.

- Chromatogram(s) and data system printout(s) for both GC columns, labeled as in Sections 2.5.6.2.2 and 2.5.6.2.4.

2.5.6.4.4 Aroclors Matrix Spike Duplicate Data

- Tabulated results (Form I ARO) of target compounds for both GC columns.

- Chromatogram(s) and data system printout(s) for both GC columns, labeled as in Sections 2.5.6.2.2 and 2.5.6.2.4.

2.5.6.5 Raw Gel Permeation Chromatograph (GPC) Data

2.5.6.5.1 GPC Calibration. The UV traces for the GPC calibration solution, chromatograms, and the data system reports for the GPC blank shall be arranged in chronological order for the GPC calibration.

- UV traces labeled with the GPC column identifier, date of calibration, and compound names. Compound names shall be placed directly out from the peak, or on the printout of RTs when the RTs are printed directly over the peak.

- Chromatogram and data system report(s) labeled as specified in Sections 2.5.6.2.2 and 2.5.6.2.4 for GPC blank analyses.

- Chromatogram and data system report(s) for the mid-point initial calibration standard associated with the GPC blank labeled as specified in Section 2.5.6.3.6 (i.e., AR1016OK, AR1260OK from the initial calibration).

2.6 Complete SDG File (CSF)

As specified in Section 1, the Contractor shall deliver one CSF (including the original Sample Data Package) to the USEPA Region concurrently with delivery of the Sample Data Package to SMO. Delivery to USEPA's designated recipients (e.g., QATS) is only required upon written request.

2.6.1 The CSF will contain all original documents specified in Sections 3 and 4 and on Form DC-2 (Section 3.20). No photocopies of original documents will be placed in the CSF unless the original data was initially written in a bound notebook, maintained by the Contractor, or the originals were previously submitted to USEPA with another Case/SDG in accordance with the requirements described in Exhibit F. The contents of the CSF shall be numbered according to the specifications described in Section 3.20.

2.6.2 The CSF will consist of the following original documents in addition to the documents in the Sample Data Package.

NOTE: All SDG-related documentation may be used or admitted as evidence in subsequent legal proceedings. Any other SDG-specific documents generated after the CSF is sent to USEPA, as well as copies that are altered in any fashion, are also deliverables to USEPA. Deliver the original to the USEPA Region and a copy to SMO. Delivery to USEPA's designated recipients (e.g., QATS) is only upon written request.

2.6.2.1 Original Sample Data Package

2.6.2.2 A completed and signed Organics CSF Inventory Sheet (Form DC-2).

2.6.2.3 All original shipping documents including, but not limited to, the following documents:

- Airbills (if an airbill is not received, include a hardcopy receipt requested from the shipping company or a printout of the shipping company's electronic tracking information);

- USEPA Sample TR/COCs; and

- Sample tags (if present) sealed in plastic bags.

2.6.2.4 All original receiving documents including, but not limited to, the following documents:

- Form DC-1;
- Other receiving forms or copies of receiving logbooks; and
- SDG Cover Sheet.

2.6.2.5 All original laboratory records, not already submitted in the Sample Data Package, of sample transfer, preparation, and analysis including, but not limited to, the following documents:

- Log book preparation entries documenting the steps and calculations of diluted and working standards and/or receipt of stock standards showing the lot number and date of receipt or date of preparation for all standards and spiking solutions;
- Original preparation and analysis forms or copies of preparation and analysis logbook pages;
- Internal sample and sample extract transfer chain-of-custody records;
- Screening records; and
- All instrument output, including strip charts from screening activities.

2.6.2.6 All other original SDG-specific documents in the possession of the Contractor including, but not limited to, the following documents:

- Telephone contact logs;
- Copies of personal logbook pages;
- All handwritten SDG-specific notes; and
- Any other SDG-specific documents not covered by the above.

2.6.3 If the Contractor does submit SDG-specific documents to USEPA after submission of the CSF, the documents should be identified with unique accountable numbers, a revised Form DC-2 should be submitted, and the unique accountable numbers and locations of the documents in the CSF should be recorded in the "Other Records" section on the revised Form DC-2. Alternatively, the Contractor may number the newly submitted SDG-specific documents to USEPA as a new CSF and submit a new Form DC-2. The revised Form DC-2 or new Form DC-2 should be submitted to the USEPA Region only.

2.7 Electronic Data Deliverable

The Contractor shall provide an electronic data deliverable on analytical data for all samples in the SDG, as specified in Exhibit H, and delivered as specified in the Contract Schedule (Performance/Delivery Schedule).

2.8 Delivery of Hardcopy Data in PDF Format

In addition to all required deliverables identified in the laboratory's contract and the SOM01.1 SOW, the laboratory shall provide a complete copy of the hardcopy deliverable in PDF on a Compact Disc (CD) if requested by the Region.

2.8.1 The PDF file should be organized in accordance to directions provided in Exhibit B, "Reporting Requirements and Order of Data Deliverables" of the SOM01.1 SOW. The PDF file shall be bookmarked as described below for ease of data retrieval and navigation.

2.8.2 Organic data shall be bookmarked using a hierarchal bookmark structure (i.e., an overview or "parent" bookmark, and a subordinate or "child" bookmark nested underneath the "parent" bookmark). The required hierarchal bookmark structure is shown in Table 2.

TABLE 2

Hierarchal Bookmark Structure

Group Bookmark	Parent Bookmark	Child Bookmarks
Sample TR/COCs, TR/COC Cover Sheet, and SDG Narrative		
VOA (SIM and Trace)	QC Summary	Deuterated Monitoring Compound Summary
		Matrix Spike/Matrix Spike Duplicate Summary
		Method Blank
		GC/MS Instrument Performance Check
		Internal Standard Area and RT Summary
	Sample Data	Samples in increasing alphanumeric EPA Sample Number order (with supporting raw data)
	Standards Data	Initial Calibration Data
		CCV Data, including closing CCV
	Raw QC Data	BFB Data
		Blank Data
		Matrix Spike Data
		Matrix Spike Duplicate Data
VOA (Low/Med)	QC Summary	Deuterated Monitoring Compound Summary
		Matrix Spike/Matrix Spike Duplicate Summary
		Method Blank
		GC/MS Instrument Performance Check
		Internal Standard Area and RT Summary
	Sample Data	Samples in increasing alphanumeric EPA Sample Number order (with supporting raw data)
	Standards Data	Initial Calibration Data
		CCV Data, including closing CCV
	Raw QC Data	BFB Data
		Blank Data
		Matrix Spike Data
		Matrix Spike Duplicate Data

TABLE 2

Hierarchal Bookmark Structure (Con't)

SVOA (SIM and Low/Med)	QC Summary	Deuterated Monitoring Compound Summary
		Matrix Spike/Matrix Spike Duplicate Summary
		Method Blank
		GC/MS Instrument Performance Check
		Internal Standard Area and RT Summary
	Sample Data	Samples in increasing alphanumeric EPA Sample Number order (with supporting raw data)
	Standards Data	Initial Calibration Data
		CCV Data, including closing CCV
	Raw QC Data	DFTPP Data
		Blank Data
		Matrix Spike Data
		Matrix Spike Duplicate Data
		Raw GPC Data
PEST	QC Summary	Surrogate Recovery Summary
		Matrix Spike/Matrix Spike Duplicate Summary
		Laboratory Control Sample Summary
		Method Blank Summary
	Sample Data	Samples in increasing alphanumeric EPA Sample Number order (with supporting raw data)
	Standards Data	Initial Calibration/Single Component
		Initial Calibration/Multi Component
		Analyte Resolution Summary
		Performance Evaluation Mixture
		Individual Standard Mixtures A and B, or Mixture C
		Calibration Verification Summary
		Analytical Sequence
		Florisil Cartridge Check
		GPC Calibration
		Identification Summary for Single Component
		Identification Summary of Multi Component
		Chromatograms and Data System Printouts
	Raw QC Data	Blank Data
		Matrix Spike Data
		Matrix Spike Duplicate Data
		Laboratory Control Sample Data
		Raw GPC Data
		Raw Florisil Data

TABLE 2

Hierarchal Bookmark Structure (Con't)

Group Bookmark	Parent Bookmark	Child Bookmarks
ARO	QC Summary	Surrogate Recovery Summary
		Matrix Spike/Matrix Spike Duplicate Summary
		Laboratory Control Sample Summary
		Method Blank Summary
	Sample Data	Samples in increasing alphanumeric EPA Sample Number order (with supporting raw data)
	Standards Data	Initial Calibration Aroclors
		Calibration Verification Summary
		Analytical Sequence
		Identification Summary for Aroclors
		Chromatograms and Data System Printouts
	Raw QC Data	Blank Data
		Matrix Spike Data
		Matrix Spike Duplicate Data
		Laboratory Control Sample Data
		Raw GPC Data
Miscellaneous		DC-1 and DC-2 Forms, logbook information, sample tags, etc.

2.9 Preliminary Results

The Form Is and Form Xs data results shall be submitted for all samples in one SDG of a Case. This includes tabulated target compound results (Form I) for the volatile, semivolatile, pesticide, and Aroclor fractions; TICs (Form I TIC) for the volatile and semivolatile fractions; and Identification Summaries (Form X) for the pesticide and Aroclor fractions. The Contractor shall clearly identify the Preliminary Results by labeling each Form I and Form I TIC as "Preliminary Results" under each form title (e.g., under Volatile Organics Analysis Data Sheet, Volatile Organics Analysis Data Sheet Tentatively Identified Compounds).

2.10 GC/MS and GC/ECD Electronic Deliverables

The Contractor shall adhere to the requirements in Exhibit E.

2.11 Extracts

The Contractor shall preserve sample extracts at 4°C (±2°C) in bottles/vials with polytetrafluoroethylene (PTFE)-lined septa. Extract bottles/vials shall be labeled with EPA Sample Number, Case Number, and SDG Number. The Contractor shall maintain a logbook of stored extracts, listing EPA Sample Numbers and associated Case and SDG numbers. The Contractor shall retain extracts for 365 days following submission of the reconciled, complete Sample Data Package. During that time, the Contractor shall submit extracts and associated logbook pages within 7 days following receipt of a written request from the CLP PO.

3.0 FORMS INSTRUCTIONS

3.1 Introduction

This section includes specific instructions for completing the data reporting forms required under the contract. Each of the forms are specific to a given fraction (volatile, semivolatile, pesticide, or Aroclor) and, in some instances, specific to a given matrix (water or soil/sediment) within each fraction. The Contractor shall submit only those forms pertaining to the fractions analyzed for a given sample(s). For instance, if a sample is scheduled for volatiles analysis only, the Contractor shall provide only forms for the volatile fraction.

3.2 General Information

The Contractor shall report values on the hardcopy forms according to the individual form instructions in this section. For example, results for concentrations of volatile target compounds shall be reported to two significant figures if the value is greater than or equal to 5.0. Values that exceed the maximum length allowed shall be reported to the maximum possible, maintaining the specified decimal place. Unless otherwise specified, all values must be reported to at least two significant figures.

3.2.1 The data reporting forms presented in Section 4 have been designed in conjunction with the computer-readable data format specified in Exhibit H. Information entered on these forms shall **not** exceed the size of the field given on the form, including such laboratory-generated items as "Lab Name" and "Lab Sample ID".

NOTE: The space provided for entries on the hardcopy forms (Section 4) is greater in some instances than the length prescribed for the variable as written to the electronic deliverable (Exhibit H). Greater space is provided on the hardcopy forms for visual clarity.

3.2.2 When submitting data, the Contractor shall reproduce **all** characters that appear on the data reporting forms in Section 4. The format of the forms submitted shall be identical to that shown in the contract. No information may be added, deleted, or moved from its specified position without prior written approval from the USEPA Regional Contract Laboratory Program Project Officer (CLP PO). The names of the various fields and compounds (i.e., "Lab Code", "Chloromethane") shall appear as they do on the forms in the contract, including the options specified in the form [i.e., "Matrix: (soil/sed/water)" shall appear, not just "Matrix"].

3.2.3 If an entry does not fill the entire blank space provided on the form, null characters shall be used to remove the remaining underscores that comprise the blank line. However, the Contractor shall **not** remove the underscores or vertical bars that delineate "boxes" on the forms. The only exception would be those underscores at the bottom of a "box" that are intended as a data entry line. (For instance, on Form 2A, line 30, if data is entered on line 30, it will replace the underscores.)

3.3 Header Information

Six pieces of information are common to the header section of each data reporting form: Laboratory Name (Lab Name); Contract; Laboratory Code (Lab Code); Case Number; Modification Reference Number (Mod. Ref. No.);

and Sample Delivery Group (SDG) Number (SDG No.). Except as noted for Mod. Ref. No., this information shall be entered on every form and shall match on every form.

3.3.1 Laboratory Name. The "Lab Name" shall be the name chosen by the Contractor to identify the laboratory. It shall not exceed 25 characters.

3.3.2 Contract. The "Contract" refers to the number of the USEPA contract under which the analyses were performed.

3.3.3 Laboratory Code. The "Lab Code" is an alphabetical abbreviation of up to six letters, as assigned by USEPA, to identify the laboratory and aid in data processing. This Laboratory Code will be assigned by USEPA at the time a contract is awarded, and shall not be modified by the Contractor, except at the direction of USEPA. If a change of name or ownership occurs at the laboratory, the Laboratory Code will remain the same until the Contractor is directed by USEPA to use another Laboratory Code.

3.3.4 Case Number. The "Case No." is the Sample Management Office (SMO)-assigned Case Number (to five characters) associated with the sample. This number is reported on the Traffic Report/Chain of Custody Record (TR/COC).

3.3.5 Modification Reference Number. The "Mod. Ref. No." is the USEPA-assigned number for analyses performed under the modified analysis clause in Exhibit A, Section 4.2.2.11. If sample analyses are performed under the modified analysis clause, the Contractor shall list both the Case Number and the Modification Reference Number on all forms. If there are no modified analysis requirements, leave the "Mod. Ref. No." field blank.

3.3.6 SDG Number. The "SDG No." field is for the SDG Number. It is the EPA Sample Number of a field sample assigned to the SDG and shall be unique for each SDG within a Case. When several samples are received together in the first SDG shipment, the SDG Number shall be the lowest Sample Number (considering both alpha and numeric designations) in the first group of samples received under the SDG. If fractions of the same field samples are scheduled under different turnaround times, thus creating separate SDGs containing the same Sample Numbers, a different Sample Number shall be utilized in the assignment of the SDG Number for each SDG. If a situation arises where there are an insufficient number of samples for assignment of SDG numbers (i.e., 1 sample with a 7-day turnaround for volatile analyses and a 14-day turnaround for semivolatile, pesticide, and Aroclor analyses), the Contractor shall contact SMO for the assignment of an SDG Number.

3.3.7 Sample Number. The "EPA Sample No." appears either in the header information of the form, or as the left column of a table summarizing data from a number of samples. When the EPA Sample Number is entered in the triple-spaced box in the upper right-hand corner of Form I, Form III, Form IV, Form V, or Form X, it should be entered on the middle line of the three lines that comprise the box.

3.3.7.1 The Contractor shall identify **all** samples, including: dilutions; reanalyses; Laboratory Control Samples (LCSs); requested Matrix Spike and Matrix Spike Duplicates (MS/MSDs); blanks; instrument performance check; and standards with an EPA Sample Number. For field samples, Matrix Spikes, and Matrix Spike Duplicates, the EPA

Sample Number is the unique identifying number given on the TR/COC that accompanied that sample. In order to facilitate data assessment, the Contractor shall use the following sample suffixes:

XXXXX	=	EPA Sample Number
XXXXXMS	=	Matrix Spike (MS) sample
XXXXXMSD	=	Matrix Spike Duplicate (MSD) sample
XXXXXRX	=	Reextracted and reanalyzed sample.
XXXXXRE	=	Reanalyzed (reinjected) sample.
XXXXXDL	=	The suffix DL is appended to the EPA Sample Number to indicate that the analytical results are a result of a dilution of the original analysis (reported as EPA Sample XXXXX). See Exhibit D for dilution requirements.
XXXXXDL2	=	Samples analyzed at a secondary dilution.
XXXXXDL3	=	Samples analyzed at a third dilution.
XXXXXME	=	Soil samples analyzed using the medium-level method when a billable low-level analysis of the same sample is also present.

3.3.7.2 There may be instances when all samples analyzed must be listed on the form, regardless of whether or not they are part of the SDG being reported (e.g., Form VIII PEST). In these instances, use ZZZZZ as the EPA Sample Number for any sample analysis **not** associated with the SDG being reported.

3.3.7.3 For blanks, the Contractor shall use the following identification scheme for the EPA Sample Number:

- Volatile method blanks shall be identified as VBLK##.
- Volatile instrument blanks shall be identified as VIBLK##.
- Volatile storage blanks shall be identified as VHBLK##.
- Semivolatile method blanks shall be identified as SBLK##.
- Pesticide method blanks shall be identified as PBLK##.
- Pesticide sulfur cleanup blanks shall be identified as PSBLK##.
- Pesticide instrument blanks shall be identified as PIBLK##.
- Aroclor method blanks shall be identified as ABLK##.
- Aroclor sulfur cleanup blanks shall be identified as ASBLK##.
- Aroclor instrument blanks shall be identified as AIBLK##.

3.3.7.3.1 The EPA Sample Number shall be unique for each blank within an SDG. Within a fraction, the Contractor shall achieve this by replacing the two-character suffix (##) of the identifier with one or two characters or numbers, or a combination of both.

For example, possible identifiers for volatile blanks would be VBLK1, VBLK2, VBLKA1, VBLKB2, VBLK10, VBLKAB, etc.

3.3.7.3.2 If the method blank is analyzed on multiple instruments, then an additional two-character suffix shall be added to make the blank EPA Sample Number unique.

3.3.7.4 The EPA Sample Number shall be unique for each LCS within the SDG. The LCSs shall be identified as follows:

- Pesticides LCS - PLCS##
- Aroclor LCS - ALCS##

Where:

P or A = Fraction (P for pesticides and A for Aroclors)

LCS = Laboratory Control Sample

= Suffix consisting of characters or numbers or both that makes the EPA Sample Number for the LCS unique in the SDG.

(1) = When reporting results on Form I, a "(1)" is appended onto the EPA Sample Number to indicate that the results are from Gas Chromatograph (GC) column (1), [e.g., PLCS01(1)].

(2) = When reporting results on Form I, a "(2)" is appended onto the EPA Sample Number to indicate that the results are from GC column (2), [e.g., ALCS01(2)].

3.3.7.5 Volatile and semivolatile instrument performance checks shall be identified as BFB## (Volatiles) and DFTPP## (Semivolatiles) where:

BFB = Bromofluorobenzene (instrument performance check compound for Volatiles analysis).

DFTPP = Decafluorotriphenylphosphine (instrument performance check compound for Semivolatiles analysis).

= One or two characters, numbers, or combinations of both to create a unique EPA Sample Number within an SDG.

3.3.7.6 Volatile and semivolatile standards shall be identified as FSTD***##, where:

F = Fraction code (V for volatiles; S for semivolatiles).

STD = Standard.

*** = Concentration of volatile standards in µg/L [e.g., 005, 010, 050, 100, and 200, or 0.5, 001, 005, 010, and 020, when trace level volatiles analyses are performed, or 0.05, 0.1, 0.5, 1.0, and 2.0 when trace level analyses by the Selected Ion Monitoring (SIM) technique are performed] or the concentration injected in ng/µL for semivolatile standards (e.g., 005, 010, 020, 040, and 080, or 0.1, 0.2, 0.4, 0.8, and 001, when optional analyses of Polynuclear Aromatic Hydrocarbons (PAHs)/pentachlorophenol are performed).

= One or two characters, numbers, or combinations of both to create a unique EPA Sample Number within an SDG.

3.3.7.7 The Contractor shall use the following scheme to identify pesticide and Aroclor standards:

Name	EPA Sample Number
Individual Mix A (CS1)	INDA1##
Individual Mix A (CS2)	INDA2##
Individual Mix A (CS3)	INDA3##
Individual Mix A (CS4)	INDA4##
Individual Mix A (CS5)	INDA5##
Individual Mix B (CS1)	INDB1##
Individual Mix B (CS2)	INDB2##
Individual Mix B (CS3)	INDB3##
Individual Mix B (CS4)	INDB4##
Individual Mix B (CS5)	INDB5##
Resolution Check	RESC##
Performance Evaluation Mixture	PEM##
Toxaphene (CS1)	TOXAPH1##
Toxaphene (CS2)	TOXAPH2##
Toxaphene (CS3)	TOXAPH3##
Toxaphene (CS4)	TOXAPH4##
Toxaphene (CS5)	TOXAPH5##
Aroclor 1016 (CS1)	AR10161##
Aroclor 1016 (CS2)	AR10162##
Aroclor 1016 (CS3)	AR10163##
Aroclor 1016 (CS4)	AR10164##
Aroclor 1016 (CS5)	AR10165##
Aroclor 1221 (CS1)	AR12211##
Aroclor 1221 (CS2)	AR12212##
Aroclor 1221 (CS3)	AR12213##
Aroclor 1221 (CS4)	AR12214##
Aroclor 1221 (CS5)	AR12215##
Aroclor 1232 (CS1)	AR12321##
Aroclor 1232 (CS2)	AR12322##

Name	EPA Sample Number
Aroclor 1232 (CS3)	AR12323##
Aroclor 1232 (CS4)	AR12324##
Aroclor 1232 (CS5)	AR12325##
Aroclor 1242 (CS1)	AR12421##
Aroclor 1242 (CS2)	AR12422##
Aroclor 1242 (CS3)	AR12423##
Aroclor 1242 (CS4)	AR12424##
Aroclor 1242 (CS5)	AR12425##
Aroclor 1248 (CS1)	AR12481##
Aroclor 1248 (CS2)	AR12482##
Aroclor 1248 (CS3)	AR12483##
Aroclor 1248 (CS4)	AR12484##
Aroclor 1248 (CS5)	AR12485##
Aroclor 1254 (CS1)	AR12541##
Aroclor 1254 (CS2)	AR12542##
Aroclor 1254 (CS3)	AR12543##
Aroclor 1254 (CS4)	AR12544##
Aroclor 1254 (CS5)	AR12545##
Aroclor 1260 (CS1)	AR12601##
Aroclor 1260 (CS2)	AR12602##
Aroclor 1260 (CS3)	AR12603##
Aroclor 1260 (CS4)	AR12604##
Aroclor 1260 (CS5)	AR12605##
Aroclor 1262 (CS1)	AR12621##
Aroclor 1262 (CS2)	AR12622##
Aroclor 1262 (CS3)	AR12623##
Aroclor 1262 (CS4)	AR12624##
Aroclor 1262 (CS5)	AR12625##
Aroclor 1268 (CS1)	AR12681##
Aroclor 1268 (CS2)	AR12682##
Aroclor 1268 (CS3)	AR12683##
Aroclor 1268 (CS4)	AR12684##
Aroclor 1268 (CS5)	AR12685##
Aroclor 1016/1260 Mix (CS1)	AR16601##
Aroclor 1016/1260 Mix (CS2)	AR16602##
Aroclor 1016/1260 Mix (CS3)	AR16603##
Aroclor 1016/1260 Mix (CS4)	AR16604##
Aroclor 1016/1260 Mix (CS5)	AR16605##

The Contractor shall replace the two-character suffix (##) of the identifier with one or two characters or numbers, or a combination of both, to create a unique EPA Sample Number within an SDG.

If one individual mix is used (Individual Mix C) then the EPA Sample Number will be INDC1## for CS1, INDC2## for CS2, etc.)

3.3.7.8 For pesticide and Aroclor standards, if the standards are injected onto both GC columns on the same instrument simultaneously, the same EPA Sample Number may be used for reporting data for the standards for both columns. If simultaneous injections are **not** made, then the same number shall **not** be used.

3.3.7.9 The EPA Sample Number for Gel Permeation Chromatograph (GPC) shall be GPC#########, where ######### is the GPC column ID. If the GPC column ID is more than nine characters, truncate at the ninth character.

3.3.7.10 The EPA Sample Number for Florisil shall be FLO#########, where ######### is the Florisil cartridge lot number. If the Florisil cartridge lot number is more than nine characters, truncate at the ninth character.

3.3.8 Other Common Fields. Several other pieces of information are common to many of the data reporting forms. These include matrix, sample weight/volume, level, Laboratory Sample Identifier, and Laboratory File Identifier.

- In the "Matrix" field, enter "Soil" for soil samples, "Sed" for sediment samples, and "Water" for water samples.

- In the "Sample wt/vol" field, enter the number of grams (for soil or sediment) or mL (for water) of sample used in the first blank. Report weights and volumes to 3 significant figures (e.g., 30.0 g, 5.00 g). Enter the units, either g or mL, in the second blank.

- The "Level" field is used for the volatile and semivolatile fractions. Enter the determination of concentration level made from the screening of soils. Enter as "TRACE" (trace volatile water only), "LOW" (volatile water and volatile and semivolatile soil), or "MED" (soil only), **not** "L" or "M".

  NOTE: There is no differentiation between low and medium soil samples for the pesticide and Aroclor fractions, and no level is entered on any of these forms.

- The "Purge Volume" field is used for volatile samples and associated calibration standards to describe the total volume of sample or calibration standard that is analyzed. For water and medium-level soil samples and their associated calibration standards, the value to be entered is "5.0 mL". For low-level soil samples and their associated calibration standards, the value to be entered is "10.0 mL".

- The Laboratory Sample Identifier is a unique laboratory-generated internal identifier pertaining to a particular analysis. The Contractor must enter the Laboratory Sample Identifier using alpha-numeric characters in the "Lab Sample ID" field. The Contractor may use the EPA Sample Number as the Laboratory Sample Identifier.

- The Laboratory File Identifier is the unique laboratory-generated name of the GC/MS data system file containing information pertaining to a particular analysis. The Contractor must enter the Laboratory File Identifier using alpha-numeric characters in the "Lab File ID" field.

3.3.8.1 The "Instrument ID" field is common to the forms containing calibration data. The identifier used by the Contractor shall include some indication of the manufacturer and/or model of the instrument, and shall contain additional characters that differentiate between all instruments of the same type in the laboratory.

3.3.8.2 Forms II, IV, V, VIII, IX, and X contain a field labeled "Page _ of _" in the bottom left-hand corner. If the number of entries required on any of these forms exceeds the available space, continue entries on another copy of the same fraction-specific form, duplicating all header information. If a second page is required, number the pages consecutively (i.e., "Page 1 of 2" and "Page 2 of 2"). If a second page is **not** required, number the page "Page 1 of 1".

NOTE: These forms are fraction-specific, and often matrix-specific within a fraction. For example, Form II VOA-1 and Form II VOA-3 are for different data. Therefore, **do not** number the pages of all 12 versions of Form II as "1 of 12", "2 of 12", etc. Number only pages corresponding to the fraction-specific and matrix-specific form.

3.3.9 Rounding Rule. For rounding off numbers to the appropriate level of precision, the Contractor shall follow these rules. If the figure following those to be retained is less than 5, drop it (round down). If the figure is greater than or equal to 5, drop it and increase the last digit to be retained by 1 (round up).

3.4 Organics Analysis Data Sheet (Form I, All Fractions)

3.4.1 Purpose

This form is used for tabulating and reporting sample analysis, including dilutions, reanalysis, blank, LCS, and requested MS/MSD results for target compounds. If all fractions are not requested for analysis, only the pages for the fractions required shall be submitted. For example, if only volatiles analysis is requested, Form I VOA-1, VOA-2, and Form I VOA-TIC shall be submitted. An additional Form I, VOA-SIM will be required if the optional Selected Ion Monitoring (SIM) analysis is performed. If only semivolatiles analysis is requested [without the (optional) PAHs/pentachlorophenol by SIM analysis], Form I SV-1, SV-2, and Form I SV-TIC shall be submitted. Form I SV-SIM shall be submitted only if the (optional) PAHs/pentachlorophenol by SIM analysis is requested. If only the pesticide and Aroclor fractions are requested for analysis, Form I PEST and Form I ARO shall be submitted. **Furthermore, pesticide instrument blanks (PIBLKs) shall be reported on a per column/per analysis basis on Form I PEST. Each PIBLK shall be named with a unique EPA Sample Number. Distinguish between GC Column (1) and GC Column (2) results by appending a suffix "(1)" for GC Column (1) and "(2)" for GC Column (2).**

3.4.2 Instructions

Complete the header information according to the instructions in Section 3.3. Complete the remainder of the form using the following instructions.

3.4.2.1 For soil and sediment samples analyzed for volatiles, enter the non-decanted Percent Moisture in the "% Moisture: not dec." field

on Form I VOA-1, VOA-2, VOA-TIC. This is the only Percent Moisture determination made for volatiles since the entire contents of the VOA vial are considered as the sample. For water samples, leave this field blank.

3.4.2.2 For soil and sediment samples analyzed for semivolatiles, pesticides, and Aroclors, enter the values for the Percent Moisture determined during the analysis in the "% Moisture" field on Form I SV-1, SV-2, SV-SIM, SV-TIC, Form I PEST, and Form I ARO. In the "Decanted: (Y/N)" field, enter "Y" if the sample had standing water above the soil or sediment that was decanted, or "N" if no water was decanted off the surface of the sample. Report Percent Moisture (decanted or not decanted) to two significant figures (e.g. 5.3 is 5.3, but 10.3 is 10). For water samples, method blanks, sulfur cleanup blanks, and instrument blanks, leave these fields blank on Form I.

3.4.2.3 For volatiles, enter the GC Column Identifier in the "GC Column" field on Form I VOA-1, VOA-2, VOA-SIM and the internal diameter in mm, to two decimal places, in the "ID" field.

3.4.2.4 For semivolatiles, pesticides, and Aroclors, enter the method of extraction in the "Extraction: (Type)" field on Form I SV-1, SV-2, SV-SIM, SV-TIC, PEST, and ARO, as "SEPF" for separatory funnel, "CONT" for continuous liquid-liquid extraction without hydrophobic membrane, "CONH" for continuous liquid-liquid extraction with hydrophobic membrane, "SONC" for sonication (soils only), "SOXH" for Soxhlet Extraction (soils only), or "PFEX" for Pressurized Fluid Extraction (soils only).

3.4.2.5 If GPC was performed, enter "Y" in the "GPC Cleanup" field on Form I SV-1, SV-2, SV-SIM, SV-TIC, PEST, or ARO. Enter "N" in this field if GPC was not performed. If GPC was performed and only half of the extract was collected enter "2.0" in the "GPC Factor" field on Form I SV-1, SV-2, SV-SIM, SV-TIC, PEST, or ARO. If GPC was performed and all of the extract was collected or if GPC was not performed enter "1.0" in the "GPC Factor" field.

NOTE: GPC is **required** for all **soil** samples analyzed for semivolatiles and pesticides; therefore, all Forms I for semivolatiles and pesticides soil samples will contain a "Y" in this field. GPC cleanup is optional for soil samples analyzed for Aroclors and for water samples analyzed for semivolatiles, pesticides, and Aroclors.

3.4.2.6 For Aroclor samples, enter "Y" in the "Acid Cleanup" field on Form I ARO.

NOTE: Acid cleanup is required for all samples analyzed for Aroclors; therefore, all Forms I ARO will contain a "Y" in this field.

3.4.2.7 For soil samples only, enter the pH for semivolatiles, pesticides, and Aroclors, reported to 0.1 pH units, on Form I SV-1, SV-2, SV-SIM, SV-TIC, PEST, and ARO.

3.4.2.8 Enter the date of sample receipt at the laboratory, as noted on the TR/Chain of Custody Record [i.e., the Validated Time of Sample Receipt (VTSR)], in the "Date Received" field. The date shall be entered as MM/DD/YYYY.

3.4.2.9 Complete the "Date Extracted" and "Date Analyzed" fields in the same format (MM/DD/YYYY). When continuous liquid-liquid extraction procedures are used for water samples, enter the date that the procedure was **started** in the "Date Extracted" field. If separatory funnel (pesticides and Aroclors only), sonication, soxhlet, Soxhlet Dean-Stark (SDS) extraction, or pressurized fluid procedures are used, enter the date that the procedure was **completed** in the "Date Extracted" field. For pesticide and Aroclor samples, enter the date of the first GC analysis performed in the "Date Analyzed" field. The date of sample receipt will be compared with the extraction and analysis dates of each fraction to ensure that contract holding times were not exceeded.

3.4.2.10 If a medium soil sample is analyzed for volatiles, enter the total volume of the methanol extract in microliters (µL) in the "Soil Extract Volume" field on Form I VOA-1, VOA-2, and VOA-TIC. This volume includes any methanol not collected from the filtration of the extract through glass wool; the volume is typically 5,000 µL (i.e., the 5 mL of methanol used for the extraction). If a medium soil sample is analyzed, enter the volume of the methanol extract added to the reagent water in the purge tube and analyzed in the "Soil Aliquot Volume" field. Enter this volume in µL.

3.4.2.11 For semivolatiles, pesticides, and Aroclors, enter the actual volume of the **most** concentrated sample extract, in µL, in the "Concentrated Extract Volume" field on Form I SV-1, SV-2, SV-TIC, SV-SIM, PEST, and ARO. For semivolatiles, this volume will typically be 1,000 µL (for water) or 500 µL (for water and soil) when GPC is performed and only 500 µL of extract is collected after GPC Cleanup. If the entire extract is collected after GPC Cleanup then this volume will typically be 1,000 µL. For pesticides and Aroclors, the volume of the most concentrated extract will typically be 10,000 µL (for water) or 5,000 µL (for water and soil) when GPC is performed. If the entire extract is collected after GPC Cleanup then this volume will typically be 10,000 µL for pesticide and Aroclor analyses and 1,000 µL for semivolatile analysis. For pesticides and Aroclors, the volume of the most concentrated extract is **not** the volume taken through the Florisil and sulfur cleanup steps. If a dilution of the sample extract is made in a subsequent analysis, this volume will remain the same, but the Dilution Factor (DF) will change.

3.4.2.12 For semivolatiles, pesticides, and Aroclors, enter the volume of the sample extract injected into the GC in the "Injection Volume" field on Form I SV-1, SV-2, SV-SIM, SV-TIC, PEST, and ARO. Report this volume in µL to one decimal place (e.g., 1.0 µL).

3.4.2.12.1 If pesticides or Aroclors are analyzed using two GC columns connected to a single injection port, enter the amount of half the volume in the syringe in the "Injection Volume" field (i.e., assume that the extract injected is evenly divided between the two columns).

3.4.2.13 If a sample or sample extract has been diluted for analysis, enter the DF value to one decimal place in the "Dilution Factor" field (i.e., a DF of 1 will be reported as 1.0; DF of 10 will be reported as 10.0).

3.4.2.14 If sulfur cleanup is employed, enter "Y" in the "Sulfur Cleanup" field; if not, enter "N" on Form I PEST and ARO.

3.4.2.15 For positively identified target compounds, the Contractor shall report the concentrations as **uncorrected** for blank contaminants.

3.4.2.16 Report all analytical results to two significant figures (i.e., if the value is 9.7, report 9.7; if the value is 10.3, report 10). For pesticide and Aroclor results, report the sample concentration (µg/L, µg/kg) of the lower of the two analyses.

3.4.2.17 Enter the appropriate concentration units, µg/L, µg/kg.

3.4.2.18 Under the column labeled "Q" for qualifier, flag each result with the specific data reporting qualifiers listed below. When reporting results to USEPA, the Contractor shall use these contract-specific qualifiers. The Contractor shall not modify the qualifiers. Up to five qualifiers may be reported on Form I for each compound. The Contractor is encouraged to use additional flags or footnotes (see the X qualifier).

The USEPA-defined qualifiers to be used are:

U: This flag indicates the compound was analyzed for but not detected. The Contract Required Quantitation Limit (CRQL) shall be adjusted according to the equation listed in Exhibit D. CRQLs are listed in Exhibit C.

J: This flag indicates an estimated value. This flag is used when: (1) estimating a concentration for Tentatively Identified Compounds (TICs) where a 1:1 response is assumed; (2) the mass spectral and Retention Time (RT) data indicate the presence of a compound that meets the volatile and semivolatile GC/MS identification criteria, and the result is less than the adjusted CRQL but greater than zero; and (3) the RT data indicate the presence of a compound that meets the pesticide and/or Aroclor identification criteria, and the result is less than the adjusted CRQL but greater than zero. For example, if the sample's adjusted CRQL is 5.0 µg/L, but a concentration of 3.0 µg/L is calculated, report it as 3.0J.

NOTE: The "J" flag is not used, and the compound is not reported as being identified for pesticide or Aroclor results less than the adjusted CRQL, if the pesticide residue analysis expert determines that the peaks used for compound identification resulted from instrument noise or other interferences (e.g., column bleed, solvent contamination).

N: This flag indicates presumptive evidence of a compound. This flag is only used for TICs, where the identification is based on a mass spectral library search and must be used in combination with the J flag. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, or for an "unknown" (no matches ≥ 85%), the "N" flag is not used.

P: This flag is used for pesticide and Aroclor target compounds when there is greater than 25% difference for detected concentrations between the two GC columns (see Form X). **The lower of the two values is reported on Form I and flagged with a "P".** The "P" flag is not used unless a compound is identified on both columns.

C: This flag applies to pesticide and Aroclor results when the **identification** has been confirmed by GC/MS. If GC/MS confirmation was attempted but was unsuccessful, do **not** apply this flag; use a laboratory-defined flag instead (see the X qualifier).

B: This flag is used when the analyte is found in the associated method blank as well as in the sample. It indicates probable blank contamination and warns the data user to take appropriate action. This flag shall be used for a TIC as well as for a positively identified target compound.

The combination of flags "BU" or "UB" is expressly prohibited. Blank contaminants are flagged "B" only when they are detected in the sample.

E: This flag identifies compounds whose response exceed the response of the highest standard in the initial calibration range of the instrument for that specific analysis. If one or more compounds have a response greater than the response of the highest standard in the initial calibration, the sample or extract shall be diluted and reanalyzed according to the specifications in Exhibit D. Exceptions are also noted in Exhibit D. All such compounds with responses greater than the response of the highest standard in the initial calibration shall have the result flagged with an "E" on Form I for the original analysis. The results of both analyses shall be reported on separate copies of Form I. The Form I for the diluted sample shall have "DL" suffix appended to the Sample Number.

D: If a sample or extract is reanalyzed at a DF greater than 1 (e.g., when the response of an analyte exceeds the response of the highest standard in the initial calibration), the DL suffix is appended to the Sample Number on Form I for the more diluted sample, and **all** reported concentrations on that Form I are flagged with the "D" flag. This flag alerts data users that any discrepancies between the reported concentrations may be due to dilution of the sample or extract.

NOTE 1: The "D" flag is not applied to compounds which are not detected in the sample analysis (i.e., compounds reported with the adjusted CRQL and the "U" flag).

NOTE 2: Separate Form Is are required for reporting the original analysis (EPA Sample No. XXXXX) and the more diluted sample analysis (EPA Sample No. XXXXXDL). The results from both analyses <u>cannot be combined</u> on a single Form I.

A: This flag indicates that a TIC is a suspected Aldol-condensation product.

S: This flag is used to indicate an estimated value for Aroclor target compounds where a valid 5-point initial calibration was not performed prior to the analytes detection in a sample. If an "S" flag is used for a specific Aroclor, then a reanalysis of the sample is required after a valid 5-point calibration is performed for the detected Aroclor.

X: Other specific flags may be required to properly define the results. If used, the flags shall be fully described in the SDG Narrative. Begin by using "X". If more than one flag is required, use "Y" and "Z" as needed. If more than five qualifiers are required for a sample result, use the "X" flag to represent a combination of several flags. For instance, the "X" flag might combine the "A", "B", and "D" flags for some samples. The laboratory-defined flags **are limited to** "X", "Y", and "Z".

3.5 Organics Analysis Data Sheet: Tentatively Identified Compounds (Form I VOA-TIC and Form I SV-TIC)

3.5.1 Purpose

This form is used to report analysis results for non-target compounds (e.g., compounds not listed in Exhibit C), excluding Deuterated Monitoring Compounds (DMCs) and internal standards. See Exhibit D for instructions on identification and quantitation. The Contractor shall submit Form I VOA-TIC or SV-TIC for **every analysis**, including required dilutions, reanalyses, and blanks, even if no TICs are found. Form I VOA-TIC and/or SV-TIC are not required for requested MS/MSD analysis.

3.5.2 Instructions

Complete the header information according to the instructions in Section 3.3. Complete the remainder of the form using the following instructions in addition to the instructions in Section 3.4.

3.5.2.1 Report all TICs including Chemical Abstracts Service (CAS) Number (if applicable), compound name, RT, and the estimated concentration as uncorrected for blank contaminants. TICs shall be reported in chronological order for blank contaminants. TICs shall be reported in chronological order with respect to RTs. Report to two significant figures (criteria for reporting TICs are given in Exhibit D, Section 11). RT shall be reported in minutes and decimal minutes, **not** seconds or minutes:seconds.

3.5.2.2 Peaks that are suspected to be straight-chained, branched, or cyclic alkanes, and are alone or part of an alkane series, shall be library searched. Documentation for the tentative identification must be supplied. Alkane concentrations will be summed and reported as "total alkanes" on Form I VOA-TIC or SV-TIC.

3.5.2.3 If the name of a compound exceeds the 28 spaces in the TIC column, truncate the name to 28 characters. If the compound is an unknown, restrict the description to no more than 28 characters (e.g., unknown hydrocarbon).

3.5.2.4 Peaks that are suspected to be Aldol-condensation reaction products (e.g., 4-methyl-4-hydroxy-2-pentanone and 4-methyl-3-pentene-2-one) shall be summarized on this form and flagged with an "A". The peaks shall be counted as part of the 30 most intense non-target semivolatile compounds to be searched.

3.6 DMC Recovery (Form II VOA-1, VOA-2, VOA-3, VOA-4, VOA-SIM1, VOA-SIM2, and Form II SV-1, SV-2, SV-3, SV-4, SV-SIM1, SV-SIM2)

3.6.1 Purpose

For volatiles and semivolatiles, Form II VOA-1, VOA-2, VOA-3, VOA-4, VOA-SIM1, VOA-SIM2, and Form II SV-1, SV-2, SV-3, SV-4, SV-SIM1, and SV-SIM2 are used to report the recoveries of the DMCs added to each volatile and semivolatile sample, including dilutions, reanalyses, blanks, and requested MS/MSDs. The DMCs are used to monitor the performance of the purge-and-trap GC/MS system as a whole, as well as the efficiency of the extraction procedure for semivolatiles. Form II VOA and Form II SV are matrix-specific, so that DMC recoveries for water samples are reported on a different version of Form II than the recoveries for soil samples. Soil sample recoveries are further differentiated by concentration level. Form II SV-SIM1 and Form II SV-SIM2 are used to report recoveries of the SIM DMCs only. For SIM analysis by the volatiles method, recoveries for the SIM DMC compounds need to be reported on Form II VOA-SIM1, VOA-SIM2.

3.6.2 Instructions

Complete the header information according to the instructions in Section 3.3.

NOTE: For volatiles and semivolatiles soil samples only, complete one form for each level. **Do not** mix low-level and medium-level samples on one form, and specify the level as LOW or MED. Complete the remainder of the forms using the following instructions.

3.6.2.1 For each of the volatile DMCs listed in Table 3, each of the semivolatile DMCs listed in Table 4, and each of the semivolatile SIM DMCs listed in Table 5, report the Percent Recovery to the nearest whole percentage point, and to the number of significant figures given by the Quality Control (QC) limits at the bottom of the form.

3.6.2.2 Flag each DMC recovery outside the QC limits with an asterisk ("*"). The asterisk shall be placed in the last space in each appropriate column, under the "#" symbol.

3.6.2.3 In the "TOT OUT" column, total the number of DMC recoveries that were outside the QC limits for each sample. If no DMCs were outside the limits, enter "0" (zero).

3.6.2.4 For semivolatiles, if the sample is diluted and the DMC recoveries are outside the acceptance window, enter the calculated recovery and flag the recovery with a "D" in the column underneath the "#" symbol.

3.6.2.5 Number all pages as described in Section 3.3.

TABLE 3

Volatile Deuterated Monitoring Compounds

Volatile Deuterated Monitoring Compounds		CAS Number
VDMC1	Vinyl chloride-d_3	6745-35-3
VDMC2	Chloroethane-d_5	19199-91-8
VDMC3	1,1-Dichloroethene-d_2	22280-73-5
VDMC4	2-Butanone-d_5	24313-50-6
VDMC5	Chloroform-d	865-49-6
VDMC6	1,2-Dichloroethane-d_4	17060-07-0
VDMC8	1,2-Dichloropropane-d_6	93952-08-0
VDMC9	Toluene-d_8	2037-26-5
VDMC10	trans-1,3-Dichloropropene-d_4	93951-86-1
VDMC11	2-Hexanone-d_5	4840-82-8
VDMC12	1,4-Dioxane-d_8	17647-74-4
VDMC13	1,1,2,2-Tetrachloroethane-d_2	33685-54-0
VDMC14	1,2-Dichlorobenzene-d_4	2199-69-1

TABLE 4

Semivolatile Deuterated Monitoring Compounds

Semivolatile Deuterated Monitoring Compounds		CAS Number
SDMC1	Phenol-d_5	4165-62-2
SDMC2	Bis(2-chloroethyl)ether-d_8	93952-02-4
SDMC3	2-Chlorophenol-d_4	93951-73-6
SDMC4	4-Methylphenol-d_8	190780-66-6
SDMC5	Nitrobenzene-d_5	4165-60-0
SDMC6	2-Nitrophenol-d_4	93951-78-1
SDMC7	2,4-Dichlorophenol-d_3	93951-74-7
SDMC8	4-Chloroaniline-d_4	191656-33-4
SDMC9	Dimethylphthalate-d_6	85448-30-2
SDMC10	Acenaphthylene-d_8	93951-97-4
SDMC11	4-Nitrophenol-d_4	93951-79-2
SDMC12	Fluorene-d_{10}	81103-79-9
SDMC13	4,6-Dinitro-methylphenol-d_2	93951-76-9
SDMC14	Anthracene-d_{10}	1719-06-8
SDMC15	Pyrene-d_{10}	1718-52-1
SDMC16	Benzo(a)pyrene-d_{12}	63466-71-7

TABLE 5

Semivolatile SIM Deuterated Monitoring Compounds

Semivolatile Selected Ion Monitoring (SIM) Deuterated Monitoring Compounds		CAS Number
SDMC17	Fluoranthene-d_{10}	93951-69-0
SDMC18	2-Methylnapthalene-d_{10}	7297-45-2

3.7 Surrogate Recovery (Form II PEST-1, PEST-2 and Form II ARO-1, ARO-2)

3.7.1 Purpose

Form II PEST-1, PEST-2 and Form II ARO-1, ARO-2 are used to report the recoveries of the surrogate compounds added to each pesticide and Aroclor sample, blank, LCS, and requested MS/MSD. Form II PEST and Form II ARO are matrix-specific, so surrogate recoveries for water samples are reported on a different version of Form II than surrogate recoveries for soil samples.

3.7.2 Instructions

Complete the header information according to the instructions in Section 3.3. Complete the remainder of the form using the following instructions.

3.7.2.1 For each surrogate listed in Table 6, report the Percent Recovery to the nearest whole percentage point, and to the number of significant figures given by the QC limits at the bottom of the form.

3.7.2.2 Flag each surrogate recovery outside the QC limits with an asterisk ("*"). The asterisk shall be placed in the last space in each appropriate column, underneath the "#" symbol.

3.7.2.3 In the "TOT OUT" column, total the number of surrogate recoveries that were outside the QC limits for each sample. If no surrogates were outside the limits, enter "0" (zero).

3.7.2.4 If the sample is diluted and the surrogates are outside the acceptance window in any analysis, enter the calculated recovery, and flag the surrogate recoveries with a "D" in the column underneath the "#" symbol.

3.7.2.5 The pesticide and Aroclor surrogate recoveries shall be reported from **both** GC columns used for the analyses. Therefore, identify each GC column at the top of Form II PEST-1, PEST-2, and Form II ARO-1, ARO-2, entering the stationary phase in the "GC Column" field, and the internal diameter of the column in mm in the "ID" field.

3.7.2.6 The assignment of columns as "1" and "2" is left to the discretion of the Contractor when the analyses are performed by simultaneous injection into a GC containing two columns. If so analyzed, the assignment of "GC Column 1" and "GC Column 2" shall be consistent across all the reporting forms. If the analysis is **not** performed by simultaneous injection, then the assignment of GC column number shall be based on the chronological order of the two analyses.

3.7.2.7 Number all pages as described in Section 3.3.

TABLE 6

Pesticide and Aroclor Surrogates

Surrogate Compound	CAS Number
Decachlorobiphenyl (DCB)	2051-24-3
Tetrachloro-m-xylene (TCX)	877-09-8

3.8 Matrix Spike/Matrix Spike Duplicate (MS/MSD) and Laboratory Control Sample (LCS) Recovery

3.8.1 Matrix Spike/Matrix Spike Duplicate Recovery (All Fractions, Form III VOA-1, VOA-2; Form III SV-1, SV-2, Form III SV-SIM1, Form III SV-SIM2, Form III PEST-1, PEST-2; Form III ARO-1, ARO-2)

3.8.1.1 Purpose

This form is used to report the results of the analyses of MS/MSDs. The form is matrix-specific for volatiles, semivolatiles, pesticides, and Aroclors. For pesticides and Aroclors, complete Form III PEST-1, PEST-2 and Form III ARO-1, ARO-2 for each GC column used for analysis.

NOTE: Form III shall only be submitted for volatiles and semivolatiles if the analyses of MS/MSD samples have been requested by the Region. However, Form III is required for pesticides and Aroclors, unless otherwise specified by the Region.

3.8.1.2 Instructions

Complete the header information according to the instructions in Section 3.3. Include the EPA Sample Number for the Matrix Spike, **without** the suffixes MS or MSD.

3.8.1.2.1 For pesticides and Aroclors, enter the instrument ID, the stationary phase in the "GC Column" field, and the internal diameter of the column in millimeters (mm) in the "ID" field. The order of reporting is not important, but must be consistent with Form X.

3.8.1.2.2 For volatile water samples, specify level as TRACE or LOW on Form III VOA-1. For volatile and semivolatile soil samples, specify level as LOW or MED on Form III VOA-2, and SV-2. SDGs containing soil samples at both levels require an MS/MSD at each level; therefore, for soils, prepare one form for each level. Complete the remainder of the form using the following instructions.

3.8.1.2.3 In the first table under the "SPIKE ADDED" column, enter the calculated concentration in µg/L or µg/kg (according to the matrix) that results from dividing each spike compound amount added to the aliquot weight/volume chosen for the Matrix Spike. For instance, for base/neutral compounds in medium-level soils,

if 50 µg of spike are added to 1 g of soil, the results concentration is 50,000 µg/kg.

3.8.1.2.4 Enter the sample concentration in the next column, in similar units, of each spike compound detected in the original sample. If a spike compound was not detected during the analysis of the original sample, enter the sample result as "0" (zero).

3.8.1.2.5 In the "MS CONCENTRATION" column, enter the actual concentration of each spike compound detected in the Matrix Spike aliquot.

3.8.1.2.6 Calculate the Percent Recovery (%R) of each spike compound in the Matrix Spike aliquot to the nearest whole percent, according to Exhibit D. Enter the Percent Recovery in the "MS % REC" column.

3.8.1.2.7 Flag all Percent Recoveries outside the QC limits with an asterisk ("*"). The asterisk shall be placed in the last space of the "MS % REC" column, underneath the "#" symbol.

3.8.1.2.8 Follow Sections 3.8.1.2.3 through 3.8.1.2.7 to complete the lower table, using the results of the analysis of the Matrix Spike Duplicate aliquot.

3.8.1.2.9 Calculate the Relative Percent Difference (RPD) between the Matrix Spike recovery and the Matrix Spike Duplicate recovery, and enter this value in the "% RPD" column. Report the RPD to the nearest whole percent.

3.8.1.2.10 Compare the RPDs to the QC limits given on the form, and flag each RPD outside the QC limits with an asterisk ("*") in the last space of the "% RPD" column, underneath the "#" symbol.

3.8.1.2.11 Summarize the values outside the QC limits at the bottom of the page. No further action is required by the Contractor.

3.8.2 LCS Recovery (Form III PEST-3, PEST-4, and Form III ARO-3, ARO-4)

3.8.2.1 Purpose

This form is used to report the results of the analyses of LCSs for pesticides and Aroclors. The form is matrix-specific for pesticides and Aroclors.

3.8.2.2 Instructions

Complete the header information according to the instructions in Section 3.3. Complete the remainder of the form using the following instructions.

3.8.2.2.1 If the LCS solution is purchased by the Contractor from a third party, report the identification number used by the third party to identify the LCS lot, if available, in the "LCS Lot No." field. If the LCS solution was prepared in-house, leave this entry blank.

3.8.2.2.2 The LCS is reported for each GC column. Enter the date analyzed, Instrument ID, GC column, and internal diameter for both GC columns. The order of reporting is not important, but

must be consistent with the information reported on Form X. All dates should be entered in MM/DD/YYYY format.

3.8.2.2.3 In the first table under the "AMOUNT ADDED" column, enter the calculated concentration in µg/L or µg/kg (according to the matrix) that results from dividing each spike compound amount added to the aliquot (weight/volume) of clean reference matrix. Under "AMOUNT RECOVERED", enter the actual concentration of each compound in the LCS calculated from analysis. Calculate the Percent Recovery of each compound in the LCS to the nearest whole percent, according to Exhibit D, and enter under "% REC". Flag all Percent Recoveries outside the QC limits with an asterisk ("*"). The asterisk must be placed in the last space of the Percent Recovery column, under the "#" symbol.

3.8.2.2.4 Complete the lower box according to the instructions in Section 3.8.2.2.3.

3.8.2.2.5 Summarize the recoveries outside the QC limits on both columns at the bottom of the page.

3.9 Method Blank Summary (Form IV, All Fractions)

3.9.1 Purpose

This form summarizes the samples associated with each method blank analysis. The Contractor shall submit the appropriate Form IV for each blank.

3.9.2 Instructions

Complete the header information according to the instructions in Section 3.3. The EPA Sample Number entered in the upper right-hand corner shall be the same number entered on Form I for the blank. Complete the remainder of the form using the following instructions.

3.9.2.1 Complete the following fields: "Instrument ID", "Date Analyzed", and "Time Analyzed". Dates shall be entered as MM/DD/YYYY. The time shall be reported using military time.

3.9.2.2 For pesticide and Aroclor method blanks, contaminants shall meet the identification criteria requiring analysis of the blank on two different GC columns (see Exhibits D - Analytical Methods for Pesticides and Analytical Methods for Aroclors). Enter the date, time, and instrument ID of both analyses of the blank on the method blank summary Form IV. The information for the two analyses is differentiated as Date Analyzed (1), Date Analyzed (2), etc. If the analyses were run simultaneously, the order of reporting is not important, but shall be consistent with the information reported on all other pesticide forms. Otherwise, Date Analyzed (1) shall indicate the analysis on Column 1, and Date Analyzed (2) shall indicate the analysis on Column 2.

3.9.2.3 For volatiles, pesticides, and Aroclors, identify the GC column and internal diameter in the appropriate fields.

3.9.2.4 For volatiles, indicate the purging method by entering "Y" for heated purge or "N" for ambient temperature purge in the "Heated Purge: Y/N" field on Form IV VOA.

3.9.2.5 For semivolatile, pesticide, and Aroclor blanks, enter the type of extraction as "CONH" for continuous liquid-liquid extraction with hydrophobic membrane, "CONT" for continuous liquid-liquid extraction without hydrophobic membrane, "SONC" for sonication, "SOXH" for Soxhlet extraction, or "PFEX" for pressurized fluid extraction on Form IV. For pesticide, and Aroclor blanks, separatory funnel extraction shall be entered as "SEPF".

3.9.2.6 For semivolatile, semivolatile-SIM, pesticide, and Aroclor method blanks, enter the date of extraction of the blank on Form IV SV, SV-SIM, PEST, or ARO (refer to Section 3.4.2.9 for more details).

3.9.2.7 Enter the reference matrix used to prepare the method blank in the "Matrix" field for all five fractions. For volatile and semivolatile soil method blanks, indicate the level as "LOW" or "MED" in the "Level" field.

3.9.2.8 If the samples associated with the pesticide and Aroclor blanks are subjected to sulfur cleanup, then the blanks shall also be subjected to sulfur cleanup. If sulfur cleanup is employed, enter "Y" in the "Sulfur Cleanup" field; if not, enter "N" on Form IV PEST, and ARO. If only some of the samples associated with the method blanks are subjected to sulfur cleanup, sulfur cleanup blanks are required in addition to the method blanks (see Exhibits D - Analytical Methods for Pesticides and Analytical Methods for Aroclors). If a sulfur cleanup blank is prepared in addition to the method blank, complete one version of Form IV associating all the samples with the method blank, and a second version of Form IV listing only those samples associated with the separate sulfur cleanup blank.

NOTE: Subjecting all samples associated with a method blank to sulfur cleanup avoids the need for two forms.

3.9.2.9 If semivolatile, semivolatile-SIM, pesticide, or Aroclor samples are subjected to GPC cleanup, then the associated blanks shall also be subjected to GPC cleanup. If the GPC Cleanup is employed, enter "Y" in the "GPC Cleanup" field; if not, enter "N" on Form IV SV, SV-SIM, PEST, and ARO.

3.9.2.10 For Aroclor blanks, enter "Y" in the "Acid Cleanup" field on Form IV ARO.

NOTE: Acid cleanup is required for all method blanks analyzed for Aroclors; therefore, all Form IV ARO will contain a "Y" in this field.

3.9.2.11 For all five fractions, as appropriate, summarize the samples including LCSs, requested MS/MSDs, storage blanks, and volatile instrument blanks, associated with a given method blank in the table, entering the EPA Sample Number and Laboratory Sample Identifier. For volatiles, enter the Laboratory File Identifier and the time of analysis of each sample. For semivolatiles, enter the Laboratory File Identifier and the date of analysis. For pesticides and Aroclors, enter the dates of both analyses as Date Analyzed (1) and Date Analyzed (2), as discussed previously.

3.9.2.12 Number all pages as described in Section 3.3.

3.10 GC/MS Instrument Performance Check and Mass Calibration (Form V VOA and Form V SV)

3.10.1 Purpose

This form is used to report the results of the GC/MS instrument performance check for the volatile and semivolatile fractions and to summarize the date and time of analyses of samples, including dilutions, reanalyses, standards, blanks, and requested MS/MSDs associated with each analysis of the Instrument Performance Check solution.

3.10.2 Instructions

Complete the header information according to the instructions in Section 3.3. Complete the remainder of the form using the following instructions.

3.10.2.1 Enter the date and time of injection of the instrument performance check solution [4-Bromofluorobenzene (BFB) for volatiles--CAS Number 460-00-4, DFTPP for semivolatiles--CAS Number 5074-71-5). The date shall be entered as MM/DD/YYYY. The time shall be reported using military time.

3.10.2.2 For volatiles, identify the GC column and internal diameter on Form V VOA.

3.10.2.3 For each ion listed on the form, enter the percent relative abundance in the right-hand column of the first table. Report relative abundances to the number of significant figures given for each ion in the ion abundance criteria column.

NOTE: For both BFB and DFTPP, one or more of the high mass ions may exceed the abundance of the ion listed on the form as the nominal base peak [mass-to-charge ratio (m/z) 95 for BFB and m/z 198 for DFTPP]. Despite this possibility, all ion abundances shall be normalized to the nominal base peaks listed on Form V.

3.10.2.4 All relative abundances shall be reported as a number. If the relative abundance is zero, enter "0", not a dash or other non-numeric character. Where parentheses appear, compute the percentage of the ion abundance of the mass given in the appropriate footnote, and enter that value in the parentheses.

3.10.2.5 In the lower table, list all samples, including dilutions and reanalyses, standards, blanks, and MS/MSDs analyzed under that instrument performance check in chronological order, by time of analysis (using military time). Refer to Section 3.3.7 for specific instructions for identifying standards and blanks.

3.10.2.6 Complete the following fields for all standards, samples, including dilutions and reanalyses, blanks, and MS/MSDs: "EPA SAMPLE NO.", "LAB SAMPLE ID", "LAB FILE ID", "DATE ANALYZED", and "TIME ANALYZED".

3.10.2.7 All Form Vs listing samples, including dilutions and reanalyses, standards, blanks, and MS/MSDs must contain an opening and closing Continuing Calibration Verification (CCV). If samples are run after an initial calibration sequence, the initial calibration may be substituted for an opening CCV.

3.10.2.8 Number all pages as described in Section 3.3.

3.11 GC/MS Initial Calibration Data (Form VI VOA-1, VOA-2, VOA-3, VOA-SIM, and Form VI SV-1, SV-2, SV-3, SV-SIM)

3.11.1 Purpose

After a GC/MS system has undergone an initial five-point[3] calibration at the specific concentration levels described in Exhibit D, and after all initial calibration criteria have been met, the Contractor shall complete and submit these forms for each volatile or semivolatile target compound initial calibration performed that is relevant to the samples, including dilutions and reanalyses, blanks, and MS/MSDs in the SDG, regardless of when that calibration was performed. A calibration containing more than five points may be performed but only five points are to be reported on the Forms. The points that can be excluded are at the extreme concentration levels (below CRQL or above the required high concentration level). If analysis of trace volatiles using the SIM technique is requested, then all initial calibrations pertaining to these analytes shall be submitted on a separate Form VI-VOA. If the optional analysis of PAHs and pentachlorophenol using the SIM technique is requested, then all initial calibrations pertaining to these analytes shall be submitted on Form VI SV-SIM.

3.11.2 Instructions. Complete the header information according to the instructions in Section 3.3. Enter the Case Number and SDG Number for the current data package, regardless of the original Case for which the initial calibration was performed. Complete the remainder of the form using the following instructions.

3.11.2.1 Enter the date(s) of the calibration. If the calendar date changes during the calibration procedure, the inclusive dates shall be recorded. Dates shall be entered as MM/DD/YYYY.

3.11.2.2 Enter the injection times of the first and last of the standards analyzed in the "Calibration Times" field. Times shall be reported using military time.

3.11.2.3 For volatiles, complete the "GC Column" and "ID" fields. Indicate the purging method by entering "Y" for heated purge or "N" for ambient temperature purge in the "Heated Purge: (Y/N)" field.

3.11.2.4 For volatiles and semivolatiles, enter the concentration of each of the five standards after "RRF" in the space provided. Then enter the Laboratory File Identifier for the standards after the "=" in the space provided. For example, for the low standard, 5.0 µg/L, the Contractor shall enter 5.0 after the "RRF" in the section labeled LAB FILE ID, prior to entering the Laboratory File Identifier in the topmost row. Subsequently, 5.0 will be entered in the RRF entry in the second row, second column. If trace volatiles analysis of water samples at lower CRQLs are requested, then the Contractor shall enter 0.5 after "RRF" for the low

[3]For semivolatiles, seven compounds (2,4-Dinitrophenol, Pentacholorophenol, 2-Nitroaniline, 3-Nitroaniline, 4-Nitroaniline, 4-Nitrophenol, and 4,6-Dinitro-2-Methylphenol) will only require a four-point initial calibration at 10, 20, 40, and 80 total ng/µL concentrations because detection at less than 10 ng/µL per injection is difficult. If a four-point calibration is performed for these compounds, leave the "RRF5.0" column blank.

standard and 1.0 for the second level standard, etc., prior to entering the Laboratory File Identifier.

3.11.2.5 Complete the RRF data for the five calibration points, and then calculate and report the Mean Relative Response Factor ($\overline{RRF}$) for all target compounds and DMCs in the calibration standards.

3.11.2.6 The Contractor shall report the Percent Relative Standard Deviation (%RSD) for **all** compounds. See Exhibit D for equations.

3.12 GC/ECD Initial Calibration Data (Form VI PEST-1, PEST-2, PEST-3, PEST-4, ARO-1, ARO-2, and ARO-3)

3.12.1 Purpose

The initial calibration of pesticides and Aroclors involves the determination of RTs, RT time windows, and Calibration Factors (CFs). For single component pesticide target compounds, these data are calculated from the analyses of the Individual Standard Mixtures A and B or C at five different concentration levels. For Toxaphene, these data are calculated from the analyses of Toxaphene standards at five different concentration levels.

3.12.2 Instructions

Complete one Form VI for **each** GC column used for the five analyses of Individual Standard Mixture C or from the five analyses of Individual Standard Mixture A and Individual Standard Mixture B or Individual Standard Mixture C during an initial calibration. Complete the header information according to the instructions in Section 3.3. Complete the remainder of the form using the following instructions.

3.12.2.1 In the "Level (x CS1)" field, enter the concentration of the five calibration standards as a multiplier of CS1 (Calibration Standard 1). Therefore, for CS1, enter "1.0". The CS5 standard shall be at least 16 times CS1, but may be higher if that value lies within the linear range of the instrument, as specified in Exhibit D. Therefore, enter the appropriate multiplier for the high-point standard concentration to one decimal place.

3.12.2.2 Identify the GC column and internal diameter (in mm) in the appropriate fields.

3.12.2.3 Enter the dates of analysis of the first and last of the standards on each form in the "Date(s) Analyzed" field. Dates shall be entered as MM/DD/YYYY.

3.12.2.4 For each standard analyzed, enter the RT of each applicable analyte in minutes and decimal minutes, under the appropriate concentration level in the "RT OF STANDARDS" column on Form VI PEST-1.

3.12.2.5 Calculate the Mean RT ($\overline{RT}$) of each analyte from the five Individual Standard Mixtures: A and B, or C, and report it in the "$\overline{RT}$" column on Form VI PEST-1.

3.12.2.6 Calculate the RT window for each analyte using the specifications in Exhibit D, and enter the lower limit of the window in the "RT WINDOW" column under "FROM" and the upper limit of the window under "TO" on Form VI PEST-1. If Individual Standard Mixture C is

used, the second set of entries for the surrogates should be left blank.

3.12.2.7 For the analyses of the Individual Standard Mixtures: A, B, or C, the Contractor shall also complete the CF data on Form VI PEST-2. Prepare one form for each instrument and GC column used. Enter the CF for each compound in each of the standards. Calculate and enter a %RSD. If Individual Standard Mixture C is used, the second set of entries for the surrogates should be left blank.

3.12.2.8 For Toxaphene, the RTs, RT windows, and $\overline{RT}$ for each peak shall be reported on Form VI PEST-3 for the five-point calibration standards. The Contractor shall select at least three peaks for Toxaphene, according to the specifications in Exhibit D. The RT and CF data apply to **each** peak. Complete the upper table for GC Column (1) and the lower table for GC Column (2). The Contractor shall complete Form VI PEST-3 for each initial calibration that applies to samples in the data package.

3.12.2.9 For Toxaphene, the Contractor shall complete the CF data on Form VI PEST-4. Calculate and enter a %RSD.

3.12.2.10 Form VI ARO-1, ARO-2, and ARO-3 are used to report the initial calibration data for Aroclors. Form VI ARO-1 and ARO-2 are used to report RTs, RT windows, CFs, and %RSD from a five-point initial calibration of Aroclors 1016 and 1260. Form VI ARO-3 is used to report RTs, RT windows and CFs from the single-point initial calibration of the remaining target Aroclor compounds. If an Aroclor other than 1016 or 1260 is detected in a sample then a separate Form VI ARO-1 and ARO-2 must be submitted for the required initial calibration.

3.12.2.11 Complete one version of Form VI ARO-1, ARO-2, and ARO-3 for each GC column used to analyze Aroclor samples and each initial calibration that applies to samples in the data package. Complete the header information according to the instructions in Section 3.3. If more than 5 peaks for a particular Aroclor are to be reported, complete as many Form VI ARO-1, ARO-2, or ARO-3, as necessary, duplicating the header information and page numbering as described in Section 3.3. Complete the remainder of the form using the following instructions.

3.12.2.12 Identify the GC column and internal diameter (in mm) in the appropriate fields.

3.12.2.13 Enter the dates of the analysis of the Aroclor standards in the "Date(s) Analyzed" field. Dates shall be entered as MM/DD/YYYY.

3.12.2.14 For each of the five standards analyzed for Aroclor 1016 and 1260, and any other Aroclor if detected enter the RT for each Aroclor peak and surrogates in minutes and decimal minutes, under the appropriate concentration level (CS1, CS2, CS3, CS4, or CS5) in the "RT OF STANDARDS" column on Form VI ARO-1.

3.12.2.15 Calculate the $\overline{RT}$ for each peak (including surrogates) from the five calibration standards and report in the "MEAN RT" column on Form VI ARO-1.

3.12.2.16 Calculate the RT window for each peak (including surrogates) using the specifications in Exhibit D - Analytical Methods for Aroclors, and enter the lower limit of the window in the "RT WINDOW" column

under "FROM" and the upper limit of the window under "TO" on Form VI ARO-1. If Aroclors 1016 and 1260 are run as a combined mixture, the second set of surrogate entries should be left blank.

3.12.2.17 For the five analyses of Aroclor 1016 and 1260, and any other Aroclor if detected, the Contractor shall also complete the CF data for Form VI ARO-2. Prepare one form for each instrument and GC column used. Enter the CF for each peak (including surrogates) in each Aroclor standard. Calculate and enter a %RSD. If Aroclors 1016 and 1260 are run as a combined mixture, the second set of surrogate entries should be left blank.

3.12.2.18 For the remaining Aroclors, the RTs, RT windows, and CFs shall be reported in a similar fashion on Form VI ARO-3, for the single point calibration standards. The Contractor shall select at least three peaks for each Aroclor, according to the specifications in Exhibit D - Analytical Methods for Aroclors. The RT and CF data apply to each peak.

3.12.3 Form VI is also used to report the results of analysis of the Resolution Check Standard that shall begin each pesticide initial calibration sequence (Form VI PEST-5). The Contractor shall submit one Form VI PEST-5 for **both** GC columns.

3.12.4 Complete the header information as described in Section 3.3. Using the same assignment of first and second GC columns made for Form IV, enter the GC column identifier, internal diameter, date, and time of analysis(es). Enter the EPA Sample Number for the Resolution Check Standard. If simultaneous injections on a single GC column are used, the EPA Sample Number may be the same for both Resolution Check Standards. If simultaneous injections are **not** used, use different suffixes to identify the standards. Complete the remainder of the form using the following instructions.

3.12.4.1 List each analyte, in **RT order**, including both surrogate compounds. Thus, the order of analytes in the two boxes on this form will be different due to the dissimilarity of the stationary phases of the two GC columns used. Enter the name of each target analyte in the Resolution Check Mixture as it appears on Form I PEST.

3.12.4.2 Enter the RT of each analyte from the analysis in the "RT" column.

3.12.4.3 Calculate the resolution between each pair of analytes. Enter the resolution between the first and second peaks on the line for the first analyte listed in the box. Enter the resolution between the second and third peaks on the line for the second analyte, and so on, until the resolutions of all possible pairs of adjacent analytes have been entered.

NOTE: The last resolution field will not be filled.

3.12.4.4 Form VI [PEST-6, PEST-7, PEST-8, PEST-9, and PEST-10 for each pair of Performance Evaluation Mixtures (PEMs), either CS3 Individual Standard Mixture C, or CS3 Individual Standard Mixtures A and B, respectively] shall be used to report the Percent Resolution between each pair of analytes according to the definition in Exhibit D (Analytical Methods for Pesticides), Section 9.2.4.10.

3.12.4.5 Complete the header information as described in Section 3.3. Using the same assignment of first and second GC columns made for

Form IV, enter the GC column identifier, internal diameter, date, and time of analysis. Enter the EPA Sample Number for the respective standards. If simultaneous injections are **not** used, use different suffixes to identify the standards. Complete the remainder of the form using the following instructions.

3.12.4.5.1 List each analyte, in **RT order**, including both surrogate compounds. Thus, the order of analytes in the two boxes on this form will be different due to the dissimilarity of the stationary phases of the two GC columns used. Enter the name of each target analyte in the standard as it appears on Form I PEST. Spell out the names of the surrogates as they appear on Form VII PEST-2.

3.12.4.5.2 Enter the RT of each analyte from the analysis in the "RT" column.

3.12.4.5.3 Calculate the resolution between each pair of analytes. Enter the resolution between the first and second peaks on the line for the first analyte listed in the box. Enter the resolution between the second and third peaks on the line for the second analyte, and so on, until the resolutions of all possible pairs of adjacent analytes have been entered.

NOTE: The last resolution field will be left blank in each table.

3.13 GC/MS Opening and Closing Continuing Calibration Verification Data (Form VII VOA-1, VOA-2, VOA-3, VOA-SIM, and Form VII SV-1, SV-2, SV-3, SV-SIM)

3.13.1 Purpose

For volatiles and semivolatiles, this form is used to report the calibration verification of the GC/MS system by the analysis of specific calibration verification standards. Form VII is required for opening and closing CCVs for each 12-hour time period for both volatile and semivolatile target compound analyses. If analysis of trace volatiles using the SIM technique is requested, then an additional Form VII VOA shall be submitted for opening and closing CCVs for each 12-hour time period that samples are analyzed. If the optional analysis of PAHs and pentachlorophenol using the SIM technique is requested, then Form VII SV-SIM shall be submitted for opening and closing CCVs for each 12-hour time period that samples are analyzed. The Contractor shall analyze calibration verification standards and meet all criteria outlined in Exhibit D for the minimum RRF and maximum Percent Difference (%D) between initial calibration CCVs.

3.13.2 Instructions

Complete the header information according to the instructions in Section 3.3. Complete the remainder of the form using the following instructions.

3.13.2.1 Enter the date (Calibration Date:) and time (Time:) of the CCV and the date(s) (Init. Calib. Dates:) and time(s) (Init. Calib. Times:) of the initial calibration (give inclusive dates if the initial calibration is performed over more than one date). Dates shall be entered as MM/DD/YYYY. Times shall be reported using military time.

3.13.2.2 For volatiles, enter "Y" if heated purge is performed or "N" if heated purge is not performed. Enter GC column identifier, internal diameter, and column length. For semivolatiles, enter the GC column identifier and internal diameter. Also enter the EPA Sample Number for the CCV standard on Form VII for volatiles and semivolatiles.

3.13.2.3 Using the appropriate initial calibration (volatile or semivolatile), enter the Mean Relative Response Factor ($\overline{RRF}$) for each target compound and DMC.

3.13.2.4 For volatiles and semivolatiles, report the concentration of the CCV standard in the space provided, after "RRF". The Contractor shall enter "50" in the space provided after "RRF" when the standard low/medium volatiles analysis for water and soil are performed and enter "20" when the standard semivolatiles analysis for water and soil are performed. If the trace volatiles analysis of water samples at lower CRQLs is requested, then the Contractor shall enter "5.0" in the space provided after "RRF". If the semivolatile analysis by the SIM method is requested enter "0.4" in the space provided after "RRF".

3.13.2.5 Report the RRF for each target and DMC from the CCV standard analysis for volatiles and semivolatiles.

3.13.2.6 Under "MIN RRF" enter the appropriate value. For an opening CCV or a closing CCV that is also used as an opening CCV for the next "12-hour period", the appropriate values can be found in Exhibit D (Table 2 in Trace Volatiles, Table 4 in Low/Medium Volatiles, and Table 4 in Semivolatiles). For a closing CCV enter "0.010" for all compounds. For a CCV that is both an opening and closing CCV, enter the values for an opening CCV.

3.13.2.7 Calculate the Percent Difference (%D) for all compounds. See Exhibits D - Analytical Methods for Volatiles and Analytical Methods for Semivolatiles for equations.

3.13.2.8 Under MAX %D enter the appropriate value. For an opening CCV and a closing CCV that is also an opening CCV for the next 12-hour period, the appropriate values can be found in Exhibit D Trace Volatiles (Tables 1 and 2), Low/Medium Volatiles (Table 4) and Semivolatiles (Table 4). For a closing CCV enter "50" for all target compounds.

3.14 GC/ECD Calibration Verification Summary (Form VII PEST-1, PEST-2, PEST-3, PEST-4, and Form VII ARO)

3.14.1 Purpose

Form VII is used to report the results of the PEMs and the CS3 concentrations of Individual Standard Mixtures C or A and B that, along with the PEM, bracket each 12-hour period of pesticides sample analyses. Form VII is also used to report the results of the mid-level Aroclor 1016/1260 standards that are used as calibration verification for Aroclors sample analyses. The Contractor shall submit Form VII PEST-1 and Form VII ARO for each 12-hour sequence analyzed. Form VII PEST-2 or Form VII PEST-3 shall be completed each time the Individual Standard Mixtures are analyzed, for each GC column used. FORM VII-PEST-4 shall be completed each time the CS3 Toxaphene standard is analyzed as part of the 72-hour confirmation requirement.

3.14.2 Instructions

Complete Form VII PEST-1, PEST-2, PEST-3, PEST-4, and Form VII ARO for each standard reported on Form VIII PEST and FORM VIII ARO. Complete the header information according to the instructions in Section 3.3. If more than 5 peaks for a particular Aroclor are to be reported, complete as many Form VII ARO as necessary, duplicating the header information and page numbering as described in Section 3.3. Complete the remainder of the forms using the following instructions.

3.14.2.1 Enter the date(s) of the initial calibration(s). Give inclusive dates if the initial calibration is performed over more than one day. Dates shall be entered as MM/DD/YYYY.

3.14.2.2 Identify the GC column and internal diameter in the appropriate fields.

3.14.2.3 On Form VII PEST-1, enter the EPA Sample Number, Laboratory Sample Identifier, and date and time of analysis for the instrument blank that preceded the 12-hour sequence (PIBLK). For the PEM that initiated or terminated the 12-hour sequence (PEM), enter the EPA Sample Number, Laboratory Sample Identifier, and date and time of analysis. Dates shall be entered as MM/DD/YYYY. Time shall be entered using military time.

3.14.2.4 When reporting data for the PEM at the **beginning** of the initial calibration sequence, leave the "EPA Sample No.", "Lab Sample ID", "Date Analyzed", and "Time Analyzed" fields blank for the instrument blank (PIBLK), when no instrument blank is analyzed before the PEM. When reporting **all other** PEM analyses, the instrument blank fields shall be completed.

3.14.2.5 In the table, report the RT for each target analyte and surrogate in the PEM, as well as the RT windows.

3.14.2.6 For each target analyte and surrogate in the PEM, enter the amount of the analyte found in the PEM, in nanograms to three decimal places, in the "CALC AMOUNT" column.

3.14.2.7 Enter the nominal amount of each analyte in the PEM in the "NOM AMOUNT" column.

3.14.2.8 Calculate the Percent Difference between the calculated amount and nominal amount for each analyte according to Exhibits D - Analytical Methods for Pesticides and Analytical Methods for Aroclors. Report the values in the "%D" column. If the Percent Difference is greater than 999.9, report as 999.9. If the Percent Difference is less than -99.9, report as -99.9.

3.14.2.9 Calculate the Percent Breakdown (%Breakdown) for Endrin and 4,4'-DDT and the combined %Breakdown in the PEM according to Exhibit D. Enter the values for the %Breakdown of Endrin and 4,4'-DDT in their respective fields immediately under the table.

3.14.2.10 Form VII PEST-2 contains the RT and CF data for Individual Standard Mixtures A and B. FORM VII PEST-3 contains the RT and CF data for Individual Standard Mixture C. FORM VII PEST-4 contains the RT and CF data for the CS3 Toxaphene standard.

Enter the EPA Sample Number, Laboratory Sample Identifier, date, and time of analysis for the instrument blank that preceded the

12-hour sequence (PIBLK). For INDC3 or INDA3 and INDB3 that initiated or terminated a 12-hour sequence and for the CS3 Toxaphene standard that is part of the 72-hour confirmation, enter the EPA Sample Number, Laboratory Sample Identifier, and date and time of analysis in the appropriate fields.

3.14.2.11 Using the appropriate initial calibration, enter the Mean Calibration Factor ($\overline{CF}$) for each target analyte and surrogate in INDC3 on FORM VII PEST-3 or INDA3 and INDB3 on FORM VII PEST-2 and CS3 Toxaphene on FORM VII PEST-4.

3.14.2.12 Enter the CF for each target analyte and surrogate from the calibration verification standards. Calculate the Percent Difference between the calibration verification CF and the $\overline{CF}$ from the initial calibration for each target analyte according to Exhibit D - Analytical Methods for Pesticides. Report the values in the "%D" column. If the Percent Difference is greater than 999.9, report as 999.9. If the Percent Difference is less than -99.9, report as -99.9.

3.14.2.13 On Form VII ARO, enter the EPA Sample Number, Laboratory Sample Identifier, date, and time of analysis for each Aroclor standard (1016 and 1260) in the appropriate fields. If Aroclor 1016 and 1260 are analyzed as a mixture, enter the EPA Sample Number of the mixture in the first "EPA Sample No." field and leave the second field blank.

3.14.2.14 In the table, report the RT for each Aroclor peak and surrogate. If Aroclor 1016 and 1260 are not analyzed as a mixture, report the surrogate information from Aroclor 1016 only. The Contractor shall report the RT window for each Aroclor peak and surrogate as determined from the appropriate initial calibration.

3.14.2.15 Using the appropriate initial calibration, enter the $\overline{CF}$ for each Aroclor peak and surrogate.

3.14.2.16 Enter the CF for each Aroclor peak and surrogate from the calibration verification standard(s).

3.14.2.17 Calculate the Percent Difference for all Aroclor peaks and surrogates. See Exhibit D - Analytical Methods for Aroclors for the equation. If the Percent Difference is greater than 999.9, report as 999.9. If the Percent Difference is less than -99.9, report as -99.9.

3.15 Internal Standard Area and RT Summary (Form VIII VOA, VOA-SIM, and Form VIII SV-1, SV-2, SV-SIM1, SV-SIM2)

3.15.1 Purpose

This form is used to summarize the peak areas and RTs of the internal standards added to all volatile and semivolatile calibration standards and samples, including: dilutions, reanalyses, and blanks. The data are used to determine when changes in internal standard responses will adversely affect quantitation of target compounds. This form shall be completed each time a CCV is performed, or when samples are analyzed under the same GC/MS instrument performance check as an initial calibration.

3.15.2 Instructions

Complete the header information according to Section 3.3. Complete the remainder of the form using the following instructions. If samples are analyzed immediately following an initial calibration, before another instrument performance check and a CCV, Form VIII shall be completed on the basis of the internal standard areas of the 50 µg/L initial calibration standard for volatiles (or the 5 µg/L initial calibration standard if the trace volatiles analysis of water samples at lower CRQLs are requested), and the 20 ng/µL initial calibration standard for semivolatiles (or the 0.40 ng/µL initial calibration if the optional analysis of semivolatiles by the SIM method is requested). Use the date and time of analysis of this standard and the Laboratory File Identifier and areas in place of those of a CCV standard.

3.15.2.1 Enter the date and time of analysis of the continuing calibration standard. The date shall be entered as MM/DD/YYYY. The time shall be reported using military time.

3.15.2.2 For volatiles, enter "Y" of heated purge is performed or "N" of heated purge is not performed. Enter the GC column identifier, internal diameter, and column length. For semivolatiles, enter GC column identifier and internal diameter.

3.15.2.3 From the results of the analysis of the CCV standard, enter the area measured for each internal standard and its RT (in decimal minutes) under the appropriate column in the "12 HOUR STD" row.

3.15.2.4 For each internal standard listed in Tables 7 and 8, calculate the upper and lower limits of the area of the particular standard for Low/Medium Volatiles and Trace Volatiles accordingly. Report these values in the "UPPER LIMIT" and "LOWER LIMIT" rows, respectively. Calculate the upper limit of the RT as the retention of the internal standard, and the lower limit of the RT as the RT in the standard minus 0.50 minutes (30 seconds) for Low/Medium or 0.33 minutes (20 seconds) for Trace Volatiles, respectively.

3.15.2.5 For each sample, including dilutions, reanalyses, blanks, and requested MS/MSDs, analyzed under a given CCV, enter the EPA Sample Number and the area measured for each internal standard and its RT. If the internal standard area is outside the upper or lower limits calculated in Section 3.15.2.4, flag that area with an asterisk ("*"). The asterisk shall be placed in the far right-hand space of the box for each internal standard area, directly under the "#" symbol. Similarly, flag the RT of any internal standard that is outside the limits with an asterisk.

3.15.2.6 Number all pages as described in Section 3.3.

TABLE 7

Volatile Internal Standards

Volatile Internal Standards	CAS Number
IS1: Chlorobenzene-d_5 (CBZ)	3114-55-4
IS2: 1,4-Difluorobenzene (DFB)	540-36-3
IS3: 1,4-Dichlorobenzene-d_4(DCB)	3855-82-1

TABLE 8

Semivolatile Internal Standards

Semivolatile Internal Standards	CAS Number
IS1: 1,4-Dichlorobenzene-d_4 (DCB)	3855-82-1
IS2: Naphthalene-d_8 (NPT)	1146-65-2
IS3: Acenaphthene-d_{10} (ANT)	15067-26-2
IS4: Phenanthrene-d_{10} (PHN)	1517-22-2
IS5: Chrysene-d_{12} (CRY)	1719-03-5
IS6: Perylene-d_{12} (PRY)	1520-96-3

3.16 Pesticide and Analytical Sequence (Form VIII PEST and Form VIII ARO)

3.16.1 Purpose

This form is used to report the analytical sequence for pesticide and Aroclor analyses. At least one form is required for each GC column used for pesticide and Aroclor analyses.

3.16.2 Instructions

Complete the header information according to the instructions in Section 3.3. Complete the remainder of the form using the following instructions.

3.16.2.1 Enter the date(s) of the initial calibration. Give inclusive dates if the initial calibration is performed over more than one day. Dates shall be entered as MM/DD/YYYY.

3.16.2.2 Identify the GC column and internal diameter in the appropriate fields.

3.16.2.3 At the top of the table, report the $\overline{RT}$ for tetrachloro-m-xylene (TCX) and decachlorobiphenyl (DCB) calculated from the initial calibration sequence.

3.16.2.4 For every analysis associated with a particular analytical sequence starting with the initial calibration, enter the EPA Sample Number, Laboratory File Identifier, and date and time of analysis. Each sample analyzed as part of the sequence shall be reported on Form VIII **even** if it is not associated with the SDG. The Contractor shall use ZZZZZ as the EPA Sample Number to distinguish all samples that are not part of the SDG being reported using military time.

3.16.2.5 Report the RT of the surrogates for each analysis in the "TCX RT" and "DCB RT" columns. For pesticides, all sample analyses shall be bracketed by acceptable analyses of instrument blanks, a PEM, and Individual Standard Mixtures A and B or C. Given the fact that the initial calibration for pesticides and Aroclors may remain valid for some time (see Exhibits D - Analytical Methods for Pesticides and Analytical Methods for Aroclors), it is only necessary to report the data from 12-hour periods when samples, dilutions, reanalyses, MS/MSDs, LCSs, or blanks in an SDG were analyzed. All data necessary to demonstrate compliance with the requirements specified in Exhibits D - Analytical Methods for

Pesticides and Analytical Methods for Aroclors must be reported. For pesticides, the Contractor shall submit Form VIII for the initial calibration sequence and forms that include the PEMs and Individual Standard Mixtures that bracket **any** and **all** samples in the SDG. While the data for time periods between the initial calibration and samples in the SDG are not a routine deliverable, the data shall be available as requested (e.g., at on-site evaluations). Non-EPA samples or samples from SDGs not being reported shall be numbered ZZZZZ.

3.16.2.6 Flag all those values which do not meet the contract requirements by entering an asterisk ("*") in the "TCX RT" and "DCB RT"column, under the "#" symbol. If the RT cannot be calculated due to interfering peaks, leave the "RT" column blank for that surrogate, enter an asterisk in the last column, and document the problem in the SDG Narrative.

3.16.2.7 If more than a single copy of Form VIII is required for pesticides or Aroclors, enter the same header information on all subsequent pages for that GC column and instrument, and number each page as described in Section 3.3.

3.17 Pesticide Cleanup Summary (Form IX PEST-1 and PEST-2)

3.17.1 Purpose

This form summarizes the results of the checks performed for both cleanup procedures employed during the preparation of pesticide extracts for analysis. Form IX PEST-1 is used to report the results of the check of the Florisil cartridges used to process all sample extracts, and to associate the lot of cartridges with particular sample results so that problems with a particular cartridge lot may be tracked across all associated samples. Form IX PEST-2 summarizes the results of the calibration verification of the GPC device that shall be used to process all sample extracts for pesticide analyses that require GPC cleanup (mandatory for all soil samples, optional for water samples).

3.17.2 Instructions

Complete the header information according to the instructions in Section 3.3. Enter the Case Number and SDG Number for the current data package, regardless of the original Case for which the cartridge check was performed. Complete the remainder of the form using the following instructions.

3.17.3 FORM IX PEST-1

3.17.3.1 Enter the Florisil cartridge Lot Number.

3.17.3.2 Enter the date the Florisil cartridge check solution was analyzed in the "Date of Analysis" field. The date shall be entered as MM/DD/YYYY.

3.17.3.3 Complete the "GC Column" and "ID" fields for the GC column used to analyze the samples, including blanks, MS/MSDs, and LCSs. Report all results from a single GC column.

3.17.3.4 In the first table, enter the amount of spike added and spike recovered in nanograms (ng) for each analyte.

3.17.3.5 Calculate the Percent Recovery to the nearest whole percent, and enter the number in the "% REC" field. Flag each spike recovery outside the QC limits (shown on the form) with an asterisk ("*"). The asterisk shall be placed in the last space in the "% REC" column, underneath the "#" symbol.

3.17.3.6 In the second table, complete the "EPA Sample No.", the "Lab Sample ID", and "Date Analyzed" fields for each sample and blank that were cleaned up using this lot of Florisil cartridges.

3.17.3.7 Number the pages as described in Section 3.3.

3.17.4 FORM IX PEST-2

3.17.4.1 On Form IX PEST-2, enter an identifier for the GPC column and the analysis date of calibration verification in the appropriate fields.

3.17.4.2 Complete the "GC Column" and "ID" fields as on Form IX PEST-1 for Florisil. Report all results from a single column.

3.17.4.3 For each of the pesticide Matrix Spike compounds listed in the first table, enter the amount of the spike added to the GPC column and the amount recovered, in nanograms (ng).

3.17.4.4 Calculate the Percent Recovery of each analyte, and enter these values on the form, to the nearest percent. Compare the recoveries to the QC limits shown on the form, and flag all those values outside the limits with an asterisk ("*") in the "% REC" column underneath the "#" symbol.

3.17.4.5 For each sample in the data package that was subjected to GPC cleanup under this calibration verification, enter the EPA Sample Number, Laboratory Sample Identifier, and the date the sample was subjected to GPC cleanup in the second table.

3.17.4.6 If more than one copy of Form IX PEST-2 is required, number all pages as described in Section 3.3.

3.18 Identification Summary of Single Component and Multicomponent Analytes (Form X PEST-1, PEST-2 and Form X ARO)

3.18.1 Purpose

This form summarizes the quantitations of all target pesticides and Aroclors detected in a given sample. It reports the RTs of the compound on both columns on which it was analyzed, as well as the RT windows of the standard for that compound on both of these columns. In addition, it is used to report the concentration determined from each GC column, and the Percent Difference between the two quantitative results. Separate forms are used for single component analytes and multicomponent analytes.

Form X is required for each sample, including dilutions and reanalyses, blanks, LCSs, and MS/MSDs in which compounds listed in Exhibit C - Pesticides and Aroclors are detected and reported on Form I. **Do not generate a Form X for pesticide instrument blanks.**

3.18.2 Instructions

Complete the header information according to the instructions in Section 3.3. Complete the remainder of the form using the following instructions.

3.18.2.1 Enter the date(s) of analysis. Dates shall be entered as MM/DD/YYYY.

3.18.2.2 Enter the GC column and internal diameter for each of the two columns.

3.18.2.3 For each single component pesticide positively identified on both columns, enter the name of the compound in the "ANALYTE" column as it appears on Form I.

3.18.2.4 For Form X PEST-1, enter the RTs on each column of the compounds detected in the sample next to the appropriate column designation (1 or 2).

3.18.2.5 Enter the RT windows on each GC column from the initial calibration standards. These data shall correspond with those on Form VI and shall be entered in a similar manner. The lower value is entered under the "FROM" column, and the upper value under the "TO" column.

3.18.2.6 Enter the concentration calculated from each GC column under the "CONCENTRATION" column. Analyte concentrations must be rounded using the USEPA Rounding Rules to the required number of significant figures. Although the units are the same as those used on Form I, µg/L for water samples and µg/kg for soil samples, do **not** enter any units on Form X.

3.18.2.7 Calculate the Percent Difference between the concentrations entered on this form. See Exhibits D - Analytical Methods for Pesticides and Analytical Methods for Aroclors for equations, and report to a tenth of a percent in the "%D" column. If the Percent Difference is greater than 999.9, report it as 999.9.

3.18.2.8 The **lower** of the two concentrations is reported on Form I for each pesticide compound. The lower concentration is used because, if present, coeluting interferences are likely to increase the calculated concentration of any target compound. If the Percent Difference between the calculated concentrations is greater than 25.0%, flag the concentration on Form I, as described previously. This will alert the data user to the potential problems in quantitating this analyte.

3.18.2.9 If more pesticide compounds are identified in an individual sample than can be reported on one Form X, complete as many additional copies of Form X as necessary, duplicating all header information and numbering the pages as described in Section 3.3.

3.18.2.10 Report Toxaphene detected in samples on Form X PEST-2. Report Aroclors detected in samples on Form X ARO. Complete the header information and GC column fields as described above. For multicomponent analytes (Toxaphene and Aroclors), it is necessary to report the RT and concentration of each peak chosen for quantitation in the target analyte in a fashion similar to that for single component pesticides. The Aroclor peaks used for quantitation must be reported in its proper position (e.g., if peaks 1, 3, and 5 are used, then report the values of these peaks in the 1, 3, and 5 position on Form X). The concentrations of all

peaks quantitated (three are required, up to five may be used) are averaged to determine the mean concentration. The mean concentration must be rounded using the USEPA Rounding Rules to the required number of significant numbers. Report the lower of the two **mean** concentrations on Form I. Flag this value if the mean concentrations from the two GC columns differ by more than 25.0%, as described previously.

3.18.2.11 If more multicomponent compounds, or more than 5 peaks per multicomponent compound, are identified in an individual sample than can be reported on one Form X, complete as many additional copies of Form X as necessary, duplicating all header information and numbering the pages as described in Section 3.3.

3.19 Sample Log-In Sheet (Form DC-1)

3.19.1 Purpose

This form is used to document the receipt and inspection of sample containers and samples. One original Form DC-1 is required for each sample shipping container (only the hardcopy form is required). If the samples in a single sample shipping container are assigned to more than one SDG, the original Form DC-1 shall be placed with the deliverables for the SDG of the lowest alphanumeric number, and a copy of Form DC-1 shall be placed with the deliverables for the other SDGs. The copies shall be identified as "copy(ies)", and the location of the original shall be noted on the copies.

3.19.2 Instructions

3.19.2.1 Sign and date the airbill. If an airbill is not received, include a hardcopy receipt requested from the shipping company or a printout of the shipping company’s electronic tracking information.

3.19.2.2 Complete the header information on the form, including the log-in date.

3.19.2.3 Examine the shipping container and record the presence/absence of custody seals and their condition (e.g., intact, broken) in Item 1.

3.19.2.4 Record the Custody Seal Numbers in Item 2.

3.19.2.5 Open the container, remove the enclosed sample documentation, and record the presence/absence of USEPA forms, SMO forms (i.e., TR/Chain of Custody Records, Packing Lists), and airbills or airbill stickers in Items 3 and 4. Specify if there is an airbill present or an airbill sticker in Item 4. Record the airbill or sticker number in Item 5.

3.19.2.6 Remove the samples from the shipping container(s), examine the samples and the sample tags (if present), and record the condition of the sample bottles (e.g., intact, broken, leaking) and presence or absence of sample tags in Items 6 and 7.

3.19.2.7 Record the presence of the cooler temperature indicator bottle in Item 8 and the cooler temperature in Item 9.

3.19.2.8 Review the sample shipping documents and compare the information recorded on all the documents and samples and circle the appropriate answer in Item 10.

3.19.2.9 The log-in date should be recorded at the top of Form DC-1; record the date and time of cooler receipt at the laboratory in Items 11 and 12.

3.19.2.10 If there are no problems observed during receipt, sign and date (include the time) Form DC-1 and the TR/COC, and record the Sample Numbers on Form DC-1 in the "EPA Sample #" column.

3.19.2.11 Record the appropriate Sample Tag Numbers and assigned laboratory numbers, if applicable.

3.19.2.12 Any comments should be made in the "Remarks" column.

3.19.2.13 Record the fraction designation (if appropriate) and the specific area designation (e.g., refrigerator number) in the "Sample Transfer" block located in the bottom left corner of Form DC-1. Sign and date the "Sample Transfer" block.

3.19.2.14 Cross out unused columns and spaces.

3.19.2.15 If there are problems observed during receipt or an answer marked with an asterisk (e.g., "absent*") was circled, contact SMO and document the contact as well as resolution of the problem on a CLP Communication Log. Following resolution, sign and date the forms and note, where appropriate, the resolution of the problem.

3.20 Organics Complete SDG File (CSF) Inventory Sheet (Form DC-2)

3.20.1 Purpose. Form DC-2 is used to record the inventory of documents in the original Sample Data Package sent to the USEPA Region.

3.20.2 Instructions

3.20.2.1 Organize all USEPA CSF documents as described in Section 2.6. Assemble the documents in the order specified on Form DC-2 and Section 2.6, and stamp each page with a consecutive number; however, do not number Form DC-2. Inventory the CSF by reviewing the document numbers and recording page number ranges in the columns provided on Form DC-2. The Contractor shall verify and record, in the "Comments" section on Form DC-2, all intentional gaps in the page numbering sequence (e.g., "page numbers not used, XXXX - XXXX, YYYY - YYYY"). If there are no documents for a specific document type, enter "NA" in the empty space.

3.20.2.2 Certain laboratory-specific documents related to the CSF may not fit into a clearly-defined category. The Contractor shall review Form DC-2 to determine if it is most appropriate to place them under categories 8, 9, 10, or 11. Category 11 should be used if there is no appropriate previous category. These types of documents should be described or listed in the blanks under each appropriate category on Form DC-2.

3.20.2.3 If it is necessary to insert new or inadvertently omitted documents, the Contractor shall identify the documents with unique accountable numbers and record the unique accountable numbers and the locations of the documents in the CSF (in the "Other Records" section on Form DC-2).

4.0 DATA REPORTING FORMS

The data reporting forms are shown on the following pages.

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1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Matrix: (SOIL/SED/WATER) _____ Lab Sample ID: _____

Sample wt/vol: _____ (g/mL)_____ Lab File ID: _____

Level: (TRACE/LOW/MED)_____ Date Received: _____

% Moisture: not dec._____ Date Analyzed: _____

GC Column: _____ ID: _____ (mm) Dilution Factor: _____

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

Purge Volume: _____(mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg)_____	Q
75-71-8	Dichlorodifluoromethane		
74-87-3	Chloromethane		
75-01-4	Vinyl chloride		
74-83-9	Bromomethane		
75-00-3	Chloroethane		
75-69-4	Trichlorofluoromethane		
75-35-4	1,1-Dichloroethene		
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane		
67-64-1	Acetone		
75-15-0	Carbon disulfide		
79-20-9	Methyl acetate		
75-09-2	Methylene chloride		
156-60-5	trans-1,2-Dichloroethene		
1634-04-4	Methyl tert-butyl ether		
75-34-3	1,1-Dichloroethane		
156-59-2	cis-1,2-Dichloroethene		
78-93-3	2-Butanone		
74-97-5	Bromochloromethane		
67-66-3	Chloroform		
71-55-6	1,1,1-Trichloroethane		
110-82-7	Cyclohexane		
56-23-5	Carbon tetrachloride		
71-43-2	Benzene		
107-06-2	1,2-Dichloroethane		
123-91-1	1,4-Dioxane		

1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Matrix: (SOIL/SED/WATER) _____ Lab Sample ID: _____

Sample wt/vol:_____ (g/mL)_____ Lab File ID: _____

Level: (TRACE/LOW/MED) _____ Date Received: _____

% Moisture: not dec._____ Date Analyzed: _____

GC Column:_____ ID:_____(mm) Dilution Factor: _____

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

Purge Volume: _____(mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg)_____	Q
79-01-6	Trichloroethene		
108-87-2	Methylcyclohexane		
78-87-5	1,2-Dichloropropane		
75-27-4	Bromodichloromethane		
10061-01-5	cis-1,3-Dichloropropene		
108-10-1	4-Methyl-2-pentanone		
108-88-3	Toluene		
10061-02-6	trans-1,3-Dichloropropene		
79-00-5	1,1,2-Trichloroethane		
127-18-4	Tetrachloroethene		
591-78-6	2-Hexanone		
124-48-1	Dibromochloromethane		
106-93-4	1,2-Dibromoethane		
108-90-7	Chlorobenzene		
100-41-4	Ethylbenzene		
95-47-6	o-Xylene		
179601-23-1	m,p-Xylene		
100-42-5	Styrene		
75-25-2	Bromoform		
98-82-8	Isopropylbenzene		
79-34-5	1,1,2,2-Tetrachloroethane		
541-73-1	1,3-Dichlorobenzene		
106-46-7	1,4-Dichlorobenzene		
95-50-1	1,2-Dichlorobenzene		
96-12-8	1,2-Dibromo-3-chloropropane		
120-82-1	1,2,4-Trichlorobenzene		
87-61-6	1,2,3-Trichlorobenzene		

1C - FORM I VOA-SIM
TRACE VOLATILE ORGANICS SIM ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Lab Sample ID: _____ Lab File ID: _____

Sample vol:(mL) _____ Date Received: _____

GC Column: _____ ID:_____(mm) Date Analyzed: _____

Dilution Factor: _____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg)_____	Q
123-91-1	1,4-Dioxane		
106-93-4	1,2-Dibromoethane		
96-12-8	1,2-Dibromo-3-chloropropane		

1D - FORM I SV-1 EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Matrix: (SOIL/SED/WATER)_____ Lab Sample ID: _____

Sample wt/vol: _____ (g/mL)_____ Lab File ID: _____

Level: (LOW/MED)_____ Extraction: (Type)_____

% Moisture: _____ Decanted: (Y/N)_____ Date Received: _____

Concentrated Extract Volume: _____(uL) Date Extracted: _____

Injection Volume: _____(uL) GPC Factor: _____ Date Analyzed: _____

GPC Cleanup: (Y/N) ____ pH: _____ Dilution Factor: _____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg)_____	Q
100-52-7	Benzaldehyde		
108-95-2	Phenol		
111-44-4	Bis(2-chloroethyl)ether		
95-57-8	2-Chlorophenol		
95-48-7	2-Methylphenol		
108-60-1	2,2'-Oxybis(1-chloropropane)		
98-86-2	Acetophenone		
106-44-5	4-Methylphenol		
621-64-7	N-Nitroso-di-n-propylamine		
67-72-1	Hexachloroethane		
98-95-3	Nitrobenzene		
78-59-1	Isophorone		
88-75-5	2-Nitrophenol		
105-67-9	2,4-Dimethylphenol		
111-91-1	Bis(2-chloroethoxy)methane		
120-83-2	2,4-Dichlorophenol		
91-20-3	Naphthalene		
106-47-8	4-Chloroaniline		
87-68-3	Hexachlorobutadiene		
105-60-2	Caprolactam		
59-50-7	4-Chloro-3-methylphenol		
91-57-6	2-Methylnaphthalene		
77-47-4	Hexachlorocyclopentadiene		
88-06-2	2,4,6-Trichlorophenol		
95-95-4	2,4,5-Trichlorophenol		
92-52-4	1,1'-Biphenyl		
91-58-7	2-Chloronaphthalene		
88-74-4	2-Nitroaniline		
131-11-3	Dimethylphthalate		
606-20-2	2,6-Dinitrotoluene		
208-96-8	Acenaphthylene		
99-09-2	3-Nitroaniline		
83-32-9	Acenaphthene		

1E - FORM I SV-2 EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Matrix: (SOIL/SED/WATER)_____ Lab Sample ID: _____

Sample wt/vol: _____ (g/mL)_____ Lab File ID: _____

Level: (LOW/MED)_____ Extraction: (Type)_____

% Moisture: _____ Decanted: (Y/N)_____ Date Received: _____

Concentrated Extract Volume: _____(uL) Date Extracted: _____

Injection Volume: _____(uL) GPC Factor: _____ Date Analyzed: _____

GPC Cleanup: (Y/N) ____ pH: _____ Dilution Factor: _____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg)_____	Q
51-28-5	2,4-Dinitrophenol		
100-02-7	4-Nitrophenol		
132-64-9	Dibenzofuran		
121-14-2	2,4-Dinitrotoluene		
84-66-2	Diethylphthalate		
86-73-7	Fluorene		
7005-72-3	4-Chlorophenyl-phenylether		
100-01-6	4-Nitroaniline		
534-52-1	4,6-Dinitro-2-methylphenol		
86-30-6	N-Nitrosodiphenylamine[1]		
95-94-3	1,2,4,5-Tetrachlorobenzene		
101-55-3	4-Bromophenyl-phenylether		
118-74-1	Hexachlorobenzene		
1912-24-9	Atrazine		
87-86-5	Pentachlorophenol		
85-01-8	Phenanthrene		
120-12-7	Anthracene		
86-74-8	Carbazole		
84-74-2	Di-n-butylphthalate		
206-44-0	Fluoranthene		
129-00-0	Pyrene		
85-68-7	Butylbenzylphthalate		
91-94-1	3,3'-Dichlorobenzidine		
56-55-3	Benzo(a)anthracene		
218-01-9	Chrysene		
117-81-7	Bis(2-ethylhexyl)phthalate		
117-84-0	Di-n-octylphthalate		
205-99-2	Benzo(b)fluoranthene		
207-08-9	Benzo(k)fluoranthene		
50-32-8	Benzo(a)pyrene		
193-39-5	Indeno(1,2,3-cd)pyrene		
53-70-3	Dibenzo(a,h)anthracene		
191-24-2	Benzo(g,h,i)perylene		
58-90-2	2,3,4,6-Tetrachlorophenol		

[1]Cannot be separated from Diphenylamine

1F - FORM I SV-SIM EPA SAMPLE NO.

SEMIVOLATILE SIM ORGANICS ANALYSIS DATA SHEET

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Matrix: (SOIL/SED/WATER)_____ Lab Sample ID: _____

Sample wt/vol: _____ (g/mL)_____ Lab File ID: _____

Extraction: (Type)_____

% Moisture: _____ Decanted: (Y/N)_____ Date Received: _____

Concentrated Extract Volume: _____(uL) Date Extracted: _____

Injection Volume: _____(uL) GPC Factor: _____ Date Analyzed: _____

GPC Cleanup: (Y/N) ____ pH: _____ Dilution Factor: _____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg)_____	Q
91-20-3	Naphthalene		
91-57-6	2-Methylnaphthalene		
208-96-8	Acenaphthylene		
83-32-9	Acenaphthene		
86-73-7	Fluorene		
87-86-5	Pentachlorophenol		
85-01-8	Phenanthrene		
120-12-7	Anthracene		
206-44-0	Fluoranthene		
129-00-0	Pyrene		
56-55-3	Benzo(a)anthracene		
218-01-9	Chrysene		
205-99-2	Benzo(b)fluoranthene		
207-08-9	Benzo(k)fluoranthene		
50-32-8	Benzo(a)pyrene		
193-39-5	Indeno(1,2,3-cd)pyrene		
53-70-3	Dibenzo(a,h)anthracene		
191-24-2	Benzo(g,h,i)perylene		

1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Matrix: (SOIL/SED/WATER)_____ Lab Sample ID: _____

Sample wt/vol: _____ (g/mL) _____ Lab File ID: _____

% Moisture: _____ Decanted: (Y/N)_____ Date Received: _____

Extraction: (Type)_____ Date Extracted: _____

Concentrated Extract Volume: _____(uL) Date Analyzed: _____

Injection Volume: _____(uL) GPC Factor: _____ Dilution Factor: _____

GPC Cleanup: (Y/N) ____ pH: _____ Sulfur Cleanup: (Y/N) _____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg)_____	Q
319-84-6	alpha-BHC		
319-85-7	beta-BHC		
319-86-8	delta-BHC		
58-89-9	gamma-BHC (Lindane)		
76-44-8	Heptachlor		
309-00-2	Aldrin		
1024-57-3	Heptachlor epoxide		
959-98-8	Endosulfan I		
60-57-1	Dieldrin		
72-55-9	4,4'-DDE		
72-20-8	Endrin		
33213-65-9	Endosulfan II		
72-54-8	4,4'-DDD		
1031-07-8	Endosulfan sulfate		
50-29-3	4,4'-DDT		
72-43-5	Methoxychlor		
53494-70-5	Endrin ketone		
7421-93-4	Endrin aldehyde		
5103-71-9	alpha-Chlordane		
5103-74-2	gamma-Chlordane		
8001-35-2	Toxaphene		

1H - FORM I ARO
AROCLOR ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Matrix: (SOIL/SED/WATER)_____ Lab Sample ID: _____

Sample wt/vol: _____ (g/mL)_____ Lab File ID: _____

% Moisture: _____ Decanted: (Y/N)_____ Date Received: _____

Extraction: (Type)_____ Date Extracted: _____

Concentrated Extract Volume: _____(uL) Date Analyzed: _____

Injection Volume: _____(uL) GPC Factor: _____ Dilution Factor: _____

GPC Cleanup: (Y/N) ____ pH: _____ Sulfur Cleanup: (Y/N) _____

Acid Cleanup: (Y/N) ____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg)_____	Q
12674-11-2	Aroclor-1016		
11104-28-2	Aroclor-1221		
11141-16-5	Aroclor-1232		
53469-21-9	Aroclor-1242		
12672-29-6	Aroclor-1248		
11097-69-1	Aroclor-1254		
11096-82-5	Aroclor-1260		
37324-23-5	Aroclor-1262		
11100-14-4	Aroclor-1268		

1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Matrix: (SOIL/SED/WATER) _____ Lab Sample ID: _____

Sample wt/vol: _____ (g/mL) _____ Lab File ID: _____

Level: (TRACE or LOW/MED) _____ Date Received: _____

% Moisture: not dec. _____ Date Analyzed: _____

GC Column: _____ ID: _____ (mm) Dilution Factor: _____

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS: (ug/L or ug/kg) ____ Purge Volume: _____ (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01					
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1]EPA-designated Registry Number.

1K - FORM I SV-TIC

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Matrix: (SOIL/SED/WATER) _____ Lab Sample ID: _____

Sample wt/vol: _____ (g/mL) _____ Lab File ID: _____

Level: (TRACE or LOW/MED) _____ Extraction: (Type) _____

% Moisture: _____ Decanted: (Y/N) ____ Date Received: _____

Concentrated Extract Volume: _____(uL) Date Extracted: _____

Injection Volume: _____(uL) GPC Factor: _____ Date Analyzed: _____

GPC Cleanup: (Y/N) ____ pH: _____ Dilution Factor: _____

CONCENTRATION UNITS:(ug/L or ug/kg) ____

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01					
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[2]	Total Alkanes	N/A		

[2]EPA-designated Registry Number.

2A - FORM II VOA-1
WATER VOLATILE DEUTERATED MONITORING COMPOUND RECOVERY

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Level: (TRACE or LOW)_____

	EPA SAMPLE NO.	VDMC1 (VCL) #	VDMC2 (CLA) #	VDMC3 (DCE) #	VDMC4 (BUT) #	VDMC5 (CLF) #	VDMC6 (DCA) #	VDMC7 (BEN) #
01								
02								
03								
04								
05								
06								
07								
08								
09								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

	QC LIMITS
VDMC1 (VCL) = Vinyl chloride-d_3	(65-131)
VDMC2 (CLA) = Chloroethane-d_5	(71-131)
VDMC3 (DCE) = 1,1-Dichloroethene-d_2	(55-104)
VDMC4 (BUT) = 2-Butanone-d_5	(49-155)
VDMC5 (CLF) = Chloroform-d	(78-121)
VDMC6 (DCA) = 1,2-Dichloroethane-d_4	(78-129)
VDMC7 (BEN) = Benzene-d_6	(77-124)

Column to be used to flag recovery values
* Values outside of contract required QC limits

2B - FORM II VOA-2
WATER VOLATILE DEUTERATED MONITORING COMPOUND RECOVERY

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Level: (TRACE or LOW)_____

	EPA SAMPLE NO.	VDMC8 (DPA) #	VDMC9 (TOL) #	VDMC10 (TDP) #	VDMC11 (HEX) #	VDMC12 (DXE) #	VDMC13 (TCA) #	VDMC14 (DCZ) #	TOT OUT
01									
02									
03									
04									
05									
06									
07									
08									
09									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									
24									
25									
26									
27									
28									
29									
30									

	QC LIMITS
VDMC8 (DPA) = 1,2-Dichloropropane-d_6	(79-124)
VDMC9 (TOL) = Toluene-d_8	(77-121)
VDMC10 (TDP) = trans-1,3-Dichloropropene-d_4	(73-121)
VDMC11 (HEX) = 2-Hexanone-d_5	(28-135)
VDMC12 (DXE) = 1,4-Dioxane-d_8	(50-150)
VDMC13 (TCA) = 1,1,2,2-Tetrachloroethane-d_2	(73-125)
VDMC14 (DCZ) = 1,2-Dichlorobenzene-d_4	(80-131)

Column to be used to flag recovery values
* Values outside of contract required QC limits

2C - FORM II VOA-3
SOIL VOLATILE DEUTERATED MONITORING COMPOUND RECOVERY

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Level: (LOW/MED)_____

	EPA SAMPLE NO.	VDMC1 (VCL) #	VDMC2 (CLA) #	VDMC3 (DCE) #	VDMC4 (BUT) #	VDMC5 (CLF) #	VDMC6 (DCA) #	VDMC7 (BEN) #
01								
02								
03								
04								
05								
06								
07								
08								
09								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

	QC LIMITS
VDMC1 (VCL) = Vinyl chloride-d_3	(68-122)
VDMC2 (CLA) = Chloroethane-d_5	(61-130)
VDMC3 (DCE) = 1,1-Dichloroethene-d_2	(45-132)
VDMC4 (BUT) = 2-Butanone-d_5	(20-182)
VDMC5 (CLF) = Chloroform-d	(72-123)
VDMC6 (DCA) = 1,2-Dichloroethane-d_4	(79-122)
VDMC7 (BEN) = Benzene-d_6	(80-121)

Column to be used to flag recovery values
* Values outside of contract required QC limits

2D - FORM II VOA-4
SOIL VOLATILE DEUTERATED MONITORING COMPOUND RECOVERY

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Level: (LOW/MED)_____

	EPA SAMPLE NO.	VDMC8 (DPA) #	VDMC9 (TOL) #	VDMC10 (TDP) #	VDMC11 (HEX) #	VDMC12 (DXE) #	VDMC13 (TCA) #	VDMC14 (DCZ) #	TOT OUT
01									
02									
03									
04									
05									
06									
07									
08									
09									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									
24									
25									
26									
27									
28									
29									
30									

	QC LIMITS
VDMC8 (DPA) = 1,2-Dichloropropane-d_6	(74-124)
VDMC9 (TOL) = Toluene-d_8	(78-121)
VDMC10 (TDP) = trans-1,3-Dichloropropene-d_4	(72-130)
VDMC11 (HEX) = 2-Hexanone-d_5	(17-184)
VDMC12 (DXE) = 1,4-Dioxane-d_8	(50-150)
VDMC13 (TCA) = 1,1,2,2-Tetrachloroethane-d_2	(56-161)
VDMC14 (DCZ) = 1,2-Dichlorobenzene-d_4	(70-131)

Column to be used to flag recovery values
* Values outside of contract required QC limits

2E - FORM II VOA-SIM1
TRACE SIM (WATER) VOLATILE DEUTERATED MONITORING COMPOUND RECOVERY

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

	EPA SAMPLE NO.	VDMC1 (VCL) #	VDMC2 (CLA) #	VDMC3 (DCE) #	VDMC4 (BUT) #	VDMC5 (CLF) #	VDMC6 (DCA) #	VDMC7 (BEN) #
01								
02								
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30								

	QC LIMITS
VDMC1 (VCL) = Vinyl chloride-d_3	(65-131)
VDMC2 (CLA) = Chloroethane-d_5	(71-131)
VDMC3 (DCE) = 1,1-Dichloroethene-d_2	(55-104)
VDMC4 (BUT) = 2-Butanone-d_5	(49-155)
VDMC5 (CLF) = Chloroform-d	(78-121)
VDMC6 (DCA) = 1,2-Dichloroethane-d_4	(78-129)
VDMC7 (BEN) = Benzene-d_6	(77-121)

Column to be used to flag recovery values
* Values outside of contract required QC limits

2F - FORM II VOA-SIM2
TRACE SIM (WATER) VOLATILE DEUTERATED MONITORING COMPOUND RECOVERY

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

	EPA SAMPLE NO.	VDMC8 (DPA) #	VDMC9 (TOL) #	VDMC10 (TDP) #	VDMC11 (HEX) #	VDMC12 (DXE) #	VDMC13 (TCA) #	VDMC14 (DCZ) #	TOT OUT
01									
02									
03									
04									
05									
06									
07									
08									
09									
10									
11									
12									
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19									
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21									
22									
23									
24									
25									
26									
27									
28									
29									
30									

	QC LIMITS
VDMC8 (DPA) = 1,2-Dichloropropane-d_6	(79-124)
VDMC9 (TOL) = Toluene-d_8	(77-121)
VDMC10 (TDP) = trans-1,3-Dichloropropene-d_4	(73-121)
VDMC11 (HEX) = 2-Hexanone-d_5	(28-135)
VDMC12 (DXE) = 1,4-Dioxane-d_8	(50-150)
VDMC13 (TCA) = 1,1,2,2-Tetrachloroethane-d_2	(73-125)
VDMC14 (DCZ) = 1,2-Dichlorobenzene-d_4	(80-131)

Column to be used to flag recovery values
* Values outside of contract required QC limits

2G - FORM II SV-1
WATER SEMIVOLATILE DEUTERATED MONITORING COMPOUND RECOVERY

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

	EPA SAMPLE NO.	SDMC1 (PHL) #	SDMC2 (BCE) #	SDMC3 (2CP) #	SDMC4 (4MP) #	SDMC5 (NBZ) #	SDMC6 (2NP) #	SDMC7 (DCP) #	SDMC8 (4CA) #
01									
02									
03									
04									
05									
06									
07									
08									
09									
10									
11									
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23									
24									
25									
26									
27									
28									
29									
30									

	QC LIMITS
SDMC1 (PHL) = Phenol-d_5	(39-106)
SDMC2 (BCE) = Bis(2-chloroethyl)ether-d_8	(40-105)
SDMC3 (2CP) = 2-Chlorophenol-d_4	(41-106)
SDMC4 (4MP) = 4-Methylphenol-d_8	(25-111)
SDMC5 (NBZ) = Nitrobenzene-d_5	(43-108)
SDMC6 (2NP) = 2-Nitrophenol-d_4	(40-108)
SDMC7 (DCP) = 2,4-Dichlorophenol-d_3	(37-105)
SDMC8 (4CA) = 4-Chloroaniline-d_4	(1-145)

\# Column to be used to flag recovery values
* Values outside of contract required QC limits
D DMC diluted out

2H - FORM II SV-2
WATER SEMIVOLATILE DEUTERATED MONITORING COMPOUND RECOVERY

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

	EPA SAMPLE NO.	SDMC9 (DMP) #	SDMC10 (ACY) #	SDMC11 (4NP) #	SDMC12 (FLR) #	SDMC13 (NMP) #	SDMC14 (ANC) #	SDMC15 (PYR) #	SDMC16 (BAP) #	TOT OUT
01										
02										
03										
04										
05										
06										
07										
08										
09										
10										
11										
12										
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15										
16										
17										
18										
19										
20										
21										
22										
23										
24										
25										
26										
27										
28										
29										
30										

	QC LIMITS
SDMC9 (DMP) = Dimethylphthalate-d_6	(47-114)
SDMC10 (ACY) = Acenaphthylene-d_8	(41-107)
SDMC11 (4NP) = 4-Nitrophenol-d_4	(33-116)
SDMC12 (FLR) = Fluorene-d_{10}	(42-111)
SDMC13 (NMP) = 4,6-Dinitro-2-methylphenol-d_2	(22-104)
SDMC14 (ANC) = Anthracene-d_{10}	(44-110)
SDMC15 (PYR) = Pyrene-d_{10}	(52-119)
SDMC16 (BAP) = Benzo(a)pyrene-d_{12}	(32-121)

Column to be used to flag recovery values
* Values outside of contract required QC limits
D DMC diluted out

2J - FORM II SV-3
SOIL SEMIVOLATILE DEUTERATED MONITORING COMPOUND RECOVERY

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Level: (LOW/MED)_____

	EPA SAMPLE NO.	SDMC1 (PHL) #	SDMC2 (BCE) #	SDMC3 (2CP) #	SDMC4 (4MP) #	SDMC5 (NBZ) #	SDMC6 (2NP) #	SDMC7 (DCP) #	SDMC8 (4CA) #
01									
02									
03									
04									
05									
06									
07									
08									
09									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									
24									
25									
26									
27									
28									
29									
30									

	QC LIMITS
SDMC1 (PHL) = Phenol-d_5	(17-103)
SDMC2 (BCE) = Bis(2-chloroethyl)ether-d_8	(12-98)
SDMC3 (2CP) = 2-Chlorophenol-d_4	(13-101)
SDMC4 (4MP) = 4-Methylphenol-d_8	(8-100)
SDMC5 (NBZ) = Nitrobenzene-d_5	(16-103)
SDMC6 (2NP) = 2-Nitrophenol-d_4	(16-104)
SDMC7 (DCP) = 2,4-Dichlorophenol-d_3	(23-104)
SDMC8 (4CA) = 4-Chloroaniline-d_4	(1-145)

Column to be used to flag recovery values
* Values outside of contract required QC limits
D DMC diluted out

2K - FORM II SV-4
SOIL SEMIVOLATILE DEUTERATED MONITORING COMPOUND RECOVERY

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Level: (LOW/MED)_____

	EPA SAMPLE NO.	SDMC9 (DMP) #	SDMC10 (ACY) #	SDMC11 (4NP) #	SDMC12 (FLR) #	SDMC13 (NMP) #	SDMC14 (ANC) #	SDMC15 (PYR) #	SDMC16 (BAP) #	TOT OUT
01										
02										
03										
04										
05										
06										
07										
08										
09										
10										
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13										
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20										
21										
22										
23										
24										
25										
26										
27										
28										
29										
30										

	QC LIMITS
SDMC9 (DMP) = Dimethylphthalate-d_6	(43-111)
SDMC10 (ACY) = Acenaphthylene-d_8	(20-97)
SDMC11 (4NP) = 4-Nitrophenol-d_4	(16-166)
SDMC12 (FLR) = Fluorene-d_{10}	(40-108)
SDMC13 (NMP) = 4,6-Dinitro-2-methylphenol-d_2	(1-121)
SDMC14 (ANC) = Anthracene-d_{10}	(22-98)
SDMC15 (PYR) = Pyrene-d_{10}	(51-120)
SDMC16 (BAP) = Benzo(a)pyrene-d_{12}	(43-111)

\# Column to be used to flag recovery values
* Values outside of contract required QC limits
D DMC diluted out

2L - FORM II SV-SIM1
WATER SEMIVOLATILE SIM DEUTERATED MONITORING COMPOUND RECOVERY

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

	EPA SAMPLE NO.	SDMC17 (FLN) #	SDMC18 (2MN) #	TOT OUT
01				
02				
03				
04				
05				
06				
07				
08				
09				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

	QC LIMITS
SDMC17 (FLN) = Fluoranthene-d_{10}	(50-150)
SDMC18 (2MN) = 2-Methylnapthalene-d_{10}	(50-150)

\# Column to be used to flag recovery values
* Values outside of contract required QC limits
D DMC diluted out

2M - FORM II SV-SIM2
SOIL SEMIVOLATILE SIM DEUTERATED MONITORING COMPOUND RECOVERY

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

	EPA SAMPLE NO.	SDMC17 (FLN) #	SDMC18 (2MN) #	TOT OUT
01				
02				
03				
04				
05				
06				
07				
08				
09				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

	QC LIMITS
SDMC17 (FLN) = Fluoranthene-d_{10}	(50-150)
SDMC18 (2MN) = 2-Methylnapthalene-d_{10}	(50-150)

\# Column to be used to flag recovery values
* Values outside of contract required QC limits
D DMC diluted out

2N - FORM II PEST-1
WATER PESTICIDE SURROGATE RECOVERY

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

GC Column(1): _____ ID: ____(mm) GC Column(2): _____ ID: ____(mm)

	EPA SAMPLE NO.	TCX 1 %REC #	TCX 2 %REC #	DCB 1 %REC #	DCB 2 %REC #	OTHER (1)	OTHER (2)	TOT OUT
01								
02								
03								
04								
05								
06								
07								
08								
09								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

	QC LIMITS
TCX = Tetrachloro-m-xylene	(30-150)
DCB = Decachlorobiphenyl	(30-150)

\# Column to be used to flag recovery values
* Values outside of QC limits
D Surrogate diluted out

2P - FORM II PEST-2
SOIL PESTICIDE SURROGATE RECOVERY

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

GC Column(1): _____ ID: ____(mm) GC Column(2): _____ ID: ____(mm)

	EPA SAMPLE NO.	TCX 1 %REC #	TCX 2 %REC #	DCB 1 %REC #	DCB 2 %REC #	OTHER (1)	OTHER (2)	TOT OUT
01								
02								
03								
04								
05								
06								
07								
08								
09								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

	QC LIMITS
TCX = Tetrachloro-m-xylene	(30-150)
DCB = Decachlorobiphenyl	(30-150)

\# Column to be used to flag recovery values
* Values outside of QC limits
D Surrogate diluted out

2Q - FORM II ARO-1
WATER AROCLOR SURROGATE RECOVERY

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

GC Column(1): _____ ID: ____(mm) GC Column(2): _____ ID: ____(mm)

	EPA SAMPLE NO.	TCX 1 %REC #	TCX 2 %REC #	DCB 1 %REC #	DCB 2 %REC #	OTHER (1)	OTHER (2)	TOT OUT
01								
02								
03								
04								
05								
06								
07								
08								
09								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

	QC LIMITS
TCX = Tetrachloro-m-xylene	(30-150)
DCB = Decachlorobiphenyl	(30-150)

\# Column to be used to flag recovery values
* Values outside of QC limits
D Surrogate diluted out

2R - FORM II ARO-2
SOIL AROCLOR SURROGATE RECOVERY

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

GC Column(1): _____ ID: ____(mm) GC Column(2): _____ ID: ____(mm)

	EPA SAMPLE NO.	TCX 1 %REC #	TCX 2 %REC #	DCB 1 %REC #	DCB 2 %REC #	OTHER (1)	OTHER (2)	TOT OUT
01								
02								
03								
04								
05								
06								
07								
08								
09								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

	QC LIMITS
TCX = Tetrachloro-m-xylene	(30-150)
DCB = Decachlorobiphenyl	(30-150)

\# Column to be used to flag recovery values
* Values outside of QC limits
D Surrogate diluted out

3A - FORM III VOA-1
WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Matrix Spike - EPA Sample No.: _____ Level: (TRACE or LOW)_____

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS %REC #	QC LIMITS REC.
1,1-Dichloroethene					61-145
Trichloroethene					71-120
Benzene					76-127
Toluene					76-125
Chlorobenzene					75-130

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD %REC #	%RPD #	QC LIMITS	
					RPD	REC.
1,1-Dichloroethene					0-14	61-145
Trichloroethene					0-14	71-120
Benzene					0-11	76-127
Toluene					0-13	76-125
Chlorobenzene					0-13	75-130

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: ___ out of ___ outside limits
Spike Recovery: ___ out of ___ outside limits

COMMENTS: _____
_____

3B - FORM III VOA-2
SOIL VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Matrix Spike - EPA Sample No.: _____ Level: (LOW/MED) _____

COMPOUND	SPIKE ADDED (ug/kg)	SAMPLE CONCENTRATION (ug/kg)	MS CONCENTRATION (ug/kg)	MS %REC #	QC LIMITS REC.
1,1-Dichloroethene					59-172
Trichloroethene					62-137
Benzene					66-142
Toluene					59-139
Chlorobenzene					60-133

COMPOUND	SPIKE ADDED (ug/kg)	MSD CONCENTRATION (ug/kg)	MSD %REC #	%RPD #	QC LIMITS	
					RPD	REC.
1,1-Dichloroethene					0-22	59-172
Trichloroethene					0-24	62-137
Benzene					0-21	66-142
Toluene					0-21	59-139
Chlorobenzene					0-21	60-133

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: ___ out of ___ outside limits
Spike Recovery: ___ out of ___ outside limits

COMMENTS: _____

3C - FORM III SV-1
WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Matrix Spike - EPA Sample No.: _____

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS %REC #	QC LIMITS REC.
Phenol					12-110
2-Chlorophenol					27-123
N-Nitroso-di-n-propylamine					41-116
4-Chloro-3-methylphenol					23-97
Acenaphthene					46-118
4-Nitrophenol					10-80
2,4-Dinitrotoluene					24-96
Pentachlorophenol					9-103
Pyrene					26-127

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD %REC #	%RPD #	QC LIMITS	
					RPD	REC.
Phenol					0-42	12-110
2-Chlorophenol					0-40	27-123
N-Nitroso-di-n-propylamine					0-38	41-116
4-Chloro-3-methylphenol					0-42	23-97
Acenaphthene					0-31	46-118
4-Nitrophenol					0-50	10-80
2,4-Dinitrotoluene					0-38	24-96
Pentachlorophenol					0-50	9-103
Pyrene					0-31	26-127

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: ___ out of ___ outside limits
Spike Recovery: ___ out of ___ outside limits

COMMENTS: _____

3D - FORM III SV-2
SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Matrix Spike - EPA Sample No.: _____ Level: (LOW/MED) _____

COMPOUND	SPIKE ADDED (ug/kg)	SAMPLE CONCENTRATION (ug/kg)	MS CONCENTRATION (ug/kg)	MS %REC #	QC LIMITS REC.
Phenol					26-90
2-Chlorophenol					25-102
N-Nitroso-di-n-propylamine					41-126
4-Chloro-3-methylphenol					26-103
Acenaphthene					31-137
4-Nitrophenol					11-114
2,4-Dinitrotoluene					28-89
Pentachlorophenol					17-109
Pyrene					35-142

COMPOUND	SPIKE ADDED (ug/kg)	MSD CONCENTRATION (ug/kg)	MSD %REC #	%RPD #	QC LIMITS	
					RPD	REC.
Phenol					0-35	26-90
2-Chlorophenol					0-50	25-102
N-Nitroso-di-n-propylamine					0-38	41-126
4-Chloro-3-methylphenol					0-33	26-103
Acenaphthene					0-19	31-137
4-Nitrophenol					0-50	11-114
2,4-Dinitrotoluene					0-47	28-89
Pentachlorophenol					0-47	17-109
Pyrene					0-36	35-142

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: ___ out of ___ outside limits
Spike Recovery: ___ out of ___ outside limits

COMMENTS: _____

3E - FORM III SV-SIM1
WATER SEMIVOLATILE SIM MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Matrix Spike - EPA Sample No.: _____

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS %REC #	QC LIMITS REC.
Acenaphthene					46-118
Pentachlorophenol					9-103
Pyrene					26-127

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD %REC #	%RPD #	QC LIMITS	
					RPD	REC.
Acenaphthene					0-31	46-118
Pentachlorophenol					0-50	9-103
Pyrene					0-31	26-127

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: ___ out of ___ outside limits
Spike Recovery: ___ out of ___ outside limits

COMMENTS: _____

3F - FORM III SV-SIM2
SOIL SEMIVOLATILE SIM MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Matrix Spike - EPA Sample No.: _____

COMPOUND	SPIKE ADDED (ug/kg)	SAMPLE CONCENTRATION (ug/kg)	MS CONCENTRATION (ug/kg)	MS %REC #	QC LIMITS REC.
Acenaphthene					31-137
Pentachlorophenol					17-109
Pyrene					35-142

COMPOUND	SPIKE ADDED (ug/kg)	MSD CONCENTRATION (ug/kg)	MSD %REC #	%RPD #	QC LIMITS	
					RPD	REC.
Acenaphthene					0-19	31-137
Pentachlorophenol					0-47	17-109
Pyrene					0-36	35-142

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: ___ out of ___ outside limits
Spike Recovery: ___ out of ___ outside limits

COMMENTS: _____

3G - FORM III PEST-1
WATER PESTICIDE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Matrix Spike - EPA Sample No.: _____

Instrument ID: _____ GC Column:_____ ID: _____(mm)

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS %REC #	QC LIMITS REC.
gamma-BHC (Lindane)					56-123
Heptachlor					40-131
Aldrin					40-120
Dieldrin					52-126
Endrin					56-121
4,4'-DDT					38-127

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD %REC #	%RPD #	QC LIMITS	
					RPD	REC.
gamma-BHC (Lindane)					0-15	56-123
Heptachlor					0-20	40-131
Aldrin					0-22	40-120
Dieldrin					0-18	52-126
Endrin					0-21	56-121
4,4'-DDT					0-27	38-127

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: ___ out of ___ outside limits
Spike Recovery: ___ out of ___ outside limits

COMMENTS: _____

3H - FORM III PEST-2
SOIL PESTICIDE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Matrix Spike - EPA Sample No.: _____

Instrument ID: _____ GC Column:_____ ID: _____(mm)

COMPOUND	SPIKE ADDED (ug/kg)	SAMPLE CONCENTRATION (ug/kg)	MS CONCENTRATION (ug/kg)	MS %REC #	QC LIMITS REC.
gamma-BHC (Lindane)					46-127
Heptachlor					35-130
Aldrin					34-132
Dieldrin					31-134
Endrin					42-139
4,4'-DDT					23-134

COMPOUND	SPIKE ADDED (ug/kg)	MSD CONCENTRATION (ug/kg)	MSD %REC #	%RPD #	QC LIMITS	
					RPD	REC.
gamma-BHC (Lindane)					0-50	46-127
Heptachlor					0-31	35-130
Aldrin					0-43	34-132
Dieldrin					0-38	31-134
Endrin					0-45	42-139
4,4'-DDT					0-50	23-134

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: ___ out of ___ outside limits
Spike Recovery: ___ out of ___ outside limits

COMMENTS: _____

3J - FORM III ARO-1
WATER AROCLOR MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Matrix Spike - EPA Sample No.: _____

Instrument ID: _____ GC Column:_____ ID: _____(mm)

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC LIMITS REC.
AR1016					29-135
AR1260					29-135

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	%RPD #	QC LIMITS	
					RPD	REC.
AR1016					0-15	29-135
AR1260					0-20	29-135

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: ___ out of ___ outside limits
Spike Recovery: ___ out of ___ outside limits

COMMENTS: _____

3K - FORM III ARO-2
SOIL AROCLOR MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Matrix Spike - EPA Sample No.: _____

Instrument ID: _____ GC Column:_____ ID: _____(mm)

COMPOUND	SPIKE ADDED (ug/kg)	SAMPLE CONCENTRATION (ug/kg)	MS CONCENTRATION (ug/kg)	MS % REC #	QC LIMITS REC.
AR1016					29-135
AR1260					29-135

COMPOUND	SPIKE ADDED (ug/kg)	MSD CONCENTRATION (ug/kg)	MSD % REC #	% RPD #	QC LIMITS	
					RPD	REC.
AR1016					0-15	29-135
AR1260					0-20	29-135

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: ___ out of ___ outside limits
Spike Recovery: ___ out of ___ outside limits

COMMENTS: _____

3L - FORM III PEST-3
WATER PESTICIDE LABORATORY CONTROL
SAMPLE RECOVERY

EPA SAMPLE NO.

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Lab Sample ID: _____ LCS Lot No.: _____

Date Extracted: _____ Date Analyzed (1): _____

Instrument ID (1): _____ GC Column (1):_____ ID: _____(mm)

COMPOUND	AMOUNT ADDED (ug/L)	AMOUNT RECOVERED (ug/L)	%REC #	QC LIMITS
gamma-BHC (Lindane)				50-120
Heptachlor epoxide				50-150
Dieldrin				30-130
4,4'-DDE				50-150
Endrin				50-120
Endosulfan sulfate				50-120
gamma-Chlordane				30-130

Instrument ID (2): _____ GC Column (2):_____ ID: _____(mm)

Date Analyzed (2): _____

COMPOUND	AMOUNT ADDED (ug/L)	AMOUNT RECOVERED (ug/L)	%REC #	QC LIMITS
gamma-BHC (Lindane)				50-120
Heptachlor epoxide				50-150
Dieldrin				30-130
4,4'-DDE				50-150
Endrin				50-120
Endosulfan sulfate				50-120
gamma-Chlordane				30-130

Column to be used to flag recovery values with an asterisk
* Values outside of QC limits

LCS Recovery:_____ out of _____ outside limits.

COMMENTS: _____
_____

3M - FORM III PEST-4
SOIL PESTICIDE LABORATORY CONTROL
SAMPLE RECOVERY

EPA SAMPLE NO.

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Lab Sample ID: _____ LCS Lot No.: _____

Date Extracted: _____ Date Analyzed (1): _____

Instrument ID (1): _____ GC Column (1):_____ ID: _____(mm)

COMPOUND	AMOUNT ADDED (ug/kg)	AMOUNT RECOVERED (ug/kg)	%REC #	QC LIMITS
gamma-BHC (Lindane)				50-120
Heptachlor epoxide				50-150
Dieldrin				30-130
4,4'-DDE				50-150
Endrin				50-120
Endosulfan sulfate				50-120
gamma-Chlordane				30-130

Instrument ID (2): _____ GC Column (2):_____ ID: _____(mm)

Date Analyzed (2): _____

COMPOUND	AMOUNT ADDED (ug/kg)	AMOUNT RECOVERED (ug/kg)	%REC #	QC LIMITS
gamma-BHC (Lindane)				50-120
Heptachlor epoxide				50-150
Dieldrin				30-130
4,4'-DDE				50-150
Endrin				50-120
Endosulfan sulfate				50-120
gamma-Chlordane				30-130

Column to be used to flag recovery values with an asterisk
* Values outside of QC limits

LCS Recovery:_____ out of _____ outside limits.

COMMENTS: _____

_____

3N - FORM III ARO-3
WATER AROCLOR LABORATORY CONTROL
SAMPLE RECOVERY

EPA SAMPLE NO.

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Lab Sample ID: _____ LCS Lot No.: _____

Date Extracted: _____ Date Analyzed (1): _____

Instrument ID (1): _____ GC Column (1):_____ ID: _____(mm)

COMPOUND	AMOUNT ADDED (ug/L)	AMOUNT RECOVERED (ug/L)	%REC #	QC LIMITS
AR1016				50-150
AR1260				50-150

Instrument ID (2): _____ GC Column (2):_____ ID: _____(mm)

Date Analyzed (2): _____

COMPOUND	AMOUNT ADDED (ug/L)	AMOUNT RECOVERED (ug/L)	%REC #	QC LIMITS
AR1016				50-150
AR1260				50-150

Column to be used to flag recovery values with an asterisk
* Values outside of QC limits

LCS Recovery:_____ out of _____ outside limits.

COMMENTS: _____

3P - FORM III ARO-4
SOIL AROCLOR LABORATORY CONTROL
SAMPLE RECOVERY

EPA SAMPLE NO.

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Lab Sample ID: _____ LCS Lot No.: _____

Date Extracted: _____ Date Analyzed (1): _____

Instrument ID (1): _____ GC Column (1):_____ ID: _____(mm)

COMPOUND	AMOUNT ADDED (ug/kg)	AMOUNT RECOVERED (ug/kg)	%REC #	QC LIMITS
AR1016				50-150
AR1260				50-150

Instrument ID (2): _____ GC Column (2):_____ ID: _____(mm)

Date Analyzed (2): _____

COMPOUND	AMOUNT ADDED (ug/kg)	AMOUNT RECOVERED (ug/kg)	%REC #	QC LIMITS
AR1016				50-150
AR1260				50-150

Column to be used to flag recovery values with an asterisk
* Values outside of QC limits

LCS Recovery:_____ out of _____ outside limits.

COMMENTS: _____

_____

4A - FORM IV VOA
VOLATILE METHOD BLANK SUMMARY

EPA SAMPLE NO.

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Lab File ID: _____ Lab Sample ID: _____

Instrument ID: _____

Matrix: (SOIL/SED/WATER) _____ Date Analyzed: _____

Level: (TRACE or LOW/MED) _____ Time Analyzed: _____

GC Column: _____ ID: _____(mm) Heated Purge: (Y/N) _____

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01				
02				
03				
04				
05				
06				
07				
08				
09				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

COMMENTS: _____

4B - FORM IV VOA-SIM
TRACE VOLATILE (WATER) SIM METHOD
BLANK SUMMARY

EPA SAMPLE NO.

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Lab File ID: _____ Lab Sample ID: _____

Instrument ID: _____ Date Analyzed: _____

GC Column: _____ ID: _____(mm) Time Analyzed: _____

Heated Purge: (Y/N) _____

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01				
02				
03				
04				
05				
06				
07				
08				
09				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

COMMENTS: _____

4C - FORM IV SV
SEMIVOLATILE METHOD BLANK SUMMARY

EPA SAMPLE NO.

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Lab File ID: _____ Lab Sample ID: _____

Instrument ID: _____ Date Extracted: _____

Matrix: (SOIL/SED/WATER) _____ Date Analyzed: _____

Level: (LOW/MED) _____ Time Analyzed: _____

Extraction: (Type) _____ GPC Cleanup: (Y/N) _____

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01				
02				
03				
04				
05				
06				
07				
08				
09				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

COMMENTS: _____

4D - FORM IV SV-SIM
SEMIVOLATILE SIM METHOD BLANK SUMMARY

EPA SAMPLE NO.

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Lab File ID: _____ Lab Sample ID: _____

Instrument ID: _____ Date Extracted: _____

Matrix: (SOIL/SED/WATER): _____ Date Analyzed: _____

Time Analyzed: _____ Extraction: (Type)_____ GPC Cleanup: (Y/N)_____

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01				
02				
03				
04				
05				
06				
07				
08				
09				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

COMMENTS: _____

4E - FORM IV PEST
PESTICIDE METHOD BLANK SUMMARY

EPA SAMPLE NO.

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Lab File ID: _____ Lab Sample ID: _____

Matrix: (SOIL/SED/WATER) _____ Extraction: (Type)_____ Date Extracted: _____

Sulfur Cleanup: (Y/N)_____ GPC Cleanup: (Y/N)_____

Date Analyzed (1): _____ Date Analyzed (2): _____

Time Analyzed (1): _____ Time Analyzed (2): _____

Instrument ID (1): _____ Instrument ID (2): _____

GC Column(1): _____ ID: ____(mm) GC Column(2): _____ ID: ____(mm)

	EPA SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED (1)	DATE ANALYZED (2)
01				
02				
03				
04				
05				
06				
07				
08				
09				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				

COMMENTS: _____

4F - FORM IV ARO
AROCLOR METHOD BLANK SUMMARY

EPA SAMPLE NO.

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Lab File ID: _____ Lab Sample ID: _____

Matrix: (SOIL/SED/WATER) _____ Extraction: (Type)_____ Date Extracted: _____

Sulfur Cleanup: (Y/N)_____ GPC Cleanup: (Y/N)_____

Acid Cleanup: (Y/N)_____

Date Analyzed (1): _____ Date Analyzed (2): _____

Time Analyzed (1): _____ Time Analyzed (2): _____

Instrument ID (1): _____ Instrument ID (2): _____

GC Column(1): _____ ID: ____(mm) GC Column(2): _____ ID: ____(mm)

	EPA SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED (1)	DATE ANALYZED (2)
01				
02				
03				
04				
05				
06				
07				
08				
09				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				

COMMENTS: _____

5A - FORM V VOA
VOLATILE ORGANIC INSTRUMENT
PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

EPA SAMPLE NO.

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Lab File ID: _____ BFB Injection Date: _____

Instrument ID: _____ BFB Injection Time: _____

GC Column: _____ ID: _____ (mm)

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	
75	30.0 - 80.0% of mass 95	
95	Base peak, 100% relative abundance	
96	5.0 - 9.0% of mass 95	
173	Less than 2.0% of mass 174	( )1
174	50.0 - 120% of mass 95	
175	5.0 - 9.0% of mass 174	( )1
176	95.0 - 101% of mass 174	( )1
177	5.0 - 9.0% of mass 176	( )2

1 - Value is %mass 174 2 - Value is %mass 176

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01					
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

5B - FORM V SV
SEMIVOLATILE ORGANIC INSTRUMENT
PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

EPA SAMPLE NO.

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Lab File ID: _____ DFTPP Injection Date: _____

Instrument ID: _____ DFTPP Injection Time: _____

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	10.0 - 80.0% of mass 198	
68	Less than 2.0% of mass 69	( )1
69	Mass 69 relative abundance	
70	Less than 2.0% of mass 69	( )1
127	10.0 - 80.0% of mass 198	
197	Less than 2.0% of mass 198	
198	Base Peak, 100% relative abundance	
199	5.0 to 9.0% of mass 198	
275	10.0 - 60.0% of mass 198	
365	Greater than 1.0% of mass 198	
441	Present, but less than mass 443	
442	50.0 - 100% of mass 198	
443	15.0 - 24.0% of mass 442	( )2

1 - Value is %mass 69 2 - Value is% mass 442

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01					
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					

6A - FORM VI VOA-1
VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Instrument ID: _____ Calibration Date(s): _____ _____

Heated Purge: (Y/N) _____ Calibration Time(s): _____ _____

Purge Volume: _____ (mL)

GC Column: _____ ID: _____ (mm) Length: _____ (m)

LAB FILE ID: _____ RRF___ = _____ RRF___ = _____

RRF___ = _____ RRF___ = _____ RRF___ = _____

COMPOUND	RRF___	RRF___	RRF___	RRF___	RRF___	$\overline{RRF}$	%RSD
Dichlorodifluoromethane							
Chloromethane							
Vinyl chloride							
Bromomethane							
Chloroethane							
Trichlorofluoromethane							
1,1-Dichloroethene							
1,1,2-Trichloro-1,2,2-trifluoroethane							
Acetone							
Carbon disulfide							
Methyl acetate							
Methylene chloride							
trans-1,2-Dichloroethene							
Methyl tert-butyl ether							
1,1-Dichloroethane							
cis-1,2-Dichloroethene							
2-Butanone							
Bromochloromethane							
Chloroform							
1,1,1-Trichloroethane							
Cyclohexane							
Carbon tetrachloride							
Benzene							
1,2-Dichloroethane							
1,4-Dioxane							
Trichloroethene							
Methylcyclohexane							

6B - FORM VI VOA-2
VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Instrument ID: _____ Calibration Date(s): _____ _____

Heated Purge: (Y/N) _____ Calibration Time(s): _____ _____

Purge Volume: _____ (mL)

GC Column: _____ ID: _____ (mm) Length: _____ (m)

LAB FILE ID: _____ RRF___ = _____ RRF___ = _____

RRF___= _____ RRF___ = _____ RRF___ = _____

COMPOUND	RRF___	RRF___	RRF___	RRF___	RRF___	$\overline{RRF}$	% RSD
1,2-Dichloropropane							
Bromodichloromethane							
cis-1,3-Dichloropropene							
4-Methyl-2-pentanone							
Toluene							
trans-1,3-Dichloropropene							
1,1,2-Trichloroethane							
Tetrachloroethene							
2-Hexanone							
Dibromochloromethane							
1,2-Dibromoethane							
Chlorobenzene							
Ethylbenzene							
o-Xylene							
m,p-Xylene							
Styrene							
Bromoform							
Isopropylbenzene							
1,1,2,2-Tetrachloroethane							
1,3-Dichlorobenzene							
1,4-Dichlorobenzene							
1,2-Dichlorobenzene							
1,2-Dibromo-3-chloropropane							
1,2,4-Trichlorobenzene							
1,2,3-Trichlorobenzene							

6C - FORM VI VOA-3
VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Instrument ID: _____ Calibration Date(s): _____ _____

Heated Purge: (Y/N) _____ Calibration Time(s): _____ _____

Purge Volume: _____ (mL)

GC Column: _____ ID: _____ (mm) Length: _____ (m)

LAB FILE ID: _____ RRF___ = _____ RRF___ = _____

RRF___= _____ RRF___ = _____ RRF___ = _____

COMPOUND	RRF___	RRF___	RRF___	RRF___	RRF___	$\overline{RRF}$	% RSD
Vinyl chloride-d_3							
Chloroethane-d_5							
1,1-Dichloroethene-d_2							
2-Butanone-d_5							
Chloroform-d							
1,2-Dichloroethane-d_4							
Benzene-d_6							
1,2-Dichloropropane-d_6							
Toluene-d_8							
trans-1,3-Dichloropropene-d_4							
2-Hexanone-d_5							
1,4-Dioxane-d_8							
1,1,2,2-Tetrachloroethane-d_2							
1,2-Dichlorobenzene-d_4							

6D - FORM VI VOA-SIM
TRACE VOLATILE (WATER) ORGANICS SIM INITIAL CALIBRATION DATA

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Instrument ID: _____ Calibration Date(s): _____ _____

Heated Purge: (Y/N) _____ Calibration Time(s): _____ _____

GC Column: _____ ID: _____ (mm) Length: _____ (m)

LAB FILE ID: _____ RRF___ = _____ RRF___ = _____

RRF___= _____ RRF___ = _____ RRF___ = _____

COMPOUND	RRF___	RRF___	RRF___	RRF___	RRF___	$\overline{RRF}$	% RSD
1,4-Dioxane							
1,2-Dibromoethane							
1,2-Dibromo-3-chloropropane							
1,2-Dichloroethane-d_4							
1,4-Dioxane-d_8							
1,1,2,2-Tetrachloroethane-d_2							

6E - FORM VI SV-1
SEMIVOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Instrument ID: _____ Calibration Date(s): _____ _____

Calibration Time(s): _____ _____

LAB FILE ID: _____ RRF___ = _____ RRF___ = _____

RRF___= _____ RRF___ = _____ RRF___ = _____

COMPOUND	RRF___	RRF___	RRF___	RRF___	RRF___	$\overline{RRF}$	% RSD
Benzaldehyde							
Phenol							
Bis(2-chloroethyl)ether							
2-Chlorophenol							
2-Methylphenol							
2,2'-Oxybis(1-chloropropane)							
Acetophenone							
4-Methylphenol							
N-Nitroso-di-n-propylamine							
Hexachloroethane							
Nitrobenzene							
Isophorone							
2-Nitrophenol							
2,4-Dimethylphenol							
Bis(2-chloroethoxy)methane							
2,4-Dichlorophenol							
Naphthalene							
4-Chloroaniline							
Hexachlorobutadiene							
Caprolactam							
4-Chloro-3-methylphenol							
2-Methylnaphthalene							
Hexachlorocyclopentadiene							
2,4,6-Trichlorophenol							
2,4,5-Trichlorophenol							
1,1'-Biphenyl							
2-Chloronaphthalene							
2-Nitroaniline							
Dimethylphthalate							
2,6-Dinitrotoluene							
Acenaphthylene							
3-Nitroaniline							
Acenaphthene							
2,4-Dinitrophenol							
4-Nitrophenol							
Dibenzofuran							

6F - FORM VI SV-2
SEMIVOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Instrument ID: _____ Calibration Date(s): _____ _____

Calibration Time(s): _____ _____

LAB FILE ID: _____ RRF___ = _____ RRF___ = _____

RRF___= _____ RRF___ = _____ RRF___ = _____

COMPOUND	RRF___	RRF___	RRF___	RRF___	RRF___	$\overline{RRF}$	% RSD
2,4-Dinitrotoluene							
Diethylphthalate							
Fluorene							
4-Chlorophenyl-phenylether							
4-Nitroaniline							
4,6-Dinitro-2-methylphenol							
N-Nitrosodiphenylamine[1]							
1,2,4,5-Tetrachlorobenzene							
4-Bromophenyl-phenylether							
Hexachlorobenzene							
Atrazine							
Pentachlorophenol							
Phenanthrene							
Anthracene							
Carbazole							
Di-n-butylphthalate							
Fluoranthene							
Pyrene							
Butylbenzylphthalate							
3,3'-Dichlorobenzidine							
Benzo(a)anthracene							
Chrysene							
Bis(2-ethylhexyl)phthalate							
Di-n-octylphthalate							
Benzo(b)fluoranthene							
Benzo(k)fluoranthene							
Benzo(a)pyrene							
Indeno(1,2,3-cd)pyrene							
Dibenzo(a,h)anthracene							
Benzo(g,h,i)perylene							
2,3,4,6-Tetrachlorophenol							

[1]Cannot be separated from Diphenylamine

6G - FORM VI SV-3
SEMIVOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Instrument ID: _____ Calibration Date(s): _____ _____

Calibration Time(s): _____ _____

LAB FILE ID: _____ RRF___ = _____ RRF___ = _____

RRF___= _____ RRF___ = _____ RRF___ = _____

COMPOUND	RRF___	RRF___	RRF___	RRF___	RRF___	$\overline{RRF}$	% RSD
Phenol-d_5							
Bis(2-chloroethyl)ether-d_8							
2-Chlorophenol-d_4							
4-Methylphenol-d_8							
Nitrobenzene-d_5							
2-Nitrophenol-d_4							
2,4-Dichlorophenol-d_3							
4-Chloroaniline-d_4							
Dimethylphthalate-d_6							
Acenaphthylene-d_8							
4-Nitrophenol-d_4							
Fluorene-d_{10}							
4,6-Dinitro-methylphenol-d_2							
Anthracene-d_{10}							
Pyrene-d_{10}							
Benzo(a)pyrene-d_{12}							

6H - FORM VI SV-SIM
SEMIVOLATILE ORGANICS SIM INITIAL CALIBRATION DATA

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Instrument ID: _____ Calibration Date(s): _____ _____

Calibration Time(s): _____ _____

LAB FILE ID: _____ RRF___ = _____ RRF___ = _____

RRF___= _____ RRF___ = _____ RRF___ = _____

COMPOUND	RRF___	RRF___	RRF___	RRF___	RRF___	$\overline{RRF}$	% RSD
Naphthalene							
2-Methylnaphthalene							
Acenaphthylene							
Acenaphthene							
Fluorene							
Pentachlorophenol							
Phenanthrene							
Anthracene							
Fluoranthene							
Pyrene							
Benzo(a)anthracene							
Chrysene							
Benzo(b)fluoranthene							
Benzo(k)fluoranthene							
Benzo(a)pyrene							
Indeno(1,2,3-cd)pyrene							
Dibenzo(a,h)anthracene							
Benzo(g,h,i)perylene							
Fluoranthene-d_{10}							
2-Methylnaphthalene-d_{10}							

6J - FORM VI PEST-1
PESTICIDE INITIAL CALIBRATION OF SINGLE COMPONENT ANALYTES

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Instrument ID: _____

Level (x CS1): CS1 ___ CS2 ___ CS3___ CS4 ___ CS5 ___

GC Column: _____ ID: _____ (mm) Date(s) Analyzed:_____ _____

COMPOUND	RT OF STANDARDS					$\overline{RT}$	RT WINDOW*	
	CS1	CS2	CS3	CS4	CS5		FROM	TO
alpha-BHC								
beta-BHC								
delta-BHC								
gamma-BHC (Lindane)								
Heptachlor								
Aldrin								
Heptachlor epoxide								
Endosulfan I								
Dieldrin								
4,4'-DDE								
Endrin								
Endosulfan II								
4,4'-DDD								
Endosulfan sulfate								
4,4'-DDT								
Methoxychlor								
Endrin ketone								
Endrin aldehyde								
alpha-Chlordane								
gamma-Chlordane								
TCX (A)								
DCB (A)								
TCX (B)								
DCB (B)								

(A) Surrogate RTs are measured from Standard Mixture A if two mixtures are used or from Standard Mixture C if one mixture is used.

(B) Surrogate RTs are measured from Standard Mixture B if two mixtures are used. Leave entries blank if Standard Mixture C is used.

* RT windows are ± 0.05 minutes for all compounds that elute before Heptachlor epoxide; ± 0.07 minutes for all other compounds (except ± 0.10 minutes for DCB).

TCX = Tetrachloro-m-xylene
DCB = Decachlorobiphenyl

6K - FORM VI PEST-2
PESTICIDE INITIAL CALIBRATION OF SINGLE COMPONENT ANALYTES

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Instrument ID: _____

Level (x CS1): CS1 ___ CS2 ___ CS3___ CS4 ___ CS5 ___

GC Column: _____ ID: _____ (mm) Date(s) Analyzed:_____ _____

COMPOUND	CALIBRATION FACTORS (CFs)					% RSD
	CS1	CS2	CS3	CS4	CS5	
alpha-BHC						
beta-BHC						
delta-BHC						
gamma-BHC (Lindane)						
Heptachlor						
Aldrin						
Heptachlor epoxide						
Endosulfan I						
Dieldrin						
4,4'-DDE						
Endrin						
Endosulfan II						
4,4'-DDD						
Endosulfan sulfate						
4,4'-DDT						
Methoxychlor						
Endrin ketone						
Endrin aldehyde						
alpha-Chlordane						
gamma-Chlordane						
TCX (A)						
DCB (A)						
TCX (B)						
DCB (B)						

(A) Surrogate CFs and %RSD are measured from Standard Mixture A if two mixtures are used or from Standard Mixture C if one mixture is used.

(B) Surrogate CFs and %RSD are measured from Standard Mixture B if two mixtures are used. Leave entries blank if Standard Mixture C is used.

TCX = Tetrachloro-m-xylene
DCB = Decachlorobiphenyl

6L - FORM VI PEST-3
TOXAPHENE INITIAL CALIBRATION

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Instrument ID (1): _____ Date(s) Analyzed (1): _____

GC Column (1): _____ ID: _____ (mm)

Level (x CS1): CS1 ___ CS2 ___ CS3___ CS4 ___ CS5 ___

COMPOUND	PEAK[1]	RT OF STANDARDS						RT WINDOW	
		CS1	CS2	CS3	CS4	CS5	$\overline{RT}$	FROM	TO
Toxaphene	1								
	2								
	3								
	4								
	5								

Instrument ID (2): _____ Date(s) Analyzed (2): _____

GC Column (2): _____ ID: _____ (mm)

Level (x CS1): CS1 ___ CS2 ___ CS3___ CS4 ___ CS5 ___

COMPOUND	PEAK[1]	RT OF STANDARDS						RT WINDOW	
		CS1	CS2	CS3	CS4	CS5	$\overline{RT}$	FROM	TO
Toxaphene	1								
	2								
	3								
	4								
	5								

[1]At least three peaks for each column are required for identification of Toxaphene.

6M - FORM VI PEST-4
TOXAPHENE INITIAL CALIBRATION

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Instrument ID (1): _____ Date(s) Analyzed (1): _____

GC Column (1): _____ ID: _____ (mm)

Level (x CS1): CS1 ___ CS2 ___ CS3___ CS4 ___ CS5 ___

COMP-OUND	PEAK[1]	CALIBRATION FACTORS (CFs) STANDARDS					%RSD
		CS1	CS2	CS3	CS4	CS5	
Toxaphene	1						
	2						
	3						
	4						
	5						

Instrument ID (2): _____ Date(s) Analyzed (2): _____

GC Column (2): _____ ID: _____ (mm)

Level (x CS1): CS1 ___ CS2 ___ CS3___ CS4 ___ CS5 ___

COMP-OUND	PEAK[1]	CALIBRATION FACTORS (CFs) STANDARDS					%RSD
		CS1	CS2	CS3	CS4	CS5	
Toxaphene	1						
	2						
	3						
	4						
	5						

[1]At least three peaks for each column are required for identification of Toxaphene.

6N - FORM VI ARO-1
AROCLORS INITIAL CALIBRATION (MULTIPOINT)

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Instrument ID: _____

Level (x CS1): CS1 ___ CS2 ___ CS3___ CS4 ___ CS5 ___

GC Column: _____ ID: _____ (mm) Date(s) Analyzed:_____ _____

COMPOUND	PEAK*	RT OF STANDARDS					$\overline{RT}$	RT WINDOW**	
		CS1	CS2	CS3	CS4	CS5		FROM	TO
AR1016	1								
	2								
	3								
	4								
	5								
TCX									
DCB									
AR1260	1								
	2								
	3								
	4								
	5								
TCX									
DCB									
AR_____	1								
	2								
	3								
	4								
	5								
TCX									
DCB									

*At least three peaks for each column are required for identification of Aroclors.

**Retention Time windows are ± 0.07 minutes for each Aroclor peak; ± 0.05 minutes for TCX; and ± 0.10 minutes for DCB.

TCX = Tetrachloro-m-xylene
DCB = Decachlorobiphenyl

6P - FORM VI ARO-2
AROCLORS INITIAL CALIBRATION (MULTIPOINT)

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Instrument ID: _____

Level (x CS1): CS1 ___ CS2 ___ CS3___ CS4 ___ CS5 ___

GC Column: _____ ID: _____ (mm) Date(s) Analyzed:_____ _____

COMP-OUND	PEAK[1]	CALIBRATION FACTORS (CFs)					%RSD
		CS1	CS2	CS3	CS4	CS5	
AR1016	1						
	2						
	3						
	4						
	5						
TCX							
DCB							
AR1260	1						
	2						
	3						
	4						
	5						
TCX							
DCB							
AR____	1						
	2						
	3						
	4						
	5						
TCX							
DCB							

[1]At least three peaks for each column are required for identification of Aroclors.

TCX = Tetrachloro-m-xylene
DCB = Decachlorobiphenyl

6Q - FORM VI ARO-3
AROCLOR INITIAL CALIBRATION (SINGLE POINT)

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Instrument ID: _____ Date(s) Analyzed: _____ _____

GC Column: _____ ID: _____ (mm)

COMPOUND	AMOUNT (ng)	PEAK[1]	RT	RT WINDOW		CALIBRATION FACTOR
				FROM	TO	
Aroclor 1221		1				
		2				
		3				
		4				
		5				
Aroclor 1232		1				
		2				
		3				
		4				
		5				
Aroclor 1242		1				
		2				
		3				
		4				
		5				
Aroclor 1248		1				
		2				
		3				
		4				
		5				
Aroclor 1254		1				
		2				
		3				
		4				
		5				
Aroclor 1262		1				
		2				
		3				
		4				
		5				
Aroclor 1268		1				
		2				
		3				
		4				
		5				

[1]At least three peaks for each column are required for identification of multicomponent analytes.

6R - FORM VI PEST-5
PESTICIDE RESOLUTION CHECK SUMMARY
COLUMN 1

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

GC Column (1): _____ ID: _____ (mm) Instrument ID (1): _____

EPA Sample No. (RESC##): _____ Lab Sample ID (1): _____

Date Analyzed (1):_____ Time Analyzed (1): _____

	ANALYTE	RT	RESOLUTION (%)
01			
02			
03			
04			
05			
06			
07			
08			
09			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			

6T - FORM VI PEST-5
PESTICIDE RESOLUTION CHECK SUMMARY
COLUMN 2

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

GC Column (2): _____ ID: _____ (mm) Instrument ID (2): _____

EPA Sample No. (RESC##): _____ Lab Sample ID (2): _____

Date Analyzed (2):_____ Time Analyzed (2): _____

	ANALYTE	RT	RESOLUTION (%)
01			
02			
03			
04			
05			
06			
07			
08			
09			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			

6U - FORM VI PEST-6
PERFORMANCE EVALUATION MIXTURE (PEM)

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

GC Column (1): _____ ID: _____ (mm) Instrument ID (1): _____

EPA Sample No. (PEM##): _____ Lab Sample ID (1): _____

Date Analyzed (1):_____ Time Analyzed (1): _____

	ANALYTE	RT	RESOLUTION (%)
01			
02			
03			
04			
05			
06			
07			
08			

GC Column (2):_____ ID:_____(mm) Instrument ID (2): _____

EPA Sample No. (PEM##): _____ Lab Sample ID (2): _____

Date Analyzed (2): _____ Time Analyzed (2): _____

	ANALYTE	RT	RESOLUTION (%)
01			
02			
03			
04			
05			
06			
07			
08			

6V - FORM VI PEST-7
INDIVIDUAL STANDARD MIXTURE A

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

GC Column (1):_____ ID:_____(mm) Instrument ID (1): _____

EPA Sample No. (INDA3##): _____ Lab Sample ID (1): _____

Date Analyzed (1): _____ Time Analyzed (1): _____

	ANALYTE	RT	RESOLUTION (%)
01			
02			
03			
04			
05			
06			
07			
08			
09			
10			
11			

GC Column (2):_____ ID:_____(mm) Instrument ID (2): _____

EPA Sample No. (INDA3##): _____ Lab Sample ID (2): _____

Date Analyzed (2): _____ Time Analyzed (2): _____

	ANALYTE	RT	RESOLUTION (%)
01			
02			
03			
04			
05			
06			
07			
08			
09			
10			
11			

6W - FORM VI PEST-8
INDIVIDUAL STANDARD MIXTURE B

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

GC Column (1):_____ ID:_____(mm) Instrument ID (1): _____

EPA Sample No. (INDB3##): _____ Lab Sample ID (1): _____

Date Analyzed (1): _____ Time Analyzed (1): _____

	ANALYTE	RT	RESOLUTION (%)
01			
02			
03			
04			
05			
06			
07			
08			
09			
10			
11			
12			
13			

GC Column (2):_____ ID:_____(mm) Instrument ID (2): _____

EPA Sample No. (INDB3##): _____ Lab Sample ID (2): _____

Date Analyzed (2): _____ Time Analyzed (2): _____

	ANALYTE	RT	RESOLUTION (%)
01			
02			
03			
04			
05			
06			
07			
08			
09			
10			
11			
12			
13			

6X - FORM VI PEST-9
INDIVIDUAL STANDARD MIXTURE C

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

GC Column (1):_____ ID:_____(mm) Instrument ID (1): _____

EPA Sample No. (INDC3##): _____ Lab Sample ID (1): _____

Date Analyzed (1): _____ Time Analyzed (1): _____

	ANALYTE	RT	RESOLUTION (%)
01			
02			
03			
04			
05			
06			
07			
08			
09			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			

6Y - FORM VI PEST-10
INDIVIDUAL STANDARD MIXTURE C

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

GC Column (2):_____ ID:_____(mm) Instrument ID (2): _____

EPA Sample No. (INDC3##): _____ Lab Sample ID (2): _____

Date Analyzed (2): _____ Time Analyzed (2): _____

	ANALYTE	RT	RESOLUTION (%)
01			
02			
03			
04			
05			
06			
07			
08			
09			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			

7A - FORM VII VOA-1
VOLATILE CONTINUING CALIBRATION DATA

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Instrument ID:_____ Calibration Date:_____ Time:_____

Lab File ID:_____ Init. Calib. Date(s):_____ _____

EPA Sample No.(VSTD#####):_____ Init. Calib. Time(s):_____ _____

Heated Purge: (Y/N) _____ GC Column:_____ ID:_____(mm) Length: _____(m)

Purge Volume: _____(mL)

COMPOUND	$\overline{\text{RRF}}$	RRF__	MIN RRF	%D	MAX %D
Dichlorodifluoromethane					
Chloromethane					
Vinyl chloride					
Bromomethane					
Chloroethane					
Trichlorofluoromethane					
1,1-Dichloroethene					
1,1,2-Trichloro-1,2,2-trifluoroethane					
Acetone					
Carbon disulfide					
Methyl acetate					
Methylene chloride					
trans-1,2-Dichloroethene					
Methyl tert-butyl ether					
1,1-Dichloroethane					
cis-1,2-Dichloroethene					
2-Butanone					
Bromochloromethane					
Chloroform					
1,1,1-Trichloroethane					
Cyclohexane					
Carbon tetrachloride					
Benzene					
1,2-Dichloroethane					
1,4-Dioxane					
Trichloroethene					
Methylcyclohexane					

7B - FORM VII VOA-2
VOLATILE CONTINUING CALIBRATION DATA

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Instrument ID:_____ Calibration Date:_____ Time:_____

Lab File ID:_____ Init. Calib. Date(s):_____ _____

EPA Sample No.(VSTD#####):_____ Init. Calib. Time(s):_____ _____

Heated Purge: (Y/N) _____ GC Column:_____ ID:_____(mm) Length: _____(m)

Purge Volume: _____(mL)

COMPOUND	$\overline{RRF}$	RRF__	MIN RRF	%D	MAX %D
1,2-Dichloropropane					
Bromodichloromethane					
cis-1,3-Dichloropropene					
4-Methyl-2-pentanone					
Toluene					
trans-1,3-Dichloropropene					
1,1,2-Trichloroethane					
Tetrachloroethene					
2-Hexanone					
Dibromochloromethane					
1,2-Dibromoethane					
Chlorobenzene					
Ethylbenzene					
o-Xylene					
m,p-Xylene					
Styrene					
Bromoform					
Isopropylbenzene					
1,1,2,2-Tetrachloroethane					
1,3-Dichlorobenzene					
1,4-Dichlorobenzene					
1,2-Dichlorobenzene					
1,2-Dibromo-3-chloropropane					
1,2,4-Trichlorobenzene					
1,2,3-Trichlorobenzene					

7C - FORM VII VOA-3
VOLATILE CONTINUING CALIBRATION DATA

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Instrument ID:_____ Calibration Date:_____ Time:_____

Lab File ID:_____ Init. Calib. Date(s):_____ _____

EPA Sample No.(VSTD#####):_____ Init. Calib. Time(s):_____ _____

Heated Purge: (Y/N) _____ GC Column:_____ ID:_____(mm) Length: _____(m)

Purge Volume: _____(mL)

COMPOUND	$\overline{RRF}$	RRF__	MIN RRF	%D	MAX %D
Vinyl chloride-d_3					
Chloroethane-d_5					
1,1-Dichloroethene-d_2					
2-Butanone-d_5					
Chloroform-d					
1,2-Dichloroethane-d_4					
Benzene-d_6					
1,2-Dichloropropane-d_6					
Toluene-d_8					
trans-1,3-Dichloropropene-d_4					
2-Hexanone-d_5					
1,4-Dioxane-d_8					
1,1,2,2-Tetrachloroethane-d_2					
1,2-Dichlorobenzene-d_4					

7D - FORM VII VOA-SIM
TRACE VOLATILE (WATER) SIM CONTINUING CALIBRATION DATA

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Instrument ID:_____ Calibration Date:_____ Time:_____

Lab File ID:_____ Init. Calib. Date(s):_____ _____

EPA Sample No.(VSTD#####):_____ Init. Calib. Time(s):_____ _____

Heated Purge: (Y/N) _____ GC Column:_____ ID:_____(mm) Length: _____(m)

COMPOUND	$\overline{RRF}$	RRF__	MIN RRF	%D	MAX %D
1,4-Dioxane					
1,2-Dibromoethane					
1,2-Dibromo-3-chloropropane					
1,2-Dichloroethane-d_4					
1,4-Dioxane-d_8					
1,1,2,2-Tetrachloroethane-d_2					

7E - FORM VII SV-1
SEMIVOLATILE CONTINUING CALIBRATION DATA

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Instrument ID:_____ Calibration Date:_____ Time:_____

Lab File ID:_____ Init. Calib. Date(s):_____ _____

EPA Sample No.(SSTD020##):_____ Init. Calib. Time(s):_____ _____

GC Column:_____ ID:_____(mm)

COMPOUND	$\overline{RRF}$	RRF__	MIN RRF	%D	MAX %D
Benzaldehyde					
Phenol					
Bis(2-chloroethyl)ether					
2-Chlorophenol					
2-Methylphenol					
2,2'-Oxybis(1-chloropropane)					
Acetophenone					
4-Methylphenol					
N-Nitroso-di-n-propylamine					
Hexachloroethane					
Nitrobenzene					
Isophorone					
2-Nitrophenol					
2,4-Dimethylphenol					
Bis(2-chloroethoxy)methane					
2,4-Dichlorophenol					
Naphthalene					
4-Chloroaniline					
Hexachlorobutadiene					
Caprolactam					
4-Chloro-3-methylphenol					
2-Methylnaphthalene					
Hexachlorocyclopentadiene					
2,4,6-Trichlorophenol					
2,4,5-Trichlorophenol					
1,1'-Biphenyl					
2-Chloronaphthalene					
2-Nitroaniline					
Dimethylphthalate					
2,6-Dinitrotoluene					
Acenaphthylene					
3-Nitroaniline					
Acenaphthene					

7F - FORM VII SV-2
SEMIVOLATILE CONTINUING CALIBRATION DATA

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Instrument ID:_____ Calibration Date:_____ Time:_____

Lab File ID:_____ Init. Calib. Date(s):_____ _____

EPA Sample No.(SSTD020##):_____ Init. Calib. Time(s):_____ _____

GC Column:_____ ID:_____(mm)

COMPOUND	$\overline{RRF}$	RRF__	MIN RRF	%D	MAX %D
2,4-Dinitrotoluene					
Diethylphthalate					
Fluorene					
4-Chlorophenyl-phenylether					
4-Nitroaniline					
4,6-Dinitro-2-methylphenol					
N-Nitrosodiphenylamine (1)					
1,2,4,5-Tetrachlorobenzene					
4-Bromophenyl-phenylether					
Hexachlorobenzene					
Atrazine					
Pentachlorophenol					
Phenanthrene					
Anthracene					
Carbazole					
Di-n-butylphthalate					
Fluoranthene					
Pyrene					
Butylbenzylphthalate					
3,3'-Dichlorobenzidine					
Benzo(a)anthracene					
Chrysene					
Bis(2-ethylhexyl)phthalate					
Di-n-octylphthalate					
Benzo(b)fluoranthene					
Benzo(k)fluoranthene					
Benzo(a)pyrene					
Indeno(1,2,3-cd)pyrene					
Dibenzo(a,h)anthracene					
Benzo(g,h,i)perylene					
2,3,4,6-Tetrachlorophenol					

(1) Cannot be separated from Diphenylamine

7G - FORM VII SV-3
SEMIVOLATILE CONTINUING CALIBRATION DATA

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Instrument ID:_____ Calibration Date:_____ Time:_____

Lab File ID:_____ Init. Calib. Date(s):_____ _____

EPA Sample No.(SSTD020##):_____ Init. Calib. Time(s):_____ _____

GC Column:_____ ID:_____(mm)

COMPOUND	$\overline{RRF}$	RRF__	MIN RRF	%D	MAX %D
Phenol-d_5					
Bis(2-chloroethyl)ether-d_8					
2-Chlorophenol-d_4					
4-Methylphenol-d_8					
Nitrobenzene-d_5					
2-Nitrophenol-d_4					
2,4-Dichlorophenol-d_3					
4-Chloroaniline-d_4					
Dimethylphthalate-d_6					
Acenaphthylene-d_8					
4-Nitrophenol-d_4					
Fluorene-d_{10}					
4,6-Dinitro-methylphenol-d_2					
Anthracene-d_{10}					
Pyrene-d_{10}					
Benzo(a)pyrene-d_{12}					

7H - FORM VII SV-SIM
SEMIVOLATILE SIM CONTINUING CALIBRATION DATA

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Instrument ID:_____ Calibration Date:_____ Time:_____

Lab File ID:_____ Init. Calib. Date(s):_____ _____

EPA Sample No.(SSTD0.4##):_____ Init. Calib. Time(s):_____ _____

GC Column:_____ ID:_____(mm)

COMPOUND	$\overline{RRF}$	RRF__	MIN RRF	%D	MAX %D
Naphthalene					
2-Methylnaphthalene					
Acenaphthylene					
Acenaphthene					
Fluorene					
Pentachlorophenol					
Phenanthrene					
Anthracene					
Fluoranthene					
Pyrene					
Benzo(a)anthracene					
Chrysene					
Benzo(b)fluoranthracene					
Benzo(k)fluoranthracene					
Benzo(a)pyrene					
Indeno(1,2,3-cd)pyrene					
Dibenzo(a,h)anthracene					
Benzo(g,h,i)perylene					
Fluoranthene-d_{10}					
2-Methylnapthalene-d_{10}					

7J - FORM VII PEST-1
PESTICIDE CALIBRATION VERIFICATION SUMMARY

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

GC Column:_____ ID:_____(mm) Init. Calib. Date(s): _____ _____

EPA Sample No. (PIBLK##): _____ Date Analyzed: _____

Lab Sample ID (PIBLK): _____ Time Analyzed: _____

EPA Sample No. (PEM##): _____ Date Analyzed: _____

Lab Sample ID (PEM): _____ Time Analyzed: _____

PEM COMPOUND	RT	RT WINDOW		CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
		FROM	TO			
alpha-BHC						
beta-BHC						
gamma-BHC (Lindane)						
Endrin						
4,4'-DDT						
Methoxychlor						
TCX						
DCB						

4,4'-DDT %Breakdown (1): _____ Endrin %Breakdown (1):_____

Combined %Breakdown (1): _____

TCX = Tetrachloro-m-xylene
DCB = Decachlorobiphenyl

7K - FORM VII PEST-2
PESTICIDE CALIBRATION VERIFICATION SUMMARY

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

GC Column:_____ ID:_____(mm) Init. Calib. Date(s): _____ _____

EPA Sample No. (PIBLK##): _____ Date Analyzed: _____

Lab Sample ID (PIBLK): _____ Time Analyzed: _____

EPA Sample No. (INDA3##): _____ Date Analyzed: _____

Lab Sample ID (INDA3): _____ Time Analyzed: _____

INDIVIDUAL MIX A COMPOUND	RT	RT WINDOW		$\overline{CF}$	CF	%D
		FROM	TO			
alpha-BHC						
gamma-BHC (Lindane)						
Heptachlor						
Endosulfan I						
Dieldrin						
Endrin						
4,4'-DDD						
4,4'-DDT						
Methoxychlor						
TCX						
DCB						

EPA Sample No. (INDB3##): _____ Date Analyzed: _____

Lab Sample ID (INDB3): _____ Time Analyzed: _____

INDIVIDUAL MIX B COMPOUND	RT	RT WINDOW		$\overline{CF}$	CF	%D
		FROM	TO			
beta-BHC						
delta-BHC						
Aldrin						
Heptachlor epoxide						
4,4'-DDE						
Endosulfan II						
Endosulfan sulfate						
Endrin ketone						
Endrin aldehyde						
alpha-Chlordane						
gamma-Chlordane						
TCX						
DCB						

TCX = Tetrachloro-m-xylene
DCB = Decachlorobiphenyl

7L - FORM VII PEST-3
PESTICIDE CALIBRATION VERIFICATION SUMMARY

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

GC Column:_____ ID:_____(mm) Init. Calib. Date(s): _____ _____

EPA Sample No. (PIBLK##): _____ Date Analyzed: _____

Lab Sample ID (PIBLK): _____ Time Analyzed: _____

EPA Sample No. (INDC3##): _____ Date Analyzed: _____

Lab Sample ID (INDC3): _____ Time Analyzed: _____

INDIVIDUAL MIX C COMPOUND	RT	RT WINDOW		$\overline{CF}$	CF	%D
		FROM	TO			
alpha-BHC						
gamma-BHC (Lindane)						
Heptachlor						
Endosulfan I						
Dieldrin						
Endrin						
4,4'-DDD						
4,4'-DDT						
Methoxychlor						
beta-BHC						
delta-BHC						
Aldrin						
Heptachlor epoxide						
4,4'-DDE						
Endosulfan II						
Endosulfan sulfate						
Endrin ketone						
Endrin aldehyde						
alpha-Chlordane						
gamma-Chlordane						
TCX						
DCB						

TCX = Tetrachloro-m-xylene
DCB = Decachlorobiphenyl

7M - FORM VII PEST-4
TOXAPHENE CALIBRATION VERIFICATION SUMMARY

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

GC Column:_____ ID:_____(mm) Init. Calib. Date(s): _____ _____

EPA Sample No. (PIBLK##): _____ Date Analyzed: _____

Lab Sample ID (PIBLK): _____ Time Analyzed: _____

EPA Sample No. (TOXAPH3##): _____ Date Analyzed: _____

Lab Sample ID (TOXAPH3): _____ Time Analyzed: _____

COMPOUND	PEAK	RT	RT WINDOW		$\overline{CF}$	CF	%D
			FROM	TO			
TOXAPHENE	1						
	2						
	3						
	4						
	5						
TCX							
DCB							

TCX = Tetrachloro-m-xylene
DCB = Decachlorobiphenyl

7N - FORM VII ARO
AROCLOR CALIBRATION VERIFICATION SUMMARY

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

GC Column:_____ ID:_____(mm) Init. Calib. Date(s): _____ _____

EPA Sample No. (AR####3##): _____ Date Analyzed: _____

Lab Sample ID: _____ Time Analyzed: _____

EPA Sample No. (AR####3##): _____ Date Analyzed: _____

Lab Sample ID: _____ Time Analyzed: _____

AROCLOR COMPOUND	PEAK	RETENTION	RT WINDOW		$\overline{CF}$	CF	%D
		RT	FROM	TO			
AR1016	1						
	2						
	3						
	4						
	5						
TCX							
DCB							
AR1260	1						
	2						
	3						
	4						
	5						
TCX							
DCB							
AR____	1						
	2						
	3						
	4						
	5						
TCX							
DCB							

TCX = Tetrachloro-m-xylene
DCB = Decachlorobiphenyl

8A - FORM VIII VOA
VOLATILE INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

GC Column:_____ ID:_____(mm) Init. Calib. Date(s): _____ _____

EPA Sample No.(VSTD#####): _____ Date Analyzed: _____

Lab File ID (Standard): _____ Time Analyzed: _____

Instrument ID: _____ Heated Purge: (Y/N)_____

		IS1 (CBZ) AREA#	RT #	IS2 (DFB) AREA #	RT #	IS3 (DCB) AREA #	RT #
	12 HOUR STD						
	UPPER LIMIT						
	LOWER LIMIT						
	EPA SAMPLE NO.						
01							
02							
03							
04							
05							
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS1 (CBZ) = Chlorobenzene-d_5
IS2 (DFB) = 1,4-Difluorobenzene
IS3 (DCB) = 1,4-Dichlorobenzene-d_4

AREA UPPER LIMIT = 200% (Low-Medium Volatiles) and 140% (Trace Volatiles) of internal standard area
AREA LOWER LIMIT = 50% (Low-Medium Volatiles) and 60% (Trace Volatiles) of internal standard area
RT UPPER LIMIT = + 0.50 (Low-Medium Volatiles) and + 0.33 (Trace Volatiles) minutes of internal standard RT
RT LOWER LIMIT = - 0.50 (Low-Medium Volatiles) and - 0.33 (Trace Volatiles) minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.

8B - FORM VIII VOA-SIM
TRACE VOLATILE (WATER) SIM INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

GC Column: _____ ID: _____ (mm) Init. Calib. Date(s): _____ _____

EPA Sample No.(VSTD0.5##): _____ Date Analyzed: _____

Lab File ID (Standard): _____ Time Analyzed: _____

Instrument ID: _____ Heated Purge: (Y/N) _____

		IS1 (CBZ) AREA#	RT #	IS2 (DFB) AREA #	RT #	IS3 (DCB) AREA #	RT #
	12 HOUR STD						
	UPPER LIMIT						
	LOWER LIMIT						
	EPA SAMPLE NO.						
01							
02							
03							
04							
05							
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS1 (CBZ) = Chlorobenzene-d_5
IS2 (DFB) = 1,4-Difluorobenzene
IS3 (DCB) = 1,4-Dichlorobenzene-d_4

AREA UPPER LIMIT = 140% of internal standard area
AREA LOWER LIMIT = 60% of internal standard area
RT UPPER LIMIT = + 0.33 minutes of internal standard RT
RT LOWER LIMIT = - 0.33 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.

8C - FORM VIII SV-1
SEMIVOLATILE INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

GC Column: _____ ID: _____ (mm) Init. Calib. Date(s): _____ _____

EPA Sample No.(SSTD020##): _____ Date Analyzed: _____

Lab File ID (Standard): _____ Time Analyzed: _____

Instrument ID: _____

		IS1 (DCB) AREA	#	RT	#	IS2 (NPT) AREA	#	RT	#	IS3 (ANT) AREA	#	RT	#
	12 HOUR STD												
	UPPER LIMIT												
	LOWER LIMIT												
	EPA SAMPLE NO.												
01													
02													
03													
04													
05													
06													
07													
08													
09													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													
21													
22													

IS1 (DCB) = 1,4-Dichlorobenzene-d_4
IS2 (NPT) = Naphthalene-d_8
IS3 (ANT) = Acenaphthene-d_{10}

AREA UPPER LIMIT = 200% of internal standard area
AREA LOWER LIMIT = 50% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.

8D - FORM VIII SV-2
SEMIVOLATILE INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

EPA Sample No.(SSTD020##): _____ Date Analyzed: _____

Lab File ID (Standard): _____ Time Analyzed: _____

Instrument ID: _____ GC Column:_____ ID:_____(mm)

		IS4 (PHN) AREA	#	RT	#	IS5 (CRY) AREA	#	RT	#	IS6 (PRY) AREA	#	RT	#
	12 HOUR STD												
	UPPER LIMIT												
	LOWER LIMIT												
	EPA SAMPLE NO.												
01													
02													
03													
04													
05													
06													
07													
08													
09													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													
21													
22													

IS4 (PHN) = Phenanthrene-d_{10}
IS5 (CRY) = Chrysene-d_{12}
IS6 (PRY) = Perylene-d_{12}

AREA UPPER LIMIT = 200% of internal standard area
AREA LOWER LIMIT = 50% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.

8E - FORM VIII SV-SIM1
SEMIVOLATILE SIM INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

GC Column: _____ ID: _____ (mm) Init. Calib. Date(s): _____ _____

EPA Sample No.(SSTD0.4##): _____ Date Analyzed: _____

Lab File ID (Standard): _____ Time Analyzed: _____

Instrument ID: _____

		IS1 (DCB) AREA	#	RT	#	IS2 (NPT) AREA	#	RT	#	IS3 (ANT) AREA	#	RT	#
	12 HOUR STD												
	UPPER LIMIT												
	LOWER LIMIT												
	EPA SAMPLE NO.												
01													
02													
03													
04													
05													
06													
07													
08													
09													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													
21													
22													

IS1 (DCB) = 1,4-Dichlorobenzene-d_4
IS2 (NPT) = Naphthalene-d_8
IS3 (ANT) = Acenaphthene-d_{10}

AREA UPPER LIMIT = 200% of internal standard area
AREA LOWER LIMIT = 50% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.

8F - FORM VIII SV-SIM2
SEMIVOLATILE SIM INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

EPA Sample No.(SSTD0.4##): _____ Date Analyzed: _____

Lab File ID (Standard): _____ Time Analyzed: _____

Instrument ID: _____ GC Column:_____ ID:_____(mm)

		IS4 (PHN) AREA	#	RT	#	IS5 (CRY) AREA	#	RT	#	IS6 (PRY) AREA	#	RT	#
	12 HOUR STD												
	UPPER LIMIT												
	LOWER LIMIT												
	EPA SAMPLE NO.												
01													
02													
03													
04													
05													
06													
07													
08													
09													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													
21													
22													

IS4 (PHN) = Phenanthrene-d_{10}
IS5 (CRY) = Chrysene-d_{12}
IS6 (PRY) = Perylene-d_{12}

AREA UPPER LIMIT = 200% of internal standard area
AREA LOWER LIMIT = 50% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.

8G - FORM VIII PEST
PESTICIDE ANALYTICAL SEQUENCE

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

GC Column:_____ ID:_____(mm) Init. Calib. Date(s): _____ _____

Instrument ID: _____

THE ANALYTICAL SEQUENCE OF BLANKS, SAMPLES, STANDARDS, MS/MSDs, and LCSs IS GIVEN BELOW:

	MEAN SURROGATE RT FROM INITIAL CALIBRATION TCX:_____ DCB:_____					
	EPA SAMPLE NO.	LAB File ID	DATE ANALYZED	TIME ANALYZED	TCX RT #	DCB RT #
01						
02						
03						
04						
05						
06						
07						
08						
09						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						
32						

	QC LIMITS
TCX = Tetrachloro-m-xylene	(± 0.05 MINUTES)
DCB = Decachlorobiphenyl	(± 0.10 MINUTES)

Column used to flag RT values with an asterisk.

8H - FORM VIII ARO
AROCLOR ANALYTICAL SEQUENCE

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

GC Column:_____ ID:_____(mm) Init. Calib. Date(s): _____ _____

Instrument ID: _____

THE ANALYTICAL SEQUENCE OF BLANKS, SAMPLES, STANDARDS, MS/MSDs, and LCSs IS GIVEN BELOW:

	MEAN SURROGATE RT FROM INITIAL CALIBRATION TCX: _____ DCB: _____					
	EPA SAMPLE NO.	LAB FILE ID	DATE ANALYZED	TIME ANALYZED	TCX RT #	DCB RT #
01						
02						
03						
04						
05						
06						
07						
08						
09						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						
32						

	QC LIMITS
TCX = Tetrachloro-m-xylene	(± 0.05 MINUTES)
DCB = Decachlorobiphenyl	(± 0.10 MINUTES)

Column used to flag RT values with an asterisk.

9A - FORM IX PEST-1
PESTICIDE FLORISIL CARTRIDGE CHECK

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Florisil Cartridge Lot Number: _____ Date of Analysis: _____

GC Column: _____ ID: _____ (mm)

COMPOUND	SPIKE ADDED (ng)	SPIKE RECOVERED (ng)	%REC #	QC LIMITS
alpha-BHC				80-120
gamma-BHC (Lindane)				80-120
Heptachlor				80-120
Endosulfan I				80-120
Dieldrin				80-120
Endrin				80-120
4,4'-DDD				80-120
4,4'-DDT				80-120
Methoxychlor				80-120
TCX				80-120
DCB				80-120
2,4,5-Trichlorophenol				<5

Column to be used to flag recovery with an asterisk.

THIS CARTRIDGE LOT APPLIES TO THE FOLLOWING SAMPLES, BLANKS, LCSs, AND MS/MSDs:

	EPA SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED 1	DATE ANALYZED 2
01				
02				
03				
04				
05				
06				
07				
08				
09				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				

TCX = Tetrachloro-m-xylene
DCB = Decachlorobiphenyl

9B - FORM IX PEST-2
PESTICIDE GPC CALIBRATION VERIFICATION

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

GPC Column: _____ Calibration Verification Date: _____

GC Column: _____ ID: _____ (mm)

COMPOUND	SPIKE ADDED (ng)	SPIKE RECOVERED (ng)	%REC #	QC LIMITS
gamma-BHC (Lindane)				80-110
Heptachlor				80-110
Aldrin				80-110
Dieldrin				80-110
Endrin				80-110
4,4'-DDT				80-110

Column to be used to flag recovery with an asterisk.

THIS GPC CALIBRATION VERIFICATION APPLIES TO THE FOLLOWING SAMPLES, BLANKS, LCSs, AND MS/MSDs:

	EPA SAMPLE NO.	LAB SAMPLE ID	GPC CLEANUP DATE
01			
02			
03			
04			
05			
06			
07			
08			
09			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			

10A - FORM X PEST-1
IDENTIFICATION SUMMARY
FOR SINGLE COMPONENT ANALYTES

EPA SAMPLE NO.

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Lab Sample ID: _____ Date(s) Analyzed: _____

Instrument ID (1): _____ Instrument ID (2):_____

GC Column (1): _____ ID: _____(mm) GC Column (2): _____ ID: _____(mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%D
			FROM	TO		
	1					
	2					
	1					
	2					
	1					
	2					
	1					
	2					
	1					
	2					
	1					
	2					
	1					
	2					
	1					
	2					

10B - FORM X PEST-2
IDENTIFICATION SUMMARY
FOR TOXAPHENE

EPA SAMPLE NO.

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ Mod. Ref No.: _____ SDG No.: _____

Lab Sample ID: _____ Date(s) Analyzed: _____

Instrument ID (1): _____ Instrument ID (2):_____

GC Column (1): _____ ID: _____(mm) GC Column (2): _____ ID: _____(mm)

ANALYTE	PEAK	RT	RT WINDOW FROM	RT WINDOW TO	CONCENTRATION PEAK	CONCENTRATION MEAN	%D
COLUMN 1	1						
	2						
	3						
	4						
	5						
COLUMN 2	1						
	2						
	3						
	4						
	5						

At least three peaks for each column are required for identification of multicomponent analytes.

10C - FORM X ARO
IDENTIFICATION SUMMARY
FOR MULTICOMPONENT ANALYTES

EPA SAMPLE NO.

Lab Name: ______________ Contract: ______________

Lab Code: ________ Case No.: ______ Mod. Ref No.: _________ SDG No.: ____________

Lab Sample ID: ______________ Date(s) Analyzed: ____________

Instrument ID (1): ____________ Instrument ID (2): ____________

GC Column (1): _________ ID: ________(mm) GC Column (2): _______ ID: _____(mm)

ANALYTE	PEAK	RT	RT WINDOW FROM	RT WINDOW TO	CONCENTRATION PEAK	CONCENTRATION MEAN	%D
______ COLUMN 1	1						
	2						
	3						
	4						
	5						
COLUMN 2	1						
	2						
	3						
	4						
	5						
______ COLUMN 1	1						
	2						
	3						
	4						
	5						
COLUMN 2	1						
	2						
	3						
	4						
	5						
______ COLUMN 1	1						
	2						
	3						
	4						
	5						
COLUMN 2	1						
	2						
	3						
	4						
	5						

At least three peaks for each column are required for identification of multicomponent analytes.

SAMPLE LOG-IN SHEET
FORM DC-1

Lab Name					Page __ of __
Received By (Print Name)					Log-in Date
Received By (Signature)					
Case Number		Sample Delivery Group No.			Mod. Ref. No.
Remarks:			Corresponding		
		EPA Sample #	Sample Tag #	Assigned Lab #	Remarks: Condition of Sample Shipment, etc.
1. Custody Seal(s)	Present/Absent* Intact/Broken				
2. Custody Seal Nos.	_____				
	_____				
3. Traffic Reports/ Chain of Custody Records (TR/COCs) or Packing Lists	Present/Absent*				
4. Airbill	Airbill/Sticker Present/Absent*				
5. Airbill No.	_____				
	_____				
6. Sample Tags	Present/Absent*				
Sample Tag Numbers	Listed/Not Listed on Chain-of-Custody				
7. Sample Condition	Intact/Broken*/ Leaking				
8. Cooler Temperature Indicator Bottle	Present/Absent				
9. Cooler Temperature	_____				
10. Does information on TR/COCs and sample tags agree?	Yes/No*				
11. Date Received at Laboratory	_____				
12. Time Received	_____				
Sample Transfer					
Fraction	Fraction				
Area #	Area #				
By	By				
On	On				

* Contact SMO and attach record of resolution.

Reviewed By	Logbook No.
Date	Logbook Page No.

ORGANICS COMPLETE SDG FILE (CSF) INVENTORY SHEET
FORM DC-2

LABORATORY NAME _____

CITY/STATE _____

CASE NO. _____ SDG NO. _____

SDG NOs. TO FOLLOW _____ _____ _____

MOD. REF. NO. _____

CONTRACT NO. _____

SOW NO. _____

All documents delivered in the Complete SDG File (CSF) must be original documents where possible.

	PAGE NOs		CHECK	
	FROM	TO	LAB	USEPA
1. **Inventory Sheet** (Form DC-2) (Do not number)				
2. **SDG Case Narrative**				
3. **SDG Cover Sheet/Traffic Report**				
4. **Trace Volatiles Data**				
a. QC Summary				
Deuterated Monitoring Compound Recovery (Form II VOA-1 and VOA-2)				
Matrix Spike/Matrix Spike Duplicate Recovery (Form III VOA) (if requested by USEPA Region)				
Method Blank Summary (Form IV VOA)				
GC/MS Instrument Performance Check (Form V VOA)				
Internal Standard Area and RT Summary (Form VIII VOA)				
b. Sample Data				
TCL Results - Organics Analysis Data Sheet (Form I VOA-1 and VOA-2)				
Tentatively Identified Compounds (Form I VOA-TIC)				
Reconstructed total ion chromatograms (RIC) for each sample				
For each sample:				
Raw Spectra and background-subtracted mass spectra of target compounds identified				
Quantitation reports				
Mass Spectra of all reported TICs with three best library matches				
c. Standards Data (All Instruments)				
Initial Calibration Data (Form VI VOA-1, VOA-2, VOA-3)				
RICs and Quantitation Reports for all Standards				
Continuing Calibration Data (Form VII VOA-1, VOA-2, VOA-3)				
RICs and Quantitation Reports for all Standards				
d. Raw/Quality Control (QC) Data				
BFB				
Blank Data				

CASE NO. _____ SDG NO. _____ SDG NOS. TO FOLLOW _____

_____ _____ MOD. REF. NO. _____

	PAGE NOs		CHECK	
	FROM	TO	LAB	USEPA
Matrix Spike/Matrix Spike Duplicate Data (if requested by USEPA Region)				
e. Trace SIM Data (Place at the end of the Trace Volatiles Section)				
[Form I VOA-SIM; Form II VOA-SIM1 and VOA-SIM2; Form IV-VOA-SIM; Form VI VOA-SIM; Form VII VOA-SIM; Form VIII VOA-SIM; and all raw data for QC, Samples, and Standards.]				
5. **Low/Med Volatiles Data**				
a. QC Summary				
Deuterated Monitoring Compound Recovery (Form II VOA-1, VOA-2, VOA-3, VOA-4)				
Matrix Spike/Matrix Spike Duplicate Recovery (Form III VOA-1 and VOA-2) (if requested by USEPA Region)				
Method Blank Summary (Form IV VOA)				
GC/MS Instrument Performance Check (Form V VOA)				
Internal Standard Area and RT Summary (Form VIII VOA)				
b. Sample Data				
TCL Results - Organics Analysis Data Sheet (Form I VOA-1 and VOA-2)				
Tentatively Identified Compounds (Form I VOA-TIC)				
Reconstructed total ion chromatograms (RIC) for each sample				
For each sample:				
Raw Spectra and background-subtracted mass spectra of target compounds identified				
Quantitation reports				
Mass Spectra of all reported TICs with three best library matches				
c. Standards Data (All Instruments)				
Initial Calibration Data (Form VI VOA-1, VOA-2, VOA-3)				
RICs and Quantitation Reports for all Standards				
Continuing Calibration Data (Form VII VOA-1, VOA-2, VOA-3)				
RICs and Quantitation Reports for all Standards				
d. Raw/Quality Control (QC) Data				
BFB				
Blank Data				

CASE NO. _____ SDG NO. _____ SDG NOS. TO FOLLOW _____

_____ _____ MOD. REF. NO. _____

	PAGE NOs		CHECK	
	FROM	TO	LAB	USEPA
Martix Spike/Matrix Spike Duplicate Data (if requested by USEPA Region)				
6. Semivolatiles Data				
a. QC Summary				
Deuterated Monitoring Compound Recovery (Form II SV-1, SV-2, SV-3, SV-4)				
Matrix Spike/Matrix Spike Duplicate Recovery Summary (Form III SV-1 and SV-2) (if requested by USEPA Region)				
Method Blank Summary (Form IV SV)				
GC/MS Instrument Performance Check (Form V SV)				
Internal Standard Area and RT Summary (Form VIII SV-1 and SV-2)				
b. Sample Data				
TCL Results - Organics Analysis Data Sheet (Form I SV-1 and SV-2)				
Tentatively Identified Compounds (Form I SV-TIC)				
Reconstructed total ion chromatograms (RICs) for each sample				
For each sample:				
Raw Spectra and background-subtracted mass spectra of target compounds				
Quantitation reports				
Mass Spectra of TICs with three best library matches				
GPC chromatograms (if GPC is required)				
c. Standards Data (All Instruments)				
Initial Calibration Data (Form VI SV-1, SV-2, SV-3)				
RICs and Quantitation Reports for all Standards				
Continuing Calibration Data (Form VII SV-1, SV-2, SV-3)				
RICs and Quantitation Reports for all Standards				
d. Raw QC Data				
DFTPP				
Blank Data				
MS/MSD Data (if requested by USEPA Region)				
e. Raw GPC Data				

CASE NO. _____ SDG NO. _____ SDG NOS. TO FOLLOW _____

_____ _____ MOD. REF. NO. _____

	PAGE NOs		CHECK	
	FROM	TO	LAB	USEPA
f. Semivolatile SIM Data				
[Form I SV-SIM; Form II SV-SIM1 and SV-SIM2; Form III SV-SIM1 and SV-SIM2 (if required); Form IV SV-SIM; Form VI SV-SIM; Form VII SV-SIM; Form VIII SV-SIM1 and SV-SIM2; and all raw data for QC, Samples, and Standards.]				
7. **Pesticides Data**				
a. QC Summary				
Surrogate Recovery Summary (Form II PEST-1 and PEST-2)				
Matrix Spike/Matrix Spike Duplicate Recovery Summary (Form III PEST-1 and PEST-2)				
Laboratory Control Sample Recovery (Form III PEST-3 and PEST-4)				
Method Blank Summary (Form IV PEST)				
b. Sample Data				
TCL Results - Organics Analysis Data Sheet (Form I PEST)				
Chromatograms (Primary Column)				
Chromatograms from second GC column confirmation				
GC Integration report or data system printout				
Manual work sheets				
For pesticides by GC/MS				
Copies of raw spectra and copies of background-subtracted mass spectra of target compounds (samples & standards)				
c. Standards Data				
Initial Calibration of Single Component Analytes (Form VI PEST-1 and PEST-2)				
Toxaphene Initial Calibration (Form VI PEST-3 and PEST-4)				
Analyte Resolution Summary (Form VI PEST-5, per column)				
Performance Evaluation Mixture (Form VI PEST-6)				
Individual Standard Mixture A (Form VI PEST-7)				
Individual Standard Mixture B (Form VI PEST-8)				
Individual Standard Mixture C (Form VI PEST-9 and PEST-10)				
Calibration Verification Summary (Form VII PEST-1)				
Calibration Verification Summary (Form VII PEST-2)				
Calibration Verification Summary (Form VII PEST-3)				

CASE NO. _____ SDG NO. _____ SDG NOS. TO FOLLOW _____

_____ _____ MOD. REF. NO. _____

	PAGE NOs		CHECK	
	FROM	TO	LAB	USEPA
Calibration Verification Summary (Form VII PEST-4)				
Analytical Sequence (Form VIII PEST)				
Florisil Cartridge Check (Form IX PEST-1)				
Pesticide GPC Calibration (Form IX PEST-2)				
Identification Summary for Single Component Analytes (Form X PEST-1)				
Identification Summary for Toxaphene (Form X PEST-2)				
Chromatograms and data system printouts A printout of Retention Times and corresponding peak areas or peak heights				
d. Raw QC Data				
Blank Data				
Matrix Spike/Matrix Spike Duplicate Data				
Laboratory Control Sample Data				
e. Raw GPC Data				
f. Raw Florisil Data				
8. **Aroclor Data**				
a. QC Summary				
Surrogate Recovery Summary (Form II ARO-1 and ARO-2)				
Matrix Spike/Matrix Spike Duplicate Summary (Form III ARO-1 and ARO-2)				
Laboratory Control Sample Recovery(Form III ARO-3 and ARO-4)				
Method Blank Summary (Form IV ARO)				
b. Sample Data				
TCL Results - Organics Analysis Data Sheet (Form I ARO)				
Chromatograms (Primary Column)				
Chromatograms from second GC column confirmation				
GC Integration report or data system printout				
Manual work sheets				
For Aroclors by GC/MS				
Copies of raw spectra and copies of background-subtracted mass spectra of target compounds (samples & standards)				

CASE NO. _____ SDG NO. _____ SDG NOS. TO FOLLOW _____

_____ _____ MOD. REF. NO. _____

	PAGE NOs		CHECK	
	FROM	TO	LAB	USEPA
c. Standards Data				
Aroclors Initial Calibration (Form VI ARO-1, ARO-2, and ARO-3)				
Calibration Verification Summary (Form VII ARO-1)				
Analytical Sequence (Form VIII ARO)				
Identification Summary for Multicomponent Analytes (Form X ARO)				
Chromatograms and data system printouts A printout of Retention Times and corresponding peak areas or peak heights				
d. Raw QC Data				
Blank Data				
Matrix Spike/Matrix Spike Duplicate Data				
Laboratory Control Sample (LCS) Data				
e. Raw GPC Data (if performed)				
9. **Miscellaneous Data**				
Original preparation and analysis forms or copies of preparation and analysis logbook pages				
Internal sample and sample extract transfer chain-of-custody records				
Screening records				
All instrument output, including strip charts from screening activities (describe or list)				
_____				
_____				
10. **EPA Shipping/Receiving Documents**				
Airbills (No. of shipments _____)				
Chain of Custody Records				
Sample Tags				
Sample Log-in Sheet (Lab & DC-1)				
Miscellaneous Shipping/Receiving Records (describe or list)				
_____				
_____				

CASE NO. _____ SDG NO. _____ SDG NOS. TO FOLLOW _____

_____ _____ MOD. REF. NO. _____

	PAGE NOs		CHECK	
	FROM	TO	LAB	USEPA
11. **Internal Lab Sample Transfer Records and Tracking Sheets** (describe or list)				
_____				
_____				
12. **Other Records** (describe or list)				
Telephone Communication Log				
_____				
_____				

13. **Comments**

_____

_____

_____

Completed by: (CLP Lab)	(Signature)	(Printed Name/Title)	(Date)
Verified by: (CLP Lab)	(Signature)	(Printed Name/Title)	(Date)
Audited by: (USEPA)	(Signature)	(Printed Name/Title)	(Date)

EXHIBIT C

TARGET COMPOUND LIST AND CONTRACT REQUIRED QUANTITATION LIMITS

NOTE: Specific quantitation limits are highly matrix-dependent. The quantitation limits listed herein are provided for guidance and may not always be achievable.

The Contract Required Quantitation Limit (CRQL) values listed on the following pages are based on the analysis of samples according to the specifications given in Exhibit D.

For soil samples, the moisture content of the samples must be used to adjust the CRQL values appropriately.

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Exhibit C - Target Compound List and Contract Required Quantitation Limits

Table of Contents

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1.0 VOLATILES TARGET COMPOUND LIST AND CONTRACT REQUIRED QUANTITATION LIMITS

	Volatiles	CAS Number	Quantitation Limits: Trace Water By SIM µg/L	Trace Water µg/L	Low Water µg/L	Low Soil µg/kg	Med. Soil µg/kg
1.	Dichlorodifluoromethane	75-71-8		0.50	5.0	5.0	250
2.	Chloromethane	74-87-3		0.50	5.0	5.0	250
3.	Vinyl chloride	75-01-4		0.50	5.0	5.0	250
4.	Bromomethane	74-83-9		0.50	5.0	5.0	250
5.	Chloroethane	75-00-3		0.50	5.0	5.0	250
6.	Trichlorofluoromethane	75-69-4		0.50	5.0	5.0	250
7.	1,1-Dichloroethene	75-35-4		0.50	5.0	5.0	250
8.	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1		0.50	5.0	5.0	250
9.	Acetone	67-64-1		5.0	10	10	500
10.	Carbon disulfide	75-15-0		0.50	5.0	5.0	250
11.	Methyl acetate	79-20-9		0.50	5.0	5.0	250
12.	Methylene chloride	75-09-2		0.50	5.0	5.0	250
13.	trans-1,2-Dichloroethene	156-60-5		0.50	5.0	5.0	250
14.	Methyl tert-butyl ether	1634-04-4		0.50	5.0	5.0	250
15.	1,1-Dichloroethane	75-34-3		0.50	5.0	5.0	250
16.	cis-1,2-Dichloroethene	156-59-2		0.50	5.0	5.0	250
17.	2-Butanone	78-93-3		5.0	10	10	500
18.	Bromochloromethane	74-97-5		0.50	5.0	5.0	250
19.	Chloroform	67-66-3		0.50	5.0	5.0	250
20.	1,1,1-Trichloroethane	71-55-6		0.50	5.0	5.0	250
21.	Cyclohexane	110-82-7		0.50	5.0	5.0	250
22.	Carbon tetrachloride	56-23-5		0.50	5.0	5.0	250
23.	Benzene	71-43-2		0.50	5.0	5.0	250
24.	1,2-Dichloroethane	107-06-2		0.50	5.0	5.0	250
25.	1,4-Dioxane	123-91-1	2.0	20	100	100	5000
26.	Trichloroethene	79-01-6		0.50	5.0	5.0	250
27.	Methylcyclohexane	108-87-2		0.50	5.0	5.0	250
28.	1,2-Dichloropropane	78-87-5		0.50	5.0	5.0	250
29.	Bromodichloromethane	75-27-4		0.50	5.0	5.0	250
30.	cis-1,3-Dichloropropene	10061-01-5		0.50	5.0	5.0	250
31.	4-Methyl-2-pentanone	108-10-1		5.0	10	10	500
32.	Toluene	108-88-3		0.50	5.0	5.0	250
33.	trans-1,3-Dichloropropene	10061-02-6		0.50	5.0	5.0	250
34.	1,1,2-Trichloroethane	79-00-5		0.50	5.0	5.0	250
35.	Tetrachloroethene	127-18-4		0.50	5.0	5.0	250

1.0 VOLATILES TARGET COMPOUND LIST AND CONTRACT REQUIRED QUANTITATION LIMITS (Con't)

			Quantitation Limits				
			Trace Water By SIM	Trace Water	Low Water	Low Soil	Med. Soil
Volatiles		CAS Number	µg/L	µg/L	µg/L	µg/kg	µg/kg
36.	2-Hexanone	591-78-6		5.0	10	10	500
37.	Dibromochloromethane	124-48-1		0.50	5.0	5.0	250
38.	1,2-Dibromoethane	106-93-4	0.050	0.50	5.0	5.0	250
39.	Chlorobenzene	108-90-7		0.50	5.0	5.0	250
40.	Ethylbenzene	100-41-4		0.50	5.0	5.0	250
41.	o-Xylene	95-47-6		0.50	5.0	5.0	250
42.	m,p-Xylene	179601-23-1		0.50	5.0	5.0	250
43.	Styrene	100-42-5		0.50	5.0	5.0	250
44.	Bromoform	75-25-2		0.50	5.0	5.0	250
45.	Isopropylbenzene	98-82-8		0.50	5.0	5.0	250
46.	1,1,2,2-Tetrachloroethane	79-34-5		0.50	5.0	5.0	250
47.	1,3-Dichlorobenzene	541-73-1		0.50	5.0	5.0	250
48.	1,4-Dichlorobenzene	106-46-7		0.50	5.0	5.0	250
49.	1,2-Dichlorobenzene	95-50-1		0.50	5.0	5.0	250
50.	1,2-Dibromo-3-chloropropane	96-12-8	0.050	0.50	5.0	5.0	250
51.	1,2,4-Trichlorobenzene	120-82-1		0.50	5.0	5.0	250
52.	1,2,3-Trichlorobenzene	87-61-6		0.50	5.0	5.0	250

2.0 SEMIVOLATILES TARGET COMPOUND LIST AND CONTRACT REQUIRED QUANTITATION LIMITS

			Quantitation Limits				
			Low Water By SIM[1]	Low Water	Low Soil By SIM[1]	Low Soil	Med. Soil
	Semivolatiles	CAS Number	µg/L	µg/L	µg/kg	µg/kg	µg/kg
53.	Benzaldehyde	100-52-7		5.0		170	5000
54.	Phenol	108-95-2		5.0		170	5000
55.	Bis(2-chloroethyl) ether	111-44-4		5.0		170	5000
56.	2-Chlorophenol	95-57-8		5.0		170	5000
57.	2-Methylphenol	95-48-7		5.0		170	5000
58.	2,2'-Oxybis(1-chloropropane)[2]	108-60-1		5.0		170	5000
59.	Acetophenone	98-86-2		5.0		170	5000
60.	4-Methylphenol	106-44-5		5.0		170	5000
61.	N-Nitroso-di-n propylamine	621-64-7		5.0		170	5000
62.	Hexachloroethane	67-72-1		5.0		170	5000
63.	Nitrobenzene	98-95-3		5.0		170	5000
64.	Isophorone	78-59-1		5.0		170	5000
65.	2-Nitrophenol	88-75-5		5.0		170	5000
66.	2,4-Dimethylphenol	105-67-9		5.0		170	5000
67.	Bis(2-chloroethoxy) methane	111-91-1		5.0		170	5000
68.	2,4-Dichlorophenol	120-83-2		5.0		170	5000
69.	Naphthalene	91-20-3	0.10	5.0	3.3	170	5000
70.	4-Chloroaniline	106-47-8		5.0		170	5000
71.	Hexachlorobutadiene	87-68-3		5.0		170	5000
72.	Caprolactam	105-60-2		5.0		170	5000
73.	4-Chloro-3-methylphenol	59-50-7		5.0		170	5000
74.	2-Methylnaphthalene	91-57-6	0.10	5.0	3.3	170	5000
75.	Hexachlorocyclo-pentadiene	77-47-4		5.0		170	5000
76.	2,4,6-Trichlorophenol	88-06-2		5.0		170	5000
77.	2,4,5-Trichlorophenol	95-95-4		5.0		170	5000
78.	1,1'-Biphenyl	92-52-4		5.0		170	5000

[1]CRQLs for optional analysis of water and soil samples using SIM technique for PAHs and phenols.

[2]Previously known as Bis(2-chloroisopropyl)ether.

2.0 SEMIVOLATILES TARGET COMPOUND LIST AND CONTRACT REQUIRED QUANTITATION LIMITS (Con't)

			Quantitation Limits				
			Low Water By SIM[1]	Low Water	Low Soil By SIM[1]	Low Soil	Med. Soil
	Semivolatiles	CAS Number	µg/L	µg/L	µg/kg	µg/kg	µg/kg
79.	2-Chloronaphthalene	91-58-7		5.0		170	5000
80.	2-Nitroaniline	88-74-4		10		330	10000
81.	Dimethylphthalate	131-11-3		5.0		170	5000
82.	2,6-Dinitrotoluene	606-20-2		5.0		170	5000
83.	Acenaphthylene	208-96-8	0.10	5.0	3.3	170	5000
84.	3-Nitroaniline	99-09-2		10		330	10000
85.	Acenaphthene	83-32-9	0.10	5.0	3.3	170	5000
86.	2,4-Dinitrophenol	51-28-5		10		330	10000
87.	4-Nitrophenol	100-02-7		10		330	10000
88.	Dibenzofuran	132-64-9		5.0		170	5000
89.	2,4-Dinitrotoluene	121-14-2		5.0		170	5000
90.	Diethylphthalate	84-66-2		5.0		170	5000
91.	Fluorene	86-73-7	0.10	5.0	3.3	170	5000
92.	4-Chlorophenyl-phenyl ether	7005-72-3		5.0		170	5000
93.	4-Nitroaniline	100-01-6		10		330	10000
94.	4,6-Dinitro-2-methylphenol	534-52-1		10		330	10000
95.	N-Nitrosodiphenylamine	86-30-6		5.0		170	5000
96.	1,2,4,5-Tetra chlorobenzene	95-94-3		5.0		170	5000
97.	4-Bromophenyl-phenylether	101-55-3		5.0		170	5000
98.	Hexachlorobenzene	118-74-1		5.0		170	5000
99.	Atrazine	1912-24-9		5.0		170	5000
100.	Pentachlorophenol	87-86-5	0.20	10	6.7	330	10000
101.	Phenanthrene	85-01-8	0.10	5.0	3.3	170	5000
102.	Anthracene	120-12-7	0.10	5.0	3.3	170	5000
103.	Carbazole	86-74-8		5.0		170	5000
104.	Di-n-butylphthalate	84-74-2		5.0		170	5000
105.	Fluoranthene	206-44-0	0.10	5.0	3.3	170	5000
106.	Pyrene	129-00-0	0.10	5.0	3.3	170	5000
107.	Butylbenzylphthalate	85-68-7		5.0		170	5000

[1]CRQLs for optional analysis of water and soil samples using SIM technique for PAHs and phenols.

2.0 SEMIVOLATILES TARGET COMPOUND LIST AND CONTRACT REQUIRED QUANTITATION LIMITS (Con't)

			Quantitation Limits				
			Low Water By SIM[1]	Low Water	Low Soil By SIM[1]	Low Soil	Med. Soil
Semivolatiles		CAS Number	µg/L	µg/L	µg/kg	µg/kg	µg/kg
108.	3,3'-Dichlorobenzidine	91-94-1		5.0		170	5000
109.	Benzo(a)anthracene	56-55-3	0.10	5.0	3.3	170	5000
110.	Chrysene	218-01-9	0.10	5.0	3.3	170	5000
111.	Bis(2-ethylhexyl) phthalate	117-81-7		5.0		170	5000
112.	Di-n-octylphthalate	117-84-0		5.0		170	5000
113.	Benzo(b)fluoranthene	205-99-2	0.10	5.0	3.3	170	5000
114.	Benzo(k)fluoranthene	207-08-9	0.10	5.0	3.3	170	5000
115.	Benzo(a)pyrene	50-32-8	0.10	5.0	3.3	170	5000
116.	Indeno(1,2,3-cd) pyrene	193-39-5	0.10	5.0	3.3	170	5000
117.	Dibenzo(a,h)anthracene	53-70-3	0.10	5.0	3.3	170	5000
118.	Benzo(g,h,i)perylene	191-24-2	0.10	5.0	3.3	170	5000
119.	2,3,4,6-Tetrachlorophenol	58-90-2		5.0		170	5000

[1]CRQLs for optional analysis of water and soil samples using SIM technique for PAHs and pentachlorophenol.

3.0 PESTICIDES TARGET COMPOUND LIST AND CONTRACT REQUIRED QUANTITATION LIMITS[1]

Pesticides	CAS Number	Quantitation Limits Water µg/L	Quantitation Limits Soil µg/kg
120. alpha-BHC	319-84-6	0.050	1.7
121. beta-BHC	319-85-7	0.050	1.7
122. delta-BHC	319-86-8	0.050	1.7
123. gamma-BHC (Lindane)	58-89-9	0.050	1.7
124. Heptachlor	76-44-8	0.050	1.7
125. Aldrin	309-00-2	0.050	1.7
126. Heptachlor epoxide[2]	1024-57-3	0.050	1.7
127. Endosulfan I	959-98-8	0.050	1.7
128. Dieldrin	60-57-1	0.10	3.3
129. 4,4'-DDE	72-55-9	0.10	3.3
130. Endrin	72-20-8	0.10	3.3
131. Endosulfan II	33213-65-9	0.10	3.3
132. 4,4'-DDD	72-54-8	0.10	3.3
133. Endosulfan sulfate	1031-07-8	0.10	3.3
134. 4,4'-DDT	50-29-3	0.10	3.3
135. Methoxychlor	72-43-5	0.50	17
136. Endrin ketone	53494-70-5	0.10	3.3
137. Endrin aldehyde	7421-93-4	0.10	3.3
138. alpha-Chlordane	5103-71-9	0.050	1.7
139. gamma-Chlordane	5103-74-2	0.050	1.7
140. Toxaphene	8001-35-2	5.0	170

[1]There is no differentiation between the preparation of low and medium soil samples in this method for the analysis of pesticides.

[2]Only the exo-epoxy isomer (isomer B) of heptachlor epoxide is reported on the data reporting forms (Exhibit B).

4.0 AROCLORS TARGET COMPOUND LIST AND CONTRACT REQUIRED QUANTITATION LIMITS[1]

Aroclors	CAS Number	Quantitation Limits Water µg/L	Quantitation Limits Soil µg/kg
141. Aroclor-1016	12674-11-2	1.0	33
142. Aroclor-1221	11104-28-2	1.0	33
143. Aroclor-1232	11141-16-5	1.0	33
144. Aroclor-1242	53469-21-9	1.0	33
145. Aroclor-1248	12672-29-6	1.0	33
146. Aroclor-1254	11097-69-1	1.0	33
147. Aroclor-1260	11096-82-5	1.0	33
148. Aroclor-1262	37324-23-5	1.0	33
149. Aroclor-1268	11100-14-4	1.0	33

[1]There is no differentiation between the preparation of low and medium soil samples in this method for the analysis of Aroclors.

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