EPA CONTRACT LABORATORY PROGRAM

STATEMENT OF WORK

FOR

HIGH RESOLUTION SUPERFUND METHODS

(Multi-Media, Multi-Concentration)

HRSM02.0
JANUARY 2019

STATEMENT OF WORK

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EXHIBIT A

SUMMARY OF REQUIREMENTS

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Exhibit A - Summary of Requirements

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1.0 PURPOSE

The purpose of this analytical service is to provide analytical data for use by the U.S. Environmental Protection Agency (EPA), in support of the 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 EPA Program Offices, as well as customers outside the Agency, that have similar analytical data needs also use this service.

2.0 DESCRIPTION OF SERVICE

This Statement of Work (SOW) provides a contractual framework for laboratories to perform analytical services. This framework applies EPA Contract Laboratory Program (CLP) analytical methods for isolation, detection, and quantitative measurement of seventeen 2,3,7,8-substituted tetra through octa chlorinated dibenzo-*p*-dioxins (CDDs) and chlorinated dibenzofurans (CDFs) and/or chlorinated biphenyl congeners (CBCs) in aqueous/water, soil/sediment, sludge, tissue (non-human), biosolids, ash, oil, and oily matrices (see Exhibit C – Target Analyte List and Contract Required Quantitation Limits for a complete list of target analytes and Exhibits D for the analytical methods). The analytical service contract provides the methods to be used and the specific contractual requirements by which the EPA will evaluate the data. This service uses a High Resolution Gas Chromatography/High Resolution Mass Spectrometry (HRGC/HRMS) method to analyze target analytes.

3.0 DATA USES

This analytical service provides data used 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 clean-up actions, and determining when remedial actions are complete. The data may be used in all stages in the investigation of hazardous waste sites, including site inspections, Hazard Ranking System (HRS) scoring, remedial investigation/feasibility studies, remedial design, treatability studies, and removal actions.

In addition, the Contractor must be aware of the importance of maintaining the integrity of 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.

4.0 SUMMARY OF REQUIREMENTS

The SOW comprises eight exhibits and three appendices:

- Exhibit A – Summary of Requirements
- Exhibit B – Reporting and Deliverables Requirements
- Exhibit C – Chlorinated Dibenzo-*p*-Dioxins and Chlorinated Dibenzofurans and Chlorinated Biphenyl Congeners Target Analyte List and Contract Required Quantitation Limits
- Exhibit D – Analytical Methods
- Exhibit E – Quality Systems

- Exhibit F - Programmatic Quality Assurance/Quality Control Elements
- Exhibit G – List of Abbreviations & Acronyms, Glossary of Terms, and Equations
- Exhibit H – Format for Electronic Data Deliverables
- Appendix A – Codes for Labeling Data
- Appendix B – Format Characteristics for Method Detection Limit Study Data
- Appendix C – Format Characteristics for Sample Delivery Group Traffic Report/Chain-of-Custody Records Data

4.1 Major Task Areas

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

4.1.1 Sample Receiving, Storage, and Disposal

The Contractor will receive samples from potential hazardous waste sites and shall store and maintain these samples under proper chain of custody (COC) procedures. The Contractor shall follow the procedures outlined in Section 5.0 of this Exhibit for proper sample receipt and handling as well as in each Exhibit D – Analytical Methods for proper storage and disposal of unused portion of samples. All anomalies and identified issues shall be communicated to the EPA via the CLP Sample Management Office (SMO) Contractor.

4.1.2 Sample Preparation and Analysis

The Contractor is advised that the samples received under this contract are usually from known or suspected hazardous waste sites. The samples may contain high levels of organic and inorganic materials of a potentially hazardous nature and of unknown structure and concentration, and should be handled throughout the analysis with appropriate caution. It is the Contractor’s responsibility to take all necessary measures to ensure laboratory safety and to prepare samples as described in the respective Exhibit D – Analytical Methods for the requested analysis type. Sample preparation methods shall remain consistent for all samples of the same matrix analyzed by the same analytical method.

4.1.3 Sample Reporting and Resubmission of Data

4.1.3.1 Required formats for the reporting of data and recipients are found in Exhibit B – Reporting and Deliverables Requirements and Exhibit H – Format for Electronic Data Deliverables. The Contractor shall be responsible for completing and submitting analysis data sheets and electronic data as requested, in a format specified in this SOW, and within the time specified in Exhibit B – Reporting and Deliverables Requirements, Section 1.1.

4.1.3.2 Use of formats other than those approved will be deemed as noncompliant. Such data are unacceptable. Resubmission in the specified format will be required at no additional cost to the Government.

4.1.4 Quality Assurance/Quality Control

The Contractor shall maintain a Quality Assurance Project Plan (QAPP) with the objective of providing sound analytical chemical measurements. This plan shall incorporate the Quality Control (QC)

procedures, any necessary corrective action, and all documentation required during data collection, as well as the Quality Assurance (QA) measures performed by management to ensure acceptable data production.

4.1.4.1 The Contractor shall strictly adhere to all specific QA/QC procedures prescribed in Exhibits D – Analytical Methods and F – Programmatic Quality Assurance/Quality Control Elements. Records documenting the use of the protocol shall be maintained in accordance with the document control procedures prescribed in Exhibit E – Quality Systems, and shall be reported in accordance with Exhibit B – Reporting and Deliverables Requirements and Exhibit H – Format for Electronic Data Deliverables.

4.1.4.2 Additional QC shall be conducted in the form of the analysis of Performance Evaluation (PE) samples submitted to the laboratory by the EPA. 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 the EPA or rejection of the data for specific analyte(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 the EPA, as well as meeting the contract requirements for analysis (Exhibit D – Analytical Methods); QA/QC (Exhibit F – Programmatic Quality Assurance/Quality Control Elements); data reporting and other deliverables (Exhibits B – Reporting and Deliverables Requirements and H – Format for Electronic Data Deliverables); and sample custody, sample documentation, and Standard Operating Procedure (SOP) documentation (Exhibit E – Quality Systems). As an alternative to data rejection, the EPA may require reanalysis of noncompliant samples. Reanalysis will be performed by the Contractor at no additional cost to the EPA.

4.1.5 Modified Analysis

The Contractor may be requested by the EPA to perform a Modified Analysis (MA). The modifications may include, but are not limited to: modified preparation or analysis procedures; additional analytes; sample matrices other than those present in the SOW; and/or lower quantitation limits. The requests will be made in writing, prior to sample scheduling. All contract requirements specified in the SOW/Specifications will remain in effect unless specifically modified.

5.0 SAMPLE RECEIPT AND HANDLING

5.1 Chain of Custody

The Contractor shall receive and maintain samples under proper COC procedures. All associated document control and inventory procedures shall be developed and followed. Documentation described herein shall be required to show that all procedures are strictly followed. This documentation shall be reported as the Complete SDG File (CSF) (see Exhibit B – Reporting and Deliverables Requirements). The Contractor shall establish and use appropriate procedures to handle confidential information received from the EPA.

5.2 Sample Scheduling

5.2.1 Sample shipments to the Contractor's facility will be scheduled and coordinated by the CLP SMO. The EPA may request analyses that include all or a subset of the Target Analytes listed in Exhibit C - Chlorinated Dibenzo-*p*-Dioxins and Chlorinated Dibenzofurans and Chlorinated Biphenyl Congeners Target Analyte List and Contract Required Quantitation Limits. The EPA may also request modified analyses due to the nature of the samples or project requirements. The Contractor shall communicate with SMO personnel as necessary, throughout the process of sample scheduling, shipment, analysis, and data reporting, to ensure that samples are properly processed.

5.2.2 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 defined 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.

5.3 Sample Shipments

5.3.1 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 of the receipt of sample shipments. This includes the pick-up of samples at the nearest servicing airport, bus station, or other carrier within the Contractor's geographical area. The Contractor shall be available to receive sample shipments at any time the delivery service is operating, including weekends.

5.3.2 Unless otherwise instructed by the EPA Region or originating sampler, the Contractor shall be required to routinely return sample shipping containers to the appropriate sampling office within 14 calendar days following shipment receipt. This shipment must be done via ground transportation only, pending receipt of a valid return authorization, unless specifically instructed to do otherwise. The Contractor will be provided a shipping mechanism by the EPA Region or originating sampler (e.g., field sampler). The Contractor shall ensure that the account numbers provided are used only for the return of Government-owned shipping containers.

5.3.2.1 The Contractor shall remove packing and other materials from the shipping containers before each pick-up and shall ensure that the shipping containers are clean. The Contractor can determine from visual inspection whether the shipping container is clean.

5.4 Sample Receipt

5.4.1 If insufficient sample amount (less than 90% but more than 50% of the required amount) is received to perform the analyses, the Contractor shall notify SMO and proceed with the analyses at reduced volume. The Contractor shall document this issue in the SDG Narrative.

5.4.2 If the Contractor receives broken sample containers, with enough (remaining) sample to perform sample analysis, but potentially not enough volume to analyze any possible re-extractions/reanalyses, the Contractor shall note the issue in the SDG Narrative, proceed with analysis of the samples, and notify SMO. If re-extraction/reanalyses are necessary, the Contractor shall contact SMO and wait for a resolution. The Contractor shall document the provided resolution in the SDG Narrative.

5.4.3 If the Contractor encounters other problems with samples or related documentation [e.g., mixed media, sample pH, sample documentation and paperwork such as Traffic Report/Chain of Custody (TR/COC) Records not with shipment, sample and TR/COC do not correspond], the Contractor shall immediately contact SMO for resolution. The Contractor shall document the provided resolution in the SDG Narrative.

5.4.3.1 If legible handwritten information is present on the TR/COC Record or sample labels, the Contractor shall note the issue in the SDG Narrative and proceed using the handwritten information.

5.4.3.2 Sample tags may or may not be used with samples. Sample tag numbers may or may not be on the TR/COC Record. The Contractor shall note the presence of tags in the SDG Narrative and proceed with the analysis of the samples.

5.4.4 Shipping Container Temperature Monitoring

5.4.4.1 To monitor the temperature of the sample shipping container more effectively, a sample shipping container temperature indicator bottle may be included with each shipping container shipped. The applicable temperature blank will be clearly labeled.

5.4.4.2 When a shipping container temperature indicator bottle is included in the sample shipping container, the Contractor shall use the supplied shipping container temperature indicator bottle to determine the shipping container temperature. The temperature of the sample shipping container shall be measured and recorded immediately upon opening the shipping container, and prior to unpacking the samples or removing the packing material.

5.4.4.3 To determine the temperature of the shipping container, the Contractor shall locate the shipping container temperature indicator bottle in the sample shipping container, invert it several times, remove the cap, and insert a calibrated [National Institute of Standards and Technology (NIST)-traceable] thermometer into the shipping container 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 thermometer used shall be capable of measuring and registering the temperature of the shipping container with an accuracy of ±1°C.

5.4.4.4 If a temperature indicator bottle is not present in the shipping container, an alternative means of determining shipping container 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 shipping container temperature. Other devices (e.g., infrared (IR) thermometer) which can measure temperature may be used if they can be calibrated to ±1°C.

5.4.4.5 If a temperature indicator bottle is not present in the shipping container, and the temperature of the shipping container is not less than or equal to 6°C, the Contractor shall note the issue, and the method used to determine the temperature, in the SDG Narrative and proceed with analysis of the samples.

5.4.4.6 Liquid bearing thermometers such as mercury or alcohol thermometers shall be traceable to NIST calibration and verified at least annually, and whenever the thermometer has been exposed to temperature extremes. The correction factor shall be indicated on the thermometer and the date the thermometer was calibrated and the calibration factor shall be kept as prescribed in the laboratory's QA documents and be available for inspection. The NIST thermometer shall be recalibrated at least every five years or whenever the thermometer has been exposed to temperature extremes.

Digital thermometers, thermocouples and other similar electronic temperature measuring devices shall be calibrated at least quarterly. The date the thermometer was calibrated and the calibration factor shall be kept as prescribed in the laboratory's QA documents and be available for inspection.

When an IR detection device is used to measure the temperature of samples, the device shall be verified at least every six months using a NIST certified thermometer over the full temperature range that the IR thermometer will be used. This would include ambient (20-30°C), iced (4°C) and frozen (0 to -5°C). Each day of use, a single check of the IR shall be made by measuring the temperature of a bottle of water that contains a calibrated thermometer, at the temperature of interest. Agreement between the two readings should be within 0.5°C, or the device shall be recalibrated.

5.4.5 Recording Sample pH

5.4.5.1 The pH for all aqueous/water samples received by the Contractor shall be measured, using a method capable of demonstrating that proper preservation was performed (e.g., pH test strips, calibrated electronic hand-held pen capable of measuring to 0.1 pH unit, or calibrated pH meter), and recorded. The pH shall be determined using a small aliquot of the sample to prevent contamination. Under no circumstances shall a strip or any device be inserted into a sample bottle for the purpose of determining pH.

5.4.5.2 All pens and pH meter electrodes shall be rinsed with reagent water between sample readings.

5.5 Sample Case

Sample analyses will be scheduled by groups of samples, each defined as a Case and identified by a unique EPA 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.

5.5.1 A Case consists of one or more SDGs.

5.5.2 An SDG is defined by the following, whichever is most frequent:

- Each Case of field samples received; or
- Each 20 samples (excluding PE samples) within a Case; or
- Each 7 calendar day period 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 assigned to an SDG must have been scheduled under the same contractual turnaround time.
- All samples scheduled with the same level of deliverables.

5.5.3 Samples may be assigned to SDGs by matrix (i.e., all soil/sediment in one SDG, all aqueous/water in another), at the discretion of the laboratory. If PE samples are received within a Case, they 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. The SDG may exceed the 20 samples limit since the limitation excludes PE samples.

5.5.4 Each sample received by the Contractor will be labeled with an EPA Sample Number and accompanied by a TR/COC Record bearing the Sample Number and descriptive information regarding the sample. The EPA Sample Numbers are continuous, without spaces or hyphens. If the sample numbers do not conform to this requirement, contact SMO. The Contractor shall complete and sign the TR/COC Record, recording the date of sample receipt and sample condition on receipt for each sample container.

5.5.5 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. Validated Time of Sample Receipt (VTSR) is the date of sample receipt at the Contractor's facility, as recorded on the shipper's delivery receipt and sample TR/COC Record.

5.5.6 The Contractor shall provide SDG grouping information in the comma-separated values (CSV) file format specified in Appendix C – Format Characteristics for Sample Delivery Group Traffic Report/Chain-of-Custody Records Data or use the "Create/Edit Sample Delivery Group" app via the Superfund Analytical Services SMO Portal at https://www.smoclpss.com within 3 working days following the receipt of the last sample in the SDG (email delivery is not acceptable). TR/COCs shall be submitted with their SDG information as specified in Exhibit B – Reporting and Deliverables Requirements.

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

5.5.8 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 immediately notify SMO personnel in advance regarding sample data that will be delivered late and shall specify the estimated delivery date.

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EXHIBIT B

REPORTING AND DELIVERABLES REQUIREMENTS

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Exhibit B – Reporting and Deliverables Requirements

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1.0 CONTRACT REPORTS/DELIVERABLES DISTRIBUTION

1.1 Report Deliverable Schedule

The following table identifies the contract reporting and deliverables requirements, and specifies the distribution that is required for each deliverable.

TABLE 1. DELIVERABLE SCHEDULE

Item		No. of Copies[1]	Delivery Schedule	Distribution		
				SMO	Region	QATS
A.[2]	Sample Delivery Grouping Information	1	• In format specified in Appendix C 3 working days after receipt of last sample in the Sample Delivery Group (SDG); or • Create the SDG using Sample Management Office (SMO) Portal 3 working days after receipt of last sample in SDG.	X		
B.[3,5,6]	Complete SDG File (CSF)	1	XX[7] days after Validated Time of Sample Receipt (VTSR) of last sample in SDG, if requested.		X	
C.[8]	SDG Cover Page, Traffic Report/Chain of Custody (TR/COC) Records, Sample Tags, Airbills, Form DC-1, and Form DC-2	1	XX[7] days after VTSR of last sample in SDG.		X	
D.[3,4,9]	Copy of CSF in Portable Document Format (PDF)	1	XX[7] days after VTSR of last sample in SDG.	X		
E.[3,9]	Electronic Data Deliverable (EDD)	1	XX[7] days after VTSR of last sample in SDG.	X		

TABLE 1. DELIVERABLE SCHEDULE (CON'T)

Item		No. of Copies[1]	Delivery Schedule	Distribution		
				SMO	Region	QATS
F.[9]	Method Detection Limit (MDL) Values	1	MDL values in format specified in Appendix B prior to analysis of field samples, annually thereafter, and after major instrument adjustments. (See Exhibit D for each method, Section 12.0)	X		X
G.	Standard Operating Procedures (SOPs)	1	Submit within 60 days after contract award. Submit the latest version within 7 days of receipt of written request to recipients as directed. (See Exhibit E, Section 4.0) Submit amended documents within 14 days of amended SOP(s) as directed in Exhibit E, Section 4.4.			X
H.	Quality Assurance Project Plan (QAPP)	1	Submit within XX[7] days after contract award. Submit the latest version within 7 days of receipt of written request to recipients as directed. (See Exhibit E, Section 3.0) Submit amended documents within 14 days of amended QAPP as directed in Exhibit E, Section 3.3.			X
I.	Instrument Electronic Data	Lot	Retain for 3 years after data submission of the reconciled CSF. Submit within 7 days of receipt of written request to recipients as directed. (See Exhibit F, Section 8.3)	As Directed		
J.	Extracts	Lot	Retain for 1 year after data submission. Submit within 7 days after receipt of written request to recipients as directed.	As Directed		

TABLE 1. DELIVERABLE SCHEDULE (CON'T)

Item		No. of Copies[1]	Delivery Schedule	Distribution		
				SMO	Region	QATS
K.	Samples	Lot	Retain for 60 days after data submission. Submit within 7 days after receipt of written request to recipients as directed.	As Directed		

Footnotes:

[1] The number of copies specified is the number of copies required to be delivered to each recipient.

[2] The Contractor **shall** provide SDG grouping information in the comma-separated values (CSV) file format specified in Appendix C - Format Characteristics for Sample Delivery Group Traffic Report/Chain of Custody Records Data or use the "Create/Edit Sample Delivery Group" via SMO Portal at https://www.smoclpss.com within 3 working days following the receipt of the last sample in the SDG (email delivery is not acceptable).

[3] **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. This includes resubmission of the hardcopy CSF, if requested, PDF of the CSF, and EDD. The date of delivery of the SDG, or any sample within the SDG, is the date that all samples have been delivered. **The delivery and timeliness of routine deliverables [hardcopy of CSF (if requested), PDF file of the CSF, and EDD] will be determined by the Data Receipt Date (DRD) of the SDG. The DRD is the date upon which the last of the routine deliverables was received by the designated recipient. If the deliverables are due on a Saturday, Sunday, or Federal holiday, then they shall be delivered on the next business day. Deliverables received after this time will be considered late.**

[4] Retain for 365 days after data submission, and submit as directed within 7 days after receipt of written request by the U.S. Environmental Protection Agency's Regional Contract Laboratory Program Contracting Officer's Representative (EPA Regional CLP COR) or Analytical Services Branch CLP (ASB CLP COR). Supplemental data (i.e., logbooks) may be requested in writing from the EPA Regional staff or the ASB CLP COR. All written communication sent by the EPA must include the EPA Regional CLP COR in the distribution list. If the EPA Regional CLP COR has not been included in the distribution list, contact the ASB CLP COR.

[5] The hardcopy data shall only be delivered to the EPA Region if specifically requested by the EPA Region at the time of sample scheduling.

[6] The CSF must contain the original sample data for Level 2a deliverables and documents described in Section 2.4.

[7] 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 sample scheduling by the SMO Contractor.

[8] This deliverable shall be provided if the EPA Region does not request a hardcopy of the CSF for the SDG. In this instance, the Contractor shall mail the original sample documentation [signed SDG Cover Page, TR/COC Records, sample tags (if present), airbills, Form DC-1, and Form DC-2] that would have otherwise been included in the hardcopy of the CSF to the EPA Region.

[9] The Contractor shall provide SMO the electronic files via EXES at https://www.smoclpss.com.

1.2 Distribution

The following addresses correspond to the "Distribution" column in Exhibit B – Reporting and Deliverables Requirements, Section 1.1, Table 1 – Deliverable Schedule.

Sample Management Office (SMO)[1]:

Delivery instructions will be provided upon contract award.

EPA Region:

EPA Regional addresses/names for data delivery are available via the Superfund Analytical Services and Contract Laboratory Program website at https://www.epa.gov/clp/forms/contact-us-about-superfund-analytical-services-or-contract-laboratory-program.

EPA Regional CLP Contracting Officer's Representative:

EPA Regional CLP CORs addresses are available via the Superfund Analytical Services and Contract Laboratory Program website at https://www.epa.gov/clp/forms/contact-us-about-superfund-analytical-services-or-contract-laboratory-program.

Quality Assurance Technical Support (QATS)[2]:

Delivery instructions will be provided upon contract award.

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

[2] QATS is a Contractor-operated facility operating under the QATS contract awarded and administered by the EPA.

2.0 REPORTING REQUIREMENTS AND ORDER OF DATA DELIVERABLES

2.1 Introduction

The Contractor shall provide reports and other deliverables as specified in Section 1.1. The required content and form of each deliverable are described in this Exhibit. All reports and documentation **shall be**:

- Legible;
- Clearly labeled and completed in accordance with instructions in this Exhibit;
- Arranged in the order specified in this Exhibit; and
- Paginated sequentially according to instructions in this Exhibit.

2.1.1 Information reported on the forms listed in this Exhibit [excluding the Sample Log-In Sheet (Form DC-1) and the High Resolution Complete SDG File (CSF) Inventory Sheet (Form DC-2)] must be computer-generated.

2.1.2 The Contractor shall use EPA Case Numbers, SDG Numbers, and EPA Sample Numbers to identify samples received under this contract, verbally, electronically, and in reports and correspondence. The Contract Number and the Statement of Work (SOW) Number shall be specified in all correspondence. The Modification Analysis Number (MA No.) shall also be included for all Modified Analyses.

2.1.3 Data elements and instructions for reporting data electronically are contained in Exhibit H – Format for Electronic Data Deliverables.

2.1.4 Section 3.0 of this Exhibit contains instructions to the Contractor for properly completing all data reporting forms to provide the EPA with all required data. Section 4.0 of this Exhibit contains the required Data Reporting Forms in Agency-specified format.

2.2 Resubmission of Data

If the submitted data or EDD does not meet the EPA data assessment criteria as defined in the laboratory contract, the Contractor is required to resubmit all required data with the deficiency(ies) corrected, at no additional cost to the EPA.

2.2.1 Whenever the Contractor is required to submit or resubmit data as a result of an on-site laboratory evaluation, through an ASB CLP COR or EPA Regional CLP COR action, or through an EPA Regional data reviewer’s request, the data shall be clearly marked as "Additional Data". The data shall be sent to both contractual data recipients (EPA Region and SMO) and to the EPA’s designated recipient. The additional data shall be provided as a PDF file to SMO only. This data shall be delivered as a hardcopy to the EPA Region and the EPA’s designated recipient(s) only if a hardcopy of the CSF was requested at the time of sample scheduling. The Contractor shall deliver the additional data within 3 business days of receipt of the request. A cover letter which describes the data being delivered and identifies the EPA Case Number(s), SDG Number(s), and the requester shall be included. Corrected data submitted as "Additional Data" shall only include the affected pages and be accompanied by a revised SDG Narrative (described in Section 2.4.8) documenting the reason(s) for the resubmittal. If the issue affects the values reported in the EDD, then the Contractor shall submit a revised complete EDD to SMO.

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 the appropriate recipient(s) (EPA Region and SMO) within 6 business days of receipt of the request. Electronic deliverables (EDD and PDF file) shall be submitted or resubmitted to SMO only. The revised hardcopy shall be delivered to the EPA Region only.

2.3 Sample Traffic Report/Chain of Custody Records

2.3.1 Each sample received by the Contractor shall be labeled with an EPA Sample Number and will be accompanied by a TR/COC Record bearing the EPA Sample Number and descriptive information regarding the sample. The Contractor shall complete the TR/COC Record, recording the date of sample receipt, verifying the number of samples, and signing it.

2.3.1.1 Upon receipt, the Contractor shall sign for the receipt of samples in the COC Record section. The laboratory Sample Custodian or designated recipient opening and verifying the contents of the shipping container shall then verify receipt of all samples identified within the CLP Traffic Report section and sign and date the signature box located in the CLP Traffic Report section. If a non-CLP TR/COC Record is submitted with the samples (e.g., a Regional TR/COC Record), then the Contractor shall record the receipt date of the samples and sign the TR/COC Record to maintain the chain-of-custody, and the Sample Custodian or designated recipient shall sign and date the TR/COC Record to verify sample information.

NOTE: If the Contractor is requested to transfer samples to another facility, the Contractor shall date and enter the name of the facility where the samples will be transferred to on the CLP TR/COC Record and document the transfer in the SDG Narrative. A signed copy of the TR/COC Record shall be included with the transferred samples and relinquished to the courier. If the samples are not listed on the TR/COC Record, the Contractor shall record them manually on the copy of the TR/COC Record.

2.3.1.2 The Contractor shall also enter the SDG Number, Case Number, and the Laboratory Contract Number on the CLP TR/COC Record. 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 the shipment only includes one sample, then that sample number becomes the SDG Number. Under no circumstances should any SDG Number be replicated within a Case. If necessary, select an alternative sample number for the SDG Number. The SDG Number is also reported on all data reporting forms (see Section 3.0 - Form Instructions).

2.3.2 The Contractor shall submit TR/COC Records in SDG sets (i.e., TR/COC Records for all samples in an SDG), with an SDG Cover Page attached. The SDG Cover Page shall contain the following items:

- Laboratory Name;
- Laboratory Code;
- Contract Number;
- Modified Analysis Number (if applicable);
- Case Number;
- SDG Number;

- SOW Number;
- List of the method/analysis for each sample; and
- List of EPA Sample Numbers of all samples in the SDG, cross-referenced with Laboratory Sample ID Numbers, identifying the first and last samples received, and their 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 sample with the lowest sample number (considering both alpha and numeric designations); the "last" sample received would be the sample with the highest sample number (considering both alpha and numeric designations).

2.3.3 EPA Sample Numbers are continuous, without spaces or hyphens. The original Sample TR/COC Record page, with laboratory receipt information and signed with an original Contractor signature, shall be submitted for each sample in the SDG.

2.3.4 If samples are received at the laboratory with multi-sample TR/COC Records, all the samples on one multi-sample TR/COC Record may not necessarily be in the same SDG. In this instance, the Contractor must make the appropriate number of copies of the TR/COC Record and submit one copy with each SDG Cover Page.

2.4 Complete Sample Delivery Group File

The CSF is described in this section. Sections 2.4.11 and 2.4.12 are each specific to an analytical method [Chlorinated Dibenzo-*p*-Dioxins/Chlorinated Dibenzofurans (CDDs/CDFs), Chlorinated Biphenyl Congeners (CBCs)]. Each method section shall include data for analysis of all samples in that SDG, including field samples, dilutions, re-extractions, re-analyses, blanks, Laboratory Control Sample (LCS) and LCS Duplicate (LCSD), calibrations, QC samples, and supporting documentation. The CSF shall be complete before submission. The CSF shall be consecutively paginated (starting with page number one and ending with the number of all pages in the package).

2.4.1 The CSF shall contain all original documents where possible. No copies of original documents shall 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 the EPA with another Case/SDG. The CSF shall be organized according to Form DC-2.

NOTE 1: All Case-related documentation may be used or admitted as evidence in subsequent legal proceedings. Any other Case-specific documents generated after the CSF is sent to the EPA, as well as copies that are altered in any fashion, are also deliverables to the EPA. Send the updated or additional documents to SMO in a PDF file. Deliver the originals to the EPA Region only if a hardcopy of the CSF was requested at the time of sample scheduling. Send to the EPA's designated recipient only upon written request.

NOTE 2: The Contractor shall retain a legible electronic PDF file or hardcopy of the CSF for 365 days after submission of the reconciled data package to the Government. After this time, the Contractor may dispose of the package.

2.4.2 The CSF shall consist of the following original documents in this order:

1. Completed SDG Cover Page with signature and date
2. EPA Sample TR/COC Record
3. Completed and signed Sample Log-In Sheet [Form DC-1]
4. Completed and signed High Resolution Complete SDG File (CSF) Inventory Sheet [Form DC-2]
5. SDG Narrative
6. Communication logs
7. Percent Solids logs
8. All other original SDG-specific documents in the possession of the laboratory, including, but not limited to the following shall also be included in the CSF:
   - Copies of personal logbook pages;
   - All handwritten SDG-specific notes; and
   - Any other SDG-specific documents not covered by the above.

If the Contractor does submit SDG-specific documents to the EPA after the submission of the CSF, the documents shall be identified with submission codes. For example, if a page or pages were submitted with errors, the corrected pages would be identified with the Case and SDG Number, and the code R#, where the "#" is incremented for any subsequent resubmissions (see Exhibit B – Reporting and Deliverables Requirements, Table 2). If a page has been left out of a CSF, it must be submitted with the code A#. If the entire CSF is to be resubmitted, it must be designated with the code RS#. A revised Form DC-2 shall be submitted, and the submission codes and locations of the documents in the CSF shall be recorded in the "Other Records" section on the revised Form DC-2.

2.4.3 Level 2b and Level 3 deliverables are not applicable.

2.4.4 SDG Cover Page

This form is used to list all samples analyzed within an SDG and provide certain analytical information and general comments. It is also the document that is signed by the Laboratory Manager or designee to authorize and release all data and deliverables associated with the SDG. More than one SDG Cover Page may be necessary.

2.4.5 TR/COC Record

Copies of the signed TR/COC Records for every field sample, field QC sample, and PE/PT sample in the SDG shall be included.

2.4.6 Sample Log-in Sheet [Form DC-1]

This form is used to document the receipt and inspection of samples and containers. At least one original Form DC-1 is required for each sample shipping container (e.g., cooler). If the samples in a single sample shipping container must be assigned to more than one SDG, the original Form DC-1 shall be placed with the deliverables for the SDG that has the lowest alpha-numeric and a copy of Form DC-1 shall be placed with the deliverables for the other SDG(s). The copies should be identified as "copy(ies)", and the location of the original should be noted on the copies.

2.4.7 High Resolution Complete SDG File (CSF) Inventory Sheet [Form DC-2]

The CSF Inventory Sheet is used to record both the inventory of CSF documents and the number of documents in the CSF.

2.4.8 SDG Narrative

This document shall be clearly labeled "SDG Narrative" and shall contain the following:

- Laboratory Name;
- SOW Number;
- Contract Number;
- Case Number;
- SDG Number;
- Modified Analysis Number (if applicable); and
- Detailed documentation of any Quality Control (QC), sample, shipment, and/or analytical problems encountered in processing the samples reported in the CSF.

2.4.8.1 All gas chromatographic columns used for analysis shall be documented in the SDG Narrative. List the GC Column identification: brand-name, internal diameter in mm, and length in meters, coating material, and film thickness.

NOTE: If a column is used that has a different elution order than the column described in the method, the Contractor shall fully document, in the SDG Narrative, the order of elution of all target analytes and identify the first and last eluting isomers for that particular column for the Window Defining Mix (WDM) and the Mid-Point Calibration Standard (CS3) Solution. Relative Retention Time (RRT) limits must be listed if different from SOW and explicit performance criteria used to generate the data.

2.4.8.2 The Contractor shall include any technical and administrative problems encountered, and the resolution or corrective actions taken. These problems may include, but are not limited to: interference problems encountered during analysis, dilutions, reanalyses and/or re-extractions, and any problems with the analysis of samples.

2.4.8.3 Document the alternative temperature technique used, if applicable, to determine shipping container temperature if a temperature indicator bottle is not present in the shipping container.

2.4.8.4 The Contractor shall also provide at least one example of each type of calculation, including a Relative Response (RR) and a Relative Response Factor (RRF) for a calibration, as well as sample results to allow the recalculation of sample results from raw instrument output.

2.4.8.5 The Contractor shall also include a discussion of any SOW Modified Analyses and attach a copy of the approved modification form to the SDG Narrative.

2.4.8.6 The Contractor shall document problems in the SDG Narrative, including but not limited to interference problems encountered during analysis.

2.4.8.7 When submitting corrected data as "Additional Data", the Contractor shall include a revised SDG Narrative documenting the reason(s) for the resubmittal.

2.4.9 Communication Logs

All communications logs, copies of emails, and Records of Communication (ROCs) shall be submitted.

2.4.10 Percent Solids Log (if applicable)

The Percent Solids log shall include: tare weights, initial weights, final weights, and calculated percent solids for all soil/sediment, sludge, ash, samples.

2.4.11 CDD/CDF Sample Data Forms and Raw Data

2.4.11.1 Sample data shall be arranged in individual sample packets with the High Resolution Analysis Data Sheet [Form 1A-HR], CDD/CDF Toxic Equivalent Summary [Form 1B-HR], Total Homologue Data Summary [Form 1D-HR], and Labeled Compound Recovery [Form 2-HR], followed by the sample raw data for that analysis. If secondary analysis or confirmation analysis was performed, all forms and required data shall also be included. These sample packets shall be placed in order of increasing EPA Sample Number, considering both alpha and numeric designations. These forms are required for each analysis including reanalysis, re-extraction, dilution, and confirmation analysis. These data should be placed after each original sample packet.

2.4.11.1.1 High Resolution Analysis Data Sheet [Form 1A-HR] - Tabulated analytical results (identification and quantitation of the target analytes shall be included). The validation and release of these results shall be authorized by a specific signed statement on the Cover Page. 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(s) in the SDG Narrative.

NOTE: Second column confirmation is required for all samples in which 2,3,7,8-TCDF is detected by analysis on a DB-5 (or equivalent) High Resolution Gas Chromatography (HRGC) column, or if 2,3,7,8-TCDF is reported as an Estimated Maximum Possible Concentration (EMPC). Form 1A-HR is required to report 2,3,7,8-TCDF from this confirmation analysis as the sample result as specified in both Exhibit D – Chlorinated Dibenzo-*p*-Dioxins and Chlorinated Dibenzofurans Analysis and Exhibit H – Format for Electronic Data Deliverables.

2.4.11.1.2 CDD/CDF Toxic Equivalent Summary [Form 1B-HR]. Tabulated adjusted concentrations for the target analytes based on the Toxic Equivalent (TEQ) Summary. This form shall be included even if no toxic congeners are positively identified. Complete columns for all Toxic Equivalency Factor (TEF) types where applicable. This form shall be included for each sample and Method Blank.

2.4.11.1.3 Total Homologue Data Summary [Form 1D-HR]. Tabulated results for the Homologues at each level of chlorination (LOC). This form shall be included for each sample and method blank.

2.4.11.1.4 Labeled Compound Recovery [Form 2-HR]. This form shall be included for each sample, method blank, instrument blank, and LCS/LCSD.

2.4.11.1.5 Selected Ion Current Profile (SICP) for each sample analysis or sample extract including reanalysis, re-extraction, and dilution.

SICPs must be presented so the two quantitation m/z, the relevant labeled compounds, and the associated PCDPE channel are on one page. The SICPs for the lock mass m/z (PFK) may be presented on another page. The SICP must show the full time window scanned for each m/z. The SICP for any toxic congener below the Signal-to-Noise (S/N) ratio of 10 or below the CRQL must be enlarged. Each SICP must include the following header information:

- EPA Sample Number;
- Date and time of analysis;
- Retention Time (RT) (and scan number if available);
- High Resolution Gas Chromatography/High Resolution Mass Spectrometry (HRGC/HRMS) instrument identifier;
- Laboratory File Identifier; and
- Analyst ID.

2.4.11.1.6 If automated data system procedures are used for preliminary identification and/or quantitation of the target analytes, the complete data system report, including but not limited to quantitation reports and the area for each m/z, shall be provided in all Sample Data Packages, in addition to the SICPs. The complete data system report shall include all of the information listed below. For laboratories which do not use the 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 SICP:

- EPA Sample Number;
- Date and time of analysis;
- Absolute RT and RRT (and scan number if available);
- For each of the two m/z monitored for each analyte with measured areas, S/N ratio, noise, and a yes/no indicator of whether the peak was accepted by data system as a peak;
- Copy of area table from data system for each component channel;
- Total area of two component channels for each analyte;
- On-column concentration/amount, including units;
- Final quantitative result (with units);
- Analyte name (preferably in same name as listed on reporting forms);
- HRGC/HRMS instrument identifier;
- Laboratory File Identifier; and
- Analyst ID.

2.4.11.1.7 In all instances where the data system report has been edited, or where manual integration or quantitation has been performed, the HRGC/HRMS instrument 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. All edits and manual integrations shall be verified by a second person, who shall also initial the change(s). In addition, graphical displays of the chromatograms before and after manual integration shall be included in the raw data.

2.4.11.2 Quality Control Data

2.4.11.2.1 Method Blank Summary [Form 4-HR]. If more than a single form is necessary arrange the forms in chronological order by date of extraction of the blank, by instrument.

2.4.11.2.2 Blank data shall be included in order by the EPA Sample Number assigned to the blank.

- For Method and Instrument Blanks, Form 1A-HR and Form 2-HR. For Method Blanks, also Form 1B-HR and Form 1D-HR as specified in Section 2.4.11.1.
- SICPs and complete data system reports including the area for each m/z shall be submitted for each blank analyzed, and labeled as specified in Sections 2.4.11.1.5 and 2.4.11.1.6.

2.4.11.2.3 Laboratory Control Sample Percent Recovery Data Summary and Laboratory Control Sample/Laboratory Control Sample Duplicate Relative Percent Difference Data Summary [Form 3A-HR and Form 3B-HR]. Arrange by designated EPA Sample Number assigned to the LCS/LCSD.

2.4.11.2.4 LCS/LCSD data shall be included in order by designated EPA Sample Number assigned to the LCS/LCSD.

- Form 1A-HR, and Form 2-HR as specified in Section 2.4.11.1.
- SICPs and complete data system reports including the area for each m/z shall be submitted for each LCS and labeled as specified in Sections 2.4.11.1.5 and 2.4.11.1.6.

2.4.11.3 Standard Data

2.4.11.3.1 Instrument Performance Check Window Defining Mix (WDM) Summary [Form 5A-HR]. In order by analysis date and time.

A WDM Summary must be completed for each 12-hour period during which sample analyses are performed. The RT for the first and last eluting congener at each LOC must be included on this form.

2.4.11.3.2 Instrument Performance Check CDD/CDF Chromatographic Resolution Summary [Form 5B-HR]. In order by analysis date and time.

A Chromatographic Resolution Summary must be completed for each 12-hour period during which sample analyses are performed. Report all of the associated sample or analytical sequence for all GC columns and instruments including the confirmation analysis data of TCDF, if performed.

2.4.11.3.3 Initial Calibration Data Summary and Ion Abundance Ratio Initial Calibration Data Summary [Form 6A-HR and Form 6B-HR]. In order by instrument, if more than one instrument is used. These forms shall be completed for all analytes including labeled compound standards.

2.4.11.3.3.1 Mass Resolution Data - PFK mass resolution documentation prior to initial calibration, as well as at the end of the 12-hour sequence during which sample analyses are performed, shall be provided and labeled with date and time, and HRGC/HRMS Instrument ID.

2.4.11.3.3.2 Standards, SICPs, and complete data system reports including the area for each m/z for the initial (five-point) calibration shall be labeled as stated in Sections 2.4.11.1.5 and 2.4.11.1.6.

2.4.11.3.3.3 When more than one initial calibration were performed, the forms must be arranged in chronological order by instrument, analysis date and time.

2.4.11.3.4 Relative Response/Relative Response Factor Continuing Calibration Summary and Relative Retention Time Continuing Calibration Summary [Form 7A-HR and Form 7B-HR]. In order by instrument, if more than one instrument is used, and in chronological order. These forms shall be completed for all analytes including labeled compound standards.

2.4.11.3.4.1 Mass Resolution Data - The PFK mass resolution documentation prior to continuing calibration shall be provided for the beginning and end of each 12-hour period during which sample analyses are performed and labeled with date and time, and HRGC/HRMS Instrument ID.

2.4.11.3.4.2 Standards, SICPs, and complete data system reports including the area for each m/z for all continuing calibrations shall be labeled as specified in Sections 2.4.11.1.5 and 2.4.11.1.6.

2.4.11.3.4.3 When more than one continuing calibration was performed, the forms must be arranged in chronological order by instrument and analysis date and time.

2.4.11.3.4.4 In all instances where the data system report has been edited, or where manual integration or quantitation has been performed, the HRGC/HRMS instrument operator shall identify the changes made by initialing and dating the changes to the report. All edits and manual integrations shall be verified by a second person, who shall also initial the change(s). In addition, graphical displays of the chromatograms of the quantitation m/z before and after the manual integration shall be included in the raw data. This applies to all target analytes listed in Exhibit C - Chlorinated Dibenzo-*p*-Dioxins and Chlorinated Dibenzofurans and Chlorinated Biphenyl Congeners Target Analyte List and Contract Required Quantitation Limits, labeled compounds, cleanup standard, and internal standards.

2.4.11.4 Standard and Reagent Preparation Logs

Logbooks in hardcopy or electronic format shall be maintained for the preparation of all standards and reagents. Standards shall be clearly labeled to identify: the analyte or analytes, the standard ID (clearly matching the standard ID noted in the analysis log/instrument run log), concentration, date prepared,

expiration date of the solution, special storage requirements if any, and the preparer's signature.

2.4.11.5 Extraction and Cleanup Logs

The extraction logs and cleanup logs shall be submitted for each extraction or cleanup procedure performed. These logs shall include: date; sample weights and volumes with initial sample weight/volume and final volume clearly indicated; sufficient information to identify which QC samples [i.e., Method Blanks, LCSs/LCSDs] correspond to each batch prepared; identification of the spiking solutions used for the preparation and clean-up processes, as applicable; comments describing any significant changes or reactions which occurred during preparation shall be entered into the log and noted in the SDG Narrative; Performance Evaluation (PE)/Proficiency Testing (PT) sample preparation information (e.g., as-received PEs to final extract); identification of the sample preparer(s) [i.e., signatures(s) or initials]; and sufficient information to identify the concentrations and volumes of reagents added to the samples.

2.4.11.6 Analysis Logs

Logbooks in hardcopy or electronic form shall be maintained for all analytical sequences to enable their reconstruction in time. The analysis logs shall record at a minimum: the date and time of analysis of each analysis within the sequence; identification that includes electronic data file IDs, Laboratory Sample IDs or EPA Sample IDs; analyst identification; notation of QC failures and reasons; and sample dilutions.

2.4.11.7 PE/PT Sample Instructions

If PE or PT audit samples are provided to the Contractor and analyzed as part of the SDG, the Contractor shall submit a copy of the instructions that accompanied the sample(s) in the CSF.

2.4.12 CBC Sample Data Forms and Raw Data

2.4.12.1 Sample data shall be arranged in individual sample packets with the High Resolution Analysis Data Sheet [Form 1A-HR], CBC Toxic Equivalent Summary [Form 1C-HR], Total Homologue Data Summary [Form 1D-HR] when applicable, and Labeled Compound Recovery [Form 2-HR] followed by the sample raw data for that analysis. If secondary analysis or confirmation analysis was performed, all forms and required data shall also be included. These sample packets shall be placed in order of increasing EPA Sample Number, considering both alpha and numeric designations. These forms are required for each analysis including reanalysis, re-extraction, and dilution. These data shall be placed after each original sample packet.

2.4.12.1.1 High Resolution Analysis Data Sheet [Form 1A-HR]. Tabulated analytical results (identification and quantitation of the requested target analytes and recoveries of the associated labeled compounds shall be included). The validation and release of these results shall be authorized by a specific signed statement on the Cover Page. 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.

2.4.12.1.2 CBC Toxic Equivalent Summary [Form 1C-HR]. Tabulated adjusted concentrations for the target analytes based on the TEF. This form shall be included even if no World Health Organization (WHO) Toxic Congeners are positively identified. This form shall be included for each sample and Method Blank.

2.4.12.1.3 Total Homologue Data Summary [Form 1D-HR]. Tabulated results for the Homologues at each LOC. This form is not required when only WHO Toxic Congeners are scheduled for analysis. This form shall be included for each sample and Method Blank.

2.4.12.1.4 Labeled Compound Recovery [Form 2-HR]. This form shall be included for each sample, method blank, instrument blank, and LCS/LCSD.

2.4.12.1.5 SICP for each sample analysis or sample extract including reanalysis, re-extraction, and dilution.

SICPs must be presented so the two quantitation m/z and the relevant labeled compounds are on one page. The SICPs for the lock mass m/z (PFK) may be presented on another page. The SICP must show the full time window scanned for each m/z. The SICP for any WHO Toxic Congeners below the S/N ratio of 10 or below the CRQL must be enlarged. Each SICP must include the following header information:

- EPA Sample Number;
- Date and time of analysis;
- RT (and scan number if available);
- HRGC/HRMS instrument identifier;
- Laboratory File Identifier; and
- Analyst ID.

2.4.12.1.6 If automated data system procedures are used for preliminary identification and/or quantitation of the target analytes, the complete data system report, including but not limited to quantitation reports and the area for each m/z, shall be provided in all Sample Data Packages, in addition to the SICPs. The complete data system report shall include all of the information listed below. For laboratories which do not use the 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 SICP:

- EPA Sample Number;
- Date and time of analysis;
- Absolute RT and RRT (and scan number if available);
- For each of the two m/z monitored for each analyte with measured area, S/N ratio, noise, and a yes/no indicator of whether the peak was accepted be data system as a peak;
- Copy of area table from data system for each component channel;
- The area for each component channel for each target analyte;

- On-column concentration/amount, including units;
- Final quantitative result (with units);
- Analyte name (preferably in same name as listed on reporting forms);
- HRGC/HRMS instrument identifier;
- Laboratory File Identifier; and
- Analyst ID.

2.4.12.1.7 In all instances where the data system report has been edited, or where manual integration or quantitation has been performed, the HRGC/HRMS instrument operator shall identify such edits or manual procedures made, by initialing and dating the changes to the report, and shall include the integration scan range. All edits and manual integrations shall be verified by a second person, who shall also initial the change(s). In addition, graphical displays of the chromatograms before and after manual integration shall be included in the raw data.

2.4.12.2 Quality Control Data

2.4.12.2.1 Method Blank Summary [Form 4-HR]. If more than a single form is necessary arrange the forms in chronological order by date of extraction of the blank, by instrument.

2.4.12.2.2 Blank data shall be included in order by the EPA Sample Number assigned to the blank.

- For Method and Instrument Blanks, Form 1A-HR and Form 2-HR. For Method Blanks, also Form 1C-HR and Form 1D-HR as specified in Section 2.4.12.1.
- SICPs and complete data system reports including the area for each m/z shall be submitted for each blank analyzed, and labeled as specified in Sections 2.4.12.1.5 and 2.4.12.1.6.

2.4.12.2.3 Laboratory Control Sample Percent Recovery Data Summary and Laboratory Control Sample/Laboratory Control Sample Duplicate Relative Percent Difference Data Summary [Form 3A-HR and Form 3B-HR]. Arrange by designated EPA Sample Number assigned to the LCS/LCSD.

2.4.12.2.4 LCS/LCSD data shall be included in order by designated EPA Sample Number assigned to the LCS/LCSD.

- Form 1A-HR and Form 2-HR as specified in Section 2.4.12.1.
- SICPs and complete data system reports including the area for each m/z shall be submitted for each LCS/LCSD and labeled as specified in Sections 2.4.12.1.5 and 2.4.12.1.6.

2.4.12.3 Standard Data

2.4.12.3.1 Instrument Performance Check Window Defining Mix (WDM) Summary [Form 5A-HR]. In order by analysis date and time.

A WDM Summary must be completed for each 12-hour period during which sample analyses are performed. The RT for the first and last eluting congener at each level of chlorination shall be included on this form.

2.4.12.3.2 Instrument Performance Check CBC Chromatographic Resolution Summary [Form 5C-HR]. In order by analysis date and time.

A Chromatographic Resolution Summary must be completed for each 12-hour period during which sample analyses are performed. Report all of the associated sample or analytical sequence for all GC columns and instruments.

2.4.12.3.3 Initial Calibration Data Summary, Ion Abundance Ratio Initial Calibration Data Summary, and Individual Congener Initial Calibration Data Summary [Form 6A-HR, Form 6B-HR, and Form 6C-HR]. In order by instrument, if more than one instrument is used. These forms shall be completed for all analytes including labeled compound standards.

2.4.12.3.3.1 Mass Resolution Data - PFK mass resolution documentation prior to initial calibration, as well as at the end of the 12-hour sequence during which sample analyses are performed, shall be provided and labeled with date and time, and HRGC/HRMS Instrument ID.

2.4.12.3.3.2 WHO Toxic Congeners/LOC Standards, SICPs, and complete data system reports including area summaries for the initial (five-point) calibration shall be labeled as stated in Sections 2.4.12.1.5 and 2.4.12.1.6.

2.4.12.3.3.3 Standards, SICPs, and complete data system reports for the single-point calibration of the 209 congeners shall be present.

2.4.12.3.3.4 When more than one initial calibration was performed, the forms must be arranged in chronological order by instrument, analysis date and time.

2.4.12.3.4 Relative Response/Relative Response Factor Continuing Calibration Summary and Relative Retention Time Continuing Calibration Summary [Form 7A-HR and Form 7B-HR]. In order by instrument, if more than one instrument is used, and in chronological order. These forms shall be completed for all analytes including labeled compound standards.

2.4.12.3.4.1 Mass Resolution Data - The PFK mass resolution documentation prior to continuing calibration shall be provided for the beginning and end of each 12-hour period during which sample analyses are performed and labeled with designated date and time, and HRGC/HRMS Instrument ID.

2.4.12.3.4.2 Standards, SICPs, and complete data system reports including the area for each m/z for all continuing calibrations shall be labeled as specified in Sections 2.4.12.1.5 and 2.4.12.1.6.

2.4.12.3.4.3 When more than one continuing calibration were performed, the forms must be arranged in chronological order by instrument, by analysis date and time.

2.4.12.3.4.4 In all instances where the data system report has been edited, or where manual integration or quantitation has been performed, the HRGC/HRMS instrument operator shall identify the changes made by initialing and dating the changes to the report. All edits and manual integrations shall be verified by a second person, who shall also initial the change(s). In addition, graphical displays of the chromatograms of the quantitation m/z before and after the manual integration shall be included in the raw data. This applies to all target analytes listed in Exhibit C -

Chlorinated Dibenzo-*p*-Dioxins and Chlorinated Dibenzofurans and Chlorinated Biphenyl Congeners Target Analyte List and Contract Required Quantitation Limits, labeled compounds, cleanup standards and internal standards.

2.4.12.4 Standard and Reagent Preparation Logs

Logbooks in hardcopy or electronic format shall be maintained for the preparation of all standards and reagents. Standards shall be clearly labeled to identify: the analyte or analytes, the standard ID (clearly matching the standard ID noted in the analysis log/instrument run log), concentration, date prepared, expiration date of the solution, special storage requirements if any, and the preparer's signature.

2.4.12.5 Extraction and Cleanup Logs

The extraction logs and cleanup logs shall be submitted for each extraction or cleanup procedure performed. These logs shall include: date; sample weights and volumes with initial sample weight/volume and final volume clearly indicated; sufficient information to identify which QC samples [i.e., Method Blanks, LCSs/LCSDs] correspond to each batch prepared; identification of the spiking solutions used for the preparation and clean-up processes, as applicable; comments describing any significant changes or reactions which occurred during preparation shall be entered into the log and noted in the SDG Narrative; PE/PT sample preparation information (e.g., as-received PEs to final extract); identification of the sample preparer(s) [signatures(s)]; and sufficient information to identify the concentrations and volumes of reagents added to the samples.

2.4.12.6 Analysis Logs

Logbooks in hardcopy or electronic form shall be maintained for all analytical sequences to enable their reconstruction in time. The analysis logs shall record at a minimum: the date and time of analysis of each analysis within the sequence; identification that includes electronic data file IDs, Laboratory Sample IDs or EPA Sample IDs; analyst identification; notation of QC failures and reasons; and sample dilutions.

2.4.12.7 PE/PT Sample Instructions

If PE or PT audit samples are provided to the Contractor and analyzed as part of the SDG, the Contractor shall submit a copy of the instructions that accompanied the sample(s) in the CSF.

2.4.13 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);
- Sample Tags (if present) sealed in plastic bags; and
- All original receiving documents, including, but not limited to, other receiving forms or copies of receiving logbooks.

2.5 Copy of Complete Sample Delivery Group File

The laboratory shall provide a copy of the CSF in a PDF file to SMO, as specified in Exhibit B – Reporting and Deliverables Requirements, Table 1 – Deliverable Schedule. Sample tags shall not be copied or included in the PDF file unless requested at the time of scheduling.

2.6 Electronic Data Deliverables

The Contractor shall provide the required electronic data deliverable as specified in Exhibit B – Reporting and Deliverables Requirements, Table 1 – Deliverable Schedule.

2.6.1 Electronic Data Delivery in Staged Electronic Data Deliverable

The Contractor shall provide an EDD in SEDD format as Level 2a. The EDD shall include analytical data for all samples in the SDG, as specified in Exhibit H – Format for Electronic Data Deliverables.

2.6.2 Portable Document Format of Complete Sample Delivery Group File

The Contractor shall provide a complete copy of the CSF, and any additional or reconciled hardcopy deliverables, in a PDF file via EXES at https://www.smoclpss.com and follow the naming convention for the PDF file HCD_Case Number_SDG Number_Contract Number_Submission Type for the PDF file.

2.6.2.1 The following identifiers are used based on submission type:

TABLE 2. PDF SUBMISSION IDENTIFIERS

Submission Type	**Identifier**
First Submission	FS
Replacement Submission (if a complete replacement of the first submission PDF is required)	RS
Reconciliation Submission	R# (The # character represents the number of the reconciliation. For example, the first reconciliation submission would be identified as R1.)
Additional Data Submission	A# (The # character represents the number of the additional data submissions. For example, the first additional data submission would be identified as A1.)

2.6.2.1.1 The PDF file shall be organized in accordance with the directions provided in Section 2.0.

2.6.2.1.2 The data shall be bookmarked using a hierarchical bookmark structure (i.e., an overview or "parent" bookmark, and a subordinate or "child" bookmark nested underneath the "parent" bookmark). The required hierarchical structure is shown in Exhibit B – Reporting and Deliverables Requirements, Table 3 – Hierarchical Bookmark Structure.

TABLE 3. HIERARCHICAL BOOKMARK STRUCTURE

Group Bookmark	Parent Bookmark	Child Bookmark
SDG Documentation	SDG Cover Page, Sample TR/COC Records, Form DC-1, Form DC-2, and SDG Narrative, Communication Logs, Percent Solids	
CDD/CDF	Sample Data	High Resolution Analysis Data Sheet, Toxicity, Total Homologue, and Labeled Compound Recovery in increasing alphanumeric EPA Sample Number order (with supporting raw data)
	QC Data	Method Blank Summary
		Method Blank and Instrument Blank Data (with supporting raw data)
		LCS/LCSD Recovery and RPD Data Summary
		LCS and LCSD Data (with supporting raw data)
	Standard Data	Instrument Performance Data Summary
		Mass Resolution Data (with supporting raw data
		Initial Calibration Summary (with supporting data) in order of date and time of analysis
		Continuing Calibration Verification (with supporting raw data)
	Other Data	Standard and Reagent Preparation Logs
		Preparation, Extraction, and Cleanup Logs
		Analysis Logs
		PE/PT Sample Instructions
CBC	Sample Data	High Resolution Analysis Data Sheet, Toxicity, Total Homologue, and Labeled Compound Recovery in increasing alphanumeric EPA Sample Number order (with supporting raw data)
	QC Data	Method Blank Summary
		Method Blank and Instrument Blank Data (with supporting raw data)
		LCS/LCSD Recovery and RPD Data Summary
		LCS and LCSD Data (with supporting raw data)
	Standard Data	Instrument Performance Data Summary
		Mass Resolution Data (with supporting raw data)
		Initial Calibration Summary (with supporting data) in order of date and time of analysis
		Single-point Calibration Data (if applicable)
		Continuing Calibration Verification (with supporting raw data)
	Other Data	Standard and Reagent Preparation Logs
		Preparation, Extraction, and Cleanup Logs
		Analysis Logs
		PE/PT Sample Instructions
Receiving Documents, Transfer Records, and Miscellaneous	Additional Documents	Receiving Logbooks
		Internal Sample, Sample Extract, and Transfer Chain–of-Custody Records

2.7 Extracts Deliverable

The Contractor is required to retain extracts for one (1) year following submission of reconciled complete 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 EPA Region, or Program Manager to the recipient(s) as directed.

2.8 Method Detection Limits

The Contractor shall perform and report determination of the MDLs by the method specified in Exhibit D – Analytical Methods for each instrument, and type and dimensions of GC column used under this contract.

The Contractor shall deliver all determined MDLs to SMO and QATS electronically in the format described in Appendix B – Format Characteristics for Method Detection Limit Study Data, according to the delivery schedule specified in Exhibit B – Reporting and Deliverables Requirements, Table 1.

3.0 FORM INSTRUCTIONS

3.1 Introduction

This section contains specific instructions for the completion of all required CDD/CDF and CBC Data Reporting Forms.

3.2 General Information

Values shall be reported on the hardcopy forms according to the respective form instructions in this section.

3.2.1 The data reporting forms discussed in Section 3.4 and presented in Section 4.0, have been designed in conjunction with the electronic data format specified in Exhibit H – Format for Electronic Data Deliverables. 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".

3.2.2 Information in the electronic deliverable must correspond to information submitted in the PDF and hardcopy CSF (if requested at the time of sample scheduling). If information in any of these deliverables is updated, the information in the other deliverables shall be updated accordingly.

3.2.3 All characters which appear on the data reporting forms presented in Section 4.0 shall be reproduced by the Contractor when submitting data, and the format of the forms submitted shall provide exactly the same information as that shown in the contract. No information may be added, deleted, or moved from its specified position. The names of various fields and analytes (i.e., "Lab Code", "PCB-1", "PCB-1L") shall appear as they are listed in Exhibit B – Reporting and Deliverables Requirements and Exhibit C - Chlorinated Dibenzo-*p*-Dioxins and Chlorinated Dibenzofurans and Chlorinated Biphenyl Congeners Target Analyte List and Contract Required Quantitation Limits.

3.2.4 Rounding Rules

For rounding off numbers to the appropriate level of precision, observe the following common rules. If the figure following those to be retained is greater than or equal to 5, the result is to be rounded up; otherwise the result is rounded down. For example, 0.4365 rounds to 0.44 and 2.3464 rounds to 2.3. Also see "Rounding Rules" in Exhibit G – List of Abbreviations & Acronyms, Glossary of Terms, and Equations.

3.2.4.1 Before evaluating a number for being in control or out of control of a certain limit [other than the CRQL], the number evaluated shall be rounded using the above rounding rules to the significance reported for that limit. For example, the upper control limit of the PCB-1 is 135% for an LCS/LCSD. Then a calculated percent recovery of 135.10 shall be reported on Form 3A-HR as 135.

3.2.5 Significant Figures

All final results for samples, blanks, LCSs/LCSDs shall be reported to two (2) significant figures on the applicable data reporting forms. All other results shall be transcribed from the instrument raw data to at least two (2) significant figures as described in Exhibit B – Reporting and Deliverables Requirements, and Exhibit H – Format for Electronic Data Deliverables. The raw data result is to

be rounded only when the number of figures in the raw data result exceeds the maximum number of figures specified for that result entry for that form. The instrument raw data files contain the raw data values. The hardcopy raw data may be a rounded or truncated representation of the instrument raw data.

3.3 Header and General Form Information

Six pieces of information are common to the header section of each data reporting form. These are Lab Name, Contract, Lab Code, Case Number (Case No.), Modified Analysis Number (MA No.), and SDG Number (SDG No.). Except as noted below for MA No., this information shall be entered on every form and shall match on all forms.

3.3.1 "Lab Name" shall be the name chosen by the Contractor to identify the laboratory.

3.3.2 "Contract" is the number of the EPA contract under which the analyses were performed.

3.3.3 "Lab Code" is an alphanumeric abbreviation, assigned by the EPA, to identify the laboratory and aid in data processing. This Lab Code will be assigned by the EPA at the time a contract is awarded and shall not be modified by the Contractor, except at the direction of the EPA Contracting Officer (CO). If a change of name or ownership occurs at the laboratory, the Lab Code will remain the same unless and until the Contractor is directed by the EPA CO to use another EPA-assigned Lab Code.

3.3.4 "Case No." is the SMO-assigned Case Number associated with the sample and reported on the TR/COC Record or sample shipping paperwork.

3.3.5 "MA No." is the EPA-assigned number for analyses performed for an analytical method under the Modified Analysis clause in Exhibit A – Summary of Requirements. If samples are to be analyzed under the Modified Analysis clause, the Contractor shall list the modification reference number on all forms. If the analyses have no modified requirements, leave the "MA No." field blank.

3.3.6 "SDG No." is the SDG Number.

3.3.7 "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.

3.3.7.1 All samples, LCS/LCSD, blanks, and calibration standards shall be identified with an EPA Sample Number. For samples, an EPA Sample Number is the unique identifying number given on the TR/COC Record or sample shipping records that accompanied that sample. In order to facilitate data assessment, the sample suffixes listed in Appendix A - Codes for Labeling Data must be used.

3.3.7.2 These sample numbers shall be listed on the form in ascending alphanumeric order. Thus, if PA1111 is the lowest (considering both alpha and numeric characters) EPA Sample Number within the SDG, it would be entered in the first EPA Sample Number field. Samples would be listed below it, in ascending sequence - PA1111, PAB124, PAB125, PAC111, etc.

3.3.8 "Matrix" is the matrix of the sample. Enter "Water", "Soil", "Sludge", "Tissue", "Biosolids", "Ash", or "Oil", as appropriate.

3.3.9 "Analytical Method" is the method used to analyze the sample. Enter "CDD/CDF" for dioxin/furan analyses, and "CBC" for chlorinated biphenyl congener analyses.

3.3.10 "Lab Sample ID" is an optional laboratory-generated internal identifier. If the Contractor does not have a Lab Sample ID, this field may be left blank. However, if this identifier is used on any of the forms or accompanying hardcopy data deliverables, it must be reported on all the appropriate forms.

3.3.11 "Lab File ID" is the laboratory-generated name of the HRGC/HRMS instrument data system file containing information pertaining to a particular analysis.

3.3.12 "Sample wt/vol" is the number of actual grams used for extraction for soil, sediment, oil, tissue, and all other solids. For water, enter the actual volume used for the extraction. Report weights and volumes to three (3) significant figures (e.g., 10.0 g, 955 mL).

NOTE: For the laboratory wipe tests, enter the area wiped in "Sample wt/vol", and report the final result in ug/m^2.

3.3.13 "Decanted (Y/N)", enter ‘Y’ if the standing water above the soil or sediment that was decanted off the surface of the sample prior to sample preparation, and enter ‘N’ if not performed.

3.3.14 "Injection Volume" is volume of the sample extract injected into the HRGC/HRMS instrument for analysis. Report this volume in µL to one decimal place (e.g., 1.0 µL).

3.3.15 "Inst. ID" is the instrument identifier used by the laboratory, particularly on forms containing calibration data. The identifier must include some indication of the manufacturer and/or model of the instrument, and contain additional characters or numbers that differentiate between all instruments of the same type in the laboratory. The instrument identifier must be consistent on all forms within the SDG.

3.3.16 "GC Column" and "ID" are two (2) fields used to identify the stationary phase of the GC column and the internal diameter of the GC column in millimeters (mm).

3.4 Reporting Forms

3.4.1 SDG Cover Page

3.4.1.1 Instructions

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

3.4.1.1.1.1 For samples analyzed using this SOW, enter "HRSM02.0" for the SOW Number.

3.4.1.1.1.2 Under column "EPA Sample No.", enter each EPA Sample Number.

3.4.1.1.1.3 Under column "Lab Sample ID", enter each Laboratory sample identifier.

3.4.1.1.1.4 Under column "Analysis Method", enter an "X" under each Analytical Method scheduled for analysis for each EPA Sample Number.

3.4.1.1.2 The SDG Cover Page shall contain the following statement, verbatim: "I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the SDG Narrative. All edits and

manual integrations have been peer-reviewed. Release of the data contained in this hardcopy Complete SDG File and in the electronic data submitted 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 the signature of the Laboratory Manager or designee with typed lines containing the signer's name and title, and the date of signature.

3.4.1.1.3 Each original SDG Cover Page shall be signed and dated by the Laboratory Manager or the Manager's designee to authorize the release and verify the contents of all data and deliverables associated with an SDG.

3.4.2 High Resolution Analysis Data Sheet [Form 1A-HR]

3.4.2.1 Purpose

This form is used to tabulate and report sample analysis results for all target analytes per analytical method (see Exhibit C - Chlorinated Dibenzo-*p*-Dioxins and Chlorinated Dibenzofurans and Chlorinated Biphenyl Congeners Target Analyte List and Contract Required Quantitation Limits), including dilutions, re-extraction and/or reanalysis, method blank, instrument blank, LCS, and LCSD.

3.4.2.2 Instructions

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

3.4.2.2.1 "Extraction Method" is the method of sample extraction. Enter "SEPF" for separatory funnel, "CLLE" for continuous liquid-liquid extraction without hydrophobic membrane, "CONH" for continuous liquid-liquid extraction with hydrophobic membrane, "SPE" for Solid Phase Extraction, "SOXH" for Soxhlet Extraction, "SDS" for Soxhlet-Dean Stark extraction, or "HCL" for HCl Digestion Extraction.

3.4.2.2.2 "Date Received" is the date (formatted MM/DD/YYYY) of sample receipt at the laboratory, as recorded on the TR/COC Record (i.e., the VTSR).

3.4.2.2.3 "Fin. Ext. Vol." is the actual final extract volume of the most concentrated sample. Enter the value in µL. If a dilution of the sample extract is done in a subsequent analysis, this volume will remain the same, but the Dilution Factor (DF) will change (Section 3.4.2.2.4).

3.4.2.2.4 "Dil. Factor" is the dilution of the final extract volume. Enter the DF value to one decimal place in the "Dil. Factor" field (i.e., a DF of 1 will be reported as 1.0; a DF of 10 will be reported as 10.0).

3.4.2.2.5 "Date Extracted" is the date of sample extraction. Enter the date on which the extraction procedure was started in the "Date Extracted" field. Enter the date as MM/DD/YYYY. The date of sample receipt will be compared with the extraction and analysis dates of each sample to ensure that contract holding times were not exceeded.

3.4.2.2.6 "Date Analyzed" is the date on which sample analysis started. Enter the date as MM/DD/YYYY.

3.4.2.2.7 "Cleanup Types" is the cleanup method used [Acid, Base, GPC, Silica Gel (Sili), Alumina (Alum), Florisil (Flor), HPLC,

carbon (Carb), or Anthropogenic Isolation Column (AIC)]. If more than one cleanup type is performed for the sample, cleanup types are separated by commas.

3.4.2.2.8 "Concentration Units" are the units in which the analytical result is reported. Enter "pg/L" or "ng/kg" as appropriate.

NOTE: Tissue results must be reported on a wet weight basis.

3.4.2.2.9 "% Solids/Lipids" is for reporting the %Solids determined by the procedure in Exhibit D – Analytical Methods, for soil/sediment and other applicable types of samples; or for reporting the %Lipids for tissue (non-human)_ samples. Enter the %Solids or %Lipids value to three (3) significant figures (e.g., 5.60%, 78.9%). Leave this field blank for aqueous/water, sludge, biosolids, ash, oil, and oily samples, as well as for method blanks.

3.4.2.2.10 Under column "CL No.", enter the number of chlorine atoms for the congener (e.g., 2 for dichloro-, 4 for tetrachloro-, 10 for PCB-209, etc).

3.4.2.2.11 Under column "Analyte Name", list the target analytes in the same order as they appear in Exhibit C - Chlorinated Dibenzo-*p*-Dioxins and Chlorinated Dibenzofurans and Chlorinated Biphenyl Congeners Target Analyte List and Contract Required Quantitation Limits (e.g., PCB-1, PCB-2, or 2,3,7,8-TCDD, 1,2,3,7,8-PeCDD and so on). For co-eluting PCB congeners, the laboratory shall adjust the target analyte names to reflect the co-elutions occurring during laboratory analysis (i.e., PCB-11/12, PCB-156/157). For LCS/LCSD, report only those analytes spiked into the samples.

3.4.2.2.12 For detected CDD/CDF target analytes and WHO Toxic Congeners (including co-eluting WHO Toxic Congeners) meeting all identification criteria, enter the concentration (if the result is greater than or equal to the adjusted MDL) in the appropriate units in the "Concentration" column. Leave the field blank if the analyte is not identified. Enter the concentration for detected non-WHO Toxic Congeners in the appropriate units in the "Concentration" column. If the non-WHO Toxic Congener is not detected, report the adjusted CRQL, calculated from the CRQL listed in Exhibit C - Chlorinated Dibenzo-*p*-Dioxins and Chlorinated Dibenzofurans and Chlorinated Biphenyl Congeners Target Analyte List and Contract Required Quantitation Limits in the "Concentration" column. All tissue results must be reported on a wet weight basis. For positively identified target analytes, the Contractor shall report the concentrations uncorrected for blank contaminants. Report all analytical results to two (2) significant figures.

3.4.2.2.13 Under column "Q", enter result qualifiers as identified below. If additional qualifiers are used, their explicit definitions shall be included in the SDG Narrative.

3.4.2.2.13.1 For the analytes which require an MDL to be determined, the MDL obtained for a given preparation method, analysis method, and instrument shall be used for the qualification of the results for samples associated with that preparation method, analysis method, and instrument.

All values for result, CRQL, and MDL shall be in the same units prior to determining the appropriate qualifier.

3.4.2.2.13.2 For reporting results, the following contract-specific qualifiers are to be used. The nine (9) qualifiers listed below are not subject to modification by the laboratory. Up to five (5) qualifiers may be reported under the "Q" column for each analyte. The eight (8) defined qualifiers to be used are as follows:

U: Indicates analyte was analyzed for, but not detected. Report the Estimated Detection Limit (EDL) or MDL value as specified in Exhibit D – Analytical Methods for the CDD/CDF and for the WHO Toxic Congeners in "EMPC/EDL/MDL" column. Report the CRQL in the "Concentration" column for non-WHO Toxic Congeners.

UM: Indicates that the analyte was not detected and the calculated EDL is less than the adjusted MDL. The MDL value is reported for the CDD/CDF and for the WHO Toxic Congeners in the "EMPC/EDL/MDL" column.

J: Indicates an estimated value. This flag is used for any detected CDD/CDF analyte or WHO Toxic Congener meeting all the identification criteria in Exhibit D – Analytical Methods, when the result is greater than or equal to the adjusted MDL and less than the adjusted CRQL calculated from the CRQL listed in Exhibit C - Chlorinated Dibenzo-*p*-Dioxins and Chlorinated Dibenzofurans and Chlorinated Biphenyl Congeners Target Analyte List and Contract Required Quantitation Limits. This flag is also used for any detected non-WHO Toxic Congener meeting all the identification criteria in Exhibit D – Analytical Method, when the result is less than the adjusted CRQL, as well as for detected homologues and total homologues as applicable.

B: This flag is used when the analyte is found in the associated blank, as well as in the sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.

E: This flag identifies analytes concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL). This flag is not applied to the detected non-WHO Toxic Congeners with results greater than the concentrations in the CS209 calibration standard. If one or more analytes have a concentration greater than upper limit of calibration range, except as noted in Exhibit D – Analytical Methods, a smaller sample size must be extracted and analyzed according to the specifications in Exhibit D. If the dilution causes any analytes identified in the first analysis to be below the calibration range in the second analysis, the results of both analyses shall be reported on separate copies of Form 1A-HR. Form 1A-HR for the diluted sample shall have the "DL" suffix appended to the EPA Sample Number.

D: This flag indicates all analytes identified in an analysis at a secondary dilution factor. This flag alerts data users that any discrepancies between the concentrations reported may be due to dilution of the sample extract.

H: This flag indicates that the analyte in question was quantitated using peak heights rather than peak areas for both the analyte and its internal standard (see Exhibit D – Analytical Methods, Section 11).

X: Other specific flags may be required to properly define the results. If used, they must be fully described, and such description must be attached to the Sample Data Package and the SDG Narrative. Begin using "X". If more than one flag is needed, use "Y" and "Z" as needed. The laboratory-defined flags are limited to the letters "X", "Y", and "Z".

: The EMPC value shall be qualified with "" in the "Q" column on the Form. This flag indicates target analyte was detected, but did not meet all the identification criteria.

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

3.4.2.2.14 Under column "EMPC/EDL/MDL", enter the calculated EMPC, EDL, or MDL as indicated in Exhibit D – Analytical Methods, Section 11.0, for CDD/CDF target analytes and WHO Toxic Congeners (including co-eluting WHO Toxic Congeners) that are not identified. Report the MDL value for the CDD/CDF target analytes and the WHO Toxic Congeners in this column when the analyte was not detected and the calculated EDL is less than the adjusted MDL. Leave the field blank for non-WHO Toxic Congeners.

NOTE: The "Concentration" column is for detected analytes meeting all the identification criteria only.

3.4.2.2.15 Under column "IAR #", enter the Ion Abundance Ratio calculated for each detected analyte. Flag any data outside the QC limit with a "#".

3.4.2.2.16 Under column "RT #", enter the RT calculated for each detected analyte. Flag any data outside the QC limit with a "#".

3.4.2.2.17 A separate Form 1A-HR is required for the confirmation analysis for TCDF, if applicable. Report the confirmation analysis column information in the "GC column" field. Enter the concentration or EDL/MDL/EMPC and the applicable laboratory qualifier for the confirmed analytes in the appropriate fields.

3.4.3 CDD/CDF Toxic Equivalent Summary [Form 1B-HR]

3.4.3.1 Purpose

This form is used to report the TEF-adjusted concentrations and the Total TEQ for the samples. The Contractor shall submit a Form 1B-HR for each analysis of each sample for which CDD/CDF analysis was performed. This form is not required for instrument blank or LCS/LCSD analyses.

3.4.3.2 Instructions

Complete the header information according to the instructions in Section 3.3. Complete the remainder of the fields in the header according to the instructions in Section 3.4.2.2. Complete the remainder of the form using the following instructions.

3.4.3.2.1 Under column "Concentration", enter each positively identified CDD/CDF analyte. Otherwise, leave the field blank. Report 2,3,7,8-TCDD from DB-225 if detected.

3.4.3.2.2 Under column "TEF-Adj. Conc.", multiply the concentration value by the TEF and enter the calculated TEF-adjusted concentrations for each analyte. Otherwise, leave the field blank. Do not include EMPC, EDL, or MDL in this calculation.

3.4.3.2.3 Calculate the Total TEQ for each of the specified species by summing the TEF-Adjusted Concentrations for the respective species, and enter the Total TEQ values in the "Total TEQ =" field for all three (3) species.

3.4.4 CBC Toxic Equivalent Summary [Form 1C-HR]

3.4.4.1 Purpose

This form is used to report the TEF-adjusted concentrations and the Total TEQ for the WHO Toxic Congeners for samples. The Contractor shall submit a Form 1C-HR for each analysis of each sample. This form is not required for instrument blank or LCS/LCSD analyses.

3.4.4.2 Instructions

Complete the header information according to the instructions in Section 3.3. Complete the remainder of the fields in the header according to the instructions in Section 3.4.2.2. Complete the remainder of the form using the following instructions.

3.4.4.2.1 Under column "Concentration", enter each positively identified WHO Toxic Congener. Otherwise, leave the field blank.

3.4.4.2.2 Under column "TEF-Adj. Conc.", multiply the concentration value by the TEF and enter the calculated TEF-adjusted concentrations for each analyte. Otherwise, leave the field blank. Do not include EMPC, EDL, or MDL in this calculation.

3.4.4.2.3 Calculate the Total TEQ for each of the specified species by summing the TEF-Adjusted Concentrations for the respective species, and enter the Total TEQ values in the "Total TEQ =" field for all three (3) species.

3.4.5 Total Homologue Data Summary [Form 1D-HR]

3.4.5.1 Purpose

This form is used to report the concentration of the homologues for each analysis of each sample analyzed for CDD/CDF or for the complete 209 congeners list. This form is not required for instrument blank or LCS/LCSD analyses.

3.4.5.2 Instructions

Complete the header information according to the instructions in Section 3.3. Complete the remainder of the fields in the header according to the instructions in Section 3.4.2.2. Complete the remainder of the form using the following instructions.

3.4.5.2.1 Under column "Homologue", enter the names of the homologues as they appear in Exhibit C - Chlorinated Dibenzo-*p*-Dioxins and Chlorinated Dibenzofurans and Chlorinated Biphenyl Congeners Target Analyte List and Contract Required Quantitation Limits, for the applicable method.

3.4.5.2.2 Under column "Peaks", enter the number of peaks detected for each homologue. If no peaks are detected, leave the field blank.

3.4.5.2.3 Under column "Concentration", enter the total concentration for the homologue to two (2) significant figures. If analytes are not detected, leave the field blank. Do not include EMPC, EDL, or MDL in this field.

3.4.5.2.4 Under column "Q", flag each total homologue result with the specific data reporting qualifiers described in Section 3.4.2.2.13.

3.4.5.2.5 In the "Total" row, enter the sum of the concentrations of all the reported homologues.

3.4.6 Labeled Compound Recovery [Form 2-HR]

3.4.6.1 Purpose

This form is used to report the percent recovery, ion abundance ratio, and retention time of each of the labeled compounds added to each sample, blank, and LCS/LCSD.

3.4.6.2 Instructions

3.4.6.2.1 Complete the header information according to the instructions in Section 3.3. Complete the remainder of the fields in the header according to the instructions in Section 3.4.2.2. Complete the remainder of the form using the following instructions.

3.4.6.2.2 Under column "CL No.", enter the number of chlorine atoms for the labeled compound.

3.4.6.2.3 Under column "Labeled Compound", enter the name of the labeled compound as given in Exhibit D – Analytical Methods, Table 1.

3.4.6.2.4 Under column "Spike Added", enter the amount of spike added in pg/L or ng/kg.

3.4.6.2.5 Under column "Amount Recovered", enter the amount, in pg/L or ng/kg, of labeled compound found in the sample.

3.4.6.2.6 Under column "%R #", enter the percent recovery (to the nearest whole number) of the labeled compound calculated from the "Spike Added" and the "Amount Recovered".

3.4.6.2.7 Under column "IAR #", enter the Ion Abundance Ratio calculated for each labeled compound.

3.4.6.2.8 Under column "RT #", enter the retention time calculated for each labeled compound.

3.4.6.2.9 Flag any data outside the QC limits with a "#".

3.4.6.2.10 In the "Labeled Cleanup Standard" row, enter the name of the labeled cleanup standard as given in Exhibit D – Analytical Methods, Table 1.

3.4.7 Laboratory Control Sample Percent Recovery Data Summary [Form 3A-HR]

3.4.7.1 Purpose

This form is used to report the percent recovery for each LCS and LCSD.

3.4.7.2 Instructions

Complete the header information according to the instructions in Section 3.3. Complete the remainder of the fields in the header according to the instructions in Section 3.4.2.2. Leave the "Date Received" field blank. Complete the remainder of the form using the following instructions.

3.4.7.2.1 Under column "CL No.", enter the number of chlorine atoms of each analyte spiked in the LCS or LCSD.

3.4.7.2.2 Under column "Spike Analytes", enter the name of each analyte spiked in the LCS or LCSD, as given in Exhibit C - Chlorinated Dibenzo-*p*-Dioxins and Chlorinated Dibenzofurans and Chlorinated Biphenyl Congeners Target Analyte List and Contract Required Quantitation Limits.

3.4.7.2.3 Under column "Spike Added", enter the amount of each analyte added to the LCS or LCSD in pg/L or ng/kg.

3.4.7.2.4 Under column "Amount Recovered", enter the amount of each analyte found in the LCS or LCSD in pg/L or ng/kg.

3.4.7.2.5 Under column "%R #", enter the percent recovery (to the nearest whole number) calculated for each analyte added to the LCS or LCSD. Flag any data outside the QC limits with a "#".

3.4.7.2.6 Under column "%R QC Limits", enter the lower and upper recovery limits for each analyte.

3.4.8 Laboratory Control Sample/Laboratory Control Sample Duplicate Relative Percent Difference Data Summary [Form 3B-HR]

3.4.8.1 Purpose

This form is used to report the Relative Percent Difference of the LCS/LCSD analyses.

3.4.8.2 Instructions

Complete the header information according to the instructions in Section 3.3. Complete the remainder of the fields in the header according to the instructions in Section 3.4.2.2. Complete the remainder of the form using the following instructions.

3.4.8.2.1 Under column "CL No.", enter the number of chlorine atoms for each analyte spiked in the LCS and LCSD.

3.4.8.2.2 Under column "Spike Analytes", enter the name of each analyte spiked in the LCS or LCSD as given in Exhibit C - Chlorinated Dibenzo-*p*-Dioxins and Chlorinated Dibenzofurans and Chlorinated Biphenyl Congeners Target Analyte List and Contract Required Quantitation Limits.

3.4.8.2.3 Under column "LCS %R #", enter the percent recovery of each target of each analyte found in the LCS.

3.4.8.2.4 Under column "LCSD %R #", enter the percent recovery of each target of each analyte found in the LCSD.

3.4.8.2.5 Under column "RPD #", enter the Relative Percent Difference calculated for each analyte added to the LCS/LCSD.

3.4.8.2.6 Flag any data outside the QC limits with a "#".

3.4.9 Method Blank Summary [Form 4-HR]

3.4.9.1 Purpose

This form summarizes the samples associated with each method blank analysis. The form shall also be submitted when a confirmation analysis is performed for CDD/CDF or when a second-column analysis is performed for coeluted isomers (e.g., 156/157) for congeners analysis. The Contractor shall submit the appropriate Form 4-HR for each blank. This form is not required for instrument blanks.

3.4.9.2 Instructions

Complete the header information according to the instructions in Section 3.3. Complete the remainder of the fields in the header according to the instructions in Section 3.4.2.2. Leave the "Date Received" field blank. The EPA Sample Number entered in the upper right-hand corner shall be the same number entered on Form 1A-HR for the blank. Complete the remainder of the form using the following instructions.

3.4.9.2.1 "Cleanup Types" is the cleanup method used [Acid, Base, GPC, Silica Gel (Sili), Alumina (Alum), Florisil (Flor), HPLC, carbon (Carb), or Anthropogenic Isolation Column (AIC)]. If more than one cleanup type is performed for the sample, cleanup types are separated by commas. Method blanks require the identical cleanup methods as the associated samples.

3.4.9.2.2 "Preparation Batch ID" is the batch identifier reported in the EDD under PreparationPlusCleanup/PreparationBatch.

3.4.9.2.3 Under column "EPA Sample No.", enter the EPA Sample Number including reanalysis, dilution, and LCS/LCSD associated with a given method blank in the table.

3.4.9.2.4 Under column "Lab Sample ID", enter the Laboratory-assigned sample number including reanalysis, dilution, and LCS/LCSD.

3.4.9.2.5 Under column "Lab File ID", enter the laboratory file identifier.

3.4.9.2.6 Under column "Date Analyzed", enter date of analysis as MM/DD/YYYY.

3.4.10 Instrument Performance Check Window Defining Mix (WDM) Summary [Form 5A-HR]

3.4.10.1 Purpose

This form is used to report the eluting RT time (first and last) of the WDM analytes for each LOC for each 12-hour time period during which sample analyses are performed.

3.4.10.2 Instructions

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

3.4.10.2.1 "Date Analyzed" is the beginning date of analysis of the Window Defining Mixture, Isomer Specificity Check, or Column Performance Solution. The date shall be entered as MM/DD/YYYY.

3.4.10.2.2 "Time Analyzed" is the time of the analysis (defined as time of injection). The time shall be reported as military time.

3.4.10.2.3 Under column "CL No.", enter the number of chlorine atoms for each LOC.

3.4.10.2.4 Under columns "RT First Eluting" and "RT Last Eluting", enter the RT of the first eluting analyte and the last eluting analyte for each LOC.

3.4.11 Instrument Performance Check CDD/CDF Chromatographic Resolution Summary and Instrument Performance Check CBCs Chromatographic Resolution Summary [Form 5B-HR and Form 5C-HR]

3.4.11.1 Purpose

These forms are used to report the resolution for selected analyte or congeners contained in the LOC/WDM for each 12-hour time period and the samples analyzed in that 12-hour time period. At least one form is required for each GC column used for analysis, and completed for each initial calibration and verification standards.

3.4.11.2 Instructions

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

NOTE: If an alternative column is used, modify this form to indicate the congeners with most critical valley characteristics relative to the target 2,3,7,8-TCDD or TCDF, or WHO Toxic Congeners.

3.4.11.2.1 "Date Analyzed" is the beginning date of analysis of the Isomer Specificity Check. The date shall be entered as MM/DD/YYYY.

3.4.11.2.2 "Time Analyzed" is the time of the analysis (defined as time of injection). The time shall be reported as military time.

3.4.11.2.3 For CDD/CDF, enter the calculated Percent Valley for each of the analyte pairs present on Form 5B-HR. For CBCs, enter the Percent Valley for each pair of congeners on Form 5C-HR.

3.4.11.2.4 For the Analytical Sequence, enter the EPA Sample Number, laboratory-designated sample ID, and Lab File ID under the "EPA Sample No.", "Lab Sample ID", and "Lab File ID" columns according to the instructions in Section 3.3. Enter the samples in chronological order by date and time of analysis.

3.4.11.2.5 Enter the date and time for each analysis under the "Data Analyzed" and "Time Analyzed" columns. The date shall be entered as MM/DD/YYYY. The time shall be reported as military time.

3.4.11.2.6 For every analysis associated with a particular analytical sequence starting with the initial calibration, enter the EPA Sample Number, Lab File ID, and date and time of analysis. Each sample analyzed as part of the sequence shall be reported on Form 5B-HR or Form 5C-HR 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.

3.4.11.2.7 If more than a single copy of Form 5B-HR or Form 5C-HR is required, enter the same header information on all subsequent pages for that GC column and instrument.

3.4.12 Initial Calibration Data Summary, Ion Abundance Ratio Initial Calibration Data Summary, and Individual Congener Initial Calibration Data Summary [Form 6A-HR, Form 6B-HR, and Form 6C-HR (when applicable)].

3.4.12.1 Purpose

These forms summarize the initial calibration of the HRGC/HRMS analytical methods. Each initial calibration that is associated with samples, including dilutions, reanalyses, LCS/LCSD, and blanks, regardless of when the calibration was performed shall be

documented using Form 6A-HR, Form 6B-HR, and Form 6C-HR, as appropriate.

3.4.12.2 Instructions

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

3.4.12.2.1 "Init. Calib. Date(s)" is the date(s) of the beginning and ending of the initial calibration. If the calendar date changes during the calibration procedure, the inclusive dates shall be recorded. Dates shall be entered as MM/DD/YYYY.

3.4.12.2.2 "Init. Calib. Time(s)" is the beginning and ending injection times of the first and last of the standards analyzed. Times shall be reported in military time.

3.4.12.2.3 On Form 6A-HR, Form 6B-HR, and Form 6C-HR, under column "CL No.", enter the number of chlorine atoms for the congener (e.g., 2 for dichloro-, 4 for tetrachloro-, 10 for PCB-209, etc).

3.4.12.2.4 On Form 6A-HR, Form 6B-HR, and Form 6C-HR, under column "Analyte Name", list the target analytes in the same order as they appear in Exhibit C - Chlorinated Dibenzo-*p*-Dioxins and Chlorinated Dibenzofurans and Chlorinated Biphenyl Congeners Target Analyte List and Contract Required Quantitation Limits (e.g., PCB-1, PCB-2, or 2,3,7,8-TCDD, 1,2,3,7,8-PeCDD and so on). For co-eluting PCB congeners, the laboratory shall adjust the target analyte names to reflect the co-elutions occurring during laboratory analysis (i.e., PCB-11/12, PCB-156/157). List the labeled compound or labeled cleanup standard as they appear in the Exhibit D – Analytical Methods, for the respective method, Table 1 (for example, $^{13}C_{12}$-2,3,7,8-TCDD, PCB-1L, PCB-2L). List the internal standards as they appear in Exhibit D – Analytical Methods for the respective method, Table 1.

3.4.12.2.5 On Form 6A-HR, under columns "CS 1", "CS 2", "CS 3", "CS 4", and "CS 5", complete the Relative Response (RR) and RRF data for the five calibration standards. Not required for internal standards.

3.4.12.2.6 On Form 6A-HR, under the column "Mean RR/RRF", report the calculated Mean RR ($\overline{RR}$) or Mean RRF ($\overline{RRF}$) for each analyte, labeled compound, and cleanup standard in the five-point calibration standards.

3.4.12.2.7 On Form 6A-HR, under column "%RSD", enter the calculated Percent Relative Standard Deviation (%RSD) for each analyte, labeled compound, and cleanup standard in the calibration standards. Report to the nearest whole number.

3.4.12.2.8 On Form 6A-HR, under the column "Mean RRT", report the Mean Relative Retention Time ($\overline{RRT}$) for each analyte, labeled compound, and cleanup standard in the five-point calibration standards.

3.4.12.2.9 On Form 6B-HR, under columns "CS 1", "CS 2", "CS 3", "CS 4", and "CS 5", complete the Ion Abundance Ratio (IAR) data for the five calibration standards for each analyte, labeled compound, cleanup standard, and internal standard in the calibration standards. Report to the nearest whole number.

3.4.12.2.10 On Form 6C-HR, under the columns "RRF", "IAR", and "RRT", respectively, enter the Relative Response Factor, Ion Abundance Ratio, and Relative Retention Time determined for each analyte, labeled compound, cleanup standard, and internal standard in the single-point calibration standard. Leave the "RRF" column blank for the internal standards. Report "1.0" under the "RRT" column for the internal standards.

3.4.12.2.11 On Form 6B-HR and Form 6C-HR, under the column "IAR QC Limits", enter the QC limits from the appropriate Exhibit D – Analytical Methods, for each analyte, labeled compound, cleanup standard, and internal standard in the calibration standard(s).

3.4.12.2.12 On Form 6A-HR and Form 6C-HR, under the column "RRT QC Limits", enter the RRT limits from the appropriate Exhibit D – Analytical Methods, for each analyte, labeled compound, cleanup standard, and internal standard in the calibration standard(s).

3.4.13 Relative Response/Relative Response Factor Continuing Calibration Summary and Relative Retention Time Continuing Calibration Summary [Form 7A-HR and Form 7B-HR]

3.4.13.1 Purpose

These forms summarize the continuing calibration verifications of the HRGC/HRMS analytical methods. Each continuing calibration verification that is associated with samples in an SDG including dilutions, reanalyses, LCS/LCSD, and blanks, shall be documented using Forms 7A-HR and 7B-HR.

3.4.13.2 Instructions

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

3.4.13.2.1 "Init. Calib. Date(s)" is the date(s) of the beginning and ending of the initial calibration. If the calendar date changes during the calibration procedure, the inclusive dates shall be recorded. Dates shall be entered as MM/DD/YYYY.

3.4.13.2.2 "Init. Calib. Time(s)" is the beginning and ending injection times of the first and last of the standards analyzed. Times shall be reported in military time.

3.4.13.2.3 "Date Analyzed" is the date for the continuing calibration standard analysis and it shall be entered as MM/DD/YYYY.

3.4.13.2.4 "Time Analyzed" is the time for the continuing calibration standard analysis and it shall be entered in military time.

3.4.13.2.5 On Form 7A-HR and Form 7B-HR, under column "CL No.", enter the number of chlorine atoms for the congener (e.g., 2 for dichloro-, 4 for tetrachloro-, 10 for PCB-209, etc).

3.4.13.2.6 On Form 7A-HR and Form 7B-HR, under column "Analyte Name", list the target analytes in the same order as they appear in Exhibit C - Chlorinated Dibenzo-*p*-Dioxins and Chlorinated Dibenzofurans and Chlorinated Biphenyl Congeners Target Analyte List and Contract Required Quantitation Limits (e.g., PCB-1, PCB-2, or 2,3,7,8-TCDD, 1,2,3,7,8-PeCDD and so on). For co-eluting PCB congeners, the laboratory shall adjust the target analyte names to reflect the co-elutions occurring during laboratory analysis (i.e., PCB-11/12, PCB-156/157). List the labeled compound or labeled cleanup standard as they

appear in the Exhibit D – Analytical Methods, for the respective method, Table 1 (for example, $^{13}C_{12}$-2,3,7,8-TCDD, PCB-1L, PCB-2L). List the internal standards as they appear in the Exhibit D – Analytical Methods for the respective method, Table 1.

3.4.13.2.7 On Form 7A-HR, under the column "RR/RRF", enter the RR or RRF calculated for each analyte, labeled compound, and cleanup standard in the continuing calibration standard.

3.4.13.2.8 On Form 7A-HR, under the column "Mean RR/RRF", enter the $\overline{RR}$ or $\overline{RRF}$ for each dioxin or furan target analyte, WHO Toxic Congener target analyte, applicable labeled compound, and cleanup standard in the associated initial calibration.

3.4.13.2.9 On Form 7A-HR, under the column "%D", enter the percent difference between the RR or RRF from the continuing calibration standard CS3 or CS209 and the $\overline{RR}$ or $\overline{RRF}$ from the associated five-point initial calibration for each dioxin or furan target analyte, WHO Toxic Congener target analyte, labeled compound, and cleanup standard in the calibration standard.

3.4.13.2.10 On Form 7A-HR, under the column "IAR", enter the Ion Abundance Ratio for each analyte, labeled compound, cleanup standard, and internal standard in the continuing calibration standard.

3.4.13.2.11 On Form 7A-HR, under the column "IAR QC Limits", enter the QC limits for each analyte, labeled compound, cleanup standard, and internal standard from the appropriate Exhibit D – Analytical Methods.

3.4.13.2.12 On Form 7B-HR, under the column "Mean RRT", enter the $\overline{RRT}$ for each dioxin or furan target analyte, WHO Toxic Congener target analyte, applicable labeled compound, cleanup standard, and internal standard in the associated five-point initial calibration.

3.4.13.2.13 On Form 7B-HR, under the column "RRT", enter the RRT calculated for each analyte, labeled compound, cleanup standard, and internal standard in the continuing calibration standard. Report "1.0" under the "RRT" column for the internal standards.

3.4.13.2.14 On Form 7B-HR, under the column "RRT QC Limits", enter the QC limits for each analyte, labeled compound, cleanup standard, and internal standard from the appropriate Exhibit D – Analytical Methods.

3.5 Sample Log-In Sheet [Form DC-1]

3.5.1 Instructions

3.5.1.1 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).

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

3.5.1.3 Record the custody seal numbers in Item 2.

3.5.1.4 Open the container, remove the enclosed sample documentation, and record the presence/absence of EPA forms (i.e., TR/COC 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 and the shipping container ID number in Item 5.

3.5.1.5 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 (i.e., intact, broken, leaking) and presence or absence of Sample Tags in Items 6 and 7.

3.5.1.6 Record the presence or absence of a shipping container temperature indicator bottle in Item 8.

3.5.1.7 Record the shipping container temperature in Item 9. If ice is present, that shall be noted in the "Remarks" column.

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

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

3.5.1.10 If there are no problems observed during receipt, sign and date (include the time) Form DC-1 and the TR/COC Record, and write the sample numbers in the "EPA Sample #" column.

3.5.1.11 Record the appropriate Sample Tags and assigned laboratory numbers, if applicable.

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

3.5.1.13 For Items 1, 3, 4, 6, 7, 8, and 10, circle the appropriate response. Responses can be underlined if this form is completed by automated equipment. Unused columns and spaces shall be crossed out, initialed, and dated.

3.5.1.14 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 the resolution of the problem on a CLP Communication Log and in the SDG Narrative. Following resolution, sign and date the forms as specified in the preceding paragraph and note, where appropriate, the resolution of the problem.

3.6 High Resolution Complete SDG File (CSF) Inventory Sheet [Form DC-2]

3.6.1 Instructions

3.6.1.1 Organize all EPA-CSF documents as described in Sections 2 and 3. Assemble the documents in Section 2 in the order specified on Form DC-2, and stamp each page with the consecutive number. Inventory the CSF by reviewing the document numbers and recording page number ranges in the columns provided on Form DC-2. For example, when filling out the page numbers for the "Sample Data" section on Form DC-2, enter the page number of the first Form 1A-HR of the sample analysis under the "From" column, and the last page of the raw data of the last sample analysis under the "To" column. The subsequent lines under the "Sample Data" section may be left blank. The Contractor shall verify and record in the "Comments:" section on Form DC-2 all intentional gaps in the page numbering sequence (for example, "page numbers not used, XXXX-

XXXX, XXXX-XXXX"). If there are no documents for a specific document type, enter an "NA" in the empty space. If analysis by one of the analytical methods is not required, then that method section is not required as a deliverable.

3.6.1.2 Certain laboratory-specific documents related to the CSF may not fit into a clearly defined category. The laboratory should review Form DC-2 to determine if it is most appropriate to place them under Categories 50 through 52. Category 52 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.

3.6.1.3 If it is necessary to insert new or inadvertently omitted documents, the Contractor shall follow these steps:

- Number all documents to be inserted with the next sequential numbers and file the inserts in their logical positions within the CSF (e.g., document to be inserted between pages 6 and 7 shall be numbered as 6a, 6b, 6c, etc.). Identify where the inserts are filed in the CSF by recording the locations on the CSF Inventory Sheet.

4.0 DATA REPORTING FORMS

The data reporting forms are shown on the following pages.

SDG COVER PAGE

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ MA No.: _____ SDG No.: _____

SOW No.: _____

EPA Sample No.	Lab Sample ID	Analysis Method CDD/CDF	Analysis Method CBC

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the SDG Narrative. All edits and manual integrations have been peer-reviewed. Release of the data contained in this hardcopy Complete SDG File and in the electronic data submitted has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: _____ Name: _____

Date: _____ Title: _____

FORM 1A-HR
HIGH RESOLUTION ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ MA No.: _____ SDG No.: _____

Matrix: _____ Analytical Method: _____ Lab Sample ID: _____

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

Decanted (Y/N): ____ Extraction Method: _____ Date Received: _____

Fin. Ext. Vol: _____(µL) Dil. Factor: _____ Date Extracted: _____

Injection Volume: ____(µL) Inst. ID: _____ Date Analyzed: _____

GC Column: _____ ID: _____(mm) Cleanup Types: _____

Concentration Units:(pg/L or ng/kg) _____ % Solids/Lipids: _____

CL No.	Analyte Name	Concentration	Q	EMPC/EDL/MDL	IAR #	RT #

EPA SAMPLE NO.

FORM 1B-HR
CDD/CDF TOXIC EQUIVALENT SUMMARY

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ MA No.: _____ SDG No.: _____

Matrix: _____ Analytical Method: _____ Lab Sample ID: _____

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

Decanted (Y/N): ____ Extraction Method: _____ Date Received: _____

Fin. Ext. Vol: _____(µL) Dil. Factor: _____ Date Extracted: _____

Injection Volume: ____(µL) Inst. ID: _____ Date Analyzed: _____

GC Column: _____ ID: _____(mm) Cleanup Types: _____

Concentration Units:(pg/L or ng/kg) _____ % Solids/Lipids: _____

Analyte Name	Concentration	TEF Mammal	TEF-Adj. Conc.	TEF Fish	TEF-Adj. Conc.	TEF Bird	TEF Adj. Conc.
2,3,7,8-TCDD		x 1.0		x 1.0		x 1.0	
2,3,7,8-TCDF		x 0.1		x 0.05		x 1.0	
1,2,3,7,8-PeCDF		x 0.03		x 0.05		x 0.1	
1,2,3,7,8-PeCDD		x 1.0		x 1.0		x 1.0	
2,3,4,7,8-PeCDF		x 0.3		x 0.5		x 1.0	
1,2,3,4,7,8-HxCDF		x 0.1		x 0.1		x 0.1	
1,2,3,6,7,8-HxCDF		x 0.1		x 0.1		x 0.1	
1,2,3,4,7,8-HxCDD		x 0.1		x 0.5		x 0.05	
1,2,3,6,7,8-HxCDD		x 0.1		x 0.01		x 0.01	
1,2,3,7,8,9-HxCDD		x 0.1		x 0.01		x 0.1	
2,3,4,6,7,8-HxCDF		x 0.1		x 0.1		x 0.1	
1,2,3,7,8,9-HxCDF		x 0.1		x 0.1		x 0.1	
1,2,3,4,6,7,8-HpCDF		x 0.01		x 0.01		x 0.01	
1,2,3,4,6,7,8-HpCDD		x 0.01		x 0.001		x 0.001	
1,2,3,4,7,8,9-HpCDF		x 0.01		x 0.01		x 0.01	
OCDD		x 0.0003		x 0.0001		x 0.0001	
OCDF		x 0.0003		x 0.0001		x 0.0001	
		Total TEQ =		Total TEQ =		Total TEQ =	

TEF – Toxic Equivalency Factor from World Health Organization (WHO) (Mammal 2005, Fish and Bird 1998)

TEQ – Toxic Equivalent

FORM 1C-HR
CBC TOXIC EQUIVALENT SUMMARY

EPA SAMPLE NO.

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ MA No.: _____ SDG No.: _____

Matrix: _____ Analytical Method: _____ Lab Sample ID: _____

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

Decanted (Y/N): ____ Extraction Method: _____ Date Received: _____

Fin. Ext. Vol: _____(µL) Dil. Factor: _____ Date Extracted: _____

Injection Volume: ____(µL) Inst. ID: _____ Date Analyzed: _____

GC Column: _____ ID: _____(mm) Cleanup Types: _____

Concentration Units:(pg/L or ng/kg) _____ % Solids/Lipids: _____

CL No.	Analyte Name	Concentration	TEF Mammal	TEF-Adj. Conc.	TEF Fish	TEF-Adj. Conc.	TEF Bird	TEF Adj. Conc.
4	PCB-77		x 0.0001		x 0.0001		x 0.05	
4	PCB-81		x 0.0003		x 0.0005		x 0.1	
5	PCB-105		x 0.00003		x 0.000005		x 0.0001	
5	PCB-114		x 0.00003		x 0.000005		x 0.0001	
5	PCB-118		x 0.00003		x 0.000005		x 0.00001	
5	PCB-123		x 0.00003		x 0.000005		x 0.00001	
5	PCB-126		x 0.1		x 0.005		x 0.1	
6	PCB-156/157		x 0.00003		x 0.000005		x 0.0001	
6	PCB-167		x 0.00003		x 0.000005		x 0.00001	
6	PCB-169		x 0.03		x 0.00005		x 0.001	
7	PCB-189		x 0.00003		x 0.000005		x 0.00001	
			Total TEQ =		Total TEQ =		Total TEQ =	

TEF – Toxic Equivalency Factor from World Health Organization (WHO) (Mammal 2005, Fish and Bird 1998)

TEQ – Toxic Equivalent

EPA SAMPLE NO.

FORM 1D-HR
TOTAL HOMOLOGUE DATA SUMMARY

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ MA No.: _____ SDG No.: _____

Matrix: _____ Analytical Method: _____ Lab Sample ID: _____

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

Decanted (Y/N): ____ Extraction Method: _____ Date Received: _____

Fin. Ext. Vol: _____(µL) Dil. Factor: _____ Date Extracted: _____

Injection Volume: ____(µL) Inst. ID: _____ Date Analyzed: _____

GC Column: _____ ID: _____(mm) Cleanup Types: _____

Concentration Units:(pg/L or ng/kg) _____ % Solids/Lipids: _____

Homologue	Peaks	Concentration	Q
Total			

EPA SAMPLE NO.

FORM 2-HR
LABELED COMPOUND RECOVERY

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ MA No.: _____ SDG No.: _____

Matrix: _____ Analytical Method: _____ Lab Sample ID: _____

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

Decanted (Y/N): ____ Extraction Method: _____ Date Received: _____

Fin. Ext. Vol: _____(µL) Dil. Factor: _____ Date Extracted: _____

Injection Volume: ____(µL) Inst. ID: _____ Date Analyzed: _____

GC Column: _____ ID: _____(mm) Cleanup Types: _____

Concentration Units:(pg/L or ng/kg) _____ % Solids/Lipids: _____

CL No.	Labeled Compound	Spike Added	Amount Recovered	%R #	IAR #	RT #
Labeled Cleanup Standard						

EPA SAMPLE NO.

FORM 3A-HR
LABORATORY CONTROL SAMPLE PERCENT RECOVERY
DATA SUMMARY

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ MA No.: _____ SDG No.: _____

Matrix: _____ Analytical Method: _____ Lab Sample ID: _____

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

Decanted (Y/N): ____ Extraction Method: _____ Date Received: _____

Fin. Ext. Vol: _____(µL) Dil. Factor: _____ Date Extracted: _____

Injection Volume: ____(µL) Inst. ID: _____ Date Analyzed: _____

GC Column: _____ ID: _____(mm) Cleanup Types: _____

Concentration Units:(pg/L or ng/kg) _____ % Solids/Lipids: _____

CL No.	Spike Analytes	Spike Added	Amount Recovered	%R #	%R QC Limits

FORM 3B-HR
LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE
RELATIVE PERCENT DIFFERENCE DATA SUMMARY

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ MA No.: _____ SDG No.: _____

Matrix: _____ Analytical Method: _____ LCS EPA Sample No.: _____

Sample wt/vol: _____ (g/mL) _____ LCSD EPA Sample No.: _____

Decanted (Y/N): ____ Extraction Method: _____ Fin. Ext. Vol.: _____(µL)

Injection Volume: ____(µL) Inst. ID: _____ GC Column: _____ ID: _____(mm)

Concentration Units:(pg/L or ng/kg) _____ % Solids/Lipids: _____

CL No.	Spike Analytes	LCS %R #	LCSD %R #	RPD #

EPA SAMPLE NO.

FORM 4-HR
METHOD BLANK SUMMARY

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ MA No.: _____ SDG No.: _____

Matrix: _____ Analytical Method: _____ Lab Sample ID: _____

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

Decanted (Y/N): ____ Extraction Method: _____ Date Received: _____

Fin. Ext. Vol: _____(µL) Date Extracted: _____

Injection Volume: ____(µL) Inst. ID: _____ Date Analyzed: _____

GC Column: _____ ID: _____(mm) Preparation Batch ID: _____

Cleanup Types: _____

	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				

FORM 5A-HR
INSTRUMENT PERFORMANCE CHECK
WINDOW DEFINING MIX (WDM) SUMMARY

EPA SAMPLE NO.

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ MA No.: _____ SDG No.: _____

Inst. ID: _____ GC Column:_____ ID: ____(mm) Lab File ID: _____

Date Analyzed: _____ Time Analyzed: _____

Analytical Method: _____

CL No.	Level of Chlorination	RT First Eluting	RT Last Eluting

EPA SAMPLE NO.

FORM 5B-HR
INSTRUMENT PERFORMANCE CHECK
CDD/CDF CHROMATOGRAPHIC RESOLUTION SUMMARY

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ MA No.: _____ SDG No.: _____

Inst. ID: _____ Lab File ID: _____

Date Analyzed: _____ Time Analyzed: _____

Percent Valley Determination for Column: _____ ID: _____(mm)

For the column performance solution beginning the 12-hour period:

1,2,3,8-TCDD/2,3,7,8-TCDD: _____

Quality Control (QC) Limits: ≤25%

Percent Valley Determination for Confirmation Column: _____ ID: _____(mm)

For the column Performance Solution beginning the 12-hour period:

2,3,4,7-TCDF/2,3,7,8-TCDF: _____

	EPA Sample No.	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
31					
32					
33					
34					
35					

EPA SAMPLE NO.

FORM 5C-HR
INSTRUMENT PERFORMANCE CHECK
CBC CHROMATOGRAPHIC RESOLUTION SUMMARY

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ MA No.: _____ SDG No.: _____

Inst. ID: _____ GC Column:_____ ID: ____(mm) Lab File ID: _____

Date Analyzed: _____ Time Analyzed: _____

Percent Valley (<40%) Determination for SBP-Octyl or equivalent column

PCB-34 from PCB-23: _____

PCB-187 from PCB-182: _____

PCB-156/157 coeluted within 2 sec(•): _____

	EPA Sample No.	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
31					
32					
33					
34					
35					

FORM 6A-HR
INITIAL CALIBRATION DATA SUMMARY

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ MA No.: _____ SDG No.: _____

Inst. ID: _____ GC Column:_____ ID: ____(mm) EPA Sample No.: _____

Init. Calib. Date(s): _____ _____ _____

Init. Calib. Time(s): _____ _____ _____

Analytical Method: _____

CL No.	Analyte Name	CS 1	CS 2	CS 3	CS 4	CS 5	Mean RR/RRF	%RSD	Mean RRT	RRT QC Limits

FORM 6B-HR
ION ABUNDANCE RATIO INITIAL CALIBRATION DATA SUMMARY

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ MA No.: _____ SDG No.: _____

Inst. ID: _____ GC Column:_____ ID: ____(mm) EPA Sample No.: _____

Init. Calib. Date(s): _____ _____ _____

Init. Calib. Time(s): _____ _____ _____

Analytical Method: _____

CL No.	Analyte Name	Ion Abundance Ratio (IAR)					IAR QC Limits
		CS 1	CS 2	CS 3	CS 4	CS 5	

FORM 6C-HR
INDIVIDUAL CONGENER INITIAL CALIBRATION DATA SUMMARY

Lab Name: ______________________________ Contract: ______________________

Lab Code: __________ Case No.: _________ MA No.: _____ SDG No.: ______

Inst. ID: _______ GC Column:_____ ID: ____(mm) EPA Sample No.: _______________

Init. Calib. Date(s): __________ __________ ______________________________

Init. Calib. Time(s): __________ __________ ______________________________

CL No.	Analyte Name	RRF	IAR	IAR QC Limits	RRT	RRT QC Limits

FORM 7A-HR

RELATIVE RESPONSE/RELATIVE RESPONSE FACTOR CONTINUING CALIBRATION SUMMARY

Lab Name: ______________________________________ Contract: ___________________________

Lab Code: _____________ Case No.: ____________ MA No.: _____ SDG No.: ________

Inst. ID: _______ GC Column:_____ ID: ____(mm) EPA Sample No.: _____________________

Init. Calib. Date(s): __________ _____________ Date Analyzed: ______________________

Init. Calib. Time(s): __________ _____________ Time Analyzed: ______________________

Analytical Method: ______________________________

CL No.	Analyte Name	RR/RRF	Mean RR/RRF	%D	IAR	IAR QC Limits

FORM 7B-HR
RELATIVE RETENTION TIME CONTINUING CALIBRATION SUMMARY

Lab Name: _____ Contract: _____

Lab Code: _____ Case No.: _____ MA No.: _____ SDG No.: _____

Inst. ID: _____ GC Column:_____ ID: ____(mm) EPA Sample No.: _____

Init. Calib. Date(s): _____ _____ Date Analyzed: _____

Init. Calib. Time(s): _____ _____ Time Analyzed: _____

Analytical Method: _____

CL No.	Analyte Name	Mean RRT	RRT	RRT QC Limits

FORM DC-1
SAMPLE LOG-IN SHEET

Lab Name		Page of
Received By (Print Name)		Log-in Date
Received By (Signature)		
Case Number	SDG No.	MA No.

Remarks:	
1. Custody Seal(s)	Present/Absent* Intact/Broken
2. Custody Seal Nos.	_____ _____
3. Traffic Reports/Chain of Custody Records or Packing Lists	Present/Absent*
4. Airbill	Airbill/Sticker Present/Absent*
5. Airbill No. and Shipping Container ID No.	_____ _____
6. Sample Tags Sample Tag Numbers	Present/Absent* Listed/Not Listed on Traffic Report/Chain of Custody Record
7. Sample Condition	Intact/Broken*/ Leaking
8. Shipping Container Temperature Indicator Bottle	Present/Absent*
9. Shipping Container Temperature	_____
10. Does information on Traffic Reports/Chain of Custody Records and Sample Tags agree?	Yes/No*
11. Date Received at Lab	_____
12. Time Received	_____

	EPA Sample #	Corresponding		Remarks: Condition of Sample Shipment, etc.
		Sample Tag #	Assigned Lab #	
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				

* Contact SMO and attach record of resolution

Reviewed By	Logbook No.
Date	Logbook Page No.

FORM DC-2
HIGH RESOLUTION COMPLETE SDG FILE (CSF) INVENTORY SHEET

NAME _____

LAB CODE _____

CONTRACT NO. _____

CASE NO. _____ SDG NO. _____

MA NO. _____ SOW No. _____

All documents delivered in the Complete SDG File must be original documents where possible. (Reference - Exhibit B, Section 2.4)

	PAGE NOs.		CHECK	
	FROM	TO	LAB	REGION
1. SDG Cover Page				
2. Traffic Report/Chain of Custody Record(s)				
3. Sample Log-In Sheet (DC-1)				
4. CSF Inventory Sheet (DC-2)				
5. SDG Narrative				
6. Communication Logs				
7. Percent Solids Logs				
High Resolution Analysis				
CDD/CDF Data				
For Each Sample:				
Sample Data including Blank and LCS/LCSD				
8. High Resolution Analysis Data Sheet (Form 1A-HR)				
9. CDD/CDF Toxic Equivalent Summary (Form 1B-HR)				
10. Total Homologue Data Summary (Form 1D-HR)				
11. Labeled Compound Recovery (Form 2-HR)				
12. Selected Ion Current Profile (SICP)				
13. Chromatogram				
14. Quantitation Reports and Area Summaries				
15. Forms and Data for Secondary or Confirmation Analysis (if required)				
Quality Control Data				
16. Laboratory Control Sample Percent Recovery and Laboratory Control Sample/Laboratory Control Sample Duplicate Relative Percent Difference Data Summary (Form 3A-HR and Form 3B-HR)				

FORM DC-2
HIGH RESOLUTION COMPLETE SDG FILE (CSF) INVENTORY SHEET

	PAGE NOs.		CHECK	
	FROM	TO	LAB	REGION
17. Method Blank Summary (Form 4-HR)				
18. Instrument Performance Check Window Defining Mix (WDM) Summary (Form 5A-HR)				
19. Instrument Performance Check CDD/CDF Chromatographic Resolution Summary (Form 5B-HR)				
Calibration Data				
20. Initial Calibration Data Summary (Form 6A-HR)				
21. Ion Abundance Ration Initial Calibration Data Summary (Form 6B-HR)				
22. PFK Tune Data				
23. SICP and complete data system reports and area summaries				
24. Relative Response/Relative Response Factor Continuing Calibration Summary (Form 7A-HR)				
25. Relative Retention Time Continuing Calibration Summary (Form 7B-HR)				
26. Raw Data for All Continuing Calibration Standards				
Other Data				
27. Standard and Reagent Preparation Logs				
28. Original Preparation and Cleanup forms or copies of Preparation and Cleanup Logbooks				
29. Original Analysis or Instrument Run forms or copies of Analysis or Instrument Logbooks				
30. Performance Evaluation (PE)/Proficiency Testing (PT) Sample Instructions				
CBC Data				
For Each Sample:				
Sample Data including Blank and LCS/LCSD				
31. High Resolution Analysis Data Sheet (Form 1A-HR)				
32. CBC Toxic Equivalent Summary (Form 1C-HR)				
33. Total Homologue Data Summary (Form 1D-HR)				
34. Labeled Compound Recovery (Form 2-HR)				
35. Selected Ion Current Profile (SICP)				
36. Chromatogram				
37. Quantitation Reports and Area Summaries				
38. Forms and Data for Secondary or Confirmation Analysis (if required)				

FORM DC-2
HIGH RESOLUTION COMPLETE SDG FILE (CSF) INVENTORY SHEET

	PAGE NOs.		CHECK	
	FROM	TO	LAB	REGION
Quality Control Data				
39. Laboratory Control Sample Percent Recovery and Laboratory Control Sample/Laboratory Control Sample Duplicate Relative Percent Difference Data Summary (Form 3A-HR and FORM 3B-HR)				
40. Method Blank Summary (Form 4-HR)				
41. Instrument Performance Check Window Defining Mix (WDM) Summary (Form 5A-HR)				
42. Instrument Performance Check CBC Chromatographic Resolution Summary (Form 5C-HR)				
Calibration Data				
43. Initial Calibration Data Summary (Form 6A-HR)				
44. Ion Abundance Ration Initial Calibration Data Summary (Form 6B-HR)				
45. Individual Congener Initial Calibration Data Summary (Form 6C-HR)				
46. PFK Tune Data				
47. SICP and complete data system reports and area summaries				
48. Relative Response/Relative Response Factor Continuing Calibration Summary (Form 7A-HR)				
49. Relative Retention Time Continuing Calibration Summary (Form 7B-HR)				
50. Raw Data for All Continuing Calibration Standards				
Other Data				
51. Standard and Reagent Preparation Logs				
52. Original Preparation and Cleanup forms or copies of Preparation and Cleanup Logbooks				
53. Original Analysis or Instrument Run forms or copies of Analysis or Instrument Logbooks				
54. Performance Evaluation (PE)/Proficiency Testing (PT) Sample Instructions				
Additional				
55. EPA Shipping/Receiving Documents				
Airbill (No. of Shipments_____)				
Sample Tags				
Sample Log-In Sheet (Lab)				

FORM DC-2
HIGH RESOLUTION COMPLETE SDG FILE (CSF) INVENTORY SHEET

	PAGE NOs.		CHECK	
	FROM	TO	LAB	REGION
56. Misc. Shipping/Receiving Records (list all individual records)				
_____				
_____				
_____				
57. Internal Lab Sample Transfer Records & Tracking Sheets (describe or list)				
_____				
_____				
_____				
58. Other Records (describe or list)				
_____				
_____				
_____				

59. Comments:

_____

_____

_____

Completed by:
(CLP Lab) _____ _____ _____
(Signature) (Print Name & Title) (Date)

Audited by:
(EPA) _____ _____ _____
(Signature) (Print Name & Title) (Date)

EXHIBIT C

CHLORINATED DIBENZO-*p*-DIOXINS AND CHLORINATED DIBENZOFURANS
AND CHLORINATED BIPHENYL CONGENERS TARGET ANALYTE LIST
AND CONTRACT REQUIRED QUANTITATION LIMITS

NOTE: 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.

Changes to the CRQL may be requested under the Modified Analysis (MA) clause in the contract.

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Exhibit C –Chlorinated Dibenzo-*p*-Dioxins and Chlorinated Dibenzofurans and Chlorinated Biphenyl Congeners Target Analyte List and Contract Required Quantitation Limits

Table of Contents

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1.0 CHLORINATED DIBENZO-*p*-DIOXINS/CHLORINATED DIBENZOFURANS TARGET ANALYTE LIST AND CONTRACT REQUIRED QUANTITATION LIMITS

TABLE 1. CHLORINATED DIBENZO-*p*-DIOXINS/CHLORINATED DIBENZOFURANS TARGET ANALYTE LIST AND CONTRACT REQUIRED QUANTITATION LIMITS

Analyte Name[C]	CAS Number	CRQL[A] Water (pg/L)	CRQL[A] Solids[B] (ng/kg)
2,3,7,8-TCDD	1746-01-6	10	1.0
1,2,3,7,8-PeCDD	40321-76-4	50	5.0
1,2,3,4,7,8-HxCDD	39227-28-6	50	5.0
1,2,3,6,7,8-HxCDD	57653-85-7	50	5.0
1,2,3,7,8,9-HxCDD	19408-74-3	50	5.0
1,2,3,4,6,7,8-HpCDD	35822-46-9	50	5.0
OCDD	3268-87-9	100	10
2,3,7,8-TCDF	51207-31-9	10	1.0
1,2,3,7,8-PeCDF	57117-41-6	50	5.0
2,3,4,7,8-PeCDF	57117-31-4	50	5.0
1,2,3,4,7,8-HxCDF	70648-26-9	50	5.0
1,2,3,6,7,8-HxCDF	57117-44-9	50	5.0
1,2,3,7,8,9-HxCDF	72918-21-9	50	5.0
2,3,4,6,7,8-HxCDF	60851-34-5	50	5.0
1,2,3,4,6,7,8-HpCDF	67562-39-4	50	5.0
1,2,3,4,7,8,9-HpCDF	55673-89-7	50	5.0
OCDF	39001-02-0	100	10

1.1 Homologues for Chlorinated Dibenzo-*p*-Dioxins/Chlorinated Dibenzofurans

Data are reported for the total concentration of all detected chlorinated dibenzo-*p*-dioxins (CDDs) or chlorinated dibenzofurans (CDFs) in the following homologues. However, because the number of non-2,3,7,8-substituted isomers that might be detected in a sample is unpredictable, it is not possible to assign CRQLs values to the total homologue concentrations with the exception of Octachlorinated dibenzo-*p*-dioxin (OCDD) and Octachlorinated dibenzofuran (OCDF).

TABLE 2. HOMOLOGUES FOR CHLORINATED DIBENZO-*p*-DIOXINS/ CHLORINATED DIBENZOFURANS

Homologue[C]	CAS Number	No. of Possible Isomers	No. of 2,3,7,8-Substituted Isomers
Total TCDD	41903-57-5	22	1
Total PeCDD	36088-22-9	14	1
Total HxCDD	34465-46-8	10	3
Total HpCDD	37871-00-4	2	1
Total TCDF	55722-27-5	38	1
Total PeCDF	30402-15-4	28	2
Total HxCDF	55684-94-1	16	4
Total HpCDF	38998-75-3	4	2
OCDD	3268-87-9	1	1
OCDF	39001-02-0	1	1

2.0 CHLORINATED BIPHENYL CONGENERS TARGET ANALYTE LIST AND CONTRACT REQUIRED QUANTITATION LIMITS

TABLE 3. CHLORINATED BIPHENYL CONGENERS TARGET ANALYTE LIST AND CONTRACT REQUIRED QUANTITATION LIMITS

Analyte Name	CBC[C]	CAS Number	CRQL[A] Water (pg/L)	CRQL[A] Solids[B] (ng/kg)
PCB-1	2-MoCB	2051-60-7	20	2.0
PCB-2	3-MoCB	2051-61-8	20	2.0
PCB-3	4-MoCB	2051-62-9	20	2.0
PCB-4	2,2'-DiCB	13029-08-8	20	2.0
PCB-5	2,3-DiCB	16605-91-7	20	2.0
PCB-6	2,3'-DiCB	25569-80-6	20	2.0
PCB-7	2,4-DiCB	33284-50-3	20	2.0
PCB-8	2,4'-DiCB	34883-43-7	20	2.0
PCB-9	2,5-DiCB	34883-39-1	20	2.0
PCB-10	2,6-DiCB	33146-45-1	20	2.0
PCB-11	3,3'-DiCB	2050-67-1	20	2.0
PCB-12	3,4-DiCB	2974-92-7	20	2.0
PCB-13	3,4'-DiCB	2974-90-5	20	2.0
PCB-14	3,5-DiCB	34883-41-5	20	2.0
PCB-15	4,4'-DiCB	2050-68-2	20	2.0
PCB-16	2,2',3-TrCB	38444-78-9	20	2.0
PCB-17	2,2',4-TrCB	37680-66-3	20	2.0
PCB-18	2,2',5-TrCB	37680-65-2	20	2.0
PCB-19	2,2',6-TrCB	38444-73-4	20	2.0
PCB-20	2,3,3'-TrCB	38444-84-7	20	2.0
PCB-21	2,3,4-TrCB	55702-46-0	20	2.0
PCB-22	2,3,4'-TrCB	38444-85-8	20	2.0
PCB-23	2,3,5-TrCB	55720-44-0	20	2.0
PCB-24	2,3,6-TrCB	55702-45-9	20	2.0
PCB-25	2,3',4-TrCB	55712-37-3	20	2.0
PCB-26	2,3',5-TrCB	38444-81-4	20	2.0
PCB-27	2,3',6-TrCB	38444-76-7	20	2.0
PCB-28	2,4,4'-TrCB	7012-37-5	20	2.0
PCB-29	2,4,5-TrCB	15862-07-4	20	2.0
PCB-30	2,4,6-TrCB	35693-92-6	20	2.0
PCB-31	2,4',5-TrCB	16606-02-3	20	2.0
PCB-32	2,4',6-TrCB	38444-77-8	20	2.0
PCB-33	2',3,4-TrCB	38444-86-9	20	2.0
PCB-34	2',3,5-TrCB	37680-68-5	20	2.0
PCB-35	3,3',4-TrCB	37680-69-6	20	2.0
PCB-36	3,3',5-TrCB	38444-87-0	20	2.0
PCB-37	3,4,4'-TrCB	38444-90-5	20	2.0
PCB-38	3,4,5-TrCB	53555-66-1	20	2.0
PCB-39	3,4',5-TrCB	38444-88-1	20	2.0
PCB-40	2,2',3,3'-TeCB	38444-93-8	20	2.0
PCB-41	2,2',3,4-TeCB	52663-59-9	20	2.0
PCB-42	2,2',3,4'-TeCB	36559-22-5	20	2.0
PCB-43	2,2',3,5-TeCB	70362-46-8	20	2.0
PCB-44	2,2',3,5'-TeCB	41464-39-5	20	2.0
PCB-45	2,2',3,6-TeCB	70362-45-7	20	2.0

TABLE 3. CHLORINATED BIPHENYL CONGENERS TARGET ANALYTE LIST AND CONTRACT REQUIRED QUANTITATION LIMITS (CON'T)

Analyte Name	CBC[C]	CAS Number	CRQL[A] Water (pg/L)	CRQL[A] Solids[B] (ng/kg)
PCB-46	2,2',3,6'-TeCB	41464-47-5	20	2.0
PCB-47	2,2',4,4'-TeCB	2437-79-8	20	2.0
PCB-48	2,2',4,5-TeCB	70362-47-9	20	2.0
PCB-49	2,2',4,5'-TeCB	41464-40-8	20	2.0
PCB-50	2,2',4,6-TeCB	62796-65-0	20	2.0
PCB-51	2,2',4,6'-TeCB	68194-04-7	20	2.0
PCB-52	2,2',5,5'-TeCB	35693-99-3	20	2.0
PCB-53	2,2',5,6'-TeCB	41464-41-9	20	2.0
PCB-54	2,2',6,6'-TeCB	15968-05-5	20	2.0
PCB-55	2,3,3',4-TeCB	74338-24-2	20	2.0
PCB-56	2,3,3',4'-TeCB	41464-43-1	20	2.0
PCB-57	2,3,3',5-TeCB	70424-67-8	20	2.0
PCB-58	2,3,3',5'-TeCB	41464-49-7	20	2.0
PCB-59	2,3,3',6-TeCB	74472-33-6	20	2.0
PCB-60	2,3,4,4'-TeCB	33025-41-1	20	2.0
PCB-61	2,3,4,5-TeCB	33284-53-6	20	2.0
PCB-62	2,3,4,6-TeCB	54230-22-7	20	2.0
PCB-63	2,3,4',5-TeCB	74472-34-7	20	2.0
PCB-64	2,3,4',6-TeCB	52663-58-8	20	2.0
PCB-65	2,3,5,6-TeCB	33284-54-7	20	2.0
PCB-66	2,3',4,4'-TeCB	32598-10-0	20	2.0
PCB-67	2,3',4,5-TeCB	73575-53-8	20	2.0
PCB-68	2,3',4,5'-TeCB	73575-52-7	20	2.0
PCB-69	2,3',4,6-TeCB	60233-24-1	20	2.0
PCB-70	2,3',4',5-TeCB	32598-11-1	20	2.0
PCB-71	2,3',4',6-TeCB	41464-46-4	20	2.0
PCB-72	2,3',5,5'-TeCB	41464-42-0	20	2.0
PCB-73	2,3',5',6-TeCB	74338-23-1	20	2.0
PCB-74	2,4,4',5-TeCB	32690-93-0	20	2.0
PCB-75	2,4,4',6-TeCB	32598-12-2	20	2.0
PCB-76	2',3,4,5-TeCB	70362-48-0	20	2.0
PCB-77	3,3',4,4'-TeCB	32598-13-3	20	2.0
PCB-78	3,3',4,5-TeCB	70362-49-1	20	2.0
PCB-79	3,3',4,5'-TeCB	41464-48-6	20	2.0
PCB-80	3,3',5,5'-TeCB	33284-52-5	20	2.0
PCB-81	3,4,4',5-TeCB	70362-50-4	20	2.0
PCB-82	2,2',3,3',4-PeCB	52663-62-4	20	2.0
PCB-83	2,2',3,3',5-PeCB	60145-20-2	20	2.0
PCB-84	2,2',3,3',6-PeCB	52663-60-2	20	2.0
PCB-85	2,2',3,4,4'-PeCB	65510-45-4	20	2.0
PCB-86	2,2',3,4,5-PeCB	55312-69-1	20	2.0
PCB-87	2,2',3,4,5'-PeCB	38380-02-8	20	2.0
PCB-88	2,2',3,4,6-PeCB	55215-17-3	20	2.0
PCB-89	2,2',3,4,6'-PeCB	73575-57-2	20	2.0
PCB-90	2,2',3,4',5-PeCB	68194-07-0	20	2.0
PCB-91	2,2',3,4',6-PeCB	68194-05-8	20	2.0
PCB-92	2,2',3,5,5'-PeCB	52663-61-3	20	2.0
PCB-93	2,2',3,5,6-PeCB	73575-56-1	20	2.0
PCB-94	2,2',3,5,6'-PeCB	73575-55-0	20	2.00
PCB-95	2,2',3,5',6-PeCB	38379-99-6	20	2.0
PCB-96	2,2',3,6,6'-PeCB	73575-54-9	20	2.0
PCB-97	2,2',3',4,5-PeCB	41464-51-1	20	2.0

TABLE 3. CHLORINATED BIPHENYL CONGENERS TARGET ANALYTE LIST AND CONTRACT REQUIRED QUANTITATION LIMITS (CON'T)

Analyte Name	CBC[C]	CAS Number	CRQL[A] Water (pg/L)	CRQL[A] Solids[B] (ng/kg)
PCB-98	2,2',3',4,6-PeCB	60233-25-2	20	2.0
PCB-99	2,2',4,4',5-PeCB	38380-01-7	20	2.0
PCB-100	2,2',4,4',6-PeCB	39485-83-1	20	2.0
PCB-101	2,2',4,5,5'-PeCB	37680-73-2	20	2.0
PCB-102	2,2',4,5,6'-PeCB	68194-06-9	20	2.0
PCB-103	2,2',4,5',6-PeCB	60145-21-3	20	2.0
PCB-104	2,2',4,6,6'-PeCB	56558-16-8	20	2.0
PCB-105	2,3,3',4,4'-PeCB	32598-14-4	20	2.0
PCB-106	2,3,3',4,5-PeCB	70424-69-0	20	2.0
PCB-107	2,3,3',4',5-PeCB	70424-68-9	20	2.0
PCB-108	2,3,3',4,5'-PeCB	70362-41-3	20	2.0
PCB-109	2,3,3',4,6-PeCB	74472-35-8	20	2.0
PCB-110	2,3,3',4',6-PeCB	38380-03-9	20	2.0
PCB-111	2,3,3',5,5'-PeCB	39635-32-0	20	2.0
PCB-112	2,3,3',5,6-PeCB	74472-36-9	20	2.0
PCB-113	2,3,3',5',6-PeCB	68194-10-5	20	2.0
PCB-114	2,3,4,4',5-PeCB[3]	74472-37-0	20	2.0
PCB-115	2,3,4,4',6-PeCB	74472-38-1	20	2.0
PCB-116	2,3,4,5,6-PeCB	18259-05-7	20	2.0
PCB-117	2,3,4',5,6-PeCB	68194-11-6	20	2.0
PCB-118	2,3',4,4',5-PeCB	31508-00-6	20	2.0
PCB-119	2,3',4,4',6-PeCB	56558-17-9	20	2.0
PCB-120	2,3',4,5,5'-PeCB	68194-12-7	20	2.0
PCB-121	2,3',4,5',6-PeCB	56558-18-0	20	2.0
PCB-122	2',3,3',4,5-PeCB	76842-07-4	20	2.0
PCB-123	2',3,4,4',5-PeCB	65510-44-3	20	2.0
PCB-124	2',3,4,5,5'-PeCB	70424-70-3	20	2.0
PCB-125	2',3,4,5,6'-PeCB	74472-39-2	20	2.0
PCB-126	3,3',4,4',5-PeCB	57465-28-8	20	2.0
PCB-127	3,3',4,5,5'-PeCB	39635-33-1	20	2.0
PCB-128	2,2',3,3',4,4'-HxCB	38380-07-3	20	2.0
PCB-129	2,2',3,3',4,5-HxCB	55215-18-4	20	2.0
PCB-130	2,2',3,3',4,5'-HxCB	52663-66-8	20	2.0
PCB-131	2,2',3,3',4,6-HxCB	61798-70-7	20	2.0
PCB-132	2,2',3,3',4,6'-HxCB	38380-05-1	20	2.0
PCB-133	2,2',3,3',5,5'-HxCB	35694-04-3	20	2.0
PCB-134	2,2',3,3',5,6-HxCB	52704-70-8	20	2.0
PCB-135	2,2',3,3',5,6'-HxCB	52744-13-5	20	2.0
PCB-136	2,2',3,3',6,6'-HxCB	38411-22-2	20	2.0
PCB-137	2,2',3,4,4',5-HxCB	35694-06-5	20	2.0
PCB-138	2,2',3,4,4',5'-HxCB	35065-28-2	20	2.0
PCB-139	2,2',3,4,4',6-HxCB	56030-56-9	20	2.0
PCB-140	2,2',3,4,4',6'-HxCB	59291-64-4	20	2.0
PCB-141	2,2',3,4,5,5'-HxCB	52712-04-6	20	2.0
PCB-142	2,2',3,4,5,6-HxCB	41411-61-4	20	2.0
PCB-143	2,2',3,4,5,6'-HxCB	68194-15-0	20	2.0
PCB-144	2,2',3,4,5',6-HxCB	68194-14-9	20	2.0
PCB-145	2,2',3,4,6,6'-HxCB	74472-40-5	20	2.0

TABLE 3. CHLORINATED BIPHENYL CONGENERS TARGET ANALYTE LIST AND CONTRACT REQUIRED QUANTITATION LIMITS (CON'T)

Analyte Name	CBC[C]	CAS Number	CRQL[A] Water (pg/L)	CRQL[A] Solids[B] (ng/kg)
PCB-146	2,2',3,4',5,5'-HxCB	51908-16-8	20	2.0
PCB-147	2,2',3,4',5,6-HxCB	68194-13-8	20	2.0
PCB-148	2,2',3,4',5,6'-HxCB	74472-41-6	20	2.0
PCB-149	2,2',3,4',5',6-HxCB	38380-04-0	20	2.0
PCB-150	2,2',3,4',6,6'-HxCB	68194-08-1	20	2.0
PCB-151	2,2',3,5,5',6-HxCB	52663-63-5	20	2.0
PCB-152	2,2',3,5,6,6'-HxCB	68194-09-2	20	2.0
PCB-153	2,2',4,4',5,5'-HxCB	35065-27-1	20	2.0
PCB-154	2,2',4,4',5,6'-HxCB	60145-22-4	20	2.0
PCB-155	2,2',4,4',6,6'-HxCB	33979-03-2	20	2.0
PCB-156	2,3,3',4,4',5-HxCB	38380-08-4	20	2.0
PCB-157	2,3,3',4,4',5'-HxCB	69782-90-7	20	2.0
PCB-158	2,3,3',4,4',6-HxCB	74472-42-7	20	2.0
PCB-159	2,3,3',4,5,5'-HxCB	39635-35-3	20	2.0
PCB-160	2,3,3',4,5,6-HxCB	41411-62-5	20	2.0
PCB-161	2,3,3',4,5',6-HxCB	74472-43-8	20	2.0
PCB-162	2,3,3',4',5,5'-HxCB	39635-34-2	20	2.0
PCB-163	2,3,3',4',5,6-HxCB	74472-44-9	20	2.0
PCB-164	2,3,3',4',5',6-HxCB	74472-45-0	20	2.0
PCB-165	2,3,3',5,5',6-HxCB	74472-46-1	20	2.0
PCB-166	2,3,4,4',5,6-HxCB	41411-63-6	20	2.0
PCB-167	2,3',4,4',5,5'-HxCB	52663-72-6	20	2.0
PCB-168	2,3',4,4',5',6-HxCB	59291-65-5	20	2.0
PCB-169	3,3',4,4',5,5'-HxCB	32774-16-6	20	2.0
PCB-170	2,2',3,3',4,4',5-HpCB	35065-30-6	20	2.0
PCB-171	2,2'3,3',4,4',6-HpCB	52663-71-5	20	2.0
PCB-172	2,2',3,3',4,5,5'-HpCB	52663-74-8	20	2.0
PCB-173	2,2',3,3',4,5,6-HpCB	68194-16-1	20	2.0
PCB-174	2,2',3,3',4,5,6'-HpCB	38411-25-5	20	2.0
PCB-175	2,2',3,3',4,5',6-HpCB	40186-70-7	20	2.0
PCB-176	2,2',3,3',4,6,6'-HpCB	52663-65-7	20	2.0
PCB-177	2,2',3,3',4',5,6-HpCB	52663-70-4	20	2.0
PCB-178	2,2',3,3',5,5',6-HpCB	52663-67-9	20	2.0
PCB-179	2,2',3,3',5,6,6'-HpCB	52663-64-6	20	2.0
PCB-180	2,2',3,4,4',5,5'-HpCB	35065-29-3	20	2.0
PCB-181	2,2',3,4,4',5,6-HpCB	74472-47-2	20	2.0
PCB-182	2,2',3,4,4',5,6'-HpCB	60145-23-5	20	2.0
PCB-183	2,2',3,4,4',5',6-HpCB	52663-69-1	20	2.0
PCB-184	2,2',3,4,4',6,6'-HpCB	74472-48-3	20	2.0
PCB-185	2,2',3,4,5,5',6-HpCB	52712-05-7	20	2.0
PCB-186	2,2',3,4,5,6,6'-HpCB	74472-49-4	20	2.0
PCB-187	2,2',3,4',5,5',6-HpCB	52663-68-0	20	2.0
PCB-188	2,2',3,4',5,6,6'-HpCB	74487-85-7	20	2.0
PCB-189	2,3,3',4,4',5,5'-HpCB	39635-31-9	20	2.0
PCB-190	2,3,3',4,4',5,6-HpCB	41411-64-7	20	2.0
PCB-191	2,3,3',4,4',5',6-HpCB	74472-50-7	20	2.0
PCB-192	2,3,3',4,5,5',6-HpCB	74472-51-8	20	2.0
PCB-193	2,3,3',4',5,5',6-HpCB	69782-91-8	20	2.0
PCB-194	2,2',3,3',4,4',5,5'-OcCB	35694-08-7	20	2.0
PCB-195	2,2',3,3',4,4',5,6-OcCB	52663-78-2	20	2.0
PCB-196	2,2',3,3',4,4',5,6'-OcCB	42740-50-1	20	2.0
PCB-197	2,2',3,3',4,4',6,6'-OcCB	33091-17-7	20	2.0
PCB-198	2,2',3,3',4,5,5',6-OcCB	68194-17-2	20	2.0

TABLE 3. CHLORINATED BIPHENYL CONGENERS TARGET ANALYTE LIST AND CONTRACT REQUIRED QUANTITATION LIMITS (CON'T)

Analyte Name	CBC[C]	CAS Number	CRQL[A] Water (pg/L)	CRQL[A] Solids[B] (ng/kg)
PCB-199	2,2',3,3',4,5,5',6'-OcCB	52663-75-9	20	2.0
PCB-200	2,2',3,3',4,5,6,6'-OcCB	52663-73-7	20	2.0
PCB-201	2,2',3,3',4,5',6,6'-OcCB	40186-71-8	20	2.0
PCB-202	2,2',3,3',5,5',6,6'-OcCB	2136-99-4	20	2.0
PCB-203	2,2',3,4,4',5,5',6-OcCB	52663-76-0	20	2.0
PCB-204	2,2',3,4,4',5,6,6'-OcCB	74472-52-9	20	2.0
PCB-205	2,3,3',4,4',5,5',6-OcCB	74472-53-0	20	2.0
PCB-206	2,2',3,3',4,4',5,5',6-NoCB	40186-72-9	20	2.0
PCB-207	2,2',3,3',4,4',5,6,6'-NoCB	52663-79-3	20	2.0
PCB-208	2,2',3,3',4,5,5',6,6'-NoCB	52663-77-1	20	2.0
PCB-209	DeCB	2051-24-3	20	2.0

2.1 Homologues for Chlorinated Biphenyl Congeners

Data are reported for the total concentration of all detected chlorinated biphenyl congeners in the following homologues. However, because the calculation of the total homologue concentrations is a mathematical computation, it is not possible to assign CRQLs values to these values with the exception of Decachlorobiphenyl (DeCB).

TABLE 4. CHLORINATED BIPHENYL CONGENERS HOMOLOGUES

Homologue[C]	CAS Number
Total MoCB	27323-18-8
Total DiCB	25512-42-9
Total TrCB	25323-68-6
Total TeCB	26914-33-0
Total PeCB	25429-29-2
Total HxCB	26601-64-9
Total HpCB	28655-71-2
Total OcCB	55722-26-4
Total NoCB	53742-07-7
DeCB	2051-24-3

3.0 WORLD HEALTH ORGANIZATION TOXIC CONGENERS TARGET ANALYTE LIST AND CONTRACT REQUIRED QUANTITATION LIMITS

TABLE 5. WORLD HEALTH ORGANIZATION TOXIC CONGENERS TARGET ANALYTE LIST AND CONTRACT REQUIRED QUANTITATION LIMITS

Analyte Name	CBC[C]	CAS Number	CRQL[A] Water (pg/L)	CRQL[A] Solids[B] (ng/kg)
PCB-77	3,3',4,4'-TeCB	32598-13-3	20	2.0
PCB-81	3,4,4',5-TeCB	70362-50-4	20	2.0
PCB-105	2,3,3',4,4'-PeCB	32598-14-4	20	2.0
PCB-114	2,3,4,4',5-PeCB	74472-37-0	20	2.0
PCB-118	2,3',4,4',5-PeCB	31508-00-6	20	2.0
PCB-123	2',3,4,4',5-PeCB	65510-44-3	20	2.0
PCB-126	3,3',4,4',5-PeCB	57465-28-8	20	2.0
PCB-156	2,3,3',4,4',5-HxCB	38380-08-4	20	2.0
PCB-157	2,3,3',4,4',5'-HxCB	69782-90-7	20	2.0
PCB-167	2,3',4,4',5,5'-HxCB	52663-72-6	20	2.0
PCB-169	3,3',4,4',5,5'-HxCB	32774-16-6	20	2.0
PCB-189	2,3,3',4,4',5,5'-HpCB	39635-31-9	20	2.0

4.0 ADDITIONAL REPORTING REQUIREMENTS

TABLE 6. ADDITIONAL CHLORINATED DIBENZO-*p*-DIOXINS/CHLORINATED DIBENZOFURANS REPORTING REQUIREMENTS

CDD/CDF	SMO ASSIGNED NO.
TEQ (Mammal)	3333-30-0
TEQ (Bird)	2222-20-0
TEQ (Fish)	2222-21-0

TABLE 7. ADDITIONAL CHLORINATED BIPHENYL CONGENERS REPORTING REQUIREMENTS

CB Congener	SMO ASSIGNED NO.
TOTAL PCBs	1111-11-1
TEQ (Mammal)	2222-22-2
TEQ (Bird)	2222-22-3
TEQ (Fish)	2222-22-4

Endnotes:

A. The CRQLs in these tables are equivalent to the concentration of the low calibration (CS1) standard, assuming that all sample weight, volumes, and cleanup procedures are performed according to Exhibit D of this Statement of Work (SOW).

Specific quantitation limits are highly matrix-dependent. The quantitation limit listed herein is provided for guidance and may not always be achievable.

These CRQL values are based on the analysis of samples according to the specification given in Exhibit D. Sample data are reported on a dry weight basis for soil/sediment samples. Sludge and oily matrices are generally reported on a wet weight basis due to their potentially hazardous nature. Tissues (non-human) are reported on a wet weight basis, along with their Percent Lipids (%Lipids) content.

NOTE: The values in these tables are quantitation limits, not absolute detection limits. The amount of material necessary to produce a detector response that can be identified and reliably quantified is greater than that needed to be simply detected above the background noise. For some congeners, the CRQLs may be dependent upon coelutions encountered during analysis.

B. Solids include soil/sediment, sludge, tissue (non-human), biosolids, ash, oil, and oily matrices. For oil samples, if 2.0 g sample size was used, then these CRQLs need to be adjusted accordingly.

C. Abbreviations for chlorination levels:

CDDs/CDFs

TCDD = Tetrachlorinated dibenzo-*p*-dioxin
TCDF = Tetrachlorinated dibenzofuran
PeCDD = Pentachlorinated dibenzo-*p*-dioxin
PeCDF = Pentachlorinated dibenzofuran
HxCDD = Hexachlorinated dibenzo-*p*-dioxin
HxCDF = Hexachlorinated dibenzofuran
HpCDD = Heptachlorinated dibenzo-*p*-dioxin
HpCDF = Heptachlorinated dibenzofuran
OCDD = Octachlorinated dibenzo-*p*-dioxin
OCDF = Octachlorinated dibenzofuran

CBCs

MoCB = Monochlorobiphenyl
DiCB = Dichlorobiphenyl
TrCB = Trichlorobiphenyl
TeCB = Tetrachlorobiphenyl
PeCB = Pentachlorobiphenyl
HxCB = Hexachlorobiphenyl
HpCB = Heptachlorobiphenyl
OcCB = Octachlorobiphenyl
NoCB = Nonachlorobiphenyl
DeCB = Decachlorobiphenyl